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The Impact of Neighborhood Environment, Social Support, and Avoidance Coping on Depressive Symptoms of Pregnant African-American Women

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A B S T R A C T

Background: Although depressive symptoms during pregnancy have been related to negative maternal and child health outcomes such as preterm birth, low birth weight infants, postpartum depression, and maladaptive mother–infant interactions, studies on the impact of neighborhood environment on depressive symptoms in pregnant women are limited. Pregnant women residing in disadvantaged neighborhoods reported higher levels of depressive symptoms and lower levels of social support. No researchers have examined the relationship between neighborhood environment and avoidance coping in pregnant women. Guided by the Ecological model and Lazarus and Folkman's transactional model of stress and coping, we examined whether social support and avoidance coping mediated associations between the neighborhood environment and depressive symptoms in pregnant African-American women.

Methods: Pregnant African-American women ($n = 95$) from a medical center in Chicago completed the instruments twice during pregnancy between 15 and 25 weeks and between 25 and 37 weeks. The self-administered instruments measured perceived neighborhood environment, social support, avoidance coping, and depressive symptoms using items from existing scales. Objective measures of the neighborhood environment were derived using geographic information systems.

Findings: Perceived neighborhood environment, social support, avoidance coping, and depressive symptoms were correlated significantly in the expected directions. Objective physical disorder and crime were negatively related to social support. Social support at time 1 (20 ± 2.6 weeks) mediated associations between the perceived neighborhood environment at time 1 and depressive symptoms at time 2 (29 ± 2.7 weeks). An increase in avoidance coping between times 1 and 2 also mediated the effects of perceived neighborhood environment at time 1 on depressive symptoms at time 2.

Conclusion: Pregnant African-American women's negative perceptions of their neighborhoods in the second trimester were related to higher levels of depressive symptoms in the third trimester. If these results are replicable in prospective studies with larger sample sizes, intervention strategies could be implemented at the individual level to support pregnant women in their ability to cope with adverse neighborhood conditions and ultimately improve their mental health.

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Depressive symptoms are a common occurrence during pregnancy, ranging from 6% to 38% in individual studies (Field, 2011; Ko, Farr, Dietz, & Robbins, 2012; Meltzer-Brody et al.,

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2013; Records & Rice, 2007). In a meta-analysis, Gavin et al. (2005) found that the prevalence of depression is 11.0% in the first trimester and 8.5% in the second and third trimesters. Compared with pregnant non-Hispanic White women, pregnant African-American women have higher rates of depressive symptoms (Holzman et al., 2006; Mustillo et al., 2004). Importantly, pregnant women with high levels of depressive symptoms have a higher risk of negative birth outcomes, such as preterm birth (less than 37 weeks completed gestation) and low birth weight infants (less than 2,500 grams), postpartum depression, and maladaptive mother–infant interactions (Davalos, Yadon, & Tregellas, 2012; Dunkel Schetter, 2011; Dunkel Schetter & Tanner, 2012; Field, 2011; Field et al., 2004; Meltzer-Brody et al., 2013; Witt et al., 2011). A recent meta-analysis found that women with depression were more likely to have preterm birth (relative risk, 1.24; 95% CI, 1.04–1.47) and low birth weight infants (relative risk, 1.34; 95% CI, 1.10–1.64; Grote et al., 2010). The risk factors for experiencing depressive symptoms during pregnancy include young maternal age, low socioeconomic status, history of infertility, and complicated pregnancies (Field, 2011; Holzman et al., 2006; Ko et al., 2012; Monti, Agostini, Fagandini, La Sala, & Blickstein, 2009; Toffol, Koponen, & Partonen, 2013). However, depressive symptoms experienced during pregnancy may not be solely attributable to these individual-level risk factors.

Little is known about the impact of neighborhood characteristics on depressive symptoms in pregnant women. Neighborhood disorder, defined as "visible cues indicating a lack of order and social control" (Ross & Mirowsky, 2001, p. 413) in the community, can be both physical (e.g., vacant housing, vandalism) and social (e.g., drug dealing, prostitution; Ross & Mirowsky, 2001; Skogan, 1990). Pregnant women living in neighborhoods with more property damage and higher vacancy rates (Messer, Maxson, & Miranda, 2012), and reporting higher levels of neighborhood violence (Patterson, Seravalli, Hanlon, & Nelson, 2012) also had higher levels of depressive symptoms. Compared with pregnant non-Hispanic White women, pregnant African-American women are more likely to live in neighborhoods with vacant buildings and violent crime (Laraia et al., 2006; Messer, Kaufman, Dole, Herring, & Laraia, 2006). Therefore, neighborhood disorder and violent crime may increase the risk of African-American women experiencing depressive symptoms during pregnancy. We did not find any published study that examined the effects of both "objective," using administrative data, and perceived measures of the neighborhood disorder or crime on depressive symptoms in pregnant women. Also, none of the studies examined the effects of neighborhood disorder or crime early in pregnancy on depressive symptoms that occur later in pregnancy.

The pathways by which the disadvantaged neighborhood environment affects depressive symptoms in pregnant women are not known. Yet, this understanding is important to identify additional potential targets for intervention. One potential pathway is through effects of social support and avoidance coping. Pregnant women residing in neighborhoods with more property damage, vacant housing, and violent crime also reported lower levels of social support (Messer et al., 2012). No researchers have examined the relationship between neighborhood environment and avoidance coping in pregnant women. Lack of social support and use of avoidance coping have been related to higher levels of depressive symptoms in a study of pregnant minority women (Rudnicki, Graham, Habboushe, & Ross, 2001). The potential role of social support and avoidance coping as mediators of the effects of neighborhood disorder or crime on depressive symptoms in pregnant women has not been examined.

This study was guided by an integration of the Ecological model (Bronfenbrenner, 1986) and Lazarus and Folkman's (1984) transactional model of stress and coping. According to the Ecological model, health outcomes are influenced by personal and environmental factors. We postulate that pregnant women's depressive symptoms are influenced by personal factors such as social support and avoidance coping, and environmental factors such as neighborhood disorder and crime. Lazarus and Folkman's (1984) transactional model of stress and coping states that psychological stress occurs when the environment is appraised as taxing or exceeding the person's resources and endangering personal well-being. The environment or social demands placed on an individual may act as antecedent factors, and social support and coping as mediators. In our model, the neighborhood environment is an antecedent factor, social support and avoidance coping are mediators, and depressive symptoms represent the short-term outcome (Figure 1). We postulate that pregnant women residing in disadvantaged neighborhoods have fewer support persons available to them, use avoidance coping more often, and in turn have higher levels of depressive symptoms. The purpose of this study was to examine whether social support and avoidance coping mediate the effects of the disadvantaged neighborhood environment on depressive symptoms in pregnant African-American women to identify potential targets for intervention. It was hypothesized that:

1. Neighborhood disorder and crime have a direct, positive effect on depressive symptoms;
2. Social support has a direct, negative effect on depressive symptoms and avoidance coping has a direct, positive effect on depressive symptoms; and
3. Social support and avoidance coping mediate the effects of neighborhood disorder and crime on depressive symptoms.

Methods

Design and Sample

This study used a prospective design. Self-identified African-American women from a medical center in Chicago were enrolled in the study between 2009 and 2011 if they a) were at least 18 years of age, b) had a singleton, medically low-risk pregnancy, and c) were in the second trimester of pregnancy. Women were excluded if they had a medical diagnosis (e.g., hypertensive disorders, pregestational diabetes) or obstetrical complications (incompetent cervix, fetal abnormality, multiple pregnancies) because these factors may pose as stressors. We approached 120 women to participate in the study. Six women declined participation owing to time restrains. Of the 114 women who signed an informed consent, six did not mail the questionnaires or the questionnaires were lost in the mail. One woman refused participation after signing the informed consent. At the first data collection, 107 women completed questionnaires. At the second data collection, three women did not attend prenatal visits, three changed prenatal care from the participating clinical site, two had termination of pregnancy, one declined to participate owing to time restraints, and three had already delivered. Thus, 95 women had complete data available for analysis at both data collection points. The latent variable