Abstract

Changes in food environments near children’s homes can significantly impact children’s BMI – evidence from a longitudinal study

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APHA's 2020 VIRTUAL Annual Meeting and Expo (Oct. 24 - 28)

Background: Evidence from well-designed longitudinal studies is needed to assess the impact of the food environment on changes in children’s weight status.

Methods: A cohort of predominantly low-income African American and Hispanic 3-15-year-old children from four New Jersey cities was monitored over two-to-five year periods. Changes in the children’s food environment were tracked using systematic protocols and geospatial measures. Changes in Body Mass Index (BMI) Z-scores were grouped into three categories: (i) negative change, (ii) minimal change, and (iii) positive change. Multivariable analyses examined the impact of exposure to changes in food environments over varying periods of time (12, 18, 24 months) and over varying distances (¼, ½ and 1 mile) on odds of belonging to one of the three BMI Z-score change categories. Complete data were available for 450 children.

Results: 34% of the sample experienced a negative change in BMI-Z score, 25% experienced a positive change, and 41% experienced minimal change. In ordered logistic regression analysis, increased exposure to convenience stores, over varying lengths of time and distances, showed consistently higher odds of an increase in children’s BMI z-score. Conversely, children exposed to more small grocery stores selling healthier products showed a consistent pattern of decreased BMI Z-scores. Further examination by child age, sex, and race revealed significant differences.

Conclusions: Food environments play a critical role in determining children’s weight status over time. Interventions are needed to improve access to small grocery stores in children’s immediate neighborhoods and diminish the influence of convenience stores.

Public health or related research