Impact of Local Food Prices on the Relationship between Food Stamp Program Participation and Bodyweight Status of Adults in the South

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BACKGROUND OF STUDY:

The Food Stamp Program (FSP) is the principal food assistance program in the U.S. It is designed to provide a nutritional safety net via benefits paid to households or individuals with low socioeconomic status (SES). Recent studies suggest that FSP participation affects individuals’ dietary intake and increases the risk of obesity. In addition, lower unhealthy food prices are positively related to a higher prevalence of obesity. However, little is known about the interaction between food prices and FSP participation and how both of these factors jointly affect the body weight status of low-income individuals. While the obesity epidemic affects all racial/ethnic groups and social classes in the U.S., populations with low socioeconomic status bear a disproportionate burden. Identification of the economic mechanisms that promote weight gain among low-income Americans will enable policy makers to design and implement effective policy instruments, which will help address the obesity epidemic in the U.S.

METHODS:

Data: Two national datasets, NLSY79 cohort data and ACCRA data, were merged using geographic identifiers to provide complete information on long-term FSP participation, body weight status, and local food prices. NLSY79, the National Longitudinal Survey of Youth 1979, was a survey of 12,686 males and females aged 14-22 in 1979. Follow-up surveys were conducted each year between 1979 until 1994, and then biennially from 1994 to 2002. These data provided complete information on personal financial information, including income, assets, poverty status, and public assistance support sources. Self-reported height and weight were available in each wave of the surveys. The NLSY79 data also included geographic identifiers, such as respondents’ state, county, and metropolitan area of residence in each survey year. The metropolitan Statistical Area (MSA) codes, county and state codes were used as linking variables to the ACCRA data. ACCRA Price Data, the American Chamber of Commerce Researchers’ Association, collected quarterly prices of consumer goods in approximately 225 metropolitan and rural areas in the U.S. The data included the prices of 21 foods, typically consumed at home, and three foods typically consumed away from home.

Study variables: Body mass index and obesity (BMI>=30) were the outcome variables. The respondent was defined as an FSP participant if any FSP benefits were received in the previous year. The eligibility of FSP participants was determined as having an annual family income of less than 130% of the poverty threshold for a given household size. Weighted food price indexes were calculated by using the expenditure weight provided in the ACCRA data based on the Consumer Expenditure Survey (CES). Due to the strong colinearity between healthy and unhealthy food price indexes, only unhealthy food price indexes were used in the analyses. The respondent’s age, gender, race/ethnicity, marital status, family sizes, household income,
highest degree completed, urban/rural residence, and regions were all controlled. “South” was defined as the following thirteen states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

**Analysis framework:** The interactive term between FSP participation and unhealthy food prices were added in the regression models. The logistic regression model was used with obesity as the outcome variable. The fixed effects model took advantage of the longitudinal dataset and examined the long-term causation effect of unhealthy food prices and FSP participation on body weight status.

**FINDINGS/DISCUSSION:**

No significant FSP effect on BMI or obesity was observed among men. Among women, FSP participation contributed to a higher BMI (β=0.26, p=0.02). The unhealthy food prices had a negative effect on BMI (β=-0.27, p=0.001). The interaction term between unhealthy food prices and FSP participation had a negative effect on BMI (β=-0.26, p=0.01). The results indicated that higher unhealthy food prices could partially offset the positive effect of FSP participation on BMI. When the outcome was obesity, FSP participation was associated with a greater chance of being obese (odds ratio=1.37, p=0.09), whereas the unhealthy food prices were strongly related to a decreased chance of being obese (odds ratio=0.60, p=0.001). However, the interaction term was no longer significant (odds ratio=1.04, p=0.86). Therefore, the impact of higher unhealthy food prices was not significant enough to change the likelihood of being obese among FSP participants. In addition, the interaction between FSP and South was tested in the models and was not significant. Therefore, there was no significant disparity of FSP effects across regions.

The analyses of NLSY79 panel data and ACCRA price data indicated that the FSP effect on body weight status was not isolated, but was affected by other economic factors such as food prices. The study found an additional economic mechanism that contributed to body weight gain among low-income populations. The FSP effects on BMI may have been more severe in regions with lower unhealthy food prices. This helps explain the dramatic geographic variation in the prevalence of obesity in the U.S. This study also suggested potential benefits of taxing unhealthy food. Compared to middle or high-income groups, low-income populations were more sensitive to unhealthy food taxes. The tax could partially offset the positive impact of FSP participation on BMI. Besides the education of FSP participants, the tax could be another policy instrument that reduces the body weight disparity between FSP participants and non-participants.

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