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Perinatal mental illness: Definition, description and aetiology

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Abstract

Perinatal mental illness is a significant complication of pregnancy and the postpartum period. These disorders include depression, anxiety disorders, and postpartum psychosis, which usually manifests as bipolar disorder. Perinatal depression and anxiety are common, with prevalence rates for major and minor depression up to almost 20% during pregnancy and the first 3 months postpartum. Postpartum blues are a common but lesser manifestation of postpartum affective disturbance. Perinatal psychiatric disorders impair a woman's function and are associated with suboptimal development of her offspring. Risk factors include past history of depression, anxiety, or bipolar disorder, as well psychosocial factors, such as ongoing conflict with the partner, poor social support, and ongoing stressful life events. Early symptoms of depression, anxiety, and mania can be detected through screening in pregnancy and the postpartum period. Early detection and effective management of perinatal psychiatric disorders are critical for the welfare of women and their offspring.

Keywords

perinatal mental illness; postpartum depression; postpartum psychosis; postpartum anxiety disorders

Introduction

Perinatal mental illness is a significant complication of pregnancy and the postpartum period, and is frequently encountered by the obstetrician–gynaecologist. The chapters in this issue of *Best Practice and Research Clinical Obstetrics and Gynaecology* are principally concerned with the most prevalent disorders: major depression, bipolar disorder, and the anxiety disorders. In this chapter, we describe the various forms of perinatal mental illness and address issues relating to epidemiology and risk factors. Subsequent chapters will address detection of perinatal mental illness, effect of perinatal stress, anxiety, and psychotropic medications on the developing fetus and infant, the long-term prognosis of

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perinatal mental illness, the varieties of psychological and medical treatments, and psychiatric management of sleep disturbance and perinatal loss. The contributions come from colleagues in the USA, Canada, UK, Australia, France, India, and Pakistan, which gives this issue of *Best Practice and Research Clinical Obstetrics and Gynaecology* a diverse and international perspective on the problem and management of perinatal mental illness.

Perinatal mental illness has been recognised since the time of Hippocrates, and commented on through the centuries. In the 19th century, medical interest in perinatal mental illness accelerated, along with more general interest in severe mental illness. Marcé [1], the namesake of the major international society devoted to the study of perinatal mental illness (the Marcé Society for Perinatal Mental Health), published an important series of case studies of women suffering from various forms of perinatal mental illness over 150 years ago. Across the 20th century, clinical accounts and research on prevalence, risk factors, consequences to the mother, fetus, and infant expanded dramatically. Numerous government agencies and professional groups have issued guidelines for the detection and management of perinatal mental illness [2–5]. Increased clinical and professional attention, and financial resources directed towards perinatal mental illness are warranted given the significant effect of these psychiatric disorders on the lives of women, their children, and their families.

Studies on perinatal mental health also have been influenced by concepts emerging over the past 2 decades relating to the centrality of the fetal milieu in shaping health throughout the individual's life. The dynamic mix of biological, socio-environmental and psychological factors affect the expression of disease (and health) across the life span [6]. Fetal programming refers to the capacity of the in-utero environment to modify the expression of genes and interact with the genetic substrate to determine disease susceptibility in the short- and long-term. High levels of stress and associated mental illnesses affect maternal and fetal outcomes, and also long-term offspring health into adulthood. To the extent that negative biopsychosocial exposures can be diminished, eliminated, or replaced with positive factors, childbearing outcomes and the subsequent health of the mother of an offspring can be improved. Focusing intervention on the perinatal period builds upon women's interest in embracing positive health behaviours to invest in the welfare of their offspring, such as decreased smoking and alcohol use. This exciting area of investigation is reviewed in this issue by Vivette Glover.

Definition of perinatal mental illness

Perinatal mental illness refers to psychiatric disorders that are prevalent during pregnancy and as long as 1 year after delivery. The postpartum time-frame is debatable: most investigators use a period ranging from 4 weeks after delivery to 3 months after delivery. Perinatal disorders ranging from mild depression and anxiety, mania, to florid psychosis all fall under the rubric of perinatal mental illness. Additionally, disorders that were present before pregnancy, or recurring along with disorders that emerge during pregnancy or in the postpartum period, are all considered perinatal mental illnesses. Among disorders that emerge in the postpartum period, some emerge soon after childbirth, and others emerge later or more variably. Do aetiology or prevention and treatment make a difference to any of these distinctions? What does the practising obstetrician need to know? It is most important for the

obstetrician to recognise psychiatric disorders that begin before pregnancy and carry on into pregnancy, or that emerge during pregnancy, or that are prevalent in the early postpartum period. In addition, the obstetrician should be aware of risk factors for perinatal mental illness, and treatment and referral options.

Types of perinatal disorders

Perinatal depression

Perinatal depression is defined in various ways. At one end of the spectrum, perinatal depression is defined symptomatically as exceeding a threshold on a screening measure, such as the Edinburgh Postnatal Depression Scale [7]. For example, pregnant and postpartum women are often asked to complete this 10-item questionnaire that asks about depression and anxiety-related symptoms over the past 7 days. Scores can range from 0 to 30, and women whose scores exceed a specified threshold (usually between ≥10 to 13) are often referred for further evaluation or treatment for a perinatal depressive or anxiety disorder. More rigorous assessment occurs in the context of a clinical interview, such as the Structured Clinical Interview for DSM-IV [8]. Of course, the clinician can assess for major depression or a range of anxiety disorders without the aid of a structured interview protocol. What is important is a determination of what a pregnant or postpartum woman needs, which might range from simple advice and reassurance, psychological counselling, antidepressant medication, to some combination of these treatments. Treatment might also include complementary and alternative treatments, such as exercise, bright light therapy, and yoga. Treatment is usually on an outpatient basis, although psychiatric emergencies, such as suicidal thoughts with a plan and intent or postpartum psychosis, warrant hospitalisation. Intervention options and settings are addressed in several chapters in this issue.

Prevalence estimates for perinatal depressive disorders vary considerably depending upon the definition of the disorder and the period over which prevalence is determined [9,10]. For example, the most recent quantitative review of the prevalence of perinatal depression found that the period prevalence (over the first 3 months postpartum) of depression broadly defined was 19.2%, but the prevalence of the more narrowly defined (and more severe) major depression was 7.2% [9]. The prevalence of depression across pregnancy was estimated at 18.4% (12.7% major depression). At about the same time, Bennett et al. [11] conducted a separate meta-analysis of depression in pregnancy based on 21 studies and 19,284 participants, and reported prevalence rates of 7.4% (first trimester), 12.8% (second trimester), and 12.0% (third trimester).

Fisher et al. [12] reported separately on prevalence of perinatal depression in low- and middle-income countries. The mean prevalence of postpartum depression in these countries was estimated to be 19.8% (15.6% during pregnancy). Since the publication of these reviews, several large-scale prevalence studies have been conducted in Europe. For example, investigators reported a 9.6% 1-year prevalence of major and minor depression in Pisa, Italy [13], which would be relatively low compared with the report of Gavin et al. [9] A large study in Barcelona, however, yielded a 6-week prevalence of 9.2% for major and minor depression and dysthymia [14]. Although these prevalence estimates are quite similar, they cover vastly different postpartum periods. All of these reviews and empirical studies

conclude that depression is common during pregnancy and after delivery in developing and developed countries.

Postpartum anxiety disorders

A wide range of anxiety disorders are prevalent in the perinatal period. These include generalised anxiety, obsessive–compulsive, panic, and social anxiety disorders. In many cases, the severity and effect of anxiety symptoms (e.g. worry, avoidance, and obsessions) do not rise to the level of an anxiety disorder diagnosis; nevertheless, they cause at least mild-to-moderate levels of distress and impairment. Similar to the case for perinatal depression, anxiety is detected using self-report measures, such as the Beck Anxiety Inventory [15,16].

Rates of anxiety disorders in pregnancy and the postpartum period range widely. For example, in a Nigerian study, Adewuya et al. [17] reported that 10.5% of pregnant women met DSM-IV criteria for generalised anxiety disorder (GAD). In a US study, however, only 1.9% of pregnant women met criteria for GAD [18]. In the first 6 months after delivery, rates of GAD, based on several studies, ranged from 6.1% to 7.7%. Rates of obsessive–compulsive disorder (OCD) during pregnancy ranged from 1.2% to 5.2%, and the rate was about 4.0% at 6 months postpartum. With panic disorder, rates ranged from 1.4% to 9.1% during pregnancy and 0.5% to 2.9% between 6 and 10 weeks postpartum. Finally, rates for social anxiety disorder in pregnancy ranged from 2.0% to 6.4%, and in the early postpartum period prevalence rates ranged from 0.2% to 6.5% [19]. What these prevalence rates suggest is that anxiety ranging from excessive worry to panic attacks is prevalent during pregnancy and the postpartum period. Given the deleterious effects of significant maternal anxiety on the developing fetus, and the way in which it complicates early parenting, the obstetrician should be as alert for anxiety symptoms as for depressive symptoms in the perinatal period.

Anxiety disorders often run a chronic course, and many women will enter pregnancy with an anxiety disorder. As with perinatal depression, the major risk factor for perinatal anxiety disorders is a history of anxiety disorders. The intensity and the degree of impairment associated with any particular anxiety disorder may wax and wane over the course of pregnancy and the postpartum period. Beyond a prior history of an anxiety disorder or depression, research on risk factors for perinatal anxiety disorders is mixed and inconclusive [19].

In a large-scale postpartum screening study with follow-up diagnostic evaluations [20], 66% of women with major depression in the postpartum period had comorbid anxiety disorders. This observation may explain the reason for the relatively small group of publications on anxiety disorders across childbearing. Most adults with mood disorders experienced significant anxiety symptoms or an anxiety disorder in childhood or adolescence; however, the same was not true of postpartum women, who developed a recurrent depressive disorder superimposed on an anxiety disorder.

Postpartum psychosis: bipolar disorder

The obstetrician–gynaecologist may be the first healthcare professional that a woman with postpartum psychosis, or more likely her distressed family, contacts. The incidence of

postpartum psychosis is one or two per 1000 births [21]. The symptom patterns in women with postpartum psychosis have consistently been reported to differ from women with psychosis not related to childbearing [22–24]. Postpartum psychosis presents rapidly after birth, with mood fluctuation, confusion, and marked cognitive impairment suggestive of delirium, bizarre behaviour, insomnia, visual and auditory hallucinations, and unusual (i.e. tactile and olfactory) hallucinations [25]. Maternal psychotic symptoms can include the altruistic homicide delusion, in which the mother believes she is saving her baby from a fate worse than death by killing it. Andrea Yates believed that the only way to release her children from condemnation to Hell was to drown them. Fortunately, such occurrences are rare, but the potentially preventable tragedy of such cases compels rapid identification and treatment [26]. Mothers who develop postpartum psychosis usually have a diagnosis consistent with bipolar depression, mania, or mixed state, with psychotic features [27]. Women are vulnerable to affective psychoses after birth more than at any other time during their lives [28].

Women with bipolar disorder are particularly vulnerable to developing psychotic and non-psychotic episodes in the postpartum period [29,30]. For women with bipolar disorder, the first 30 days after birth carries a relative risk of 23.3 of having a psychiatric admission compared with women at any other period after birth, and 30–60 days after birth incurs a risk of 6.3 [29]. The causes of post-birth decompensation in women with bipolar disorder include genetic factors [31–33] and massive gonadal steroid withdrawal after birth in women who are neurobiologically sensitive to hormonal change [34]. Sleep deprivation and interference with circadian rhythms during late pregnancy, labour, and frequent newborn feeding promote mood destabilization [27]. Constant care for the newborn is a major stressor, particularly where psychosocial and physical support is lacking. The psychosocial consequences of psychotic and mood episodes during childbearing include an increased risk for substance use, smoking, and high-risk behaviours that increase exposure to sexually transmitted and other diseases, violence, victimisation, poor nutrition, non-compliance with medical care, and alienation from social support systems. The United Kingdom Confidential Enquiry into All Maternal Deaths (1997–1999) [35] revealed that 10% of postpartum deaths resulted from suicide, and 12% resulted from psychiatric causes (e.g. accidental overdose, deaths from medical conditions due to substance use, and violent deaths).

The effect of pregnancy on the course of bipolar disorder has not been elucidated. Published reports differ in their conclusions, which are likely to be based on populations with dissimilar characteristics. Some researchers have described a benign course or mood stabilisation and improvement for women with bipolar disorder during gestation; that is, a protective effect [36], whereas others have described pregnancy as having no effect or increased risk for episodes [27].

Viguera et al. [37] retrospectively compared recurrence rates and survival functions for women with bipolar disorder in two groups receiving tertiary psychiatric care treatment. One group discontinued lithium during childbearing, and the other discontinued lithium but was non-childbearing. Rates of recurrence over the first 40 weeks after lithium discontinuation were similar for pregnant (52%) and non-pregnant women (58%); however, rates for both were comparatively much lower the year before treatment discontinuation (21%).

One of the few screening measures for bipolar disorder, and the most commonly used, is the Mood Disorders Questionnaire (MDQ) [38]. This questionnaire assesses lifetime history of mania and hypomania with 13 yes/no symptoms reflecting DSM-IV criteria, a yes/no question about symptom occurrence during the same time period, and a designation of the resulting problem level. A positive screen requires seven or more symptoms in the same period that caused moderate or serious problems. In the only published screening study for postpartum BD, Sharma and Xie [39] gave women with a diagnosis of MDD ($n = 68$) or bipolar disorder ($n = 57$) the MDQ at 2–4 weeks after delivery. The MDQ yielded a sensitivity of 75% and specificity of 87% with the original scoring criteria.

The recognition and clinical diagnosis of bipolar disorder is by far the most important prerequisite for adequate treatment [40]. Although many women with bipolar disorder receive treatment for depression or comorbid mental disorders (such as substance abuse or anxiety disorders), lack of recognition of the underlying bipolarity results in few receiving appropriate treatment [41]. Half of women who have 'treatment resistant' postpartum depression actually suffer from undiagnosed bipolar disorder [42]. Antidepressant drug monotherapy for bipolar disorder may precipitate rapid cycling, induce mania, or increase treatment resistance [40]. Studies are under way to obtain more information about the usefulness of pairing the Edinburgh Postnatal Depression Scale with the MDQ to address the differential diagnoses of these major perinatal mood disorders [42].

Differentiating postpartum psychosis from obsessions and compulsions is often challenging, but is crucial for appropriate management [43]. Obsessions include intrusive thoughts and images, which are in the 'mind's eye', and differ from hallucinations, which appear as if in the real world. Common examples are 'what if I put the baby in the microwave?' 'The baby's head could slip under water in the bath and I might drown her.' 'What if I throw the baby over the banister?' These are also symptoms of OCD, which is classified within anxiety disorders, and also other mental illnesses, which commonly co-occur. In women with postpartum onset major depression, 57% reported obsessional thoughts of harm to their baby, and most had checking compulsions (i.e. highly repetitive night-time checking to make sure the baby is breathing) [44]. In new mothers, checking behaviour might be considered appropriate because of the mother's concern for the baby's wellbeing; however, in OCD, it has intensified to a degree that compromises the mother's ability to provide care [44].

Exploration for hallucinations in all senses (e.g. visual, auditory, olfactory, gustatory, tactile) and delusions (i.e. the baby is the devil, another person lives in me) is also critical to rule out a psychotic process. Postpartum women with obsessions are distressed by the thoughts and usually do not reveal them without sensitive questioning. These mothers recognise them as bizarre and intrusive, which is another distinction between obsessions and psychosis. The compulsions may not manifest as an active ritual but may involve extreme avoidance of the infant because of fear of actually doing harm.

Women with OCD without psychosis or severe personality disorder have no increased risk of aggressive harm to their infants [21,43,45].

Postpartum blues

In the first week or so after delivery, it is common for women to experience a variety of physical discomforts and symptoms that have been characterised as the 'postpartum blues' or 'baby blues'. Prevalence estimates for the blues range from 26% [46] to 84% [47], reflecting more or less stringent criteria. Unfortunately, no established criteria for the blues exist, although O'Hara et al. [46] adapted the work of Handley et al. [48] and proposed diagnostic criteria that led to their determination of a 26% prevalence rate. Blues symptoms included dysphoric mood, crying, mood lability, anxiety, insomnia, loss of appetite, and irritability. Participants met Handley Blues criteria if they were rated as having four of seven symptoms of at least mild severity (3 on 6-point scale). A more recent study of the factor structure of the blues during the first week postpartum found that symptoms such as 'up and down mood', 'mentally tense', 'overemotional', 'oversensitive', 'brooding', 'low spirited', 'tearful', and 'irritable' all loaded above 0.60 on postpartum negative affect [49]. Interestingly, a distinct positive affect factor was reported in the first week postpartum, which included positive emotions such as 'inspired', 'confident', 'lively', 'enthusiastic', 'interested', 'alert', 'determined', and 'calm', which loaded above 0.60 on postpartum positive affect [49]. The findings that two distinct mood factors exist — negative and positive affect — in the early postpartum period suggest that the structure of mood in the postpartum period is the same as the structure of mood at other times in a woman's life. These findings are important because they suggest that blues symptoms are on the same dimension as mood symptoms at other times in a woman's life. Good evidence shows that mood symptoms worsen in the first week postpartum and then gradually improve [50]. Negative mood symptoms have been found to peak between day 3 and day 5 postpartum, perhaps reflecting hormonal readjustments after delivery [49–51]. It is generally the case that blues symptoms will largely diminish by days 10 to 12 postpartum, except in cases in which they evolve into an episode of postpartum depression. Postpartum depressions are generally independent of the blues, but the postpartum blues do represent a risk factor for postpartum depression [46].

Distinctiveness of perinatal mental illness

Perinatal psychiatric disorders might be distinct from similar disorders occurring at other times in a number of ways. For example, is the prevalence of psychiatric disorders increased in the perinatal period? Is the presentation of these disorders distinct? Do they respond to treatment in the same ways as similar disorders outside of the perinatal period? Are the risk or causal factors and pathophysiology distinct? What about courses of these disorders?

Is depression more common in the postpartum period than at other times in a woman's life? The data are equivocal, and most reviews have concluded that little evidence is available for increased risk of depression in the postpartum period [9,10]. For example, studies of perinatal depression that included control groups of non-pregnant and non-postpartum women have not found different rates of depression across groups [52,53]. Recent large-scale studies have provided some evidence for increased risk for depression in the postpartum period. For example, Vesga-Lopez et al. [54] found that, in a large sample of postpartum and non-postpartum women (in the USA) after controlling for sociodemographic

characteristics, previous history of depression, overall health and stressful life events, the odds ratio for depression in the postpartum was 1.52 (CI 1.07 to 2.15), a significant effect. In a study conducted in the UK, Davé et al. [55] linked childbirth, and depression diagnoses and antidepressant prescriptions in medical records for couples ($n > 17,000$) over a 12-year period, and found that the incidence of a diagnosis of depression or a prescription for antidepressant medication was almost 14% in the first year after delivery and fell to about 6% in the second year and beyond. Both studies have significant limitations because they were not designed specifically to determine the prevalence of perinatal depression relative to depression that occurs at other times in a woman's life. Of course, depression is common among women, and the ages at which women are most likely to have children are those at which women seem to have the highest rates of depression across the life-span [56,57]. Therefore, the obstetrician should be alert to depression and provide appropriate health care to women throughout pregnancy and the postpartum period, and also at other times.

Causal factors

Psychological and environmental underpinnings

Over the past 30 years, a great deal of research has addressed risk and causal factors for postpartum depression and, to a much less extent, depression during pregnancy. Several meta-analyses and systematic reviews have been completed and have arrived at similar conclusions [10,58–60]. On the basis of these reviews, risk factors with moderate to strong associations with postpartum depression include history of depression, depression and anxiety during pregnancy, neuroticism, low self-esteem, postpartum blues, stressful life events, poor marital relationship, and poor social support [58]. Other relevant risk factors that have smaller associations with postpartum depression include low socioeconomic status, being single, unwanted pregnancy, obstetrical stressors, and difficult infant temperament. What these findings suggest is that three constellations of risk factors exist: history of psychiatric illness, which may range from mild to severe, life stress, and poor social relationships. These factors figure prominently in risk for depression at any time, and all are readily identifiable by the obstetrician. Positive social relationships are often instrumental in buffering the effects of psychiatric vulnerability and life stress. For the vulnerable woman, the obstetrician can educate the woman and her partner or family about the importance of social support (both practical and emotional) in preventing the onset of depression during pregnancy and the postpartum period. Referral to local agencies providing support for childbearing women is an important intervention.

Biological underpinnings

Postpartum mental illnesses provide an intriguing model for the study of the emergence of mental illness owing to their close association with birth. As is true for depression in general, the causes of postpartum depression includes dynamically changing contributions from biological, psychosocial, and environmental domains. Women who develop postpartum onset major depression are differentially sensitive to the mood-destabilising effects of withdrawal from reproductive hormones at birth. During pregnancy, the brain is exposed to a 100-fold increase in oestradiol levels, which abruptly decrease in the first few postpartum days. The neurobiological effects of this massive steroid withdrawal predispose to the

development of postpartum depression. In a landmark study, Bloch et al. [34] simulated the withdrawal of hormones at birth by inducing a hypogonadal state in women with leuprolide, adding back supraphysiologic doses of oestradiol and progesterone for 8 weeks, then withdrawing both steroids under double-blind conditions. Five of eight women with a history of postpartum depression, compared with 0 of the 8 women without a history of depression, developed mood symptoms. Symptoms peaked in the withdrawal (postpartum simulation) phase.

An inverse association between changes in oestradiol levels and the enzyme monoamine oxidase activity in the brain has been shown. This relationship was evaluated in postpartum women by Sacher et al. [61] Monoamine oxidase A promotes the enzymatic degradation of neurotransmitters such as serotonin, dopamine and norepinephrine, which are important in mood function. Monoamine oxidase A levels were 43% greater 4–6 days after birth; therefore, neurotransmitters are more rapidly depleted. This time frame overlaps with the baby blues and early postpartum depression.

Genetic studies have also pointed to specific hereditary factors in postpartum depression [32]. Genome-wide data suggested that genetic variations on specific chromosomes may increase susceptibility to postpartum mood symptoms. Association studies of a number of candidate genes in women with postpartum psychosis and bipolar disorder have been conducted, with an emphasis on gene expression influenced by steroid hormones [62].

Conclusion

Perinatal depression, anxiety, bipolar disorder, and postpartum psychosis represent mental health problems that, in the case of depression and anxiety, are relatively common and serious, and in the case of bipolar disorder and psychosis, while relatively less common, can have devastating consequences for the mother and her family. Postpartum blues are a common and less serious manifestation of affective disturbance, which emerge early in the postpartum period but have few negative sequelae. Risk factors for these disorders include past history during the perinatal period or at other times. In addition, women with significant life stressors, a poor marital relationship, and poor social support from family and friends also are vulnerable. Biologic factors also play a significant role in the development of perinatal mental illness. Numerous professional and national organisations have issued guidelines for their detection and treatment, several of which are referenced in the Appendix. Treatments for perinatal mental illness include a wide range of psychological, pharmacological, and complementary and alternative treatments. These treatments are described in detail in other chapters in this issue. Continued research on aetiology, prevention and treatment are critical in the effort to diminish the effect of perinatal mental illness on women and their families and invest in our next generation.

Appendix.: Postpartum depression and anxiety disorders: resources for the obstetrician.

Postpartum depression	
Marcé Society for Perinatal Mental Health (International)	http://www.marcesociety.com/Default.aspx
Postpartum Support International (USA)	http://www.postpartum.net
Med Ed PPD (USA)	www.MedEdPPD.org
Support and Training to Enhance Primary Care for Postpartum Depression (STEP-PPD) (USA)	http://www.step-ppd.com/step-ppd/Home.aspx
Massachusetts General Center for Women's Mental Health (USA)	http://www.womensmentalhealth.org
DART - National Library of Medicine (medications and pregnancy) (USA)	http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?DARTETIC
LACTMED - National Library of Medicine (medications and breastfeeding) (USA)	http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?LACT
MotherToBaby, formerly Organization of Teratology Information Specialists (OTIS) (USA)	www.mothertobaby.org
Patient Resources (National Institute of Mental Health (USA)	www.nimh.nih.gov/health/publications/bipolar-disorder/complete-index.shtmljabfm.org
MotherRisk (Treating Mothers and the Unborn Child) (Canada)	http://www.motherisk.org/women/index.jsp
The Association for Post-Natal Illness (UK)	http://apni.org/
Pre and Postnatal Depression Advice and Support (PANDAS) (UK)	http://www.pandasfoundation.org.uk/
La Société Marcé Francophone L'association francophone pour l'étude des pathologies psychiatriques puerpérales et périnatales (France)	http://www.marce-francophone.fr/
Maman Blues (France)	http://www.maman-blues.fr/index.php
Marcé Gesellschaft für Peripartale Psychische Erkrankungen e.V. (Germany)	http://www.marce-gesellschaft.de/start.html
Beyondblue - Depression and Anxiety (Australia)	http://www.beyondblue.org.au/resources/for-me/pregnancy-and-early-parenthood
Post and Antenatal Depression Association Inc. (PANDA) (Australia)	http://www.panda.org.au/
White Ribbon Alliance for Safe Motherhood (South Asia)	http://www.whiteribbonalliance.org/index.cfm/national-alliances/india/
Anxiety disorders	
Anxiety Disorders Association of America (USA)	http://www.adaa.org/
Mount Sinai Obsessive-Compulsive Disorders Treatment Center (USA)	www.mssm.edu/psychiatry/ocd
International OCD Foundation (USA)	http://www.ocfoundation.org/EO_Postpartum.aspx

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Practice points

- At an appointment early in pregnancy, current and past history of psychiatric disorders should be obtained.
- Many women will not have been treated for their depression or anxiety disorders, so do not ignore untreated episodes.
- Anxiety disorders are prevalent during pregnancy and the postpartum period. Be sure to ask about anxiety and worry at each visit.
- Develop professional relationships with psychiatrists and clinical psychologists as well as social service agencies to whom you can make referrals and with whom you can jointly manage care.

Research agenda

- Large scale community-based epidemiological studies to determine prevalence of and comorbidity among psychiatric disorders during pregnancy and the postpartum period.
- Research that integrates psychosocial and biological aetiological underpinnings of disorders within the spectrum of perinatal mental illness.
- Research to determine specific pregnancy or childbirth-related biological factors that bring on postpartum depression.