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## Delusional ideation during the perinatal period in a community sample

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### ABSTRACT

**Background:** Despite the prevalence of mental health problems during the perinatal period, little research has examined psychotic symptoms in a community sample across pregnancy and the postpartum. Exposure to environmental risk factors, and immigration in particular, are associated with increased risk for psychotic disorders. The current investigation examined whether psychosocial risk and immigrant status would predict levels of delusional ideation across the perinatal period when controlling for depression, anxiety, and demographic factors.

**Methods:** A community sample of 316 pregnant women was assessed at 12–14 and 32–34 weeks gestation during routine clinic visits, and at 7–9 weeks postpartum during a home visit. Measures included self-report ratings of psychosocial risk (e.g., history of mental health problems or abuse, stressful life events, lack of social support), pregnancy-related anxiety, depressive symptomatology, and delusional ideation.

**Results:** There was less delusional ideation during the postpartum period than during early pregnancy. Across all time points, levels of delusional ideation were lower than in the general population. Analyses using multilevel modeling indicated significant fixed-effects for the variables time, age, partnership, being religious and prenatal anxiety, but not depressive symptomatology, on delusional ideation. Immigrant status moderated the effect of psychosocial risk such that greater psychosocial risk predicted more symptoms of delusional ideation among immigrants, but not non-immigrants.

**Conclusion:** Psychosocial risk factors place immigrant women at an increased likelihood for experiencing delusional ideation during the perinatal period.

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### 1. Introduction

Subclinical levels of psychotic symptoms such as delusional ideation are common in the general population (Freeman, 2006) and may confer risk for the development of psychotic disorders, contingent upon the level of exposure to environmental risk factors (van Os et al., 2009). Yet there is a dearth of research examining psychotic symptoms among women during the perinatal period, despite the prevalence of mental health problems during this time and their negative impact on maternal functioning and child development (O'Hara and Wisner, 2014). Indeed, postpartum psychosis is associated with an increased risk of maternal suicide, neglect, and infanticide (Sit et al., 2006). Moreover, the content of postpartum delusions has been shown to predict

the quality of mother-infant interaction, and risk of child abuse in particular (Chandra et al., 2006). The purpose of the current study was to improve our understanding of the development of delusional ideation across the perinatal period.

To date, few studies have addressed this issue. Mannion and Slade (2014) examined psychotic-like experiences in a sample of women during pregnancy (28 weeks gestation) and early postpartum (1 week after childbirth). Results indicated that prevalence of delusional ideation and hallucinations was higher during pregnancy than in the postpartum, though levels were lower compared to reports of other non-clinical samples. Although multiple demographic (e.g., age, education, employment), obstetrical (e.g., parity, sex of baby), and psychological (e.g., depression, well-being, anxiety about childbirth) risk factors were also tested, depressive symptomatology emerged as the only significant predictor of delusional ideation during pregnancy, which in turn was the only significant predictor of delusional ideation one week postpartum. Similarly, Mighton et al. (2015) found a history of major depression to

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be associated with symptoms of psychosis during the perinatal period, and observed a greater onset of symptoms during pregnancy than postpartum. However, their sample was restricted to primiparous women and the investigators did not explore other risk factors.

Mannion and Slade's (2014) findings provide preliminary evidence of the prevalence and predictors of psychotic symptoms during the perinatal period. However, it is of interest to consider a longer time frame as well as psychosocial risk factors, including immigration. Immigrant status, particularly in urban areas, is a well-established risk factor for psychotic disorders and psychotic-like experiences (Bourque et al., 2011; Kelleher and Cannon, 2011), which may be explained in part by discrimination, separation from parents/family, and lack of social support (Bentall and Fernyhough, 2008). Psychosocial risk factors for postpartum psychosis include increased life stress (e.g., low socioeconomic status, stressful events), lack of partner support, and history of mental health problems (Kendell et al., 1987; Shehu and Yunusa, 2015; Sit et al., 2006). The experience of delusional ideation in particular has been associated with other psychosocial risk factors such as child victimization (Freeman, 2006) and life hassles (Schreier et al., 2009). Further, it has been suggested that social (e.g., social support) and personal (e.g., self-esteem) factors play a role in the resiliency or vulnerability to mental health problems in response to immigration and its associated stressors (Bhugra, 2004). Accordingly, psychosocial risk factors may increase the likelihood that immigrants will experience psychological distress. These processes have yet to be investigated in relation to psychotic symptoms during the larger perinatal period.

A larger longitudinal study exploring perinatal mental health and the mother-infant relationship (Zelkowitz et al., 2014) provided an opportunity for secondary analyses to examine levels of delusional ideation in a culturally diverse, urban community sample of women across a wide time period (12–14 weeks gestation to 7–9 weeks postpartum). The present investigation aimed to extend the findings of Mannion and Slade (2014) by including immigrant status and psychosocial risk in addition to depression and anxiety as predictors. Given the importance of environmental risk factors (van Os et al., 2009), we administered a measure of psychosocial risk covering a broad array of relevant risk factors including stressful life events, lack of social support, and history of abuse or mental health problems. Rather than single-item measures of anxiety and fear about childbirth, we used a well-validated 16-item scale to assess pregnancy-related worry.

We hypothesized that immigrant status and psychosocial risk would significantly predict levels of delusional ideation, after controlling for depression, anxiety, demographic and obstetrical risk factors. Additionally, we explored whether immigrant status would moderate the association between psychosocial risk and delusional ideation.

## 2. Methods

### 2.1. Participants

A community sample of pregnant women was recruited in Canada between July 2009 and May 2012 during routine prenatal examinations at a general hospital and a birthing center, as part of the larger study investigating perinatal mental health (Zelkowitz et al., 2014). Eligibility criteria were: minimum age of 18 years, gestational age within 12–14 weeks, singleton pregnancy, and reading comprehension in English or French.<sup>1</sup> A total of 341 women were enrolled in the study, of whom 25 were deemed ineligible (e.g., miscarriage, infant death, premature or twin birth, poor reading comprehension, or no longer receiving

care at a study site). The final sample included 316 participants. Sample characteristics are reported in Table 1. Immigrants did not differ on any sample characteristics except a higher percent of immigrants endorsed being religious ( $\chi = 6.17, p = 0.013$ ).

### 2.2. Measures

#### 2.2.1. Demographic and obstetric information

Participants completed a background questionnaire that asked about age, parity, years of education, being religious, partnership, and immigrant status. Participants' birth charts were reviewed to obtain the sex of the baby and to compute the total number of prenatal and intrapartum obstetrical complications, such as: bleeding during pregnancy, gestational diabetes, oligohydramnios, preterm rupture of membranes, fetal distress, abruption, episiotomy, use of vacuum or forceps, breech, emergency cesarean section, preeclampsia and eclampsia.

#### 2.2.2. Depression

Maternal symptoms of depression were measured using the 10-item Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987). Scores range from 0 to 30, where higher scores represent increased depressive symptomatology. This scale has demonstrated validity and reliability for the assessment of perinatal depressive symptomatology (Murray and Cox, 1990).

#### 2.2.3. Anxiety

Maternal prenatal anxiety was assessed using the Cambridge Worry Scale (CWS; Green et al., 2003). This 16-item questionnaire measures health, socio-economic and relationship concerns during pregnancy. Total scores range from 0 to 80, with higher scores reflecting increased worry. The CWS demonstrates good reliability (internal consistency and test-retest) as well as convergent validity with measures of state and trait anxiety (Green et al., 2003).

#### 2.2.4. Psychosocial risk

The 10-item Antenatal Risk Questionnaire (ANRQ; Austin et al., 2013) was used to assess the presence and severity of psychosocial risk factors for developing perinatal mental health problems. Risk factors include: emotional supportiveness of the participant's mother during childhood, history of mental health problems, emotional supportiveness of partner, stressful life events in the past 12 months, predisposition to worry, social support, and history of physical and sexual abuse. Scores range from 5 to 67, where higher scores indicate greater risk. The ANRQ demonstrates strong validity and reliability for

**Table 1**  
Sample characteristics.

Variable	Mean (SD)
Age	31.92 (4.57)
Years of education	16.46 (3.01)
Obstetrical complications	1.64 (1.28)
Variable	n (%)
Parity	
0 (Nulliparous)	148 (46.8)
1	117 (37.0)
2 or more	51 (16.1)
Sex of baby	
Male	152 (48.1)
Female	135 (42.7)
Partnered	296 (93.7)
Religious	199 (63.0)
Immigrant status	131 (41.5)

Note. Partnered was coded as 1 for married or living with partner and coded as 0 if single/never married, divorced, separated, or widowed. Immigrant status was coded as 1 if not born in Canada and coded as 0 if born Canada.

<sup>1</sup> All self-report measures were translated into French using the forward-backward method by two independent French-English bilingual research assistants, who then met to reach consensus on final versions. Cronbach's alpha ranged from 0.63 to 0.85. The ANRQ, EPDS, and CWS were significantly correlated (Pearson's  $r$  0.31–0.61), demonstrating convergent validity.

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