Diagnosis and management of post-partum disorders: a review

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This paper reviews the psychiatry of the puerperium, in the light of work published during the last eight years. Many distinct disorders are seen. In addition to various psychoses and a heterogeneous group of depressions, there are specific anxiety, obsessional and stress-related disorders. It is important to identify severe disorders of the mother-infant relationship, which usually respond to treatment, but have pernicious effects if untreated. The complexity of post-partum psychiatry requires the deployment of multidisciplinary specialist teams, which can handle the challenges of therapy, prevention, training, research and service development.

Key words: Post-partum psychosis, mother-infant relationship disorders, post-partum depression, post-partum anxiety, mother and baby units

Childbearing, from the standpoint of psychological medicine, is the most complex event in human experience. Recently delivered mothers are vulnerable to the whole spectrum of general psychiatric disorders, as well as those resulting from the physical and psychological changes of childbirth. The old classification under three headings – the maternity blues, post-partum ('postnatal') depression and post-partum ('puerperal') psychosis – is an oversimplification. A four-part classification would be appropriate: psychoses, mother-infant relationship disorders, depression and a miscellaneous group of anxiety and stress-related disorders. Each, with sub-headings, will be discussed here in terms of diagnosis, treatment and prevention.

PSYCHOSES

These fall under three headings – organic, psychogenic and bipolar/polymorphic – of which the last is the least rare. The organic psychoses (1) include post-eclamptic psychosis (2) and infective psychoses. Antenatal care and antibiotics have almost wiped them out, but they may still occur in low-income countries. Recent figures for the frequency of eclampsia and post-eclamptic psychosis in India resemble those in Europe 100 years ago (3). There have been occasional reports of confusional states complicating anaemia, ethanol withdrawal, cerebral venous thrombosis (4), chorea gravidarum and heart disease. Idiopathic confusion, similar to that seen during parturition, can occur. In the ICD-10, these disorders can be classified under F05, with an appropriate coding for the cause. The treatment is of the underlying disorder.

In psychogenic psychosis, the content (usually delusions), as well as the onset, course and outcome, are linked to severe stress. Conjugal jealousy, arising in the puerperium, is an example. Psychogenic psychoses are occasionally seen after adoption of a child (5) or in fathers around childbirth. In the ICD-10, these are classifiable under F23.3, and require psychological as well as antipsychotic drug treatment.

Most cases of post-partum psychosis are manic-depressive in form, and there is much evidence for a close connection between puerperal and bipolar disorders (1). Another literature links post-partum and 'cycloid' (acute polymorphic) psychoses (6). Unfortunately, there is no agreement on the relation between the bipolar and the acute polymorphic group: if they were related, as has been suggested (7), 'puerperal psychosis' would simply fall under an (enlarged) bipolar rubric. ICD-10 recommends classifying all post-partum disorders according to the presenting symptoms, with a second code (099.3) for the puerperium. It has also reserved an entire category (F53) for puerperal disorders, while discouraging its use (8). This is unnecessary. The important thing is for psychiatrists to code the puerperal state, so that epidemiologists can identify all cases. The 'puerperium' can be defined broadly, because it is easy to eliminate distantly related cases by scrutinising the records. Two excellent epidemiological surveys (9,10) have established the incidence of post-partum psychosis as somewhat less than 1/1000 deliveries. The diagnosis presents no exceptional problems, since every form of delusion, verbal hallucinosis, disturbances of the will and self, perplexity, stupor, catatonia and mania can occur, with an acute onset soon after delivery. Treatment is with antipsychotic drugs, but severe side effects have been seen with haloperidol, and second generation antipsychotics may be safer. Lithium is useful in treatment; only one breast-fed infant developed (non-fatal) side effects. If a mother needs admission to hospital, it is probably best to admit the infant too (see below). The psychosis has a recurrence rate of at least 1 in 5 pregnancies. Mothers with a history of non-puerperal mania have a similar enhanced risk. There is some evidence that lithium, given immediately after delivery, reduces this risk.

DISORDERS OF THE MOTHER-INFANT RELATIONSHIP

Developing a relationship with the newborn is the central and most

important psychological process of the puerperium. Disturbances in this process were recognized long ago, when hatred and rejection of children (11-14), child abuse (15) and infanticide were described. Various terms have been used to denote these disturbances. 'Bonding' is a lay term, but 'bonding' and 'attachment' are not descriptive of the essential symptom, which is the mother's emotional response to the infant, including hatred and pathological anger. 'Mother-infant interaction' reflects this, and has the advantage that it can be recorded and measured. But the concept of 'post-natal depression with impaired mother-infant interaction' is inadequate for these eleven reasons:

- A disturbed relationship is a distinct phenomenon. Its affective focus is different from depression.
- 'Impaired mother-infant interaction' is merely the behavioural manifestation of this emotional lesion.
- Depression is associated with many other disorders (e.g., phobias and obsessions), but we still recognize these co-morbid disorders as phenomena worthy of study in their own right.
- 'Impaired interaction' has several causes, of which aversion to the infant is only one – the others include focused anxiety and obsessions of infanticide.
- The mother's aversion to her infant is often disproportionate to depression and can occur without it (16).
- Only a minority of depressed mothers have a relationship problem with their infants. It is important to select them for special treatment, and not to stigmatize the others.
- Mother-infant relationship disorders have their own specific treatment.
- The risks are higher in these mothers. It is probable that emotional deprivation, impaired cognitive and personality development, child abuse, child neglect and infanticide are commoner in this group.
- Those involved in public health planning, therefore, should be aware of these disorders, of the risks they pose and their treatment response, so that facilities can be provided.
- The aetiology is probably different from post-partum depression, with more emphasis on unwanted pregnancy and challenging infant behaviour.
- In research, this concept will sharpen the focus of studies aimed at preventing child abuse and neglect.

Perhaps the main reason for the neglect of these disorders is their absence from ICD-10 and DSM-IV (17). In ICD-10, attachment disorders of childhood (reactive 94.1 and disinhibited 94.2) are diagnosable in the children. There are also 'Z codes' that "capture… a wide variety of things which, although not illnesses or disorders, bring patients into contact with the health services". They include hostility towards the child, and scapegoating, but only in relation to the child's psychiatric state. In DSM-IV the corresponding category is reactive attachment disorder of infancy and childhood (313.89). For adults, the only possible category is 'Parent-child relational problem' (V61.20), which is assigned a mere 50 words on p. 681. The American Psychiatric Association's Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood has various relationship disorders as Axis II, but nothing resembling rejection of the child (18). One of the challenges for ICD-11 and DSM-V is to find a place for these disorders, so that they can be recognized by practitioners, and referred for expert treatment. This will be a difficult innovation, because a mother's hatred of her infant does not fit comfortably with the concept of 'disease' or 'illness'. But the medical profession has the responsibility for conceiving a classification that enables the recognition and scientific study of all morbid states brought by patients for treatment.

Disorders of the mother-infant relationship are prominent in 10-25% of mothers referred to psychiatrists after childbirth (1). At the severe level of rejection of the infant, the mother may try to escape, or may seek permanent transfer of infant care within or without the family. She may express the wish that the baby be stolen, or succumb to cot death. Another manifestation is pathological anger – shouting, cursing or screaming at the infant, accompanied by impulses to strike, shake or smother the child. These disorders are more common, intractable and serious in their effects than puerperal psychosis. With treatment, they can resolve completely. Without it, the risks are high. For evidence of these effects, one must turn to studies of the effects of 'post-natal depression'. Most have not assessed the mother-infant relationship, but, where this has been done (19), the child's cognitive deficits were linked to early mother-infant interaction, not maternal depression. More research should be focused on the effects of these disorders, especially their relationship to child abuse and neglect.

The diagnosis is facilitated by screening questionnaires (20,21), and interviews exploring the mother-infant relationship. Observational data can be obtained in hospital (22,23) or at home (24). Other objective measures, such as videotapes (25), can be used. It is possible that functional magnetic resonance imaging can objectify the emotional lesion. In the management, it is wise to treat depression, even when signs of depression are minimal. The specific psychological treatment is play therapy in various forms (26) or baby massage (27,28), which can be undertaken by nursing staff or psychologists. The aim is to help the mother to enjoy her interactions with the child. There is evidence for the efficacy of prophylactic interventions (29,30).

DEPRESSION

The concept of 'post-natal depression' is another useful lay term. It reduces stigma, and enables mothers with a variety of post-partum psychiatric disorders to recognize that they are ill, and seek help. It is a focus for self-

help groups and lobbying to improve services.

It is less useful, however, as a medical concept. The epidemiological association between the puerperium and depression is weak. Depression is relatively common in all adult women, whether infertile, menopausal, pregnant, puerperal or involved in child-rearing. The rates of depression show little difference between newly delivered mothers and other women (31). There is little confirmation of the severity of post-partum depression in the suicide figures. Record linkage studies in Finland, Denmark and Canada have shown lower rates of suicide in mothers within 12 months of childbirth than are found in other women from the same nation (32-34). Only in economically disadvantaged American mothers have higher rates been found (35). Mothers with 'post-natal depression' are a heterogeneous group. Some have anxiety, obsessional and stress disorders, with little or no depression. Others have depression associated with equally important co-morbid disorders. Even those with depression alone are heterogeneous: they include mothers with chronic dysthymia, pre-partum depression continuing into the puerperium, depression associated with recent adversity, and bipolar depression.

In recent years, there has been a flood of publications on this subject from all over the world, with over 800 papers since 1995. Post-partum psychiatric disorders are common everywhere, and are not just confined to industrialised nations with their particular problems of scattered or disrupted families. Indeed, an 11 centre study (36) showed they were most frequent in India (32%), Korea (36%), Guyana (57%) and Taiwan (61%). But unless it is realized that the term is merely a rubric, it will leave research and clinical practice at a basic level. Not surprisingly, research into causal associations has discovered that they are the same as for depression generally, including genetic factors (37), a previous tendency to depression, adverse events, disturbed relationships, lack of support and social isolation (38,39). One bold experimental study (40) showed that abrupt withdrawal of oestrogen and progesterone led to hypomania or depression in women who had previously suffered from post-partum depression.

The merit of a broad concept of 'post-natal depression' is the public recognition that post-partum disorders are common, promoting the deployment of remedial services. Maternal morbidity can have pervasive effects on the infant, other children and the family. Although deficits are not universal (41), depression can lead to reduced interaction and irritability misdirected at the children. Maternal suicide can be combined with filicide, which, though rare, is a matter of great concern. The development of screening questionnaires has put early diagnosis in the hands of every midwife, nurse or practitioner. The Edinburgh Postnatal Depression Scale (EPDS, 42) has been translated into many languages, and a Norwegian paper reviewed 18 validation studies (43). The EPDS is a general screening tool for the whole gamut of post-partum psychiatric disorders. Other questionnaires can also be used. A positive score on a self-rating questionnaire needs to be followed by an interview clarifying the symptoms of depression and co-morbid psychiatric disorders. It is important to explore the wider context, including the mother's life history, personality and circumstances; the course of the pregnancy including parturition and the puerperium; and relationships with spouse, other children, family of origin and, especially, the infant. In addition to diagnosing depression and other disorders, one must identify vulnerability factors and the availability of support. Treatment is focused on depression and any underlying vulnerability. It will always involve psychotherapy (44), often given by hospital and community nurses, health visitors or lay counsellors. A *Lancet* review tabulated 13 randomised controlled treatment trials using psychological treatments (45), to which two recent studies (46,47) can be added. Almost all interventions were beneficial. An extensive literature has accumulated on drug treatment in lactating women, with over 50 reviews (48). The suckling infant is at risk because of the immaturity of foetal systems – lack of body fat, less plasma protein-binding, immature liver and kidney and undeveloped blood brain barrier. Nevertheless, few adverse effects have been reported. Indeed, Epperson et al (49,50) have demonstrated that neither sertraline nor fluoxetine affects serotonin levels in suckling infants. In general, it is not recommended that antidepressant agents should be withheld, or that breast-feeding stopped. It is wise to use antidepressive drugs cautiously in lactating mothers, and it may be helpful to take the drug after breast-feeding. Oestrogens may be efficacious (51), although replication is necessary.

Prevention is important in mothers with a history of post-partum depression. There is a great opportunity to identify mothers at risk during their attendance at antenatal clinics, where pregnant women with previous episodes, current depression and obvious risk factors such as social problems, substance abuse or unwanted pregnancy can be picked up. Support from community nurses, voluntary agencies or groups can begin during pregnancy, and arrangements made for prompt diagnosis and treatment of a post-partum recurrence. The *Lancet* review (45) tabulated 11 randomised controlled prophylactic trials, using psychological interventions, to which 6 others (52-57) can be added. The involvement of fathers has been positive (58,59), and three intervention studies improved mother-infant interactions (30,60,61). But most prophylactic trials have been disappointing. Even prophylactic antidepressive agents have failed to prevent post-partum depression (62). It is remarkable that a disorder that presents such an excellent opportunity for prevention has proved so resistant to prophylaxis.

DISORDERS RESULTING FROM STRESSFUL PARTURITION

Post-traumatic stress disorder (PTSD)

Since the pioneering study of Bydlowski and Raoul-Duval (63), over 40 papers have appeared on this disorder. There have been eight quantitative studies, showing rates up to 5.6% (64). The stressful experience is usually pain, but loss of control and fear of death may be the focus (65,66). Tension, nightmares and flashbacks persist for some weeks or months, and may recur towards the end of the next pregnancy. They lead to secondary tocophobia: in Sweden half the mothers with a 'very negative' birth experience at their first delivery avoided any further pregnancy (67). These patients should be referred for specific psychological treatment.

Querulant disorders

Childbirth is a key experience, and a mother may feel bitter if delivery is perceived as mismanaged. Complaints are relatively common after emergency Caesarean section (68). In some cases, complaining can preoccupy the mother for weeks or months, and interfere with infant care. These disorders are sometimes confused with depression or PTSD, but the affect is ruminative anger, not depression or anxiety, and the treatment is different – distracting attention from the perceived injury, and redirecting it to positive activity.

SPECIFIC ANXIETY DISORDERS

Post-partum anxiety disorders are underemphasized and may be more common than depression (69-71). A review of eight studies of 'panic disorder' showed that 44% anxious women had an exacerbation, and 10% a new onset, in the puerperium (72). ICD-10 and DSM-IV give criteria for anxiety disorders as a group, but the focus of anxiety is also important, because it may indicate specific psychological treatment. This is a challenge for the next generation of international classifications. De Armond (73) described fear of the newborn based on the awesome responsibility of infant care. Most mothers are shielded from this by family support, but it can be a problem in isolated nuclear families. A mother with infant-focused anxiety may develop a phobia for the infant (74). Fear of cot death can reach a pathological degree (75): the main manifestation is nocturnal vigilance – the mother lying awake listening to the infant's breathing, with frequent checks that lead to exhausting sleep deprivation. Many mothers are excessively anxious about the health and safety of their children – described as 'maternity neurosis' in an early paper (76). Drug treatment can be used, but, in lactating mothers, benzodiazepines should be used with caution. They are well absorbed from the gut, have long half-lives, and are more slowly metabolised by the foetal liver. Lethargy and weight loss have been reported in an infant exposed to diazepam. Post-partum anxiety disorders often require the skills of a clinical psychologist, using relaxation techniques, cognitive therapy, desensitisation and other specific therapies. Involvement of a panel of mothers who have recovered from these disorders is useful, as in other post-partum disorders.

OBSESSIONS OF CHILD HARM, AND OTHER MORBID PREOCCUPATIONS

Obsessions of infanticide were among the first post-partum disorders to be described (77). Classic papers were written by Chapman (78) and Button and Reivich (79). The central symptom is impulses to attack the child, but the setting is different from the pathological anger that precedes child abuse. The mother is gentle and devoted. She experiences extravagant infanticidal impulses, together with fantasies of the family's horror and grief, causing intense distress and leading to reduced contact with the baby. The content can include child sexual abuse (80). Jennings et al (81) found that 21/100 depressed mothers had repeated thoughts of harming their child and took precautions, and 24 were afraid to be alone with the baby. Pregnancy and childbirth are among the main precipitants of obsessional neurosis (82,83). The management involves specific psychological treatment as well as antidepressant therapy. It is important to discourage avoidance of the child, and encourage cuddling and play, strengthening positive maternal feelings.

Other morbid ideas are a problem to some mothers. A disorder akin to dysmorphophobia, based on the bodily changes resulting from pregnancy and childbirth, is common. These women complain of weight gain, stretch marks or scars. They are reluctant to undress in front of their husband, avoid looking at themselves in the bath or the mirror, and sometimes avoid being seen in public. These have not been emphasized in the psychiatric literature, perhaps because no-one can suggest a treatment, except time!

Conjugal jealousy is another disorder sometimes linked to pregnancy and childbirth, as an understandable reaction to pregnancy's effect on sexual life. Apart from case reports, there is just one quantitative study: Schüller (84) found that 6/27 patients with morbid jealousy, attending an Austrian clinic, were breast-feeding.

SPECIALIST TEAMS

Because of the diversity of post-partum mental illness, its risks for the infant, and the skills and resources required, there is a case for setting up specialist services. In 1958, Main (85) pioneered conjoint mother and infant hospitalisation. This has accelerated the growth of knowledge through the concentration of severe cases in mother and baby units. The essence of mother-infant services is the multidisciplinary specialist team, including psychiatrists, psychologists, nurses (probably also nursery nurses) and social workers. Its aims are prevention, early diagnosis, and versatile intervention, with minimal family disruption. Such teams can serve a wide

area, taking over the treatment of severe and intractable illness, developing services, training staff and conducting research. They can provide a trial of mothering in complex cases, and give medico-legal advice. Domiciliary assessment and home treatment are appropriate. A day hospital, with a wide range of interventions – groups, play therapy, motherhood classes, anxiety management and occupational therapy – has the advantage of putting mothers with similar disorders in touch with each other, without disrupting family life; it has been shown to be cost effective (86). If a mother must be hospitalised, joint admission of mother and infant has advantages over admission of the mother alone, because it preserves the mother-infant relationship. Units devoted to post-partum care are probably safer and more effective than conjoint admission to general psychiatric wards. Specialist teams need links with obstetric units, which have an important role, especially in early diagnosis and prevention. They also need links with paediatric units, social services and child protection teams to collaborate in the prevention of child abuse. Links with voluntary agencies are important, because self-help groups provide much support for depressed and isolated mothers, and can collaborate in treatment (87). There are a number of specialist services in UK, Australia and New Zealand, France, Germany, Belgium and The Netherlands, but few elsewhere. There is a case for establishing them in every country, and all major cities and conurbations. Unfortunately, the advantages and safety of these specialist services have not yet been established by systematic service evaluation. This will be a difficult exercise, demanding careful matching of cases for diagnosis and severity. But it is one of the main research priorities in this area of psychiatry.

References

1. Brockington IF. Motherhood and mental health. Oxford: Oxford University Press, 1996.
2. Kutzinski A. Über eklamptische Psychosen. Charité-Annalen 1909;33:216-60.
3. Bathla S, Suneja A, Guleria K et al. Dilantin as anti-convulsant in eclampsia. J Indian Med Assoc 2002;100:561-4.
4. Constantinesco I, Constantinesco S, Constantinesco D. Thrombo-phlébite des sinus cérébraux dans une confusion mentale post-partum. Bullétin de la Société de Psychiatrie de Bucarest 1937; 2:68-73.
5. Trixler M, Jádi F. Adoptáció utáni 'post partum' pszichózisok. Orvosi Hetilap 1981;122:3071-4.
6. Grosse U. Diagnostische Beurteilung der im Puerperium ausbrechenden Psychosen. Psychiatrie, Neurologie und medizinische Psychologie 1968;20:222-5.
7. Brockington IF, Perris C, Kendell RE et al. The course and outcome of cycloid psychosis. Psychol Med 1982;12:97-105.
8. World Health Organization. The ICD-10 classification of mental and behavioural disorders. Clinical descriptions and diagnostic guidelines. Geneva: World Health Organization, 1992.
9. Kendell RE, Chalmers JC, Platz C. Epidemiology of puerperal psychoses. Br J Psychiatry 1987;150:662-73.
10. Terp IM, Mortensen PB. Post-partum psychoses: clinical diagnoses and relative risk of admission after parturition. Br J Psychiatry 1999;172:521-6.
11. Boileau de Castélnau P. Misopédie ou lesion de l'amour de la progéniture. Ann Médico-Psychol 1861;7:553-68.
12. Oppenheim H. Über misopädie. Zeitschrift für die gesamte Neurologie und Psychiatrie 1919:45:1-18.
13. de Coghill H. Emotional maladjustments from unplanned parenthood. Virginia Medical Monthly 1941;68:682-7.
14. Luft H. Die Wochenbettdepression. Klinik und pathogenetische Faktoren. Nervenarzt 1964;35:185-94.
15. Tardieu A. Etude medico-légale sur les sévices et mauvais traitements exercés sur des enfants. Annales d'Hygiène 1860; 15:361-98.
16. Righetti-Veltema M, Conne-Perréard E, Bousquet A et al. Postpartum depression and mother-infant relationship at 3 months old. J Affect Disord 2002;70:291-306.
17. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 4th ed. Washington: American Psychiatric Association, 1994.
18. American Psychiatric Association. Diagnostic classification of mental health and developmental disorders of infancy and early childhood. Washington: American Psychiatric Association, 1994.
19. Murray L, Hipwell A, Hooper R. The cognitive development of 5-year-old children of postnatally depressed mothers. J Child Psychol Psychiatry 1996;37:927-35.
20. Nagata M, Nagai Y, Sobajima H et al. Maternity blues and attachment to children in mothers of full-term normal infants. Acta Psychiatr Scand 2000; 101:209-17.
21. Brockington IF, Oates J, George S et al. A screening questionnaire for mother-infant bonding disorders. Archives of Women's Mental Health 2001;3:133-40.
22. Salariya EM, Cater JI. Mother-child relationship - FIRST score. J Advanced Nursing 1984;9:589-95.
23. Hipwell AE, Kumar R Maternal psychopathology and prediction of outcome based on mother-infant interaction ratings. Br J Psychiatry 1996;169:655-61.
24. Ainsworth MDS, Bell SM, Stayton DJ. Individual differences in the development of some attachment behaviours. Merrill Palmer Quarterly 1972;18:123-43.
25. Tronick E, Als H, Adamson L et al. The infant's response to entrapment between contradictory messages in face-to-face interaction. J Am Acad Child Adolesc Psychiatry 1978;17:1-13.
26. Brockington IF, Brierley E. Rejection of a child by his mother, successfully treated after 3 years. Br J Psychiatry 1984;145: 316-8.
27. Field T, Grizzle N, Scafidi F et al. Massage therapy for infants of depressed mothers. Infant Behav Develop 1996; 19:107-12.
28. Onozawa K, Glover V, Adams D et al. Infant massage improves mother-infant interaction for mothers with postnatal depression. J Affect Disord 2001;63: 201-7.
29. Wendland-Carro J, Piccinini CA, Millar WS. The role of an early intervention on enhancing the quality of mother-infant interaction. Child Develop 1999;70: 713-21.
30. Cooper PJ, Landman M, Tomlinson M et al. Impact of a mother-infant intervention in an indigent peri-urban South African context. Br J Psychiatry 2002; 180:76-80.
31. Najman JM, Andersen MJ, Bor W et al. Postnatal depression - myth and reality: maternal depression before and after the birth of a child. Soc Psychiatry Psychiatr Epidemiol 2000;35:19-27.
32. Gissler M, Hemminki E, Lönnqvist J. Suicides after pregnancy in Finland 1987-1994: register linkage study. Br Med J 1996;313:1431-4.
33. Appleby L, Mortensen PB, Faragher EB. Suicide and other causes of mortality after post-partum psychiatric admission. Br J Psychiatry 1998;173:209-11.
34. Turner LA, Kramer MS, Liu S. Maternal mortality and morbidity study group of the Canadian perinatal surveillance system. Chronic Diseases of Canada 2002; 23:31-6.
35. Reardon DC, Ney PG, Scheuren F et al.

Deaths associated with pregnancy outcome: a record linkage study of low income women. South Med J 2002;95: 834-44.
36. Affonso DD, De AK, Horowitz JA et al. An international study exploring levels of postpartum depressive symptomatology. J Psychosom Res 2000;49:207-16.
37. Treloar SA, Martin NG, Bucholz KK et al. Genetic influences on post-natal depressive symptoms: findings from an Australian twin sample. Psychol Med 1999;29:645-54.
38. Nielsen Forman D, Videbech P, Hedegaard M et al. Postpartum depression: identification of women at risk. Br J Obst Gynaecol 2000;107:1210-7.
39. Baker D, Taylor H. The relation between condition-specific morbidity, social support and material deprivation in pregnancy and early motherhood. Soc Sci Med 1997;45:1325-36.
40. Bloch M, Schmidt PJ, Danaceau M et al. Effects of gonadal steroids in women with a history of postpartum depression. Am J Psychiatry 2000;157:924-30.
41. Pound A, Puckering C, Cox A et al. The impact of maternal depression on young children. Br J Psychother 1988;4:240-52.
42. Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression: development of the 10-item Edinburgh Postnatal Depression Scale. Br J Psychiatry 1987; 150:782-6.
43. Eberhard-Gran M, Eskild A, Tambs K et al. Review of validation studies of the Edinburgh Postnatal Depression Scale. Acta Psychiatr Scand 2001;104:243-9.
44. Stuart S, O'Hara MW, Gorman LL. The prevention and psychotherapeutic treatment of postpartum depression. Archives of Women's Mental Health 2003; 6(Suppl. 2):S57-69.
45. Brockington IF. Postpartum psychiatric disorders. Lancet 2004;363:303-10.
46. Clark R, Tluczek A, Wenzel A. Psychotherapy for postpartum depression: a preliminary report. Am J Orthopsychiatry 2003;73:441-54.
47. Heh SS, Fu YY. Effectiveness of informational support in reducing the severity of postnatal depression in Taiwan. J Advanced Nursing 2003;42:30-6.
48. Spigset O, Hägg S. Excretion of psychotropic drugs into breast milk. CNS Drugs 1998;9:111-34.
49. Epperson N, Czarkowski KA, Ward-O'Brien D et al. Maternal sertraline treatment and serotonin transport in breastfeeding mother-infant pairs. Am J Psychiatry 2001;158:1631-7.
50. Epperson CN, Jatlow PI, Czarkowski KA et al. Maternal fluoxetine treatment in the postpartum period; effects on platelet serotonin and plasma drug levels in breast-feeding mother-infant pairs. Pediatrics 2003;112:425.
51. Gregoire AJP, Kumar R, Everitt B et al. Transdermal oestrogen for treatment of severe postnatal depression. Lancet 1996;347:930-3.
52. Buist A, Westley D, Hill C. Antenatal prevention of postnatal depression. Archives of Women's Mental Health 1998;1:1-7.
53. Dennis CL. The effect of peer support on postpartum depression: a pilot randomized controlled trial. Can J Psychiatry 2003;48:115-24.
54. Marks MN, Siddle K, Warwick C. Can we prevent postnatal depression? A randomized controlled trial to assess the effect of continuity of midwifery care on rates of postnatal depression in high risk women. Journal of Maternal, Fetal and Neonatal Medicine 2003;13:119-27.
55. Stamp GE, Williams AS, Crowther CA. Evaluation of antenatal and postnatal support to overcome postnatal depression: a randomized controlled trial. Birth 1995;22:138-43.
56. Priest SR, Henderson J, Evans SF et al. Stress debriefing after childbirth: a randomized controlled trial. Med J Australia 2003;178:542-55.
57. Webster J, Linnane J, Roberts J et al. Identify, educate and alert (IDEA) trial: an intervention to reduce postnatal depression. Br J Obst Gynaecol 2003; 110:842-6.
58. Gordon RE, Gordon KK. Social factors in the prevention of postpartum emotional problems. Obst Gynecol 1960; 15:433-8.
59. Misri S, Kostaras X, Fox D et al. The impact of partner support in the treatment of postpartum depression. Can J Psychiatry 2000;45:554-8.
60. O'Hara MW, Stuart S, Gorman LL et al. Efficacy of interpersonal psychotherapy for postpartum depression. Arch Gen Psychiatry 2000;57:1039-45.
61. Murray L, Cooper PJ, Wilson A et al. Controlled trial of the short- and long-term effect of psychological treatment of post-partum depression. 2. Impact on the mother-child relationship and child outcome. Br J Psychiatry 2003;182:420-7.
62. Wisner KL, Perel JM, Peindl KS et al. Prevention of recurrent postpartum depression: a randomised clinical trial. J Clin Psychiatry 2001;62:82-6.
63. Bydlowski M, Raoul-Duval A. Un avatar psychique méconnu de la puerpéralité: la névrose traumatique post-obstétricale. Perspectives Psychiatriques 1978;4:321-8.
64. Creedy DK, Shochet IM, Horsfall J. Childbirth and the development of acute trauma symptoms: incidence and contributing factors. Birth 2000;27:104-11.
65. Menage J. Post-traumatic stress disorder in women who have undergone obstetric and/or gynaecological procedures. A consecutive series of 30 cases of PTSD. Journal of Reproductive and Infant Psychology 1993;11:221-8.
66. Ryding EL. Investigation of 33 women who demanded a Caesarian section for personal reasons. Acta Obstet Gynaecol Scand 1993;72:280-5.
67. Gottvall K, Waldenström U. Does a traumatic birth experience have an impact on future reproduction? Br J Obstet Gynaecol 2002;109:254-60.
68. Ryding E L, Wijma K, Wijma B. Experiences of emergency Caesarean section: a phenomenological study of 53 women. Birth 1998;25:246-51.
69. Matthey S, Barnett B, Howie P et al. Diagnosing postpartum depression in mothers and fathers: whatever happened to anxiety? J Affect Disord 2003;74:139-47.
70. Wenzel A, Haugen EN, Jackson LC et al. Prevalence of generalized anxiety at eight weeks postpartum. Archives of Women's Mental Health 2003;6:43-9.
71. Ross LE, Gilbert Evans SE, Sellers EM et al. Measurement issues in postpartum depression part 1: anxiety as a feature of postpartum depression. Archives of Women's Mental Health 2003;6:51-7.
72. Hertzberg T, Wahlbeck K. The impact of pregnancy and puerperium on panic disorder: a review. J Psychosom Obst Gynaecol 1999; 20:59-64.
73. De Armond M. A type of post partum anxiety reaction. Dis Nerv Syst 1954;15: 26-9.
74. Sved-Williams AE. Phobic reactions of mothers to their own babies. Aust N Zeal J Psychiatry 1992;26:631-8.
75. Weightman J, Dalal BM, Brockington IF. Pathological fear of cot death. Psychopathology 1999;167:246-9.
76. Moll L. Die Maternitätsneurose. Wiener Klinische Wochenschrift 1920;33:160-2.
77. Woodward J. Autochthonous delusion. 1757. Reproduced in: Hunter R, McAlpine I (eds). Three hundred years of psychiatry. Oxford: Oxford University Press, 1963: 338-41.
78. Chapman AH. Obsessions of infanticide. Arch Gen Psychiatry 1959;1:12-6.
79. Button JH, Reivich RS. Obsessions of infanticide. A review of 42 cases. Arch Gen Psychiatry 1972;27:235-40.
80. Filer ADJ, Brockington IF. Maternal obsessions of child sexual abuse. Psychopathology 1996;29:135-8.
81. Jennings KD, Ross S, Popper S et al. Thoughts of harming infants in depressed and non-depressed mothers. J Affect Disord 1999;54:21-8.
82. Buttolph ML, Holland AD. Obsessive-compulsive disorders in pregnancy and childbirth. In: Jenike MA, Baer L, Minichiello WE (eds). Obsessive-compulsive disorder: theory and management, 2nd ed. Chicago: Yearbook Medical Publishers,1990:89-95.
83. Maina G, Vaschetto P, Ziero S et al. Il postpartum come fattore di rischio specifico per l'esordio del disturbo ossessivo-compulsivo: studio clinico controllato. Epidemiol Psichiatr Soc 2001;10:90-5.

84. Schüller D. Discussion of Meyer E. Zur Klinik der Puerperalpsychosen. Zeitschrift für Psychiatrie 1901;58:703.
85. Main TF. Mothers with children in a psychiatric hospital. Lancet 1958;ii:845-7.
86. Boath E, Major K, Cox J. When the cradle falls II: the cost-effectiveness of treating postnatal depression in a psychiatric day hospital compared with routine primary care. J Affect Disord 2003;74:159-66.
87. Oates M. The development of an integrated community-orientated service for severe postnatal mental illness. In: Kumar R, Brockington IF (eds.). Motherhood and mental illness: causes and consequences. London: Wright, 1988:133-58.