Research Article

A Supermarket Double-Dollar Incentive Program Increases Purchases of Fresh Fruits and Vegetables Among Low-Income Families With Children: The Healthy Double Study

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ABSTRACT

Objective: To carry out a pilot study to determine whether a supermarket double-dollar fruit and vegetable (F&V) incentive increases F&V purchases among low-income families.

Design: Randomized controlled design. Purchases were tracked using a loyalty card that provided participants with a 5% discount on all purchases during a 3-month baseline period followed by the 4-month intervention.

Setting: A supermarket in a low-income rural Maine community.

Participants: A total of 401 low-income and *Supplemental Nutrition Assistance Program* (SNAP) supermarket customers.

Intervention: Same-day coupon at checkout for half-off eligible fresh, frozen, or canned F&V over 4 months.

Main Outcome Measure: Weekly spending in dollars on eligible F&V.

Analysis: A linear model with random intercepts accounted for repeated transactions by individuals to estimate change in F&V spending per week from baseline to intervention. Secondary analyses examined changes among SNAP-eligible participants.

Results: Coupons were redeemed among 53% of eligible baskets. Total weekly F&V spending increased in the intervention arm compared with control ($1.83; 95% confidence interval [CI], $0.29 to $3.88). The largest increase was for fresh F&V ($1.97; 95% CI, $0.49 to $3.44). Secondary analyses revealed greater increases in F&V spending among SNAP-eligible participants who redeemed coupons ($5.14; 95% CI, $1.93 to $8.34) than among non–SNAP eligible participants who redeemed coupons ($3.88; 95% CI, $1.67 to $6.08).

Conclusions and Implications: A double-dollar pricing incentive increased F&V spending in a low-income community despite the moderate uptake of the coupon redemption. Customers who were eligible for SNAP saw the greatest F&V spending increases. Financial incentives for F&V are an effective strategy for food assistance programs to increase healthy purchases and improve dietary intake in low-income families.

Key Words: behavioral economics, financial incentives for fruit and vegetable purchase promotion, randomized controlled trial, SNAP, SNAP policy (*J Nutr Educ Behav*. 2017;■■:■■–■■.)

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INTRODUCTION

Consuming more fruits and vegetables (F&V) is associated with lower rates of obesity, diabetes, cardiovascular disease, and some cancers.[1] Children who consume a diet rich in F&V are less likely to be overweight or obese than their peers who consume nutrient-poor foods.[1] Several factors have been linked to higher consumption of F&V among children, including greater availability of F&V in the home[2] and higher maternal intake of F&V.[3] Furthermore, higher maternal

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F&V intake is inversely associated with child weight status.[3,4] Efforts to increase F&V purchases and intake by adults in the household should positively affect children's F&V consumption and weight status.[5,6]

Low-income populations, such as those who participate in the *Supplemental Nutrition Assistance Program* (SNAP), spend less per person on F&V than do higher-income populations.[7] Although the goal of SNAP is to eliminate food insecurity and improve nutrition,[8] some studies found that people who participate in SNAP are more likely to have obesity and other metabolic health risks than are lower income nonparticipants.[9-13] These findings could be explained by poorer dietary quality of SNAP participants. Compared with nonparticipants, SNAP participants consume more refined grains, processed meats, and sugar-sweetened beverages and fewer F&V.[13-15] An analysis of recent sales data from a large supermarket chain demonstrated that during 2 years (2012–2014) in 188 northeast store locations, 13% of SNAP spending and 19% of non-SNAP spending were for F&V.[16] In addition, transactions made with SNAP benefits included greater spending on less healthful food categories, including sugar-sweetened beverages (5.5% vs 3.7%) and red meat (16.9% vs 11.5%) than those made with non-SNAP dollars.[16]

Low-income and SNAP populations often cite cost and preparation time as major barriers to purchasing and preparing F&V.[4,7,17] Efforts to prevent obesity at the population level require changes that address these key barriers. The researchers used diffusion theory[18] to guide this intervention design. Diffusion theory posits that the speed of adoption of new behaviors within any population is based on 4 factors: observability; trialability; compatibility, and relative advantage. Maximizing these factors will speed the adoption of a desired behavior.[18] The intervention affects perceived relative advantage by making F&V more affordable for low-income shoppers; greater affordability means greater compatibility with lower income needs. To a lesser extent, observability and trialability of the study loyalty card system (described later) are affected through a demonstration of how to use the study loyalty card system at enrollment and by observing savings at checkout. Financial incentives and price changes, such as decreasing the cost of healthy foods or increasing the cost of unhealthy foods, were successful at promoting healthy food purchases.[19-21] For example, farmers' market pricing incentives for fresh produce were shown to have a positive impact on F&V purchases among SNAP users.[22,23] However, inconvenience, seasonality, and the perception of the lack of racial/ethnic diversity at farmers' markets may discourage use among others.[24] A recent review of the effect of food pricing on diet demonstrates the effectiveness of pricing strategies to increase the consumption of healthy food while concurrently decreasing the consumption of unhealthy food.[25] For example, the Healthy Incentives Pilot Study in Hampden County, MA, tested the use of financial incentives ($0.30/$1.00 SNAP benefit) to encourage the purchase of fresh, frozen, and canned F&V in retail food stores.[26] The study found that participants consumed 26% (1/4 cup/d) more F&V than did nonparticipants, spent 11% more on F&V using SNAP dollars, and spent over $6/mo more on F&V.[26] However, existing evidence is limited owing to small convenience samples and short intervention and follow-up time frames; furthermore, few studies explored the use of supermarket point-of-purchase incentives applied in real time.[27]

The large chain supermarket setting is ideal to test effective strategies to promote healthy purchases because of the broader array of available fresh, frozen, and canned F&V. Supermarkets reach more people and account for a larger share of the SNAP food budget than do other retail venues such as farmers' markets or corner stores. Ninety percent of both SNAP and food-insecure households usually shop for groceries at either a supermarket or a supercenter, the same as higher-income consumers.[28] Moreover, 64% of weekly SNAP food budgets are spent in large supermarkets, compared with only 2% in specialty stores.[29] Supermarket chains also have the potential to affect large segments of the population by targeting promotions in low-income and rural locations, and may be eager to promote sales of higher-priced perishable items (eg, produce), thus reducing potential financial losses and in turn sustaining financial incentives. Incentives could also be sustained through programs such as SNAP or a sugary beverage tax.

To date, limited data are available to evaluate the effectiveness of pricing interventions from randomized controlled studies in large supermarkets.[25,30] Therefore, this pilot study used a randomized controlled design to test the effectiveness of financial incentives for increasing purchases of fresh, frozen, and canned F&V in a supermarket that served a low-income, rural population and was part of a large regional supermarket chain.

METHODS

Setting and Participants

The setting for the Healthy Double study was a supermarket located in a rural suburb of Portland, ME. The study store was chosen for its high SNAP customer base. Transactional store data demonstrated that approximately 10% of store purchases were made with an Electronic Benefits Transfer (EBT) card. In 2015, 19% of the Maine population participated in SNAP, compared with the national average of 15%.[31] A total of 65% of Maine adults were classified as overweight or obese[32] and Maine ranked 13th in the nation for prevalence of childhood obesity.[33] Maine's rural geography, limited access to supermarkets, and long winters meant a shorter growing season, further limiting access to fresh affordable local produce and placing low-income rural Mainers at greater risk for poor nutrition and its consequences.[34-36]

Supermarket Partner and Guiding Stars

The Hannaford supermarket chain, which had a loyal customer base, had 194 stores located in New York and northern New England, including 62 stores in Maine. In 2006, Hannaford introduced the Guiding Stars nutrition labeling system, the first storewide nutritional navigation program in a supermarket setting. The nutrient profiles