

Relationships among Neighborhood Environment, Racial Discrimination, Psychological Distress, and Preterm Birth in African American Women

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ABSTRACT

Objectives: To (a) examine the relationships among objective and perceived indicators of neighborhood environment, racial discrimination, psychological distress, and gestational age at birth; (b) determine if neighborhood environment and racial discrimination predicted psychological distress; (c) determine if neighborhood environment, racial discrimination, and psychological distress predicted preterm birth; and (d) determine if psychological distress mediated the effects of neighborhood environment and racial discrimination on preterm birth.

Design: Descriptive correlational comparative.

Setting: Postpartum unit of a medical center in Chicago.

Participants: African American women ($n_1 = 33$ with preterm birth; $n_2 = 39$ with full-term birth).

Methods: Women completed the instruments 24 to 72 hours after birth. Objective measures of the neighborhood were derived using geographic information systems (GIS).

Results: Women who reported higher levels of perceived social and physical disorder and perceived crime also reported higher levels of psychological distress. Women who reported more experiences of racial discrimination also had higher levels of psychological distress. Objective social disorder and perceived crime predicted psychological distress. Objective physical disorder and psychological distress predicted preterm birth. Psychological distress mediated the effect of objective social disorder and perceived crime on preterm birth.

Conclusion: Women's neighborhood environments and racial discrimination were related to psychological distress, and these factors may increase the risk for preterm birth.

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AWHONN

In 2009 in the United States, one-half million (12.18%) infants were born prematurely at fewer than 37 weeks gestation (Hamilton et al., 2011). African American women had a preterm birth rate of 17.5%, a rate considerably higher than their non-Hispanic White counterparts (10.9%) (Hamilton et al.). Preterm birth is a major factor associated with neonatal mortality, motor and mental developmental delays, failure in school, and chronic illness (McCormick, Litt, Smith, & Zupancic, 2011). Preterm birth costs more than \$26 billion annually (Institute of Medicine, 2006). It has been proposed that genetic predisposition may increase the risk for preterm birth (Rich-Edwards et al., 2001). However, compared with foreign-born Black women, U.S.-born African American women have higher risk for preterm birth

(Culhane & Goldenberg, 2011; Janevic et al., 2010). Although maternal low socioeconomic status and obstetric history are related to a higher risk of preterm birth, when these factors are controlled, an elevated risk for of preterm birth among African Americans remains (Culhane & Elo, 2005; Culhane & Goldenberg; Rich-Edwards & Grizzard, 2005; Rich-Edwards et al.).

Attempts to explain disparity in preterm birth have focused on neighborhood environment and racial discrimination that disproportionately affect African American women (Ahern, Pickett, Selvin, & Abrams, 2003; Dole et al., 2003, 2004; Kaufman, Dole, Savitz, & Herring, 2003; Messer, Kaufman, Dole, Herring, & Laraia, 2006; Messer, Kaufman, Dole, Savitz, & Laraia, 2006; Mustillo

Despite more than 20 years of research, the causes of preterm birth disparity are not clearly understood.

et al., 2004; Pickett, Ahern, Selvin, & Abrams, 2002; Pickett, Collins, Masi, & Wilkinson, 2005; Reagan & Salsberry, 2005; Rosenberg, Palmer, Wise, Horton, & Corwin, 2002). Compared with pregnant non-Hispanic White women, pregnant African American women are more likely to live in neighborhoods with more abandoned commercial buildings and litter (Laraia et al., 2006) and violent crime (Laraia et al.; Messer, Kaufman, Dole, Herring et al.). They are also more likely to be exposed to racial discrimination (Dole et al., 2004; Mustillo et al.). These factors have been related to higher rates of preterm birth (Ahern et al.; Dole et al., 2003, 2004; Kaufman et al.; Messer, Kaufman, Dole, Herring, et al., 2006; Messer, Kaufman, Dole, Savitz, et al.; Mustillo et al.; Pickett, Ahern, et al.; Pickett, Collins, et al.; Reagan & Salsberry; Rosenberg et al.). Little is known about the potential pathways by which neighborhood environment and racial discrimination affect preterm birth.

Researchers have demonstrated that psychological stress has been associated with preterm birth (Hedegaard, Henrikson, Svend, & Secher, 1993; Messer, Dole, Kaufman, & Savitz, 2005). However, research on the relationship between neighborhood environment or racial discrimination and stress in pregnant women is limited. Residing in a neighborhood environment with high poverty (Nkansah-Amankra, Luchok, Hussey, Watkins, & Liu, 2010) and experiencing racial discrimination (Murrell, 1996; Stancil, Hertz-Picciotta, Schramm, & Watt-Morse, 2000) were related to stress for pregnant women. Thus theoretically, neighborhood environment and racial discrimination can increase the stress of pregnant women and ultimately place them at greater risk for preterm birth (see Figure 1). Although researchers suggest that visible negative indicators of neighborhood environment may contribute to an increase in risk of preterm birth, only one group of researchers has examined women's perceptions of their neighborhood environments (Dole et al., 2003) that may be more strongly related to the stress women experience.

Literature Review

Neighborhood Environment

We examined three aspects of the neighborhood environment: physical disorder, social disorder,

and violent crime. *Disorder* is "visible cues indicating a lack of order and social control" in the community (Ross & Mirowsky, 2001, p. 413). Cues are physical and social (Skogan, 1990). *Physical disorder* includes physical conditions of the neighborhood, such as vacant housing, vacant lots, and vandalism. *Social disorder* refers to activities involving people, such as drug dealing, prostitution, and gangs (Ross & Mirowsky; Skogan). Using data from the 1979–1998 waves of the National Longitudinal Survey of Youth 1979 cohort, Reagan and Salsberry (2005) found that housing vacancy affected African American and non-Hispanic White women differently: for African American women only, housing vacancy rates increased the risk of preterm birth at fewer than 33 weeks gestation (Reagan & Salsberry). Using the births in Louisiana from 1997–1998, Farley and associates found that boarded-up housing in urban areas were associated with a decrease in gestational age at birth (Farley et al., 2006). However, the researchers used gestational age at birth and not preterm birth as an outcome variable. Therefore, research on the relationship between physical disorder and preterm birth is limited. No researchers have examined the relationship between social disorder and preterm birth. Still it is plausible that visible indicators signaling lack of order and social control in the neighborhood may contribute to stress for women and increase their risk of preterm birth.

Violent crime is a serious problem for African American women: homicide is the second leading cause of death, and sexual assault is the third leading cause of nonfatal injuries for these women (National Center for Injury Prevention and Control, 2007). Using crime report data from North Carolina, Messer and colleagues found that compared with non-Hispanic White women, African American women were exposed to 4 times as many violent crimes within a half-mile radius and lived closer to violent crime (Messer, Kaufman, Dole, Herring, et al., 2006; Messer, Kaufman, Dole, Savitz, et al., 2006).

However, research on the relationship between violent crime and preterm birth is limited. Compared with African American women living in census block groups with low rates of violent crime, African Americans living in census block groups with medium and high violent crime rates had a higher risk of preterm birth after controlling for individual covariates (Messer, Kaufman, Dole, Herring, et al., 2006; Messer, Kaufman, Dole, Savitz, et al., 2006). Using 1990 census data, 1991

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