Can Postpartum Depression Be Predicted?

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Abstract

Postpartum depression (PPD) is a mental health problem that carries substantial risk for women, children, and families. Depression may emerge during pregnancy and carry over into the postpartum period or develop soon after delivery and even many months later. Numerous studies have been undertaken to determine the etiology of PPD and to identify risk factors during pregnancy that may predict its occurrence. Risk factors measured during pregnancy that show the strongest relation to PPD include current and past depression and anxiety disorder, negative stressful life events, marital discord, and poor social support. Many of these risk factors have been incorporated into scales and are used to screen women during pregnancy and to select high-risk women for prevention trials. In general, these instruments do identify a group of women with substantial increased risk for PPD over the base rate and can serve as a basis for a conversation between a woman and her healthcare provider. Despite their positive attributes, these instruments tend to over identify women at risk and at the same time miss many women who go on to experience a PPD.

Introduction

Depression in the postpartum period is a common mental health problem affecting approximately 13% of American women. The burden of depression for women is substantial. Recent data suggest that depression affects women more than all other chronic diseases with the exception of heart disease. Worldwide, depression is responsible for 5.5% of all disease burden in women. In the year 2000, depression was the leading cause of nonobstetric hospitalizations among childbearing-aged women, resulting in 205,000 women being discharged with a diagnosis of depression. This burden extends to the family as well: children of depressed women are at risk for problems in social, emotional, and intellectual development. Moreover, depression in the postpartum period is frequently associated with marital conflict. This reality underlines the importance of early detection and treatment of postpartum depression (PPD) and calls out for prevention efforts during pregnancy and preconception.

The term “postpartum depression” suggests an episode of depression that has its origins in the postpartum period and that is etiologically linked to childbirth or to physiological/hormonal, social, psychological, or environmental events that occur within some reasonable proximity to childbirth. The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), has codified this perspective by introducing the specifier “with postpartum onset” to identify major depressions that begin within 4 weeks of childbirth. This designation within the DSM-IV is important because it provides recognition to depressions that in the past have been overlooked or minimized by clinicians and families. However, the “with postpartum onset” specifier and the 4-week time frame suggest to clinicians and others that PPD is a discrete entity that has its onset in the immediate postpartum period. In fact, major depressions in the postpartum period sometimes have their origins in pregnancy or later than 1 month after delivery. For example, a recent psychotherapy outcome study of 120 postpartum depressed women found that roughly one third of women had their depression onset before delivery, one third had an onset in the first month after delivery, and one third had an onset 2–6 months after delivery.

Over the past 25 years there has been a dramatic increase in studies addressing many aspects of PPD, especially risk factors. Typical study methodologies have included the recruitment of women at some point during pregnancy, the measurement of risk factors, and a prospective follow-up until some point in the postpartum period, usually 2–6 months postpartum. The goal of most of these studies was to understand etiological factors in PPD. Two outgrowths of this research have been the development of prevention studies that targeted women during pregnancy at high risk for PPD and the development of screening scales (separate from the high-risk prevention studies) to identify women at high risk for PPD. As a consequence, this article first briefly reviews the general literature on PPD risk factors and suggests a few key questions that a clinician might ask of a pregnant woman (Table 1). Second, it discusses the strengths and limitations of two scales that were developed for clinical use with pregnant women. Third, it evaluates the success of PPD prevention studies in identifying a true high-risk sample of pregnant women. Finally, it makes some general recommendations regarding the identification of women who are at risk for PPD.
Domains of Risk for Postpartum Depression

Sociodemographic Factors

Sociodemographic features reflect the basic facts of a woman’s life, and usually include age, marital status, parity, education level, occupation, income, and race or ethnicity. The literature suggests that the major risk factors within this particular group of women include not being married or in a stable relationship and low socioeconomic status, which generally reflects education, occupation, and income. Overall, the effect is not strong, but most studies have included only adult women and find age not to be a significant factor. However, studies of adolescents find high rates of depression in the postpartum period. With respect to race or ethnicity, the evidence is mixed, though it does appear that after controlling for socioeconomic status, being a member of an ethnic minority group does not increase a woman’s risk for PPD or depression more generally.

Endocrine Factors

There has been a great deal of research over the years on the role of endocrine factors in PPD. This research has had several characteristics. First, it assumes that levels of hormones such as progesterone, estradiol, prolactin, and cortisol are either too high or too low in the puerperium or that levels of these hormones are changing too rapidly. Second, many of these studies do not address PPD but rather address the postpartum blues or simply index levels of mood disturbance or depression symptoms in the postpartum period. Finally, with a few exceptions (eg, thyroid antibody status), there is no simple way to determine what would constitute an abnormal finding for the biological variables.

Progesterone withdrawal and estrogen withdrawal after childbirth have been posited as potential hormonal triggers for PPD and the blues. Although much of the progesterone and estradiol circulating during pregnancy is not biologically active, levels of free (and biologically-active) progesterone and estradiol are elevated relative to the highest levels of the menstrual cycle. Nevertheless, there has been very little support in the literature for the direct role of progesterone or estradiol. Results from studies have been inconsistent and usually negative. Interestingly, Bloch and colleagues reported that women with a history of PPD responded with clear depressive mood symptoms following the withdrawal of add-back progesterone and estradiol following an experimental suppression of ovarian function. Women without a history of PPD did not show a mood response to the withdrawal of progesterone and estradiol. The authors argued that there may be a subgroup of women who are especially sensitive to changes in progesterone and estradiol levels associated with childbirth. These women may represent the true instances of PPD.

Thyroid dysfunction and positive thyroid antibody status probably play a role in a limited subset of PPDs. For example, Kuijpers and colleagues found that positive thyroid antibody status during pregnancy was significantly associated with clinically-diagnosed depression in the postpartum period, even after controlling for depression during pregnancy and lifetime history of depression. Recently, Harris and colleagues reported on the results of a double-blind placebo-controlled trial of thyroxine 100 µg/day beginning at 6 weeks postpartum and extending to 6 months postpartum in women who were thyroid-antibody–positive. The daily administration did not result in significantly lower levels of depression in these high-risk women relative to the control condition. Despite this disappointing finding, it is becoming standard practice to assess thyroid function in women presenting with PPD.

Obstetric Factors

Although medical difficulties during pregnancy and obstetric complications associated with delivery might be expected to contribute to risk for PPD, the evidence base is quite weak. A recent meta-analysis did not identify obstetric factors as a significant predictor of PPD, moreover, another meta-analysis specifically addressing consequences of cesarean section obtained evidence only of a nonsignificant trend relating a cesarean section and PPD.

Stressful Life Events

The occurrence of negative life events is a reliable predictor of PPD. Numerous studies have found a significant association between the occurrence of negative events (usually during pregnancy) and PPD. Typical negative life events would include loss of the women’s job or partner’s job, undesired change in housing, accident or ill health affecting a close family member, being victimized, and the death of a close relative or friend.
Relationship With Partner

For most women, the quality of their relationship with their partner is quite salient during the postpartum period. Not only are partners expected to parent the child but they are often major sources of social support for the woman if the relationship is a good one. Activities as simple as helping around the house, giving the mother a chance to rest, and feeding the baby at night can be quite important to the woman's mental health. Evidence from several studies suggest that marital conflict during pregnancy elevates the risk for PPD and that overall there is a strong association between marital satisfaction and PPD.

Relationship With Mother

Another important relationship in a woman's life is her relationship with her mother during pregnancy and the postpartum period. Mothers are a great source of emotional and instrumental support and advice. In contexts where the relationship is poor, distant, or conflicted, a woman is likely to be deprived of support that most women come to expect. The literature here is not as extensive as that which addresses the role of the partner, but several studies have found a significant association between the woman's relationship with her mother and PPD.

Social Support

Numerous studies have documented the important role of social support in protecting postpartum women from depression. There is a great deal of overlap between studies that evaluate the quality of women's close relationships and those that address social support. Social support can come from numerous sources, including friends and neighbors, relatives (sisters and female cousins), support groups, healthcare professionals, and formal programs in the community.

Personal History of Depression and Anxiety

Being depressed or anxious during pregnancy or having had past episodes of depression (including previous PPD) or anxiety disorder usually carries a poor prognosis for a woman's adjustment after delivery. A large number of prospective studies have confirmed this perspective (though not in every case). In fact, depression during pregnancy may be the single most reliable predictor of depression after delivery, followed closely by high levels of anxiety during pregnancy and past history of depression and anxiety disorders. Finally, women with a history of bipolar disorder are also at significant risk.

Women should be screened routinely at initial obstetrics visits for past history of mental illness, particularly depression (including bipolar depression) and anxiety disorders. Moreover, it is good practice to routinely screen during pregnancy and the postpartum period for evidence of increasing levels of anxiety and depression. A number of tools exist to perform symptom screening including the Edinburgh Postnatal Depression Scale (EPDS) and the Postpartum Depression Screening Scale (PDSS). These tools can help identify distressed women during pregnancy and in the postpartum period.

Risk-Screening Inventories

A recent review identified 16 studies that reported the development of PPD risk-screening inventories that could be used during pregnancy. Four of the studies referred to screening inventories used in prevention studies. The review identified numerous problems with these inventories. First, sample sizes used to assess the predictive validity of screening inventories have generally been too small, likely leading to unreliable estimates of classification accuracy. Second, there is a wide variety of risk factors included in risk-assessment inventories and those factors vary from study to study. Most often, factors included in risk-screening inventories are based on qualitative reviews of the literature and are study specific. A third problem is that most screening inventories have not been subjected to appropriate validation procedures, such as cross-validation or replication in other samples. And finally, sensitivity, specificity, and positive predictive values vary among screening inventories and are fairly low, with one exception, the Antepartum Questionnaire (APQ), which will be described in more detail below.

The sensitivity of a screening inventory is important clinically because it refers to the proportion of women that are correctly identified as being at high risk. In other words, sensitivity refers to the proportion of women who experience a PPD who were identified as high risk (ie, true positives/all positives). For example, a screening instrument with a sensitivity of .80 would identify 80% of women during pregnancy that would go on to experience a PPD. A measure's specificity is also important, although perhaps less so clinically, as it refers to the proportion of women the screening inventory correctly identifies as low risk and who did not experience a PPD (ie, true negatives/all negatives). In the 16 studies reviewed by Austin and Lumley, sensitivity indices ranged from .23–.82 and specificity indices ranged from .43–.96. The majority of studies demonstrated good sensitivities but lower specificities or vice versa, and only rarely did both validity indicators approach adequate levels within the same measure.

In addition to the variability in sensitivity and specificity among screening inventories, positive predictive values (PPV), the proportion of women identified as being at risk who then actually become depressed, and negative predictive values (NPV), the proportion of women who are not considered to be at risk and actually remain well, also have wide ranges. PPVs ranged from 0–.56 while NPVs ranged from .73–.98. These values indicate that, at best, current screening inventories predict PPD in only 56% of women identified as high risk. Although risk-screening inventories have not been developed to a level that perfectly identifies all women who will and will not experience PPD, their use in clinical settings is still worth the effort. Two inventories that appear to hold promise in their clinical utility are the APQ, which was included in the Austin and Lumley review, and the revised version of the Postpartum Depression Predictors Inventory (PDPI-Revised), which was not included in the Austin and Lumley review.

The Antepartum Questionnaire

The APQ is a 24-item questionnaire, completed by the woman herself during pregnancy. Items inquire about the woman's marital status, education, childhood and current family relationships, emotional states during pregnancy and when not pregnant, self-esteem, premenstrual problems, previous episodes of PPD, nausea during pregnancy, financial status, and social support. Since some items ask about the current pregnancy, the questionnaire is probably best administered during the second trimester as it was in the original sample in which it was validated. The questionnaire takes an average of 7–10 minutes to complete and requires at least a ninth-grade education. Responses to items are assigned weighted values and the questionnaire is scored by summing item responses. Using a cutoff score of 46 in two validation samples, Posner and colleagues reported quite acceptable levels of sensitivity (82% and 80%) and specificity (78% and 82%) when the measure was used to predict Beck Depression Inventory scores above a target...
The Postpartum Depression Predictors Inventory

The other measure to consider for use in clinical settings is the PDPI-Revised. Unlike the self-administered APQ, the PDPI-Revised is administered by a clinician or interviewer. The questionnaire is made up of several guide questions covering 10 risk factors that can be assessed during pregnancy and the postpartum period. These include marital status, socioeconomic status, self-esteem, prenatal depression, prenatal anxiety, unplanned pregnancy, history of depression, social support, marital satisfaction, and life stress. The inventory contains an additional set of questions that are designed to assess for three risk factors after delivery. These additional risk factors are childcare stress, infant temperament, and maternity blues.

It is advised that the PDPI-Revised be completed with women during each trimester of pregnancy and periodically after delivery through the first year postpartum. The PDPI-Revised does not calculate any cutoff score that identifies women as being more or less at risk, but was intended to be a semistructured interview to assess for the presence of significant risk factors and to discuss the need for intervention with the woman if necessary. A self-administered version of the PDPI-Revised is under development with validation studies planned.

In sum, current screening inventories designed to identify women who are at high risk for PPD have been developed for use in research and clinical settings. Although some inventories have shown promise in predicting women likely to experience PPD, a great deal of work is needed to improve sensitivities and specificities in order to more accurately identify women who may benefit from preventive and early interventions aimed at lowering the risk of PPD.

Do Screening Scales Identify High-Risk Women in Prevention Studies?

Identifying women at risk for PPD has utility in both clinical and research settings. In clinical settings, screening women during pregnancy and in the early postpartum period for risk factors associated with PPD ideally leads to earlier intervention and prevention of postpartum depressive episodes. Early screening during pregnancy would not only identify asymptomatic, at-risk women, but could also identify women with subthreshold depressive symptoms. For example, if screening included assessment of antenatal levels of depression and anxiety, women experiencing subthreshold or threshold symptoms during pregnancy could be offered interventions at that point in an effort to lessen exacerbation of symptoms and reduce the risk of a postpartum depressive episode. Likewise, with women who are asymptomatic during pregnancy but have risk factors such as a prior history of depression or marital discord, preventive interventions could be implemented.

One of the primary goals of prevention studies is to identify women who are at risk for PPD. Following the screening process, women deemed to be at high risk are randomly assigned to an intervention or control group. Selection of risk factors included in screening inventories developed for use in high-risk prevention studies have primarily been derived from literature reviews. One way to examine the predictive validity of the screening inventories used to identify high-risk women in prevention studies is to look at the proportion of women in the control group who did not receive the preventive intervention and who subsequently became depressed.

Table 2 shows the prevalence rates of PPD in the no treatment control groups of six high-risk prevention studies. The criteria used to identify women at high risk varied among the studies, as did the assessment times and measures used to assess PPD. Depending on these factors, prevalence rates in untreated high-risk control groups ranged from 10% to 39%. Prevalence rates from four of the six studies were two or three times higher than the average rate of 13%, suggesting that the screening inventories used in those studies were successful in identifying high-risk women. Further refinement and psychometric validation of these screening inventories are warranted.

Table 2

<table>
<thead>
<tr>
<th>Study</th>
<th>Risk Screening Assessment</th>
<th>Postpartum Depression Among Untreated Control Groups in High-Risk Prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bohris and colleagues</td>
<td>One or more of the following:</td>
<td>3.1% SAD, 28.1% 3-month period prevalence</td>
</tr>
<tr>
<td>German</td>
<td></td>
<td>3.6% SAD, 54.3% 6-month period prevalence</td>
</tr>
<tr>
<td>Effler and colleagues</td>
<td></td>
<td>3.3% SAD, 26.0% 6-month period prevalence</td>
</tr>
<tr>
<td>Wexler and colleagues</td>
<td></td>
<td>3.3% SAD, 26.0% 6-month period prevalence</td>
</tr>
<tr>
<td>Sharp and colleagues</td>
<td></td>
<td>1.8% SAD, 28.1% 6-month period prevalence</td>
</tr>
<tr>
<td>Buell and colleagues</td>
<td></td>
<td>1.8% SAD, 28.1% 6-month period prevalence</td>
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Conclusion

Numerous risk factors have been identified for PPD. However, there has been little consistency in how and when these risk factors and PPD are assessed. Moreover, there are almost no studies that have assessed the generalizability of a set of risk factors from one population to another or from one setting to another. As a consequence, there is little empirical basis for the clinician to choose a set of risk factors to use in an antenatal clinic. In an effort to simplify the life of the clinician this article offers three general suggestions. First, it is clear that many of the most potent risk factors reflect current or past depression or anxiety and related constructs (eg, low self-esteem, high levels of neuroticism). Taking some time to address a woman's mental health during pregnancy can pay large dividends. This approach may include asking about any past depression, particularly after childbirth, or...
using simple tools like the EPDS or the PDSS. Second, ask about what kind of help she can expect from her partner, family, and friends after delivery and what might be the consequences if the help is not forthcoming. Finally, ask a woman what concerns she has about her likely adjustment after delivery (and the basis of those concerns). These questions consider some of the key concepts identified earlier and simplify the myriad of risk indices that have been promulgated by clinicians and researchers.

In situations in which the clinician may be concerned about the patient’s adjustment after delivery, several approaches should be considered. If the patient is already depressed or has a history of serious mental illness, the clinician should arrange for a referral to a mental health professional—ideally someone the patient knows and has worked with successfully. If the patient is not currently depressed but has several risk factors for PPD, or is worried about her adjustment after delivery, she should be encouraged to contact the clinician at the first sign of difficulty after delivery. Use of depression screening instruments such as the EPDS can be helpful. In most cases, if the clinician suspects that a patient is depressed in the postpartum period, she should be referred to a mental health professional for further evaluation and possible treatment. Referral relationships with mental health professionals who are comfortable and skilled in working with depressed pregnant and postpartum women should be established by the clinician in advance. PP

References


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Postpartum depression (PPD), also called postnatal depression, is a type of mood disorder associated with childbirth, which can affect both sexes. Symptoms may include extreme sadness, low energy, anxiety, crying episodes, irritability, and changes in sleeping or eating patterns. Onset is typically between one week and one month following childbirth. PPD can also negatively affect the newborn child. In the days after his son was born, Rob Sandler found the thrill of becoming a new father replaced with dark feelings of dread and hopelessness. Those feelings, coupled with sleep deprivation and stress, culminated in a panic attack during his son’s bris. As a group of old friends was saying goodbye after the ceremony, “I had this feeling that they were leaving and I was stuck in this situation that would never get any better,” said Mr. Sandler, a marketing executive in Dallas. “I just felt trapped.” What followed was months of sadness, anxiety and — perhaps most worrisome of all — a feeling Postpartum depression is quite different from typical depression in that the symptoms can manifest into bouts of anger and rage. Kimberly Solo, LICSW has a private practice in Westwood, Massachusetts specializing in treating women with prenatal and postpartum mood disorders says, “Often postpartum depression is typically accompanied by significant irritability and anger. This can manifest into impatience and having a short temper, making it very difficult to deal with the stressors that accompany taking care of a newborn. Postpartum depression is a highly treatable condition that should be addressed with the assistance of a mental health professional. Women should not let these feelings and symptoms linger in hopes they will disappear over time.