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Research paper

Prevalence and risk factors for comorbid postpartum depressive symptomatology and anxiety

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ABSTRACT

Background: To date, little is known about the prevalence and risk factors for comorbid postpartum depression and anxiety. The aims of this study were to estimate the prevalence of comorbid depressive symptomatology and anxiety during the first 8 weeks postpartum and to identify risk factors.

Methods: As part of a longitudinal study conducted in a health region near Vancouver, British Columbia, a sample of 522 women completed mailed questionnaires at 1, 4, and 8 weeks postpartum. The presence of comorbid postpartum depressive symptomatology and anxiety was defined as having an Edinburgh Postnatal Depression Scale (EPDS) score of ≥ 10 and a State Trait Anxiety Inventory (STAI)-state anxiety score of ≥ 40 at the same time point. Risk factors associated with comorbidity were examined using generalized estimating equations (GEE).

Results: The prevalence of comorbid depressive symptomatology and anxiety was 13.1% during the first 8 weeks postpartum. In multivariable analysis, immigration within past 5 years (adjusted odds ratio (AOR)=8.03, 95% CI 3.43–18.77), maternal vulnerable personality (AOR=1.42, 95% CI 1.02–1.97 for 1 SD increase), child care stress (AOR=1.66, 95% CI 1.18–2.35 for 1 SD increase) and perceived stress (AOR=3.00, 95% CI 2.01–4.47 for 1 SD increase) predicted a higher risk of comorbidity. Conversely, high breastfeeding self-efficacy (AOR=0.66, 95% CI 0.49–0.88 for 1 SD increase), maternal self-esteem (AOR=0.66, 95% CI 0.45–0.97 for 1 SD increase), and partner support (AOR=0.73, 95% CI 0.55–0.98 for 1 SD increase) were associated with a lower risk of developing comorbidity.

Limitation: In this study, women who were single or from non-Caucasian ethnic groups were under-represented.

Conclusions: Comorbid postpartum depressive symptomatology and anxiety is a common condition with little known about risk factors. Additional research is warranted to develop strategies to reliably identify women with this comorbid condition and to determine effective treatment options.

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1. Introduction

Maternal mental health difficulties during the early postpartum period are major public health issues due to the ever-growing evidence of the negative impacts on children's cognitive, behavioral, and emotional development (Muzik and Borovska, 2010). Approximately 10–13% of women experience postpartum depression (Leahy-Warren et al., 2011) and among these mothers 20–60% also experience comorbid anxiety (Miller et al., 2015; Reck et al., 2008; Tavares et al., 2012b). Despite significant co-morbidity between postpartum depression and anxiety, a few studies have been conducted to determine the prevalence of comorbidity. Among these studies the prevalence ranged from 2% to 13% (Adewuya and Afolabi, 2005; Austin et al., 2010; Giakoumaki et al., 2009; Miller et al., 2015; Reck et al., 2008; Tavares et al., 2012a).

Similarly, risk factors for postpartum depression have been frequently examined. The results of meta-analyses suggest that antenatal anxiety, antenatal depression, history of depression, childcare stress, stressful life events, poor social support, marital conflict, single marital status, and unplanned/unwanted pregnancy increase the likelihood of postpartum depression (Beck, 2001; Robertson et al., 2004). While risk factors for postpartum anxiety have been less frequently examined. There is some evidence to suggest factors that place a mother at increased risk of postpartum anxiety. These risk factors include stress during pregnancy, smoking, primiparity, negative childbirth experience, infant born ≤ 27 weeks gestation, and infant admitted to the NICU (Farr et al., 2014; Giakoumaki et al., 2009).

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To date, risk factors for comorbidity remain relatively unknown. Only one study examined risk factors for co-morbidity in 4451 American women and found stressors during pregnancy, delivering an infant at ≤ 27 weeks gestation, and smoking throughout pregnancy increase the risk of postpartum comorbid depression and anxiety (Farr et al., 2014). The purpose of the current study was to estimate the prevalence of comorbid depressive symptomatology and anxiety during the first 8 weeks postpartum and to identify risk factors.

2. Methods

2.1. Participants and procedures

Participants completed questionnaires as part of a longitudinal study conducted in a health region near Vancouver, British Columbia from April 2001 to January 2002 (Dennis et al., 2004). Eligible women, who were at least 18 years and able to understand English, were recruited after receiving approval from the university ethics committee and study authorization from the participating health region. In order to recruit a representative sample of pregnant women or women who had recently delivered, participating family physician, obstetrician, and midwifery offices recruited women at more than 32 weeks pregnant and public health nurses recruited new mothers during the standard 48 h post-hospital discharge. All participants were subsequently mailed the same questionnaires at 1, 4, and 8 weeks postpartum. Reminder telephone calls were provided to women who did not return their questionnaires within 2 weeks of mailing.

2.2. Outcome

Comorbid depressive symptomatology and anxiety at 1, 4, and 8 weeks postpartum was defined as having an Edinburgh Postnatal Depression Scale (EPDS) score ≥ 10 and a Spielberger State Anxiety Inventory (STAI-State) score ≥ 40 at the same time point (e.g. score above cutoff for both depressive symptomatology and anxiety for week 1). The EPDS is a 10-item self-report instrument where items are rated on a 4-point scale to produce a summative score ranging from 0 to 30, with higher scores indicating higher levels of depressive symptomatology. The EPDS has been suggested as a reliable tool for screening depression during pregnancy and postpartum using a cutoff value of 10 (Bergink et al., 2011; Hanusa et al., 2008). The STAI-State (Spielberger et al., 1970) is a 20-item self-report instrument where items are rated on a 4-point Likert scale to produce a summative score ranging from 20 to 80, with higher scores indicating higher levels of anxiety. A study showed that a cutoff value of >40 has a sensitivity of 80.9% and specificity of 79.7% (Grant et al., 2008).

2.3. Predictors

Predictors were assessed at 1 week and 4 weeks postpartum and included: maternal age, level of education, marital status, ethnicity, ability to manage with income (easy, difficult), housing suitability (suitable, not suitable), immigration within past five years, frequency of exercise during pregnancy, parity, type of delivery (vaginal, caesarean), ready to discharge from hospital after delivery (yes, no), breastfeeding status (yes, no), satisfaction with breastfeeding progress (well, satisfactory, not well, terrible), number of times used help from a health professional, number of medical problems, number of obstetrical problems, history of maternal psychiatric problems, mother and husband coping with pregnancy (definitely, sometimes, not at all), worry about returning to work after pregnancy (no, sometimes, yes), and boss or work environment supportive of the pregnancy (all the time, sometimes, not at all).

Maternal confidence in breastfeeding at 1 week and 4 weeks postpartum was assessed using the 14-item Breastfeeding Self-Efficacy Scale-Short Form (Dennis, 2003a). The score ranges from 14 to 70. Cronbach's alpha of 0.94 was reported for the instrument reliability (Dennis, 2003a). Maternal personality trait at 4 weeks postpartum was assessed using the Vulnerable Personality Style Questionnaire (Boyce et al., 2001). It is a 9-item instrument developed to assess personality traits. Maternal self-esteem at 4 weeks postpartum was assessed using Rosenberg's Self-Esteem Scale (Rosenberg, 1989). It is a 10-item Likert-type scale with items answered on a 4-point scale from strongly agree to strongly disagree. Maternal perceptions of global support at 1 week postpartum was measured using the 24-item Social Provisions Scale (Cutrona and Russell, 1987). This self-reported scale assesses how individuals perceive that they have adequate social support. The scale consists of 4-point Likert-type items answered on a scale from strongly disagree to strongly agree.

The 30-item Social Provisions Checklist was used to assess relationship-specific social support and conflict at 1 week postpartum (Davis et al., 1998). Items were rated on a 5-point Likert-type scale. Total score ranges from 30 to 150, with higher scores indicating higher perceived support related to a specific relationship. This questionnaire was completed separately for the four following relationships: partner, mother, mother-in-law, and other women with children. The Postpartum Partner Support Scale, a 24-item self-report instrument (Dennis and Ross, 2006), was used to assess partner postpartum-specific support at 4 weeks postpartum. Items were rated on a 4-point Likert-type scale to produce a total score ranging from 24 to 96, with higher scores indicating higher levels of postpartum partner support.

The Antenatal Psychosocial Health Assessment (ALPHA) (Reid et al., 1998) form was used to assess the psychosocial health of women. In this study, the 14 questions related to substance use and family violence were included. Perceived stress was assessed at 1 week postpartum using 10-item Perceived Stress Scale (Taylor, 2015). The instrument is commonly used for measuring perception of stress in a participant's life situations that are stressful or appraised. Each item was rated on a 5-point scale to produce a sum score ranging from 0 to 40. Child Care Stress Checklist, a 23-item, was used to assess stress related to child care such as problems with feeding the baby at 4 weeks postpartum (Dennis, 2003b). Items need a yes-no response with higher scores suggesting higher levels of childcare stress. The instrument has good reliability, with a Cronbach's alpha of 0.81 (Dennis, 2003b). Finally, a 25-item life-events checklist based on the Tennant and Andrews's life-events scale (Tennant and Andrews, 1976) was used to assess stressors in the past 12 months.

2.4. Statistical analysis

Since we did not measure continuous predictors in the same scale, in order to determine the relative importance of continuous predictors, we divided continuous variables by their standard deviation to get an odds ratio for 1 standard deviation (SD) increase in the predictors. Since measures for depressive symptomatology and anxiety for each participant were available at 1, 4, and 8 weeks postpartum, we estimated the association between different predictors and comorbid depressive symptomatology and anxiety using generalized estimating equations (GEE) (Hanley et al., 2003). We specified the link function as "logit", family as “binomial” and correlation as “exchangeable”. We used robust variance estimator. The univariable analyses were conducted among women who had no missing data on a single variable. Due to a lack of sufficient statistical power, we first conducted

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