Depression After Childbirth

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Abstract: ***Background and Methods:*** **Depression following childbirth is an illness occurring in 10 to 20 percent of women in the year postpartum. Researchers have debated whether postpartum depression is a different illness from depression at other times. We critically review the literature on postpartum depression, as distinguished from postpartum blues and psychosis.**

Results: **Problems with definition, study design, and the validity of the diagnosis have hampered investigation. Studies do not clearly distinguish postpartum depression from major depression occurring at other times.**

Conclusions: **Depression after childbirth is probably the same illness as depression at other times. It is not known whether biological and psychological factors unique to the puerperium alter the expression of the illness. Nonetheless, physicians caring for women and infants should learn to screen for, diagnose, and treat depression in women after childbirth. (J Am Board Fam Pract 1992; 5:303-11.)**

The postpartum disorders occur as a spectrum of psychiatric syndromes ranging from mild blues to psychosis occurring during the puerperium. Although many postpartum women experience brief periods of sadness and irritability, some women become incapacitated by moderate to severe depression or psychosis. This article reviews postpartum depression as distinct from the blues and puerperal psychosis. The blues are excluded from discussion because they are transient, self-limited, and probably not pathological. Psychosis is excluded because it is more rare and less well understood (Table 1).

Ambiguity and confusion surround the postpartum psychiatric disorders. This review attempts to clarify what is known and to provide a framework for the diagnosis and management of clinically serious depression occurring in women after childbirth. Our objectives are threefold: (1) to discuss critically the research on postpartum depression; (2) to discuss the epidemiology, clinical characteristics, management, and prognosis of depression in the puerperium; and (3) to provide ideas for future research.

First, before considering the clinical aspects of postpartum depression, the research must be evaluated. Most researchers have approached postpartum depression as a diagnosis unique from depression that occurs at other times. Because any psychiatric illness can occur during the puerperium, it is important to determine whether postpartum depressive episodes can be distinguished from major depressions occurring at other times. Are there distinctive biological or phenomenological features of postpartum depression that suggest it is somehow different? The search for answers to these questions has been confounded by imprecise definitions, flawed methods, and a failure to establish the independent validity of postpartum depression as a diagnosis. Understanding these methodologic problems will provide a framework for interpreting the clinical discussion.

Second, we discuss what is known about major depression in the puerperium, including management and prognosis. Although it can be difficult to identify factors that characterize women at risk, the family physician is in the position to screen for, identify, and treat symptomatic depression in women. Depression in the puerperium is more common than the blues and psychosis; in its milder forms, it is more likely to be overlooked by the primary care physician. We hope this review will heighten attention to the emotional state of women and families during the first postpartum year.

Submitted, revised, 2 January 1992.

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This review was undertaken while Dr. Sharon Dobie was a Fellow in the Department of Family Medicine's Faculty Development Program at the University of Washington. Funding was provided by the United States Department of Health and Human Services, Public Health Services.

Table 1. Psychiatric Conditions Occurring during the Puerperium.*

Condition	Characteristics	Rate (%)
Postpartum blues	A brief, self-limited mood disturbance lasting hours to a few days, the blues are characterized by tearfulness, exaggerated affect, and empathy	30–60
Postpartum depression	A mild to severe illness occurring within the first postpartum year, characterized by depressed mood, sleep, and appetite disturbances; altered motivation; and altered patterns of social interaction	10–20
Postpartum psychosis	A rare, severe psychotic illness, most often occurring within 2 weeks of the birth, characterized by delusions and manic or schizoaffective signs	< 1

*Note: Another descriptive format is provided by Inwood.[1]

Third, directions for future research are discussed. By shifting their focus away from proving that postpartum depression is a distinct diagnostic category, researchers can pursue other intriguing and clinically relevant questions. Even if postpartum depression is not distinct from major depression, could the puerperium be a period of increased vulnerability to psychiatric symptoms? Are there unique features of the clinical expression of major depression occurring during the puerperium? Does the expression of depressive symptoms during this time affect patient care?

Methods

Using the key words "puerperal," "puerperal disorders," "postpartum," "depression," "depressive disorders," "blues," and "psychosis," the literature was searched through MEDLINE from 1980 to the present. Articles preceding 1980 were accessed from the more current articles. Case reports and case-control, prevalence, and cohort studies were included for consideration. The search methods limited the scope of articles to those found in the indexed medical literature. Anthropologic, social work, and psychoanalytic literature was not well represented in our search strategy.

The State of the Research

Imprecise Definitions

Agreement on definition is important for accurate, relevant, and reproducible research; furthermore, case identification and diagnostic criteria must be standardized for both clinical and research purposes. Unfortunately, variation in diagnostic criteria for postpartum depression has led to inconsistency in case identification (Table 2), and many researchers have either failed to use operational definitions or used idiosyncratic definitions, making comparisons across studies difficult. Studies of postpartum depression have included major depression with or without psychotic features, adjustment disorders with depressed mood, and various combinations; studies of psychosis have included both affective and nonaffective psychosis. Attempts to discriminate between "the blues" and depression have not led to consistent operational definitions.[2,4,7,11,15-19]

Because researchers have not uniformly applied psychiatric classification systems to define cases, they have further contributed to dissimilar definitions. Nevertheless, many researchers have noted differences in symptom complexes and natural history between depressed women in the puerperium and depressed women at other times.[20-22] Based on these differences in symptoms, some researchers have argued for a classification system that differentiates postpartum depression from nonpuerperal major depression. The *Diagnostic and Statistical Manual of Mental Disorders III-R* (*DSM-III-R*), however, does not differentiate puerperal psychiatric symptoms from their nonpuerperal counterparts,[23] and there are currently no plans to change the classification for the 1992 edition of the *DSM-IV*.

Many researchers have used the older *Research Diagnostic Criteria* (*RDC*), which allow for diagnoses of both minor and major depression,[3-5,22,24] as the *RDC* have a broader definition and identify more cases than does the *DSM III-R*. Case definitions with high sensitivity and low specificity have limited the interpretation of data in studies that used diagnostic criteria without adjusting for physical symptoms commonly associated with both depression and normal puerperal adjustment, including fatigue, sleep disturbance, and alteration in appetite.[6,11,25]

Table 2. Prevalence Studies of Postpartum Depression.

Diagnostic Criteria	Name (Year)	Sample Size	Length of Follow-Up	Prevalence (%)
Formal criteria				
Research diagnostic criteria	O'Hara, et al. (1990)[2]	342	9 wk	10.4*
	Cooper, et al. (1988)[3]	483	12 mo	15.1*
	O'Hara (1986)[4]	99	9 wk	12
	Kumar & Robson (1974)[5]	119	1–4 y	14†, 22‡
DSM-III-R	Cutrona & Troutman (1986)[6]	55	3 mo	20
Pitt's criteria	Cox, et al. (1982)[7]	103	3–5 mo	13
	Pitt (1968)[8]	305	6–8 wk	10.3
Informal criteria				
International Classification of Diseases	Watson, et al. (1984)[9]	128	12 mo	13§
Montgomery-Ashberg scale	Stein, et al. (1989)[10]	460	3 mo	0.5
Clear psychiatric diagnosis	Gard, et al. (1986)[11]	52	9 mo	21
Raskin score	Paykel, et al. (1980)[12]	120	6 wk	20
Needing psychiatric care	Dalton (1971)[13]	189	6 mo	7
Emotional maladjustment	Gordon, et al. (1965)[14]	435	To 4 yr	19‖
General practitioner rating	Tod (1964)[15]	700	12 mo	2.9

*Double cohort design; sample size includes nonpuerperal controls.
†At 3 mo.
‡Period prevalence at 1 yr.
§At 6 wk.
‖At 6 wk.

Problems of Study Design

Research on postpartum depression has been characterized by serious design deficiencies. Many of the studies have been descriptive and have lacked a nonpuerperal control group.[5-8,10,11,13,17,19,26-28] An optimal study design for a study of puerperal psychiatric symptoms would be either a cohort or a prevalence study with a sample of sufficient size to ensure statistical power and generalizability. Double cohort designs, rare in the literature, allow measurement of psychiatric symptoms in a matched group of women who are not postpartum.[2,3,29]

Early studies have been based on simple prevalence or case-control designs. Prevalence studies have typically been small, lacked a control group, and failed to discuss risk relative to the nonpuerperal control group (Table 2).[8,9,11,14,19,30,31] Furthermore, most prevalence studies have examined culturally and economically homogeneous groups of women, which would limit the generalizability of the findings. Case-control studies, typically examining records of patients requiring hospital admission, would likely have selection bias and underestimate the prevalence of nonpsychotic depression.[17,26,27,32,33] Studies also have not been consistent on the length of follow-up for women postpartum, with follow-up ranging from 14 days to 1 year. Often diagnoses have been based on self-reporting of symptoms,[11,14,25] and two recent studies have discussed the methodologic problems with instruments for such self-report, including recall bias.[24,34] Lack of standardized structured interviews has resulted in considerable variation in estimated diagnostic rates.

In view of these difficulties, it is probably best to view available research as studies of moderate to severe depressive symptoms rather than as studies of postpartum depressive disorder. For the purpose of this discussion, however, we will accept the imprecision of these earlier studies and continue with the problem of validity.

Validity of the Diagnosis

Because precise definition does not guarantee validity, it has been suggested that the validity of a psychiatric diagnosis be based on the following five criteria: distinctive phenomenology, natural history of the illness, family history, biological markers, and response to treatment.[35] If postpartum depression is distinct, it should be separable

from nonpuerperal major depression in at least some of these five categories.

Phenomenology

Although the clinical manifestations of postpartum depression include the classical symptoms found in major depression (e.g., weight changes, change in sleep patterns, anhedonia), some authors have noted increased lability, disorientation, and self-reproach in depressed postpartum women when compared with nonpuerperal depressed women.[4,8,19,26] Delusions and cognitive impairment have also been reported.[4,26,27,33] These findings have led some to suggest that postpartum depression might be an illness different from depression occurring at other times. None of the studies has controlled for the occurrence of these symptoms in unaffected postpartum women, and objective psychometric or cognitive testing has not been done.

Natural History of the Illness

The duration of the illness is variable, and the range is unknown. Few studies have addressed long-term morbidity.[8,36,37] Findings from two studies have suggested that women with postpartum depression have an earlier age of onset of depression, fewer lifetime episodes of depression, shorter time from onset of symptoms to hospitalization, shorter duration of symptoms, and better outcomes than those of women depressed at other times.[18,33] Others have found significant persistent morbidity up to 4 years after the index birth.[36,37] None of the studies has provided conclusive evidence of a difference in the natural history of postpartum depression and depression occurring at other times.

Family History

Family history includes both genetic and environmental factors. Although studies of twins are lacking, most reports that include observations of family history have noted some association with depression. Several researchers have found a strong positive family history of nonpuerperal depression in women affected with postpartum depression compared with nondepressed postpartum control groups.[9,17,28,31] The presence of a strong positive family history does not suggest that postpartum depression is distinct, however, because women with any psychiatric diagnosis would be expected to have an increased risk for past psychiatric episodes and a family history of psychiatric illness. One author found that the odds ratio for a positive family history of depression was the same for hospitalized women with puerperal depression as it was for women hospitalized with a depressive illness at a different time.[27]

Biological Markers

A biological marker is a reproducible biological finding that is consistently found in individuals afflicted with a disorder; it is a strong determinant of validity. The marker must be present not only during the disease state but also during remission of the disease, when the patient is asymptomatic. These markers should not be present in individuals who do not have the disease. No such biological markers have been identified for postpartum depression.

There are, however, a number of endocrine and neuroendocrine changes occurring during pregnancy, the puerperium, and lactation that have attracted attention as biological correlates of postpartum depression. The known psychotropic effects of steroid hormones make it tempting to associate the wide-ranging hormonal changes of the postpartum period with emotional lability. Despite the attractiveness of this concept, however, there is little evidence to support it. Authors have associated postpartum depression with both breast feeding and with weaning.[13,38-40] Others have failed to find a strong association of postpartum depressive symptoms with estrogen, progesterone, and other hormonal or neurohormonal levels.[11,13,30,41] Finally, all postpartum women experience these hormonal changes, but only a minority become depressed.

Very little is known about the role of altered sleep patterns in the precipitation or expression of postpartum depressive symptoms. Frank, et al.[18] found significant rapid eye movement (REM) latency in women with puerperal depression, as well as in women with major depression. Nevertheless, there were differences between the two groups in frequency and length of REM cycles. As no control group of unaffected postpartum women was used, the interpretation of this difference is limited.

Thorough neuroendocrine evaluation is difficult because the months of pregnancy and the puerperium are marked by multiple endocrine

changes and great individual variation. As a result, discrete values are probably less helpful than are changes in values and rates of change. Furthermore, because the period of potential risk is long, it is difficult to design a study that would be acceptable to the subjects.

Response to Treatment

There are no prospective randomized controlled trials comparing the efficacy of treatments. In studies examining hospital admissions, antidepressant medications were found to be equally effective in both puerperal and nonpuerperal depressed women.[17,26,27,33] Gennaro[16] found that prognosis seemed to be related to the severity of the illness and to psychiatric history, as it is for depression occurring at other times. Katona[33] has suggested that patients requiring hospitalization for postpartum depression had lower numbers of readmissions than patients in a nonpuerperal control group. In a study of women with puerperal disorders severe enough to warrant hospitalization, Protheroe[27] found they were at significant risk of future psychiatric illness, both puerperal and nonpuerperal.

In summary, problems with definition, study design, and validity complicate our understanding of postpartum depression. Although the many endocrine changes of the puerperium invite speculation that postpartum depression is an "organic" mood disorder, there is little evidence to support the concept of postpartum depression as a diagnosis distinct from major depression occurring at another time. The *DSM-IV* Work Group on Organic Mental Disorders has recommended phenomenologic classification of depressive symptoms on Axis I as major depression, with attention to biological correlates on Axis III. They argue that the presence of a category for "organic mood disorders" implies that other depressive syndromes lack a biological basis.[42] This argument is in keeping with recent criticisms of the validity of organic mood disorders.[43] Despite this lack of agreement among researchers, women with symptoms of depression during the puerperium have unique biological and psychosocial characteristics that can affect treatment.

Clinical Presentation

The estimated prevalence of depressive symptoms in the first year postpartum ranges from 2.9 percent to 22 percent, depending on the population studied, case definition, and length of follow-up (Table 2). In the most recent studies, O'Hara, et al.[2] and Cooper, et al.[3] found an annual incidence of 10 to 15 percent, a rate comparable with the incidence of depression in a matched control group of nonpuerperal women. These findings are particularly important because they came from major cohort studies. Others have found that from 25 to 48 percent of women hospitalized for a psychiatric disorder in the puerperium are diagnosed with depression.[17,26,33]

The onset of depressive symptoms can occur any time during the first postpartum year, with a peak number of symptoms occurring in the early puerperium. Nearly one-half of the patients with depressive symptoms reported symptoms within the first 2 weeks of the delivery, and the majority of depressive episodes occurred within the first 3 months.[4,5,8,9,17,26] There is some debate concerning the onset of symptoms in the antenatal period. Several studies report that 25 to 50 percent of women with postpartum depression had symptoms prior to delivery.[9,10,15,26] These findings, however, were not confirmed in other studies.[4,5,7,8,31]

With the hope of recognizing women at risk and developing preventive interventions, researchers have looked for factors that might predispose a woman to postpartum depression. Specifically, psychological, socioeconomic, and cultural variables have been studied. In addition, some researchers have also examined the role of maternal age, coexisting medical or infant illness, and obstetrical complications.

Factors That Might Influence Expression

Psychological Variables

Three authors found a higher number of past psychiatric episodes in affected postpartum women when compared with an unaffected postpartum control group,[4,9,31] although other studies have not confirmed this association.[2,5,8,29] Two case-control studies found that approximately one-third of the women had a history of some psychiatric disorder.[17,26]

No distinct traits appear to place a woman at risk. Specifically, there have been studies that claim and studies that fail to confirm neuroticism, introversion, and antenatal anxiety as personality characteristics of women at risk.[5,8,9,13]

Social Factors

Only Stein, et al.[10] found an association of postpartum depression with social class, a finding that has remained unconfirmed in the majority of studies.[4,6,9,13,15] Three studies have suggested a correlation between less education and postpartum depressive symptoms.[4,6,24] Social support could be an important determinant of risk for symptoms of depression during the puerperium, as a strong support system appears to be protective, providing greater self-confidence in the new role.[6,28] At least one study attempted to incorporate instruction in role changes for a group of pregnant women. Women from that study group had quicker recoveries and were more likely to be free of depression after 5 years.[14]

Absent or ineffective social support appears to be associated with depressive symptoms.[4,10,14] In two studies premorbid marital discord was associated with postpartum symptoms of depression, but no standardized instruments were used to measure the psychological and day-to-day involvement of the spouses.[5,9] Little is known about differences in risk and the role of social support for single women.

Authors have disagreed on the impact of stressful life events on the expression of symptoms. Stresses that have been identified include death of a family member, prior infertility, or infant death.[4,25,26] Other researchers found little difference in the presence of stressful events comparing affected women and a puerperal control group.[5,8,22]

Cultural Variables

Few investigators have examined the role of culture in the expression of postpartum depression.[44,45] Noting that ritual facilitates transition through major life events, Stern and Knuckman[44] reviewed studies of Nigerian, Nepalese, Chinese, and Southeast Asian women. They found that postpartum depression is only rarely described within these cultures, all of which have significant rituals during the puerperium. Little is known about how women in Western society structure their lives for the adjustment to motherhood. Specifically, do culture and ritual act as mediators in the expression of symptoms and illness? Cox, et al.[7] suggested that postpartum affective symptoms are not easily reconciled with the cultural expectation that women return rapidly to full domestic and employment functions.

Other Associated Factors

Various studies have been designed to search for other factors that predispose a woman or increase her vulnerability to depressive symptoms in the puerperium, especially maternal age, parity, and obstetric problems.

Authors are divided on the question of maternal age. Kumar and Robson[5] and Paykel, et al.[12] found an increased rate of postpartum depression with age, whereas others were unable to confirm this association.[4,8,15] Findings on parity are equally divided.[8,15,27] No association has been demonstrated between postpartum depression and obstetric risk or complications.[7,8,16] One investigator found a weak association with prematurity,[5] but this finding was not confirmed in another study in which no difference in depressive symptoms occurring during the early weeks postpartum was found in parents of premature infants compared with parents of term infants.[16]

In sum, women can have symptoms of postpartum depression any time during the first year. There is little agreement on risk factors or other variables associated with postpartum depression.

Management

The management of postpartum depression in women who are symptomatic is similar to the management of depression in adults who are depressed at another time. The puerperium is, however, a unique interval during which women seek care for other reasons. Family physicians and pediatricians will often see a woman 5 to 10 times during the first postpartum year for the well-child visits of the infant, for routine maternal examinations, and for acute illnesses. Maternal mood and affect can easily be ascertained in the context of these visits. Women who are symptomatic should have further evaluation using the diagnostic criteria of the *DSM-III-R*. All symptomatic women could benefit from discussions about support systems, coping mechanisms, and rest. Mildly and moderately symptomatic women can be treated by a family physician through frequent visits, and they will benefit from brief supportive psychotherapy. Intervention, with education about role changes and conflicts, could help decrease the severity of symptoms.[14]

Women who meet the *DSM-III-R* criteria for major depression might benefit from a combination of psychotherapy and antidepressant medication. There have been few studies of the effects of antidepressant medication on breast-fed infants, but indirect evidence is reassuring. Breast milk concentrations of most tricyclic antidepressants approximate those found in maternal serum in the 100-to-400–ng/mL range. Serum levels in breast-fed infants have been nearly undetectable.[46] Because little is known about the effects of even extremely low levels of antidepressant levels on the developing nervous system, the American Academy of Pediatrics has classified antidepressants as "drugs whose effect on nursing infants is unknown but may be of concern."[47] On the other hand, much is known about the morbidity of impaired maternal-infant bonding. If symptoms appear severe enough to be potentially responsive to antidepressant medications and the woman is breast feeding, a psychiatric consultation should be undertaken to evaluate the risks to the patient and family of untreated maternal depression versus the risks of antidepressant medications to the infant. If hospitalization is necessary, frequent mother-baby contact for the hospitalized woman and her infant should be encouraged.

Future Research

Although research in postpartum depression is difficult and complex, there are a number of important areas for future research. Reports of depression occurring more frequently in the puerperium have been central to arguments favoring classification of postpartum depression as an illness different from depression occurring at other times. The similar prevalences of depression found by recent authors in postpartum women and nonpuerperal community control subjects have provided helpful information.[2,3] Replication of these data is needed using *DSM-III-R* criteria.

Studies are needed to classify the illness further. Are there differences between women with one episode and women with recurrent episodes of postpartum depression? Are women who have a history of postpartum depression at increased risk for subsequent postpartum depression, blues, or psychosis? While several authors commented on the abnormal cognitive functioning of women with postpartum depression, it would be useful to compare the cognitive function of postpartum women who are depressed with the cognitive function of postpartum women who are not depressed. Additional studies of sleep patterns might further aid in the classification of subsets of the populations.

Much remains to be learned about the role of the spouse's emotional adjustment in the development of postpartum depression.[48] We know little about unusual variants, including affective disorder in the spouse, grandparent, or an adoptive mother occurring temporally in the puerperium.[49] The results of studies done among any of these populations might answer questions regarding the relative role of psychosocial variables. Few studies have examined the impact of postpartum depression on child development and welfare.[50-52] Data are needed that address the impact of the illness on maternal health, child development, and family health and stability.

Treatment has not been well studied. Randomized trials are needed comparing different treatment modalities. Are prophylactic measures indicated in the antepartum care of women who have a history of postpartum depression? A study testing the efficacy of enhancing self-esteem through teaching role conflict reduction and how to build tangible support systems might clarify factors influencing the development or expression of postpartum depression. It might also increase understanding of possible treatment modalities, especially in mildly symptomatic women.

Finally, much can be learned from cross-cultural studies. Are there differences between culturally similar women giving birth within their country of origin and first- or second-generation immigrants giving birth in a culture with fewer and different rituals of passage? Are symptoms indeed absent or rare in cultures with more defined rituals and longer sanctioned adjustment times, or is the expression of symptoms simply inhibited by the more traditional culture? In other countries, what are the culturally appropriate expressions for symptoms experienced as depression by women in industrialized nations?

Conclusion

Depression in the puerperium, occurring along a spectrum of postpartum disorders and ranging from mild symptoms to severe illness, affects 10 to 20 percent of postpartum women in the first year following the birth of an infant. Although

current research does not support the hypothesis of postpartum depression as a distinct diagnosis, perhaps some women have a biological, psychological, or social vulnerability that increases the likelihood of having a puerperal major depression. Alternatively, these vulnerabilities could influence a woman's response to the hormonal and social changes of the puerperium. Thus, depression during the puerperium might be more an abnormal response to normal endocrinologic changes than a normal response to abnormal endocrinologic changes. Medical personnel caring for women and infants during the first postpartum year can provide a valuable service by including surveillance of maternal mood, affect, and support systems during medical visits. Primary care providers can increase their awareness of disorders occurring in the puerperium, which should lead to better identification and treatment of affected women.

References

1. Inwood DG. The spectrum of postpartum psychiatric disorders. In: Recent advances in postpartum psychiatric disorders. Washington, DC: American Psychiatric Press, 1985.
2. O'Hara MW, Zekoski EM, Phillips LH, Wright EJ. Controlled prospective study of postpartum mood disorders: comparison of childbearing and nonchildbearing women. J Abnorm Psychol 1990; 99:3-15.
3. Cooper PJ, Campbell EA, Day A, Kennerly 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. O'Hara MW. Social support, life events, and depression during pregnancy and the puerperium. Arch Gen Psychiatry 1986; 43:569-73.
5. Kumar R, Robson KM. A prospective study of emotional disorders in childbearing women. Br J Psychiatry 1974; 144:35-47.
6. Cutrona CE, Troutman BR. Social support, infant temperament and parenting self-efficacy: a mediational model of postpartum depression. Child Dev 1986; 57:1507-18.
7. Cox JL, Conner Y, Kendell RE. Prospective study of the psychiatric disorders of childbirth. Br J Psychiatry 1982; 140:111-7.
8. Pitt B. "Atypical" depression following childbirth. Br J Psychiatry 1968; 114:1325-35.
9. Watson JP, Elliott JA, Rugg AJ, Brough DI. Psychiatric disorder in pregnancy and the first postnatal year. Br J Psychiatry 1984; 144:453-62.
10. Stein A, Cooper PJ, Campbell EA, Day A, Altham PM. Social adversity and perinatal complications: their relation to post natal depression. BMJ 1989; 298:1073-4.
11. Gard PR, Handley SL, Parsons AD, Waldron G. A multivariate investigation of post partum mood disturbance. Br J Psychiatry 1986; 148:567-75.
12. Paykel ES, Emms EM, Fletcher J, Rassaby GS. Life events and social support in puerperal depression. Br J Psychiatry 1980; 136:339-46.
13. Dalton K. Prospective study into puerperal depression. Br J Psychiatry 1971; 118:689-92.
14. Gordon RE, Kapostins EE, Gordon K. Factors in postpartum emotional adjustment. Obstet Gynecol 1965; 25:158-66.
15. Tod ED. Puerperal depression: a prospective epidemiological study. Lancet 1964; 2:1264-6.
16. Gennaro S. Postpartal anxiety and depression in mothers of term and preterm infants. Nurs Res 1988; 37(2):82-5.
17. Meltzer ES, Kumar R. Puerperal mental illness, clinical features and classification: a study of 142 mother-baby admissions. Br J Psychiatry 1985; 145:647-54.
18. Frank E, Kupfer DJ, Jacob M, Blumenthal SS, Jarrett DB. Pregnancy related affective episodes among women with recurrent depression. Am J Psychiatry 1987; 144:288-93.
19. Hapgood CC, Elkind GS, Wright JJ. Maternity blues: phenomena and relationships to later post partum depression. Aus NZ J Psychiatr 1988; 22:299-306.
20. Brockington I. Postpartum psychosis. In: Michels R, editor. Psychiatry. Philadelphia: JB Lippincott, 1988; Chapter 74, pp 1-15.
21. Brockington IF, Margison FR, Schofield E, Knight RJ. The clinical picture of the depressed form of puerperal psychosis. J Affective Disord 1988; 15:29-37.
22. Martin GJ, Brown GW, Goldberg DP, Brockington IF. Psychosocial stress and puerperal depression. J Affective Disord 1989; 16:283-93.
23. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 3rd ed. Revised. Washington, DC: American Psychiatric Press, 1987.
24. Gotlib IH, Whiffen VE, Morent JH, Milne K, Cordy NI. Prevalence rates and demographic characteristics associated with depression in pregnancy and the postpartum. J Consult Clin Psychol 1989; 57:269-74.
25. O'Hara MW, Rehm LP, Campbell SB. Predicting depressive symptomatology: cognitive-behavioral models and postpartum depression. J Abnorm Psychol 1982; 91:457-61.
26. Dean C, Kendall RE. The symptomatology of puerperal illness. Br J Psychiatry 1981; 139:128-33.
27. Protheroe C. Puerperal psychosis: a long term study 1927-1961. Br J Psychiatry 1969; 115:9-30.

28. Turner RJ, Grindstaff CF, Phillips N. Social support and outcome in teenage pregnancy. J Health Soc Behav 1990; 31:43-57.
29. Troutman BR, Cutrona CE. Nonpsychotic postpartum depression among adolescent mothers. J Abnorm Psychol 1990; 99:69-78.
30. Nott PN, Franklin M, Armitage C, Gelder MG. Hormonal changes and mood in the puerperium. Br J Psychiatry 1976; 128:379-83.
31. O'Hara MW, Neunaber DJ, Zekoski EM. Prospective study of postpartum depression: prevalence, course and predictive factors. J Abnorm Psychol 1984; 93:158-71.
32. Ostwald PF, Regan PF. Psychiatric disorders associated with childbirth. J Nerv Ment Dis 1957; 125:153-65.
33. Katona CL. Puerperal mental illness: comparisons with non-puerperal controls. Br J Psychiatry 1982; 141:447-52.
34. Hopkins J, Campbell SB, Marcus M. Postpartum depression and postpartum adaptation: overlapping constructs. J Affective Disord 1989; 18:251-65.
35. Robins E, Guze SB. Establishment of diagnostic validity in psychiatric illness: its application to schizophrenia. Am J Psychiatry 1970; 126:983-7.
36. Cox JL, Rooney A, Thomas PF, Wrate RW. How accurately do mothers recall postnatal depression? Further data from a 3 year follow-up study. J Psychosom Obstet Gynecol 1984; 3:185-9.
37. Wolkind S, Coleman EZ, Ghodsian M. Continuities in maternal depression. Int J Fam Psychiatry 1980; 1:167-82.
38. Susman VL, Katz JL. Weaning and depression: another postpartum complication. Am J Psychiatry 1988; 145:498-501.
39. Alder E, Bancroft J. The relationship between breast feeding persistence, sexuality and mood in postpartum women. Psychol Med 1988; 18:389-96.
40. Harris B, Johns S, Fung H, Thomas R. The hormonal environment of postnatal depression. Br J Psychiatry 1989; 154:660-7.
41. Stewart DE, Addison AM, Robinson GE, Joffe R, Burrow GN, Olmstead MP. Thyroid function in psychosis following childbirth. Am J Psychiatry 1988; 145:1579-81.
42. Popkin MK, Tucker G, Caine E, Folstein M, Grant I. The fate of organic mental disorders in the DSM-IV: a progress report. Psychosomatics. 1989; 30: 438-41.
43. Fogel B. Major depression versus organic mood disorder: a questionable distinction. J Clin Psychiatry 1990; 51:53-6.
44. Stern G, Knuckman L. Multidisciplinary perspectives on postpartum depression: an anthropological critique. Soc Sci Med 1983; 17:1027-41.
45. Cox J. Childbirth as a life event: sociocultural aspects of postnatal depression. Acta Psychiatr Scand 1988; 344(Suppl):75-83.
46. Stancer HC, Reed KL. Desipramine and 2-hydroxydesipramine in human breast milk and the nursing infant's serum. Am J Psychiatry 1986; 143: 1597-1600.
47. Committee on Drugs, American Academy of Pediatrics. Transfer of drugs and other chemicals into human milk. Pediatrics 1989; 84:924-36.
48. Fawcett J. Spouses' physical and psychological symptoms during pregnancy and the postpartum. Nurs Res 1986; 35:144-8.
49. Stuart SA, Rubin LJ. Postpartum reactions: some unrecognized variations. Am J Psychiatry 1974; 13:870-4.
50. Wrato RM, Rooney AC, Thomas PF, Cox JL. Postnatal depression and child development. Br J Psychiatry 1985; 146:622-7.
51. Cogill SR, Caplan HL, Alexandra H, Robson KM, Kumar R. Impact of maternal post natal depression on cognitive development of young children. Br Med J 1986; 292:1165-7.
52. Gnodsian M, Zajicek E, Woolkind S. A longitudinal study of maternal depression and child behavior problems. J Child Psychiatry 1984; 25:91-109.