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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).

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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.

Keywords

neighborhood environment; racial discrimination; stress; preterm birth

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 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 crime data, and birth certificate information from more than 55,000 births in Chicago, Masi and associates found that violent crime in the census tract was not associated with increased odds for preterm birth among all racial/ethnic groups (Masi, Hawkley, Piotrowski, & Pickett, 2007). Violent crime may be a potent chronic stressor for African American women of childbearing age and may contribute to preterm birth. However, the results related to the relationship between violent crime and preterm birth are conflicting.

Only one group of researchers examined women's perceptions of their neighborhood environment and their influences on preterm birth (Dole et al., 2003). In a prospective study of pregnant women, of whom 36% were African American, African American women were more likely to report that their neighborhoods were unsafe (Dole et al., 2003, 2004). Negative perceptions of neighborhood safety were associated with a slight increase in the risk of preterm birth (Dole et al., 2003, 2004). Stancil et al. (2000) found that perceived neighborhood safety was not related to perceived stress in a sample of pregnant African American women. None of the researchers assessed objective measures of neighborhood environment and women's perception of their neighborhood environment, which may be more closely related to stress experienced by these women.

Racial Discrimination

Racial discrimination is defined as being hassled or made to feel inferior due to one's race, ethnicity, or color (Krieger et al., 2010). Racial discrimination is a chronic stressor (Peters, 2004) that may influence the risk of preterm birth (Krieger, Rowley, Herman, Avery, & Phillips, 1993; Rich-Edwards et al., 2001). Most researchers have suggested a relationship between perceptions of racial discrimination and preterm birth (Dole et al., 2003, 2004; Mustillo et al., 2004; Rosenberg et al., 2002), particularly in those with lower levels of education (Rosenberg et al.). Compared with non-Hispanic White women, African American women reported more racial discrimination (Mustillo et al.). African American women who reported racial discrimination in at least three out of seven situations (school, getting a job, work, getting housing, getting medical care, on the street or in a public setting, and from the police or in the courts) were 3 times more likely to have preterm birth (Mustillo et al.).

Although most of these studies were based on retrospective designs, one study based on a prospective design showed that women 24 to 29 weeks gestation with higher scores on perception of racial discrimination had a higher relative risk for preterm birth (Dole et al., 2003, 2004). Stancil and colleagues (2000) reported that racial discrimination was related to perceived stress and that 54% of pregnant African American women reported ever experiencing racial discrimination. Similarly, Murrell (1996) found that high levels of racial discrimination were related to higher levels of stress in pregnant African American women. Therefore, perceived racial discrimination may be a potent lifetime chronic stressor that increases women's stress and contributes to the preterm birth disparity.

Psychological Distress

Psychological distress is positively associated with an increased risk of preterm birth (Hedegaard et al., 1993). Mothers reporting stress were at higher risk for preterm birth (Nkansah-Amankra et al., 2010). However, other researchers did not find a relationship between psychological distress and preterm birth (Maina et al., 2008). Psychological distress may be the potential pathway by which neighborhood environment and racial discrimination affect preterm birth (see Figure 1).

The specific aims of this project were to (1) 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.

Research Design and Methods

Design

In this pilot study, we used a cross-sectional comparative design.

Sample

A sample of 72 self-identified African American women was enrolled in the study. They were recruited into two groups: 33 women with preterm birth (<37 weeks gestation) and 39 women with full-term birth (≥37 weeks gestation). Selection criteria included (a) at least 18 years of age, (b) singleton pregnancy, (c) at least 24 weeks gestation at the time of birth, (d) at least 24 hours after birth, and (e) medically stable. Also, the preterm birth must have been the result of spontaneous preterm labor and/or premature rupture of membranes. Women were excluded if they (a) had a medical diagnosis (e.g., hypertensive disorders, pregestational diabetes), (b) had a medically indicated birth (e.g., due to hypertensive disorders), or (c) were medically unstable (e.g., postpartum hemorrhage). These inclusion and exclusion criteria were selected to provide a homogenous sample of women whose pregnancies reached the point of fetal viability (24 weeks gestation) and were not at risk for preterm birth because of multiple pregnancies or medical complications. Women were recruited in 2007 from a medical center in Chicago.

Research Procedures

The principal investigator obtained an Institutional Review Board waiver to access medical records of women receiving prenatal care at the participating site. Potential participants were contacted first by the health care provider. The research assistant met face-to-face with women on the postpartum unit of the hospital 24 to 72 hours after birth. The research assistant explained the study, invited women to participate, and obtained informed consent. The participants completed the packet of questionnaires by themselves in a private room between 24–72 hours after birth and received $25 for their participation and time. The packet of questionnaires included the following scales: Sociodemographic Questionnaire,

adapted Physical Environmental Stress Scale, adapted Neighborhood Problems Scale, adapted Perceived Neighborhood Scale, Experiences of Discrimination, and Psychological General Well-Being Index as described below.

Variables and Instruments

Maternal sociodemographic and obstetrical characteristics were collected from self-administered Sociodemographic Questionnaire and medical records and included maternal age, marital status, education, income, gestational age at time of data collection, and medical history.

Gestational age at birth was collected from birth records based on the last monthly period and confirmed by ultrasound examination. We classified preterm birth as births occurring at fewer than 37 weeks gestation and full-term birth as births occurring at 37 or more weeks gestation.

Objective neighborhood environment measures included physical disorder, social disorder, and crime. To measure neighborhood environment, we first obtained participants' home addresses and geocoded them using ArcGIS 9.1 to obtain the latitude and longitude and corresponding Year 2000 census block group. The measures were developed based on a 0.5-mile- and 0.25-mile radius around the home address. We then measured physical disorder, social disorder, and violent crime. Because results were similar, we present results for the 0.5 mile radius here.

Neighborhood physical disorder was measured using three indicators: proportion of vacant housing based on 2000 Census data, proportion of land that is vacant or has abandoned buildings based on the Northeastern Illinois Planning Commission (NIPC)'s 2001 Land Use Inventory, and proportion of industrial land use available in NIPC's Land Use Inventory. The 2001 Land Use Inventory was the most recent available at the time measures were developed. Because these measures are on different scales, z-scores were calculated for each measure, and the mean of these z-scores was used in the analysis.

We measured neighborhood social disorder as the annual number of prostitution- and drug-related incidents. We used 2007 data from the Chicago Police Department. Neighborhood violent crime was measured as the annual number of incidents of homicide, sexual assault, aggravated assault, and robbery in the neighborhood in 2007. We used crime incidents rather than crime rates based on the assumption that participants would be most aware of and influenced by crime incidents rather than their risk per capita.

Perceived physical disorder, social disorder, and crime were also assessed. Perceived physical disorder was measured using six items adapted from the Physical Environmental Stress Scale (Israel et al., 2006; Schulz et al., 2000). Rated on a 5-point scale, items include housing conditions, vacant lots/houses, and vandalism. The sum of the six items created the total score with a range from 6 to 30. Support for construct validity was found in an urban multiethnic sample (Zenk et al., 2005). In the current study Cronbach's alpha was 0.80.

Perceived social disorder was measured using six items adapted from the Neighborhood Problems Scale (Elder, Eccles, Ardelt, & Lord, 1995) and the Perceived Neighborhood Scale

(Martinez, Black, & Starr, 2002). The items were rated on a 3-point scale (e.g., open drug use/dealing, gangs, prostitution) with higher scores representing a greater degree of neighborhood problems (range of scores 6–18). Construct validity was supported in urban African American women (Martinez et al.). The Cronbach's alpha for current study was 0.87.

Perceived crime in the neighborhood was measured using six items (e.g., fear of being robbed, fear of being raped, safety to walk alone in neighborhood at night) adapted from the crime sub-scale of the Perceived Neighborhood Scale and rated on a 5-point scale with total score ranging from 6 to 30 (Martinez, 2000; Martinez et al., 2002). Prior studies showed construct validity among a sample of urban African American women (Martinez et al.). In the current study, Cronbach's alpha was 0.90.

Perceived racial discrimination was measured by the Experiences of Discrimination (Krieger, 1990; Krieger & Sidney, 1996; Krieger, Smith, Naishadham, Hartman, & Barbeau, 2005). The Experiences of Discrimination asks participants if they have ever experienced discrimination because of race, ethnicity, or color and the frequency of these occurrences in nine situations (school; getting hired or getting a job; work; getting housing; getting medical care; getting service in a store or restaurant; getting credit, bank loans, or a mortgage; on the street or in a public setting; from the police or in the courts). For each situation, respondents can reply "yes" = 1 or "no" = 0. The sum of the nine situations ranges from 0 to 9. In addition, a frequency for each situation was calculated with 0 (*never*), 1 (*once*), 2.5 (*2–3 times*), and 5 (*4 or more times*). The sum of frequency score for the nine situations can range from 0 to 45. Experiences of Discrimination had established construct validity (Krieger et al.). In the current study Cronbach's alpha was 0.78.

Psychological distress was measured by the Psychological General Well-Being Index (PGWB) (Dupuy, 1984) that contained 22 items on a 6-point Likert-type scale. Participants were asked to report on their psychological distress within the past month. Scores could range from 0 to 110, with some items being reverse-scored. Scores below 72 represented distress. Evidence of concurrent validity had acceptable correlations ranging from 0.52 to 0.80 (Dupuy). The Cronbach's alpha in the current study was 0.91.

Data Management and Analysis

Data were entered, cleaned, and prepared for analysis on an ongoing basis by the principal investigator or a research assistant using SPSS 17. The expectation maximization (EM) algorithm (Enders, 2003) was used to impute missing values. We collected data face-to-face, and our missing data were minimal. Data were analyzed according to the study aims, and Pearson r correlation coefficient was used to examine the relationships among neighborhood environment, racial discrimination, psychological distress, and gestational age at birth. Multiple linear regression analysis was used to test if neighborhood environment and racial discrimination predicted psychological distress for women in this study. A binary logistic regression was performed to test if neighborhood environment, racial discrimination, and psychological distress predicted preterm birth. A binary logistic regression was used, rather than a linear regression, due to the dichotomous nature of the dependent variable (preterm birth, no preterm birth). To estimate the mediating effect of neighborhood environment

through psychological distress on preterm birth, path analysis with logistic regression model was applied using Mplus version 4.1 for binary preterm birth outcome variable. The independent variables were selected with the linear regression of psychological distress and logistic regression of preterm birth. A smaller number of independent variables is more appropriate for a small sample size.

Results

Sample Characteristics

The women's mean age was 23 years and the mean gestational age was 36.7 weeks. Women with preterm birth had infants with a mean gestational age of 33.5 weeks, and women with full-term birth had infants with a mean gestational age of 39.4 weeks. The majority of women were single (82%), employed (53%), had household annual incomes of <$10,000 (42%), and had either some college (39%) or graduated high school (38%) (Table 1).

Relationships among Variables

Objective neighborhood social disorder was positively related to perceived social disorder. Perceived physical disorder, perceived social disorder, and perceived crime were positively related to psychological distress. Experiences of racial discrimination were positively related to psychological distress. Gestational age at birth was not related to any variables (Table 2).

Predictors of Psychological Distress

Objective social disorder and perceived crime predicted psychological distress. The model explained 51% of the variance, $R^2 = .51$, $F(8, 61) = 8.04$, $p < .000$ (Table 3).

Predictors of Preterm Birth

The Hosmer and Lemeshow goodness of fit yielded $\chi^2(8) = 4.92$, $p > .05$ suggesting that the model fit the data well. The model predicted preterm birth correctly 61% of the time. The odds ratio (OR) for objective physical disorder was 2.64 implying that for each point increase in physical disorder there is a 2.6 times odds increase in preterm birth. The OR for psychological distress was 1.06 implying that for each point increase in psychological distress there is a 1.06 times odds increase in preterm birth (Table 4).

Mediating Effect of Psychological Distress on Preterm Birth

Psychological distress mediated the effects of objective social disorder and perceived crime on preterm birth. Psychological distress was the only predictor of preterm birth whereas objective social disorder and perceived crime were not significant as direct factors on preterm birth. Perceived crime and objective social disorder were significant in explaining the levels of psychological distress (Table 5).

Discussion

Our results show that objective physical disorder was the only neighborhood environment variable that predicted preterm birth. Our findings regarding objective physical disorders were similar to the findings from Reagan and Salsberry (2005) that for African American

women only, housing vacancy rates increased the risk of preterm birth at fewer than 33 weeks gestation. Furthermore, objective social disorder increased the level of psychological distress and indirectly affected the risk for preterm birth. This is the only study to examine the relationship between objective social disorder and preterm birth. Lastly, psychological distress mediated the effects of objective social disorder on preterm birth.

We did not find the relationship between objective violent crime and preterm birth that other researchers have found (Messer, Kaufman, Dole, Herring, et al., 2006; Messer, Kaufman, Dole, Savitz, et al., 2006). Other researchers have measured homicide, physical assault, sexual assault, and kidnapping. Women in this study lived in neighborhoods with low levels of homicide and sexual assault, and these crimes did not affect preterm birth. However, we found that perceived crime increased the psychological distress of women in our study. Lastly, psychological distress mediated the effects of perceived crime on preterm birth.

Women in this study who reported more experiences of racial discrimination had higher levels of psychological distress. Stancil and associates (2000) and Murrell (1996) also found that racial discrimination was related to perceived stress in pregnant women. Therefore, women's experiences of discrimination may increase their psychological distress. However, in this study racial discrimination did not predict preterm birth as other studies have found. Women in our sample reported low levels of racial discrimination (mean of 2.5 situations from a possible range of 0–9) that may explain why racial discrimination was not related to preterm birth.

There are several limitations of this study. Our sample size was small. Women were enrolled from one medical center and lived in seven of the 77 community areas in Chicago limiting the variability for the objective neighborhood measures. The study was conducted one time at 24 to 72 hours after birth. A longitudinal design with data collection during pregnancy would provide a better view of the effect of neighborhood environment, racial discrimination, and psychological distress on preterm birth. Despite these limitations, we were able to examine objective and perceived neighborhood environment in postpartum women and their relationship with psychological distress.

Implications for Practice and Public Policies

The results of this study suggest that women's objective social disorder and perceived crime influenced their psychological distress. The results of this study have implications at multiple levels. With regard to implications for care for pregnant women, health care providers need to understand that neighborhood conditions may increase women's stress. Clinicians can assist women living in stressful environments to cope more effectively with stress by recommending relaxation techniques. Referrals for social services should be considered for women who live in neighborhoods with high objective physical disorder. Importantly, results suggest that health care providers should advocate for public policies that bring additional resources into urban neighborhoods with high rates of disorder and crime to improve conditions and reduce sources of stress. Health care providers can partner with local businesses, churches, and police departments in these efforts. More resources could also be allocated for prenatal care for women from neighborhoods with high objective

physical and social disorder. By addressing risk factors at multiple levels, the well-being of pregnant African American women may be maximized.

Implications for Research

This is the first study to examine objective and perceived neighborhood environment and their relationships with preterm birth, and psychological distress mediated the effect of objective social disorder and perceived crime on preterm birth. Future studies should be conducted to assess the effects of neighborhood environment on preterm birth by using a prospective longitudinal design. By measuring neighborhood environment during pregnancy, we can examine potential pathways by which neighborhood environment affects preterm birth among African American women. Additionally, more research is needed to examine perceived neighborhood environment, which may be more closely related to the stress women experience. Future researchers should develop interventions that support individual women during pregnancy and address neighborhood conditions. These interventions would include participation of community partners in decreasing housing vacancy and crime rates.

Conclusion

The results of this study suggest that psychological distress mediated the effects of objective social disorder and perceived crime on preterm birth. Health care providers need to assess women's perception of their neighborhoods and their influence on women's psychological distress. Nurses need to advocate for public policies that improve women's living conditions. By incorporating assessment of neighborhood environment during prenatal care and developing relevant interventions, nurses may improve the health of women and their infants.

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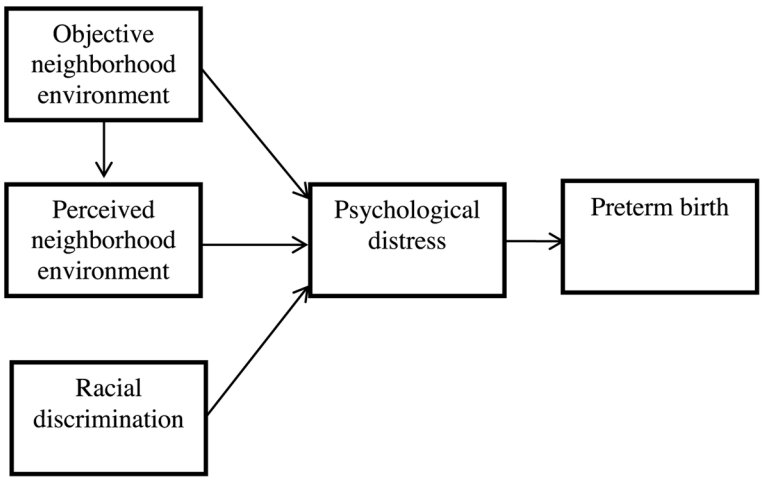

Figure 1.
Hypothesized pathways between neighborhood environment, racial discrimination and preterm birth.

Table 1

Sociodemographic and Obstetric Characteristics ($N = 72$)

Variable	Full-term birth ($n = 39$) M (SD)	Preterm birth ($n = 33$) M (SD)	t
Age	23.38 (5.44)	23.27 (5.24)	−.088
Gestational age at birth	39.4 (1.23)	33.5 (2.76)	−5.94*
	n (%)	n (%)	χ^2
Gravida			
Multigravida	−7 (36.8)	12 (63.2)	3.12
Primigravida	−32 (60.4)	21 (39.6)	
Marital status			
Single	33 (55.9)	26 (44.1)	.41
Married	6 (46.1)	7 (53.9)	
Education			
Less than high school	6 (66.7)	3 (33.3)	3.87
Graduated high school	15 (55.6)	12 (44.4)	
Technical/vocational	1 (50.0)	1 (50.0)	
Some college	14 (50.0)	14 (50.0)	
Associate degree	2 (100.0)	0	
Bachelor degree	1 (25.0)	3 (75.0)	
Employment			
No	18 (52.9)	16 (47.1)	.04
Yes	21 (55.3)	17 (44.7)	
Household income			
Less than $10,000	15 (50.0)	15 (50.0)	2.08
$11,000–20,000	12 (66.7)	6 (33.3)	
$21,000–30,000	6 (54.6)	5 (45.4)	
More than $31,000	5 (41.7)	7 (58.3)	

Note.

* $p < .01$ two tailed.

Table 2

Relationships among Variables

Variable	Objective physical disorder	Objective social disorder	Objective violent crime	Perceived physical disorder	Perceived social disorder	Perceived crime	EOD Situation	EOD Frequency	Psychological distress
Objective physical disorder	—								
Objective social disorder	.311**	—							
Objective violent crime	.440**	.510**	—						
Perceived physical disorder	.060	.046	.108	—					
Perceived social disorder	.134	.246*	.224	.685**	—				
Perceived crime	.104	−.031	.039	.673**	.585*	—			
EOD Situation	−.195	−.090	−.071	.266*	.219	.288*	—		
EOD Frequency	−.207	−.080	−.096	.324**	.280*	.428**	.863**	—	
Psychological distress	−.002	−.227	−.104	.423**	.444**	.589**	.437**	.524**	—
Gestational age at birth	−.134	.062	.079	−.004	.106	−.063	.061	.037	.067

Note. EOD = Experiences of Discrimination.

* $p < .05$ two-tailed,

** $p < .01$ two-tailed.

Table 3

Predictors of Psychological Distress ($N = 72$)

Variable	β	t	p
Objective physical disorder	.071	.680	.499
Objective social disorder	−.289	−2.666	.010
Violent crime	−.006	−.050	.960
Perceived physical disorder	.031	.221	.826
Perceived social disorder	−.025	−.187	.852
Perceived crime	−.465	−3.453	.001
EOD situation	−.108	−.597	.553
EOD frequency	−.244	−1.260	.212

Note. EOD = Experiences of Discrimination.

$R^2 = .513$; $F = 8.043$, $p = .000$.

Table 4

Predictors of Preterm Birth ($N = 72$)

Variable	β	$SE\beta$	Wald's χ^2	p	e^{β} (odds ratio)	95% CI
Objective physical disorder	.972	.462	4.428	.035	2.642	1.07–6.53
Objective social disorder	−.278	.436	.408	.523	.757	.32–1.779
Violent crime	−.379	.420	.813	.367	.685	.30–1.56
Perceived physical disorder	.087	.068	1.614	.204	1.091	.95–1.25
Perceived social disorder	−.148	.119	1.532	.216	.863	.68–1.09
Perceived crime	.087	.068	1.614	.204	1.091	.80–1.05
EOD situation	−.211	.248	.724	.395	.810	.50–1.32
EOD frequency	.100	.088	1.269	.260	1.105	.93–1.31
Psychological distress	.056	.027	4.274	.039	1.055	1.01–1.11

Note. EOD = Experiences of Discrimination.

Cox and Snell $R^2 = .164$; Nagelkerke $R^2 = .219$; $\chi^2 = 6.217$, $p = .045$; model predicted preterm birth correctly 61.4% of time.

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Table 5

Path Analysis for Preterm Birth, Psychological Distress, and Neighborhood Environment ($N = 72$)

Dependent Variable	Independent variable	Estimated coefficient	Standard error	Estimated coefficient/ Standard error
Preterm birth (yes/no)	Psychological distress	.051	.023	2.191
	Perceived crime	−.057	.053	−1.083
	Objective social disorder	−.466	.36	−1.295
	Objective physical disorder	.656	.408	1.606
	Intercept	−4.831	2.446	−1.975
Psychological distress	Perceived crime	1.531	.229	6.698
	Objective social disorder	5.737	1.862	3.082
	Objective physical disorder	−3.436	2.155	−1.594
	Intercept	102.959	3.533	29.139