Examining the Relationships between Stress, Depressive Symptoms, and the Neighborhood Food Environment on Diet Quality among Racially-Diverse Pregnant Women in South Carolina

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Background

Women’s diet quality during pregnancy often falls short of U.S. Dietary Guidelines and poor mental health and poor access to healthy food may be important barriers to improving diet quality during pregnancy. The purpose of this study was to 1) synthesize existing literature on the relationship between mental health and diet quality during pregnancy, 2) examine the relationship between mental health and diet quality in pregnancy, and 3) examine the relationship between healthy food density and diet quality in pregnancy.

Methods

For Aim 1 (systematic review), articles were obtained from five databases; study characteristics and findings were extracted and synthesized. For Aims 2 & 3, a cross-sectional analysis was conducted on baseline demographic, mental health, food environment, and dietary data from African-American (AA) and White overweight/obese pregnant women participating in the Health in Pregnancy and Postpartum (HIPP) study. Assessments were conducted from January 2015 to March 2018 by research staff and the 24-hour dietary recalls were self-administered. The 24-hour dietary recall data were used to calculate Healthy Eating Index (HEI)-2015 total and component scores. Food retailer data were obtained from ReferenceUSA. Food retailer locations and participants’ home addresses were geocoded to the point or street-address level in ArcGIS Pro. Healthy food density scores (via the Modified Retail Food Environment Index) were calculated based on a 5-mile network buffer around each participant’s home. Multiple linear and logistic regression models were conducted in SAS 9.4.
Results

Women (n=169) were racially-diverse (40% AA), young (M=29.6±5.1 years), primarily married (67%), well-educated given most women (61%) earned a college degree or higher, almost a quarter (23%) were enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children, most were in early pregnancy (M=10.1±2.4 weeks), and most lived in urban areas (82%). Women had low levels of stress (M=4.8±3.3, range 0-14), low levels of depressive symptoms (M=5.8±4.3, range 0-20), and poor diet quality (M=55.9±10.6, range 28-76). As stress and depressive symptoms increased, HEI total scores tended to decrease; alternatively, as healthy food density increased, HEI total scores tended to increase, but associations did not reach statistical significance. A one-unit increase in stress was associated with a 14% decrease in the odds of meeting Seafood and Plant Protein recommendations [adjusted (adj) OR: 0.86 (95% CI=0.77, 0.96)]. A one-unit increase in healthy food density was associated a 21% increase in the odds of meeting the Whole Fruit recommendation for participants living in an urban area (adj OR: 1.21 [95% CI=1.04, 1.40]) compared to those living in a rural area (adj OR: 0.97 [95% CI=0.91, 1.03]).

Conclusions

Overall, HIPP participants’ diet quality was poor, highlighting the need for additional research. Future studies should examine the efficacy of interventions that incorporate stress management and nutrition education and compare women’s perceptions of their food environment (vs. GIS-based measures) to improve diet quality in pregnancy.