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Effects of financial incentives for the purchase of healthy groceries on dietary intake and weight outcomes among older adults: A randomized pilot study

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ABSTRACT

Providing financial incentives can be a useful behavioral economics strategy for increasing fruit and vegetable intake among consumers. It remains to be determined whether financial incentives can promote intake of other low energy-dense foods and if consumers who are already using promotional tools for their grocery purchases may be especially responsive to receiving incentives. This randomized controlled trial tested the effects of offering financial incentives for the purchase of healthy groceries on 3-month changes in dietary intake, weight outcomes, and the home food environment among older adults. A secondary aim was to compare frequent coupon users (FCU) and non-coupon users (NCU) on weight status, home food environment, and grocery shopping behavior. FCU (n = 28) and NCU (n = 26) were randomly assigned to either an incentive or a control group. Participants in the incentive group received $1 for every healthy food or beverage they purchased. All participants completed 3-day food records and a home food inventory and had their height, weight, and waist circumference measured at baseline and after 3 months. Participants who were responsive to the intervention and received financial incentives significantly increased their daily vegetable intake ($P = 0.04$). Participants in both groups showed significant improvements in their home food environment ($P = 0.0003$). No significant changes were observed in daily energy intake or weight-related outcomes across groups ($P < 0.12$). FCU and NCU did not differ significantly in any anthropometric variables or the level at which their home food environment may be considered 'obesogenic' ($P > 0.73$). Increased consumption of vegetables did not replace intake of more energy-dense foods. Incentivizing consumers to make healthy food choices while simultaneously reducing less healthy food choices may be important.

1. Introduction

Provision of financial incentives designed from behavioral economics concepts are increasingly being tested for their effectiveness in changing health behaviors including, but not limited to, smoking cessation, medication adherence, weight loss, and promotion of physical activity (Haff et al., 2015). A number of randomized studies were also conducted recently to test the effectiveness of providing financial incentives for the purchase of healthy foods and beverages on promoting their intake. For example, the USDA Healthy Incentives Pilot (HIP) project aimed to determine the impact of financial incentives provided to participants in the Supplemental Nutrition Assistance Program (SNAP) for the purchase of qualifying fruits and vegetables on intake (United States Department of Agriculture, 2014). Participants in the intervention (HIP) group received 30 cents for every SNAP dollar they spent on targeted fruits and vegetables (e.g., fresh, frozen, canned, dried fruits and vegetables without added sugars, fats, oils, and salt) at participating retailers. The results showed that HIP participants consumed almost a quarter of a cup or 26% more targeted fruits and vegetables per day compared to participants in the control group.

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Similarly, Geliebter and colleagues (Geliebter et al., 2013) tested the effect of a 50% discount on low energy-dense fruits and vegetables, bottled water, and diet sodas on purchasing behaviors, food intake, and body weight in overweight and obese shoppers in two Manhattan supermarkets. The results showed that the gross weekly purchasing of discounted fruits and vegetables was more than three times greater by the intervention group than the control group, an effect which was partially sustained during the 4-week follow-up period. Together, these data suggest that subsidizing purchases of fruits and vegetables by providing financial incentives can be an effective strategy to significantly increase intake of these foods. It remains to be tested if extending financial incentives to other low energy-dense foods and beverages can significantly impact daily energy intake and weight-related outcomes.

Many middle-aged and older Americans are economizing on their food purchases and coupons are one of several promotional tools that supermarkets use to promote grocery sales. It is estimated that 27% of households frequently use grocery coupons at a variety of retailers (Kumcu & Kaufman, 2011). Novel distribution techniques for coupons through digital channels (e.g., email promotions, mobile device apps), which personalize the display of coupons are increasingly being used by retailers and have shown to yield higher rates of coupon redemptions and more redemptions for brands/products that are new to consumers (Cameron, Gregory, & Battaglia, 2012). While many prior studies have focused on coupon use as a sales promotion technique (Bawa & Shoemaker, 1987; Goodwin, 1992; Musalem, Bradlow, & Raju, 2008; Venkatesan & Farris, 2012), little is known about the extent to which coupons for groceries may promote obesogenic home food environments and higher weight status among consumers. Many coupons encourage the purchase of large quantities of prepackaged and processed foods and often reward shoppers by adding 'free' products if they purchase certain quantities. In fact, a content analysis of 1056 online coupons showed that the largest percentage of coupons was for processed snack foods, candies and desserts (25%), prepared meals (14%), cereals (11%), and beverages such as sodas, juices, and energy/sports drinks (12%). Only 4% of the online coupons were for the purchase of fruits and vegetables (Lopez & Seligman, 2014). Availability and easy accessibility of unhealthy foods and beverages in the home, such as high-fat foods, sweet and savory snacks, and sugar-sweetened beverages, has been shown to promote increased intake of those foods and beverages in youth and adults (Campbell et al., 2007; Raynor, Polley, Wing, & Jeffery, 2004; Tak et al., 2011).

The primary aim of this pilot study was to test, in a randomized-controlled trial, the effects of financial incentives for the purchase of healthy foods and beverages on 3-month changes in dietary intake, BMI and waist circumference, and the home food environment among an urban sample of middle-aged and older FCU and NCU. We hypothesized that participants in the incentivized group would show significant improvements in dietary intake, BMI and waist circumference, and their home food environment compared to participants in the control group. A secondary aim of the study was to compare, in a baseline analysis, FCU and NCU on weight measures, home food environments, and grocery shopping behaviors. We hypothesized that compared to NCU, FCU would have a significantly higher weight status and reside in a more obesogenic home food environment. We further hypothesized that the primary considerations for food product choices among FCU would be price and economic value, while NCU focus more on the perceived nutritional value and quality of grocery purchases.

1.1. Study design

This pilot study, a randomized controlled trial, tested the effects of providing financial incentives for the purchase of healthy groceries on 3-month changes in dietary intake, BMI and waist circumference, and the home food environment among older adults who either frequently or never used coupons for their grocery purchases. Participants were randomly assigned to either an incentivized group (Incentive) or a control group (Control). Coupon usage (FCU/NCU) was counterbalanced across groups so that each group consisted of ~50% FCU and ~50% NCU. At baseline, and again at a 3-month follow-up visit, participants were asked to complete a series of questionnaires and had their height, weight, and waist circumference measured.

1.2. Participants and recruitment

Participants in this study were 54 racially/ethnically diverse men and women, ages 40–70 years, living in Philadelphia. Participants were recruited through newspaper and online advertisements. To be included in the study, participants had to be between 40 and 70 years of age and qualify as a FCU or NCU. FCU were defined as individuals who, during a telephone screening interview, reported that they 1) use grocery coupons at least once a week or every time they shop for groceries and 2) purchase at least half of their grocery items with coupons each time they shop. NCU were individuals who reported never using coupons when shopping for groceries. Individuals were excluded from participating in the study if they had medical conditions or were using medications that affect appetite, food intake, and body weight; were on a special diet or dieting; had severe food allergies or dietary restrictions; or were occasional coupon users.

Interested men and women were screened by telephone to determine their eligibility for the study. Those who qualified for the study from the screening interview were invited to come to the Center for Weight and Eating Disorders at the University of Pennsylvania for their baseline visit. During this visit, participants received a detailed explanation of study procedures and were asked to provide voluntary consent to participate in the study by signing the consent form. Subjects were compensated $100 for the successful completion of all anthropometric and dietary assessments over the course of the study. The study was approved by the Institutional Review Board of the University of Pennsylvania.

1.3. Intervention and control groups

Eligible participants were randomly assigned to either an incentivized group (Incentive) or a control group (Control). Participants in the Incentive group received a brief orientation to the incentive program at the beginning of the study (baseline visit). During this orientation, a clinical research coordinator informed participants that for every healthy food or beverage they purchased, they would receive $1 (in cash) in financial incentives. The maximum amount of financial incentives that participants could earn was $100 (for a total of 100 healthy foods and/or beverages) over the 3-month study duration. Foods and beverages that qualified for the incentive program included fruits and vegetables (fresh, canned, frozen); no-calorie or low-calorie (<50 kcal per 8 fl oz) beverages; and any foods with an energy density < 1.5 calories per serving (g), such as soups, legumes, or low-fat dairy and meat products. Participants were given $1.00 for every food item purchased per grocery transaction that met this definition. This also meant that, for example, if a participant purchased five apples during one transaction and provided proof of purchase with one grocery receipt, they were given $1.00. If a participant purchased one apple at five independent transactions over the course of their participation, they were given $1.00 per transaction for a total of $5.00. This incentive also applied to the purchase of food items with