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Factors Associated With High Levels of Perceived Prenatal Stress Among Inner-City Women

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ABSTRACT

Objective: To explore the factors associated with high rates of perceived prenatal stress among inner-city women.

Design: Observational cross-sectional study.

Setting/Participants: We conducted a secondary analysis of data from 603 inner-city women. In our study, 330 participants (54.7%) self-identified as First Nations, Metis, or First Nations/Metis.

Methods: Prenatal stress was measured with Cohen's Perceived Stress Scale. A social ecological model provided the theoretical framework for the study, and variables representing all levels of the model were selected for study. Data analyses included t tests to compare women with high stress and low/moderate stress, univariable logistic regression analysis to determine the association of selected factors with maternal stress, and multivariable logistic regression analysis to provide adjusted odds ratios and 95% confidence intervals for the factors.

Results: Of the 603 participants, 17.2% (104) reported high levels of perceived stress, and 82.8% (499) reported low/moderate levels. The high-stress group included a significantly greater proportion of First Nations, Metis, or First Nations/Metis women (76.0%) than the low/moderate–stress group (50.3%). Low rates of self-esteem and social support, residential mobility, abuse before/during pregnancy, and experiencing discrimination were significantly associated with high levels of perceived prenatal stress.

Conclusion: Our findings demonstrated that factors that influence prenatal stress occur at all levels of the social ecological model. The identified factors are amenable to change, and implications for practice include the need for psychosocial risk assessment, alternative forms of prenatal care, relational care, and advocacy initiatives. A greater understanding of the complex factors associated with high rates of perceived prenatal stress can inform the development of effective interventions for inner-city women.

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AWHONN

Stress during pregnancy is common, and rates of high prenatal stress are estimated at 12% to 44.1% (Kingston, Heaman, Fell, Dzakpasu, & Chalmers, 2012; Kingston, Sword, Krueger, Hanna, & Markle-Reid, 2012). Prenatal stress is positively associated with significant adverse pregnancy outcomes for women and infants (Kingston, Heaman et al., 2012). A growing body of evidence points to stress as a key risk factor for preterm birth and low birth weight (Dunkel Schetter, 2011; Gennaro, Shults, & Garry, 2008; Heaman et al., 2013). In a Canadian study, women with high levels of perceived stress were 1.5 times more likely to have preterm births (Heaman et al., 2013). Several researchers found that increased prenatal stress is also associated with inadequate use of prenatal care (Heaman, Gupton, & Moffatt, 2005), postpartum depression (Razurel, Kaiser, Sellenet, & Epiney, 2013), hypertensive disorders of pregnancy (Leeners, Neumaier-Wagner, Kuse, Stiller, & Rath, 2007), small-for-gestational-age infants (Heaman et al., 2013), and delayed infant development (Kingston, Tough, & Whitfield, 2012). Prenatal stress is a potentially modifiable risk factor; therefore, early intervention for women who are at risk for prenatal stress could decrease the associated perinatal morbidity and mortality.

Researchers examined the complex concept of maternal stress in a variety of ways, including measures of perceived stress, stressful life events, anxiety, psychological distress, daily hassles, and biomarkers of stress (Dunkel Schetter, 2011; Giscombé & Lobel, 2005; Kingston, Heaman et al., 2012). Within the

transactional view of stress, perceived stress is a "measure of the degree to which situations in one's life are appraised as stressful" (Cohen & Williamson, 1988, p. 33). This individual experience of stress is what actually determines the negative effect of life's stressors (Cohen, Kamarck, & Mermelstein, 1983; Lazarus & Folkman, 1984). Measuring perceived stress might be a more accurate way to assess stress with regard to its effect on a person's health than measuring the number of stressful events. Perceived stress encompasses a person's unique perspective of the situation, and this response and the resulting effect on health may vary greatly between individuals (Gennaro & Hennessy, 2003; Solivan, Xiong, Harville, & Buekens, 2015).

A number of factors associated with prenatal stress have been identified. In a study based on 6,421 postpartum women who participated in the Canadian Maternity Experiences Survey, researchers found that unhappy feelings about pregnancy, stressful events, depression, low social support, previous miscarriage, medical conditions, not attending prenatal classes, and multiple ultrasound imaging procedures were risk factors for high levels of perceived stress during pregnancy (Kingston, Heaman et al., 2012). Interestingly, demographic factors were not significant in the adjusted analysis. In the study, perceived stress was measured with a one-item question. In another study, Kingston, Sword et al. (2012) evaluated life course pathways to perceived prenatal stress, which was measured with the 10-item Perceived Stress Scale, and found that a complex interplay of factors from childhood and adulthood were associated with stress. In a cross-sectional study of 1,522 pregnant women from diverse backgrounds, researchers reported that depression, panic disorder, drug use, domestic violence, and medical complications were associated with high stress, as measured by the Prenatal Psychosocial Profile stress scale, and that demographic factors were not significant (Woods, Melville, Guo, Fan, & Gavin, 2010). Conversely, in their study of 94 pregnant African American women, Stancil, Hertz-Picciotto, Schramm, and Watt-Morse (2000) found that demographic factors were significantly associated with high stress, as measured with the 10-item Perceived Stress Scale. Significant factors included younger age, higher income, lower education, and experiences of discrimination. In a cross-sectional analysis, social support was found to mediate the effect of stressful events on maternal distress (Glazier, Elgar, Goel, & Holzapfel, 2004).

> **Factors from multiple levels of the social ecological model emerged as important contributors to high levels of perceived prenatal stress among this group of inner-city women.**

To date, an emerging array of diverse and at times contradictory factors is associated with prenatal stress. Evidence regarding demographic factors is equivocal. Additionally, there has been little examination of factors associated with high rates of perceived stress among inner-city pregnant women, many of whom may be faced with complex challenges as a result of social, economic, and environmental risk factors (Dunkel Schetter, 2011). Thus, the purpose of our study was to explore the factors associated with high levels of perceived prenatal stress among inner-city women using a reliable and valid instrument to measure perceived stress.

The social ecological model, based on Bronfenbrenner's work (1979), was the theoretical framework for our study. This model posits that adverse health outcomes are a result of interacting factors at multiple levels, not of individual factors alone (McLeroy, Bibeau, Steckler, & Glanz, 1988). The social ecological model guided us to examine individual and social environmental factors that contribute to perceived prenatal stress and to move away from the victim-blaming mentality that ignores the significance of societal influences on health. An individualistic perspective is especially problematic for vulnerable populations, such as inner-city women, because it promotes the view of illness as the result of personal failure without a critical examination of the complex underlying causes. McLeroy et al. (1988) also assert that developing multilevel interventions will increase the effectiveness of prevention initiatives. Once factors are identified, targeted strategies can be developed to address leverage points within the various ecological levels to affect change. This model was useful for describing the diverse intrapersonal, interpersonal, community, and policy factors correlated with high levels of perceived prenatal stress and to contextualize the stress of inner-city women.

Methods

Design and Sample

Our study had an observational cross-sectional design. We conducted a secondary analysis of data from a case–control study in which researchers