



## Birth setting, labour experience, and postpartum psychological distress



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### ABSTRACT

**Objective:** although psychosocial risk factors have been identified for postpartum depression (PPD) and perinatal posttraumatic stress disorder (PTSD), the role of labour- and birth-related factors remains unclear. The present investigation explored the impact of birth setting, subjective childbirth experience, and their interplay, on PPD and postpartum PTSD.

**Method:** in this prospective longitudinal cohort study, three groups of women who had vaginal births at a tertiary care hospital, a birthing center, and those transferred from the birthing centre to the tertiary care hospital were compared. Participants were followed twice during pregnancy (12–14 and 32–34 weeks gestation) and twice after childbirth (1–3 and 7–9 weeks postpartum).

**Results:** symptoms of PPD and PTSD did not significantly differ between birth groups; however, measures of subjective childbirth experience and obstetric factors did. Moderation analyses indicated a significant interaction between pain and birth group, such that higher ratings of pain among women who were transferred was associated with greater symptoms of postpartum PTSD.

**Conclusion and implications for practice:** women who are transferred appear to have a unique experience that may put them at greater risk for postpartum psychological distress. It may be beneficial for care providers to help prepare women for pain management and potential unexpected complications, particularly if it is their first childbirth.

### Introduction

There is a relatively high prevalence of psychological distress during the postpartum period – estimated to range from 13–19% for postpartum depression (PPD; Gavin et al., 2005) and 1.5–5.6% for posttraumatic stress disorder (PTSD; Olde et al., 2006). The harmful effects of postpartum psychological distress extend beyond women's health, to relationships with partners, mother-infant attachment, as well as children's cognitive, emotional, and behavioural development (Ayers et al., 2007; Murray et al., 2003). Psychosocial risk factors, including previous psychopathology, level of social support, and stressful life events or traumatic experiences, have been well established for PPD (O'Hara and McCabe, 2013) and perinatal PTSD (Ayers et al., 2016). What is less clear is the extent to which factors related to

the labour and birth experience confer risk for the development of postpartum psychological distress.

One such factor that has received increasing attention is birth setting (Hodnett et al., 2005). While research efforts have focused on the medical outcomes of births in birthing centres or under midwife-led care (McIntyre, 2012), there has been limited research on the possible psychological impact of birth setting. To our knowledge, only one study has examined this issue to date. Stramrood et al. (2011) observed lower rates of postpartum PTSD symptoms among women giving birth in home-like settings compared to hospitals, but this difference was not significant after controlling for complications and interventions. This finding suggests that variation in obstetric factors (e.g., interventions) and subjective distress (e.g., reported pain intensity) across birth settings may help to explain the differing rates of

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PTSD symptoms. Although informative, this study was limited by the retrospective cross-sectional design and the wide timeframe (2–6 months postpartum) in which women's symptoms of PTSD were assessed. Additionally, symptoms during pregnancy were not controlled for, and birthing centre and home birth were collapsed into one category (home-like settings), which may obscure distinctions between the settings.

A significant minority of women (28%; Bernitz et al., 2011) are transferred from birthing centres to hospitals to access obstetric interventions due to medical complications during labour (e.g., emergency caesarean section) or for pain management (e.g., epidural). Transfer has been associated with a more negative experience (i.e., birth reported to be 'worse than expected') and more symptoms of PTSD (Rijnders et al., 2008; Stramrood et al., 2011). However, the extant research on intrapartum transfer is sparse and largely qualitative. Quantitative studies are therefore necessary to clarify the potential psychological risks associated with transfer.

Variation in subjective experience across birth settings may lead to differences in rates of postpartum psychological distress. For example, women who receive midwife-led care (Sutcliffe et al., 2012), or who give birth at an in-hospital birth centre (Waldenström and Nilsson, 1993) or a home-like setting (Hodnett et al., 2005), report greater satisfaction with the childbirth experience than women in standard obstetric care in hospital settings. There is little research investigating how pain differs across birth settings. However, Stramrood et al.'s (2011) findings indicated that more women in hospital settings report pain during birth as 'worse than expected' compared to home-like settings. Further, measures of subjective experience have been associated with risk for PPD and postpartum PTSD. Indeed, less positive and more negative emotions during labour (Weisman et al., 2010) and low satisfaction with the childbirth experience (Webster et al., 2003) contribute to PPD. Birth experience has also been associated with symptoms of postpartum PTSD, beyond labour complications (Garthus-Niegel et al., 2013). Intensity of pain during labour has been associated with symptoms of "blues" and depression in the immediate (3 days) postpartum period (Boudou et al., 2007), whereas the influence of pain and negative emotions related to pain on postpartum PTSD is more controversial (Olde et al., 2006). In a large Norwegian longitudinal cohort study (Garthus-Niegel et al., 2014), labour pain predicted symptoms of posttraumatic stress, but this association was partially mediated by women's overall birth experience.

The current longitudinal study aimed to extend previous research by testing whether birth setting, including intrapartum transfer, moderates the impact of subjective experience on postpartum psychological distress beyond other known risk factors. More specifically, we examined whether subjective measures of the childbirth experience (pain and satisfaction) contributed to levels of both PPD and PTSD symptoms assessed at 7–9 weeks postpartum, and whether these associations varied across three birth groups (tertiary care hospital, free standing birthing centre, and transfer from birthing centre to tertiary care hospital). We controlled for symptoms of depression and anxiety during pregnancy, given that they are strong predictors of PPD (Robertson et al., 2004) and postpartum PTSD (Andersen et al., 2012) respectively. We also explored possible associations of several obstetric factors including augmentation, duration of labour, and parity, as they have been inconsistently related to PPD and PTSD (Söderquist et al., 2002).

We hypothesized the following moderation effects: a) that more positive ratings of the childbirth experience would be associated with lower levels of PPD and PTSD symptoms among women delivering at birthing centres since they tend to report greater satisfaction, b) in contrast, less positive ratings of the childbirth experience were expected to be associated with higher levels of PPD and PTSD symptoms among women who were transferred since they generally report a more negative experience, and c) we predicted that higher ratings for pain of labour and birth would be associated with higher

levels of PPD and PTSD among the hospital group as women in hospital settings have reported pain as worse than expected.

## Methods

### Participants

A community sample of women was recruited between July 2009 and January 2011 for this longitudinal cohort study (Zelkowitz et al., 2014). A research assistant approached women during their first prenatal appointment at a tertiary care hospital and during an information session at a freestanding community based midwife-led birthing centre. Both sites are located in the same multicultural neighbourhood of a large Canadian city. To be eligible to participate in the study, women had to be at the 12–14 weeks gestational stage, 18 years of age or older, and able to read and speak English or French. Women were later excluded from this study if their pregnancy resulted in a miscarriage, infant death, premature or twin birth, poor reading comprehension, or if they no longer received care at a study site. Women who had a caesarean section were also excluded from the present investigation as their pain ratings were not interpretable. As per protocol, women were transferred from the birthing centre to the hospital due to need of medical intervention for complications (e.g., hypertension, bleeding, premature rupture of membranes, fatigue, failure to progress, failed induction of labour) or for pain management.

### Measures

#### Background information

Socio-demographic and background information was collected including maternal age, marital status, education level, language, number of years lived in Canada, parity, breastfeeding status, and use of oral contraceptives.

#### Obstetric factors

Participants' birth charts were reviewed to collect obstetric data including: duration of labour; whether augmentation was received during labour; and transfer status (whether the woman was transferred from the birthing centre during labour). Duration of labour was measured from the beginning of the active phase, defined as 3 cm dilation and/or contraction every 3–5 minutes. Two separate variables were computed for augmentation, rated as *Yes* or *No*, for administration of syntocinon and for use of other procedures (e.g., artificial rupturing of membranes, naturopathy, homeopathy, breast pump, etc.).

#### Subjective experience

One item from the Canadian Maternity Experiences Survey (MES; Public Health Agency of Canada, 2009) was administered to assess women's subjective experience: "Overall, would you describe your experience of labour and birth as...?" on a 5-point scale that ranged from *very negative* to *very positive*. Women rated the intensity of their pain in response to the question: "How painful were your labour and birth?" on a scale that ranged from 0 (*No pain*) to 10 (*Maximum pain imaginable*). This numeric rating scale is a reliable measure of acute pain (Breivik et al., 2008) and is widely used to assess labour pain in research (Beilin et al., 2003).

#### Depression

Symptoms of depression were assessed using the 10-item self-report Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987). Respondents are asked to report how they have felt in the past 7 days and each item is rated on a 4-point Likert scale. The total score ranges from 0–30, with a higher score indicating the presence of more symptoms. The EPDS is the most commonly used screening tool for depression in the perinatal period. It performs well diagnostically

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