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Postpartum Anxiety Prevalence, Predictors and Effects on Child Development: A Review

Tiffany Field

University of Miami, Miller School of Medicine, Fielding Graduate University, California, USA

***Corresponding Author:** Tiffany Field, University of Miami, Miller School of Medicine, Fielding Graduate University, California, USA, Tel: +305243-6781; E-mail: tfield@med.miami.edu

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Abstract

This narrative review of the literature was derived from a search for 2010-2017 publications on postpartum anxiety and postnatal anxiety on the PubMed and PsycINFO databases. Approximately two thirds of the papers are focused on the prevalence/incidence, onset and course of postnatal anxiety. The other third are almost equally distributed across correlates/risk factors and effects/outcomes, and only a few studies are focused on interventions/treatments. Based on the recent literature, the prevalence of postpartum anxiety has widely ranged from 13 to 40%. The demographic risk factors for postnatal anxiety include being a young mother, having more education and being employed. Childbirth risk factors include being primiparous in one sample and multiparous in another, cesarean delivery, fear of the birth and of death during delivery, lack of control during labor, low self-confidence for the delivery and the delivery staff, and premature delivery. Social support problems include the lack of family support, marital/family conflict, and social health issues. Psychiatric history risk factors include prenatal depression and

anxiety. Postnatal anxiety has negative effects on breast-feeding, bonding, mother–infant interactions, and infant temperament, sleep, mental development, health and internalizing behavior and on conduct disorder in adolescents. Unfortunately, only six postnatal anxiety intervention studies could be found including paternal education, music therapy during labor, mothers massaging their infants, cognitive behavior therapy and administering oxytocin.

Keywords: Anxiety; Childbirth risk; Behavior therapy.

1. Postpartum Anxiety Prevalence, Predictors and Effects on Child Development

The literature on the prevalence, predictors and effects of postnatal mood states on child development has primarily focused on postpartum depression. As this body of research has developed, researchers have begun to focus on other mood states that are also prevalent including postpartum anxiety. Postpartum anxiety (also called postnatal anxiety) has been noted as having independent effects just as postpartum depression has had notable independent effects. Significant comorbidity has also been noted between postpartum anxiety and postpartum depression.

The current review of the literature was derived from a search for publications on postpartum anxiety/postnatal anxiety on the PubMed and PsycINFO databases. Inclusion criteria were survey studies, empirical research, narrative and systematic reviews and meta-analyses that were published between 2010 and 2017. Exclusion criteria were underpowered research, case studies and non-English papers. Of the 117 papers found, 73 met criteria and are briefly summarized here. As is representative of the literature, approximately two thirds of the papers are focused on the prevalence/incidence, onset and course of postnatal anxiety. The other third are almost equally distributed across correlates/risk factors and effects/outcomes, and only a few studies are focused on interventions/treatments. This distribution is similar to that noted in a recent meta-analysis on 58 studies on anxiety disorders during pregnancy [1]. Thus, the current review is organized and presented to reflect that distribution, including prevalence, risk factors, effects and interventions.

2. Prevalence

The prevalence of postpartum anxiety has varied according to the definition, the anxiety scale used, the cut-off scores on the scales, the severity of anxiety, the timing of the assessment (postpartum week/month), the recruitment sample (convenience or hospitalized sample) and the origin (country) of research. Although some have viewed postpartum anxiety as being pregnancy–specific anxiety or unique in its etiology and clinical symptoms, others have

considered postpartum anxiety as similar to anxiety that occurs at other non-postpartum times. This lack of consensus was explored in a study on the Depression Anxiety Stress Scale scores of 527 inpatients admitted to a psychiatric mother and baby unit [2]. Based on a factor analysis of these data, the same factor structure on postpartum anxiety symptoms was noted for the factor structure on non-postpartum anxiety symptoms. The authors suggested that their study is consistent with the position that postpartum anxiety symptoms are similar to those that occur at other times. However, because this study was based on women who were hospitalized for postpartum anxiety symptoms, the data may not be generalizable to other postpartum anxiety samples.

Most of the prevalence data samples have been representative of outpatient care facilities and have been presented as scores on various anxiety scales such as The Depression and Anxiety Stress Scale, The Hospital Depression – Anxiety Scale and The State Anxiety Inventory rather than anxiety disorders that were diagnosed based on a structured diagnostic interviews Other scales that have been used less frequently include the Edinburgh Postnatal Depression Scale that has both depression and anxiety factor scores [3] and the Postpartum Worry Scale that was developed specifically to tap postnatal-specific anxiety [4]. Based on the recent literature on these scales, the prevalence of postpartum anxiety has widely ranged from 13 to 40%. As already mentioned, this appears to depend on the type of anxiety assessment (interview versus self-report scale), the scale used, the cut-off score for anxiety, the severity of anxiety, the timing of the assessment (week/month postpartum), and the country of origin.

In the state of Qatar, for example, based on the Depression, Anxiety and Stress Scale, the prevalence of postpartum anxiety was 13% (as compared to 19% for depression and 9% for stress) [5]. This scale was administered in a face–to–face interview of 1659 women. In a randomized controlled trial on different post discharge care models, baseline-in-person interviews during the hospital stay suggested that 17% of 1123 mothers had State Trait Anxiety Inventory scores greater than 40 [6]. Elevated State Trait Anxiety scores occurred more often than elevated depression scores at each assessment (two weeks, two months and six months). In another State Trait Anxiety Inventory study, at one week postpartum 23% of 522 mothers had scores greater than 40 [7]. In still another study using the State Trait Anxiety Inventory, as many as 40% had high anxiety scale scores based on interviews [8]. The greater prevalence in this study may relate to the scale being administered by interviews in which “faking good” (denying symptoms) may be more difficult.

When mothers were interviewed at later times during the postpartum period, the prevalence of postnatal anxiety appeared to be lower. For example, in a study based on a small sample (N=158) and the completion of the Hospital Anxiety and Depression Scale at two months postpartum, 20% of women had severe anxiety symptoms [9]. In a much larger population–based survey of 4366 women who gave birth in Victoria and South Australia, only 13% of women had high anxiety scale scores, but later (at six months postpartum) [10]. When repeated measures have been taken, the decrease in anxiety symptoms has appeared to be even more evident. For example, in a study from Vancouver Canada on 522 postpartum women, the prevalence of anxiety symptoms decreased from 23% at one week to 17% at four weeks and 15% at eight weeks postpartum [7]. And, in a study on 181 couples, the scores on the State–Trait Anxiety Inventory decreased significantly from 3 to 6 months postpartum for both mothers and fathers [11].

A systematic review on 35 prevalence studies from Africa (N=10,880) suggested that depression was the most commonly assessed disorder with a prevalence of 18% postpartum depression, while the prevalence rate for postnatal anxiety from a smaller number of studies was 14% [12]. These rates are roughly equivalent to those from the U.S., suggesting a similar prevalence in different parts of the world. However, most of the prevalence studies have been derived from cross–sectional data based on highly variable anxiety measures. Interestingly, in a meta-analysis that averaged all types of postpartum anxiety disorders including panic disorder, generalized anxiety disorder, obsessive-compulsive disorder, posttraumatic stress disorder and various phobias, the prevalence averaged across these anxiety disorders was only 9% [1]. This meta-analysis was based on as many as 58 studies, but again there was considerable heterogeneity across studies.

The prevalence of comorbid postpartum anxiety and depression has been noted in at least a few samples. For example, in a community sample of 798 women, a significant link was noted between postpartum anxiety disorder and depression as diagnosed according to DSM-IV. Similarly, in a sample of women on a maternity ward in Israel, 40% of postpartum women had high anxiety scores based on the State Trait Anxiety Inventory, and a significant association was noted between postpartum anxiety and depression, although the anxiety scores were almost 50% higher in those who suffered from comorbid postpartum PTSD than those who had comorbid depression [8]. In a much larger population-based survey, 18% of 4451 postpartum women reported postpartum anxiety symptoms. Of these, 35% also reported postpartum depressive symptoms, suggesting an overall incidence of 6.3% comorbid postpartum anxiety and depression.

These prevalence data highlight the importance of screening for postpartum anxiety. Although screening is increasingly common for postpartum depression, the prevalence of postpartum anxiety has only been recently reported, and screening has been less common. Screening would be indicated for postpartum anxiety as well as postpartum depression given that the incidence of postpartum anxiety approximates that of postpartum depression, and given the frequency of comorbid postpartum anxiety and depression. The Depression Anxiety and Stress scales or the combination of the Edinburgh Postnatal Depression Scale and the State Trait Anxiety Inventory have reliably detected postnatal anxiety and depression and could be used for widespread screening of postpartum women via, for example, Survey Monkey or Qualtrics or other anonymous survey engines. The survey itself could then help women self–diagnose and seek treatment on hotlines and other referral sources that could be provided as part of the survey.

3. Correlates/Risk Factors

The correlates/risk factors for postpartum anxiety can be divided into four categories including demographic factors, childbirth experiences, social support and history of psychiatric and psychological problems. The demographic risk factors that have been reported for postpartum anxiety include being a young mother, having more education and being employed. Childbirth experiences include being primiparous in one sample and multiparous in another, having a cesarean delivery, having fear of the birth and having fear of death during delivery, lack of control during labor, less self-confidence for the delivery and less confidence in the delivery staff, having a premature delivery and childcare stress. Social support problems include the lack of family support, marital/family conflict, and social health issues. Psychiatric history problems include prenatal depression and prenatal anxiety as well as comorbid prenatal depression/anxiety. Other psychological problems include difficulty identifying and describing feelings, inappropriate coping, self-blame and denial of reality.

3.1 Demographic factors

In a sample of 1659 women, 13% experienced postpartum anxiety [5]. Of those women, young mothers and those with higher education were more anxious (35% and 68% respectively), and postpartum working women were more anxious (52%), while housewives were more depressed (52%). Mixed findings were reported for parity including primiparity being a risk factor in one study Paul et al. [6] and multiparity in another study Dennis et al. [7]. Those inconsistent data are difficult to interpret.

3.2 Childbirth experiences

Several experiences around the birth have been related to postpartum anxiety including the type of delivery and the fears surrounding the birth process. In one study, elevated State-Trait Anxiety scores were associated with cesarean versus natural delivery (22% versus 15%) [6], and in another study, postpartum anxiety, depression and stress were associated with cesarean delivery [23].The cesarean sections may have been indicated, as suggested by premature delivery (at less than 27 weeks) being related to postpartum anxiety in still another sample. In a much larger sample (N= 4657), the type of delivery was not related to anxiety symptoms, but a negative perception of the birth experience was associated with postpartum anxiety (but not with depression symptoms) at an eight month follow-up assessment postpartum. The authors concluded that improving a woman's childbirth experience may decrease the likelihood of postpartum anxiety but not postpartum depression. Several other factors were related to high anxiety scores including fear of the birth, fear of death during delivery (mother and fetus), feeling lack of control during labor and less self-confidence and less confidence in the medical staff [8]. In that study on Israeli women, of those who developed postpartum anxiety, 75% reported feeling anger, fear or emotional detachment during childbirth. However, anxiety was, surprisingly, not related to obstetric or birth complications.

3.3 Family support

Studies in socioeconomically depressed countries have reported relationships between anxiety symptoms and lack of social support. For example, in a study in Mexico City in which women were seen at six weeks and 4-6 months postpartum, lack of social support was related to postpartum anxiety at six weeks, and lack of social support and lack of a partner were related to postpartum anxiety at 4 to 6 months [13]. In a sample of 1659 mothers, the Depression Anxiety Stress Scales were used Bener et al [5]. Unplanned pregnancy was a significant correlate for postpartum depression, while a lack of family support was a significant correlate for postpartum anxiety. In a systematic review of 35 studies on 10,880 postpartum women in Africa, lack of support and marital/family conflict were related to postpartum anxiety, whereas the relationships between postpartum anxiety and sociodemographic and obstetric variables were inconclusive [12]. Again, surprisingly, obstetric complications were not related to postpartum anxiety.

3.4 History of psychiatric and psychological problems

Psychiatric history problems, most especially prenatal anxiety, has been an independent predictor of postpartum anxiety in several studies. For example, in a sequential logistic regression, history of psychiatric problems was a significant predictor of anxiety symptoms on the State–Trait Anxiety Inventory (score >40) at eight weeks in a sample of 522 women Dennis et al. [7]. Multiparous women with a psychiatric history and high levels of diverse stress symptoms were at the greatest risk for postpartum anxiety. Prenatal anxiety symptoms have predicted postpartum anxiety as well as postpartum depression at six weeks and at 4-6 months in a sample of 156 women [13]. A complex set of findings in an extremely large sample (N=42,225) of women in Norway suggested that prenatal anxiety and depression were related to breast-feeding cessation, and breast-feeding cessation, in turn, was predictive of an increase in postpartum anxiety and depression [14].

Lesser psychological problems have also been associated with postpartum anxiety. For example, difficulty describing feelings at 18–20 weeks gestation has been related to an increase in postpartum anxiety (STAI scores) by three months postpartum, and difficulty identifying feelings prenatally led to a significant increase in anxiety by 12 months postpartum [15]. In a study based on the Hospital Anxiety and Depression–Anxiety Subscale, 20% of women had severe anxiety symptoms after birth [9]. And, the anxious women had more inappropriate coping and less adaptive coping responses including self–blame and denial of reality which, in turn, may have accounted for the persistent postpartum anxiety noted in that study. In a population–based survey of 4,366 women in Victoria and South Australia, 13% scored above the normal range on the Depression, Anxiety and Stress Scales for anxiety with 38% reporting one to two social health issues and 9% reporting three or more social health issues [10]. The women who reported three or more social health issues were significantly more likely to experience postnatal anxiety, depression and/or comorbid anxiety and depression.

These studies considered history of psychiatric and psychological problems as predating the postpartum period because they had been documented during pregnancy. However, it is also possible that the history of these problems preceded pregnancy, suggesting chronicity of the anxiety symptoms. Comorbidity was likely more common than reported. And, other emotions like anger could have also exacerbated the postpartum depression, although anger was only reported in one of the studies reviewed here [8]. In that study, 75% of the women reported feeling angry. Paternal anxiety may have also exacerbated the effects of maternal postpartum anxiety, although postpartum anxiety symptoms were only studied in fathers by one group in this review [15]. The above correlates/risk factors for postpartum anxiety might be combined with the prenatal anxiety and depression scales to develop a more

comprehensive screening measure for identifying women who may have postpartum anxiety. This, in turn, would facilitate the design of preventive intervention programs that may reduce the incidence of postpartum anxiety and the negative developmental effects on the offspring of parents with postpartum anxiety.

4. Developmental Effects

Several negative developmental effects have been noted to follow postpartum anxiety. In the literature reviewed here, these include negative effects on breast-feeding, on bonding and on mother–infant interactions, on infant temperament and sleep, on mental development, health and internalizing in infants and on conduct disorder in adolescents. These developmental effects studies are more often based on structured clinical interviews and behavior observations, unlike the risk factor studies that were typically surveys based on self-report scales.

4.1 Breast feeding

In a systematic review, 33 studies on postpartum anxiety and breastfeeding met selection criteria [16]. In some studies, women with postpartum anxiety were less likely to initiate breast-feeding and more often used formula during their hospitalization. Those women with postpartum anxiety who breast-fed had greater breast-feeding difficulties, and the composition of their breast milk may have been affected. They were also more likely to terminate breast-feeding earlier. As in most systematic reviews and meta-analyses, the authors experienced methodological constraints due to the lack of comparability of methods and findings across studies.

4.2 Bonding and mother-infant interactions

In a German sample of 78 mother–infant dyads, 30 mothers had postpartum anxiety disorders without depression based on the Structured Clinical Interview for DSM-IV Disorders conducted at four months infant age [17]. The mothers were also given the German version of the Edinburgh Postnatal Depression Scale and the Postpartum Questionnaire. The mothers with postpartum anxiety disorder reported less bonding to their infants. A significant amount of the variance in bonding was explained by sub-clinical depression symptoms and avoidance of anxiety–related situations, highlighting the need to target even women with mild symptoms of depression and avoidance behavior.

In an experimental paradigm, mothers with anxiety disorder, depression or no disorder and their 10-month-old infants were randomly assigned to a worry/rumination prime or a neutral prime group [18]. As compared to the

neutral prime the worry/rumination prime had a negative effect on the postpartum anxiety mothers' responsivity to their infants' vocalizations during their interactions (and to a lesser degree for the depressed mothers). Their infants, in turn, showed less emotional tone and greater withdrawal.

4.3 Infant temperament

Infant temperament appears to be negatively affected by postpartum anxiety at least across the first year of life. In a survey of 296 mothers of newborns that was taken during the first postpartum month, the mothers' ratings of infant temperament were assessed by the Early Infancy Temperament Questionnaire and the mothers' anxiety was rated on the State Trait Anxiety Inventory [19]. The scores on the State Trait Anxiety Inventory were positively correlated with the mothers' ratings of infant activity, rhythmicity, approach, distractibility, adaptability, intensity and the global rating of temperament. In a regression analysis that controlled for other variables, the overall difficult temperament rating was independently associated with both state anxiety and depression. In a similar study, the mothers' anxiety was measured during the first few days after childbirth, and infant temperament was assessed at eight weeks post-delivery [20]. Data analysis suggested that the mothers' postpartum anxiety post-delivery was the best predictor for most of the infant temperament variables including infant irritability as well as breast-feeding difficulty.

In an experimental stress condition, mothers diagnosed with DSM-IV anxiety disorder (N=44) were compared to those without the disorder (N=38) during the still–face paradigm (the mother going still-face during an interaction with her infant) [21]. The infants' distress was measured by both their cortisol reactivity and their behavioral distress during the still–face. The infants' cortisol reactivity and behavioral distress were correlated with their mothers' ratings of their infants' temperament on the Infant Behavior Questionnaire. Infant temperament was most highly related to the mothers' avoidance ratings on the anxiety scale.

Surprisingly, relationships between maternal depression and infant temperament were not reported in these studies given that postpartum depression has been related to infant temperament in previous studies See Ref [22], for a review). Most likely, many of these mothers had comorbid depression and anxiety. And, paternal anxiety and depression were not assessed, although they would be expected to exacerbate the mothers' anxiety.

Infant/child health problems, mental development and internalizing/externalizing behaviors

In one study, postpartum anxiety was related to infant health problems at four–six months postpartum while infant sleep problems were related to postpartum depression [23]. The postpartum anxiety tended to persist when mothers had experienced a cesarean delivery and had sleep problems and when their infants had health problems.

In a study from India, 420 women were enrolled during the perinatal period and the mothers' anxiety and depression were assessed across the first 30 months following childbirth using anxiety and depression scales based on DSM-IV criteria [24]. The infants' development was assessed on the Early Childhood Development Scale including social emotional, language, cognitive, gross motor and fine motor development. Significant associations were noted between postpartum anxiety and depression with delayed development on all five of the early childhood development scales.

In a path analysis model, the relative contributions of prenatal and postnatal anxiety and depression to internalizing/externalizing behaviors were examined in a sample of 3,298 mother –infant pairs both at 32 weeks prenatally and 1.5 years postpartum [25]. Maternal anxiety appeared to be more specific to internalizing behaviors of the infant.

In a sample of 577 women, logistic regression models suggested that exposure to prenatal depression was associated with lower anxiety symptoms in male offspring [26]. In contrast, male offspring who were exposed to medium and high prenatal and postnatal anxiety had greater odds of conduct disorder than males with low exposure levels. Curiously, females exposed to medium or high prenatal and postnatal anxiety were less likely to have conduct disorder than females with low exposure. These findings were difficult to interpret.

These developmental effects of postnatal anxiety only appear in a relatively recent literature, likely because they went unmeasured along with postnatal depression. Screening is still predominantly focused on postnatal depression, maybe because postpartum depression is more apparent or because postpartum anxiety might be expected in primiparous women because of the novelty, uncertainty and difficulties of being a first-time mother or in multiparous women because they have overwhelmin caregiving responsibilities for earlier-born children. Nonetheless, the postnatal anxiety effects on the offspring's development are sufficiently severe and long-term that screening and preventive interventions are warranted.

5. Interventions

Unfortunately, only six postpartum anxiety intervention studies could be found in the literature. These included a study that was conducted prenatally on education and support to reduce paternal postpartum anxiety, a study on music therapy during labor to reduce postpartum anxiety in mothers, a study involving mothers massaging their infants to reduce their postpartum anxiety, two studies on cognitive behavior therapy and a study that suggests that administering oxytocin can reduce postpartum anxiety.

Although most of the literature has focused on maternal anxiety and depression, paternal depression and anxiety also occurs especially comorbidly with maternal depression and anxiety. Australian fathers were given a prenatal education program that was repeated at six weeks postpartum [27]. The aim of this study was to increase the initiation and duration of breast-feeding. Based on the Hospital Anxiety and Depression Scale, the intervention group fathers as opposed to the control group fathers experienced less postpartum anxiety. It is not clear however whether self-selection factors confounded these results given the lack of random assignment to groups.

In a randomized controlled study, 161 primiparous women listened to self–selected music during labor or no music [28]. Mothers in the music group not only had lower postpartum pain but also less anxiety than the control group. Massaging infants has also helped lower anxiety in postpartum women [29]. In this study, 40 mothers were randomly assigned to a group who massaged their infants versus a group who only observed their infants being massaged. Although both groups had lower depression scores following the session, only the group who massaged their infants had lower anxiety scores at the end of the session. Although this study suggests only immediate reduction of postpartum anxiety following massaging infants, repeated massage sessions would be expected to lead to longer-term effects on postnatal anxiety as they have for postpartum depression [30].

Surprisingly, only two psychotherapy studies were found in this literature, and they were small, uncontrolled pilot studies [31, 32]. Although their findings suggested that cognitive behavior therapy was effective for treating postpartum anxiety, larger more controlled, randomized studies are needed.

Several animal and human studies have reported the reduction of postpartum anxiety by oxytocin release [33]. Although oxytocin has been called the “love hormone”, the underlying mechanisms for its effects are not yet known.

The data, nonetheless, suggest that intranasal administration of oxytocin might be used as a preventive intervention for those who have shown prenatal anxiety to prevent postpartum anxiety.

6. Limitations and Future Directions

This review and other previous reviews Goodman et al. [1] highlight the need for further development and greater use of screening measures for identifying women with postpartum anxiety as well as interventions for preventing and, at the very least, reducing postpartum anxiety. To better inform the screening and prevention/intervention protocols, more robust research is needed. Many of the studies featured small sample sizes including some without power analysis. In several of the large sample size studies results were reported from single measures, and those typically involved self-report scales, as might be expected because of the large sample sizes. Self-report scales notably have problems including recall bias and "faking good" or denying symptoms. As was noted above, postpartum anxiety prevalence rates were greater when diagnostic interviews were conducted as compared to self-reports likely because denying symptoms was more difficult.

With respect to postpartum anxiety prevalence, which was addressed by most of the studies in this review, the variability of the studies has made it difficult to determine average prevalence. The studies have varied on recruitment strategies, on heterogeneity of the samples, on the assessment methods, and the timing of assessments. The large sample survey studies were typically more heterogeneous on their demographics, making them more generalizable to the population of postpartum women, although they were based on self–reports. The assessments have typically been limited to standardized anxiety measures which is controversial. Not only are they less likely to identify women with different types of anxiety (e.g. generalized anxiety disorder or posttraumatic stress disorder, etc.), but also it has not been clear if postpartum anxiety is a specific form of anxiety that needs a specific measure, as some have suggested. Reputedly no scales have been developed that relate specifically to postpartum anxiety [34]. It is also difficult to determine from the anxiety scales whether prenatal anxiety preceded postpartum anxiety and whether postpartum anxiety is a recurrence of anxiety episodes that preceded pregnancy as in chronic anxiety.

The screening assessments clearly need to be broadened to include many of the risk factors that have been identified in this literature including demographics such as the more educated working woman being more likely to have postpartum anxiety, the childbirth experiences and fears variables, the family support variable, the history of anxiety and other psychological problems and the comorbidity, for example, with depression. Future research also needs to

include these risk factors in path analysis or profile analysis models to determine the relative contributions of these variables.

The variability in even the self-report scales used in the studies has made it difficult to conduct systematic reviews or meta-analyses. Even a systematic review of 31 studies was inconclusive because of the variability on the assessments along with the variability on several other features of the studies [35]. Meta-analyses have been infrequently performed for the same reasons. And, those have their own limitations including giving more weight to some studies than to others and averaging effect sizes on studies that vary in methodological rigor.

The timing of assessments is a critical variable as evidenced by the different prevalence rates across studies that varied on the timing of assessment. Only one prospective longitudinal study in this literature search highlighted the importance of tracking changes in postpartum anxiety over time. Screening too early in the postpartum period may yield many false positives related to delivery anxiety and exhaustion, and screening too late in the postpartum period may miss those cases that have already resolved.

Given the extent of the developmental effects following postpartum anxiety including effects on breast-feeding, mother–infant interactions, infant temperament and child health, mental development and internalizing/externalizing problems as late as adolescence, it is surprising that very few interventions have been studied. Postpartum anxiety may be masked by postpartum depression, it may be less noticeable and less expected especially for primiparous mothers who might be assumed to be experiencing parenting stress rather than postpartum anxiety. And, postpartum anxiety women are notably less likely than postpartum depressed women to seek professional help [36].

As has been noted, most postpartum women are aware of potential negative effects of medications on breastmilk, for example, and reputedly prefer alternative therapies [36]. Only six alternative therapy studies could be found in this literature review including father education, music therapy, massage therapy and cognitive behavior therapy. But these were small sample studies that need to be replicated in larger sample, randomized controlled trials. Without more evidence-based studies, professionals who typically see postpartum women, for example, obstetricians/gynecologists and pediatricians, are less likely to prescribe and make referrals. And, certainly, insurance companies are less likely to provide coverage. Several alternative therapies that have been effective with prenatally and postpartum depressed women might be studied in women with postpartum anxiety including, for example, self-massage, massage by partners, yoga and tai chi. This postpartum anxiety research, as in the history of

research on most conditions, has proceeded from prevalence to risk factors to follow-up effects to interventions, as is represented in this review. The high prevalence, significant risk factors, and negative developmental effects of postpartum anxiety highlight the need most especially for preventive intervention research.

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