Research paper

The effects of trauma on perinatal depression: Examining trajectories of depression from pregnancy through 24 months postpartum in an at-risk population

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ABSTRACT

Background: Research suggests that trauma exposure is associated with perinatal depression; however, little is known about the nature of the relation between trauma history and trajectory of depression, as well as the predictive power of trauma history beyond other risk factors. Additionally, more research is needed in at-risk samples that are likely to experience severe traumatic exposure.
Methods: Secondary data analysis was conducted using demographic and depression data from the Healthy Start and Empowerment Family Support programs in Des Moines, Iowa. Hierarchical linear modeling was used to examine trajectories of perinatal depressive symptoms, from pregnancy to 24 months postpartum, and clarify whether trauma exposure, relationship status, and substance use uniquely contribute to trajectories of symptoms over time.
Results: On average, depressive symptoms decreased from pregnancy to 24 months postpartum; however, trajectories varied across women. Single relationship status, substance use, and trauma history were each predictors of higher depression levels at several points in time across the observed perinatal period. Single relationship status was also associated with decline in depressive symptoms followed by a rebound of symptoms at 22 months postpartum.
Limitations: These data were not collected for research purposes and thus did not undergo the rigorous data collection strategies typically implemented in an established research study.
Conclusions: History of trauma, substance use and single relationship status represent unique risk factors for perinatal depression. For single women, depressive symptoms rebound late in the postpartum period. Single women are at greater risk for substance use and traumatic exposure and represent a sample with cumulative risk. Eliciting social support may be an important intervention for women presenting with these risk factors.

1. Introduction

Perinatal depression (i.e., depression that occurs during pregnancy and/or the postpartum period) is an impactful disorder that not only affects a mother, but also her new infant and the larger family system (Pearlstei et al., 2009). Researchers have estimated that around 10% of women meet criteria for depression during pregnancy (Melville et al., 2010), and around 7–12% of women meet criteria for depression during the postpartum period (Gavin et al., 2005). Sociodemographic variables such as low income and younger age, perinatal complications, psychiatric history, and life stress are robust predictors of perinatal depression (Norhayati et al., 2015; O'Hara and McCabe, 2013; Segre, O'Hara,

Arndt, and Stuart, 2007). Recent research suggests that exposure to traumatic events also increases the risk for perinatal depression (Alvarez-Segura et al., 2014; Brock et al., 2015; Dailey et al., 2008; Howard et al., 2013); however, research on the nature of the relation between trauma exposure and perinatal depression is limited. The principal goal of the present study was to examine trajectories of depressive symptoms from pregnancy to 24 months postpartum in a large sample of women with low socioeconomic status (SES), and to examine the impact of recent trauma history (trauma exposure within the previous year from enrollment) on those trajectories while simultaneously considering other risk factors salient in low income populations (i.e., substance use and single relationship status).

1.1. Trauma and perinatal depression

Research has established an association between history of trauma and mental health problems in pregnant and postpartum women. Studies have shown that childbearing women with a history of trauma endorse higher levels of psychological symptoms, report greater health problems and practice poorer health behaviors during both pregnancy and the postpartum period than women without a history of trauma (Dailey et al., 2008; Mezey et al., 2005). Two recent reviews (Alvarez-Segura et al., 2014; Howard et al., 2013) document the significant and large association between trauma exposure and perinatal depression. In their meta-analysis evaluating the association between domestic violence (DV) and perinatal mood disorders, Howard et al. found that women with depression during pregnancy or the postpartum period were three to five times more likely to have experienced DV than women without depression. More broadly, Alvarez-Segura et al. showed that any incidence of abuse across the lifetime was significantly associated with depression during the perinatal period.

The impact of trauma exposure extends beyond perinatal depression and includes other negative consequences such as poor health behaviors during pregnancy and poor infant outcomes (Dailey et al., 2008; Martin et al., 2006). Furthermore, populations that are at greater sociodemographic risk because of low income also are at higher risk for trauma exposure (Breslau et al., 1998; Hatch and Dohrenwend, 2007; Turner and Avison, 2003). Thus, particular attention to at-risk samples is necessary to fully understand the adverse impact of trauma on perinatal mental health.

Though the existing literature emphasizes the strong association between traumatic exposure and perinatal mental health, it has yet to evaluate whether traumatic exposure predicts the *course* of depressive symptoms during pregnancy and throughout the postpartum period. Additionally, traumatic exposure is often evaluated independently without examining its predictive power above and beyond other well-established risk factors, such as single relationship status and substance use (Poehlmann et al., 2009; Vasa et al., 2014). Single relationship status and substance use have consistently been shown to be associated with and predictive of depression both during pregnancy and in the postpartum period (Sidebottom et al., 2014). Additionally, these psychosocial characteristics and health behaviors are prevalent in low-income communities such as the current sample. Therefore, these variables co-occur and are important to examine together, rather than independently. Lastly, trauma exposure is often confined to physical and sexual abuse and though these are traumatic experiences, it is important to broaden the type of trauma that is evaluated (Dailey et al., 2008).

1.2. Trajectories of perinatal depression

The evidence summarized above suggests that there is an association between trauma history and levels of depression at certain points in time during the perinatal period, but few studies have examined how trauma contributes to *developmental trajectories* of depression over time. In order to optimally explain the long-term, pervasive impact of trauma exposure on perinatal depression, it is critical to first understand the typical course of depression during this unique life transition. Across community samples, researchers have found that, on average, maternal depressive symptoms decrease from pregnancy into the postpartum period (Brock et al., 2015; Diaz et al., 2007; Smith and Howard, 2008; Whisman et al., 2011). Latent class analyses (LCA) have also been employed to identify distinct classes of perinatal depression trajectories in both community (Luoma et al., 2015; Sutter-Dallay et al., 2012) and at-risk samples (Christensen et al., 2011; Poehlmann et al., 2009). Several distinct patterns of change in depressive symptoms have been identified, primarily: never elevated, post or antepartum (i.e., during pregnancy) elevation, and chronic elevation. These results highlight the quantifiable differences in patterns of change in depressive symptoms

across the perinatal period, and suggest that women might experience unique trajectories of symptoms as a function of various intrapersonal, interpersonal, or contextual factors. Consequently, research isolating risk factors for maladaptive symptom trajectories (i.e., elevated and/or escalating symptoms), such as trauma, is important for identifying women who are at-risk for experiencing a sustained or even escalating course of postpartum depression, rather than the natural recovery that women typically experience (Brock et al., 2015; Diaz et al., 2007; Smith and Howard, 2008; Whisman et al., 2011).

Poehlmann et al. (2009) demonstrated the impact of *cumulative* sociodemographic and obstetric risk factors (excluding trauma) on trajectories of perinatal depression using multilevel models (MLM) with a sample of mothers of preterm infants. Notably, by implementing MLM, Poehlmann et al. were able to conduct a relatively fine-grained analysis of depression trajectories, and link a range of risk factors to the long-term course of perinatal depression. MLM not only models the average trajectory of symptoms over time to identify global trends, but also captures between-subject variability in trajectories facilitating explanations for varying patterns of change in symptoms over time. Results demonstrated that women who were experiencing an accumulation of risks (e.g., low income, younger age, less education, single relationship status, more children at home) showed less decline in depressive symptoms during the postpartum period. This research is important because it demonstrates that numerous risk factors do indeed have a quantifiable impact on the time course of depressive symptoms during the perinatal period.

1.3. The present study

Existing literature addresses the general course of depression over the perinatal period, and the deleterious impact of traumatic exposure on maternal mental health during pregnancy and the postpartum period. Although these areas of literature are related, they have yet to be integrated, limiting our understanding of whether trauma functions as a risk factor for *subsequent* depressive symptoms and differing trajectories of perinatal depression over time. Further, multi-wave longitudinal designs spanning multiple years are warranted to examine the effects of trauma on the *progression* of symptoms. Additionally, the course and risk of depression in low SES populations remains unclear. Research is needed to understand the course of perinatal depression in women exposed to risk factors that may be of greater magnitude and severity due to the limited resources and greater adversity often experienced by low SES populations (Adler and Newman, 2002; Rojas-Garcia et al., 2015). The present study aimed to examine the incremental predictive utility of trauma, beyond other well-established risk factors, for explaining trajectories of depression from pregnancy to 24 months postpartum in a sample of 1216 low SES mothers enrolled in the Healthy Start and Empowerment Family Support programs in Des Moines, Iowa (see Fig. 1).

There were three primary aims of the present study. The first aim was to examine the average course of depression from pregnancy through two years postpartum across a sample of at-risk women, without considering variables that may differentiate trajectories across women. We predicted that depressive symptoms would decrease from pregnancy through the first postpartum year, but would rebound around toddlerhood (e.g., 18–24 months postpartum). Other studies have found this rebound effect, specifically in at-risk women (Poehlmann et al., 2009). We anticipated that between-subject variability would be explained, in part, by the risk factors under investigation, examined in the following aims.

The second aim was to examine trauma exposure, occurring within the year prior to a woman's intake appointment in the Healthy Start Program, as a risk factor for a rebound effect of depressive symptoms. We predicted that women reporting trauma during the year prior to their intake at Healthy Start would experience a decrease in depressive symptoms until approximately 18 months postpartum, and then a