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Point-of-Purchase Nutrition Information Influences Food-Purchasing Behaviors of College Students: A Pilot Study

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ABSTRACT

The goal of point-of-purchase (POP) nutrition information is to help consumers make informed, healthful choices. Despite limited evaluation, these population-based approaches are being advocated to replace traditional, more expensive, individual behavior-change strategies. Few studies have examined the effect of POP information on buying patterns of college students, a group with high obesity rates and poor eating habits. This quasi-experimental pilot project sought to determine whether the "Eat Smart" POP program affected food-purchasing habits of multiethnic college students shopping at an on-campus convenience store. Baseline sales data of foods in the cereal, soup, cracker, and bread categories were collected for 6 weeks during Fall 2008. After Winter break, a few food items within each of these food categories were labeled as healthful using a "Fuel Your Life" shelf tag, and sales data were then collected for 5 weeks. In each of the four food categories, nontagged foods were available at the identical price as tagged items. Following intervention, there were increased sales

of tagged items (measured as a percentage of total sales) in the cereal, soup, and cracker categories, while sales of bread decreased. Although none of these changes were statistically significant, the intervention resulted in a $3.6\% \pm 1.6\%$ ($P=0.082$) increase in the percentage of sales from tagged items. Thus, providing POP nutrition information in a college campus convenience store may promote healthful food choices. A longer study examining the effect of POP on sales of items in other food categories is warranted.

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Poor diet and physical inactivity leading to obesity is poised to overtake tobacco use as the leading cause of preventable death in the United States (1). Currently, >30% of adult Americans are obese (2), increasing their risk for cardiovascular disease, hypertension, type 2 diabetes, and several forms of cancer (3). Weight gain is primarily caused by an energy imbalance, the result of too many calories consumed relative to those expended (4). On the energy-intake side, diet and eating behaviors are influenced by a complex set of interactions, ranging from individual choice to broader social, cultural, economic, and environmental determinants (5). Strategies for changing nutrition behavior focusing on the individual (ie, downstream approaches) have high costs relative to their efficacy and reach (6). This has led to increasing interest in developing policies and environments that support healthful eating and obesity prevention in a given population rather than for individuals (ie, upstream approaches) (7-9). Policy approaches can affect health behaviors and alter physical environments in an entire population (10). Environmental approaches to healthful eating include improving access to and availability of healthful foods and providing point-of-purchase (POP) nutrition information (11).

Because POP nutrition information has the potential to influence healthful eating patterns in entire populations (11), legislating the provision of POP information has moved from the states (12) to the federal government. The Patient Protection and Affordable Care Act of 2010 (13) requires calorie labeling on chain-restaurant menus,

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STATEMENT OF POTENTIAL CONFLICT OF INTEREST: See page S45.

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menu boards, and drive-through displays, as well as on vending machines. Studies examining the effect of POP information on food purchasing behaviors in grocery stores, restaurants, universities, and the workplace have recently been reviewed (11,14). In grocery stores, of 11 interventions that focused primarily on information strategies (15-25), seven studies showed increased sales for, at most, 50% of the targeted food items (19-25).

Currently, four different shelf-tag POP initiatives are being used in grocery stores in the United States (26-29). The Guiding Stars program (promoted in Hannaford stores [Hannaford Supermarkets, Scarborough, ME] in the Northeast) assigns one to three stars to various food items, to identify foods with higher nutritional value (26). The NuVal Nutritional Scoring System (found in stores throughout the Northeast and Midwest) factors >30 nutrients into an algorithm to compute a single nutrition score (from 1 to 100) for each food item, assigning higher scores to foods and beverages with higher nutrient content (27). Nutrition iQ shelf tags (used in Acme, Cub, and Albertsons stores [all owned by Supervalu, Inc, Eden Prairie, MN]) uses color-coded tags displaying nutrition content for sodium, fiber, saturated fat, calcium, protein, whole grains, and calories (28). The Healthy Ideas program (found in Stop&Shop stores [Royal Ahold, Amsterdam, The Netherlands] throughout the Northeast) assigns a “healthy ideas” logo to >3,000 items, all of which have at least 10% of the daily recommended amount of one nutrient (29). Although these shelf-tag POP programs are widely distributed in grocery stores throughout the country (26-29), peer-reviewed studies on their efficacy are limited (25).

In the university setting, provision of POP nutrition information in cafeterias (30-36) and vending machines (37-39) has been studied. No research has examined the effect of POP information provided to students shopping at on-campus convenience stores. Notably, 25% of college students are obese (40), few meet the Dietary Guidelines for Americans (41-44), and many are developing dietary habits that influence later health risk (45). Consequently, it is important to determine whether information provided to college students in this venue influences their food-purchasing habits. The objective of this pilot project was to examine the effect of a POP nutrition program on the food-buying habits of multiethnic students who shopped at an on-campus convenience store at a large urban university. The hypothesis was that more students would purchase healthful food items, promoted as part of the “Eat Smart” campaign and tagged with the “Fuel Your Life” logo, compared to identically priced, nontagged items within the same food category.

METHODS

Study Venue

The Eat Smart POP nutrition information program was conducted in an on-campus convenience store located at an urban university with no ethnic majority (23% Asian, 16% Hispanic, 29% white, and 32% listed in other ethnic groups). This on-campus convenience store is on the ground floor of a three-unit high-rise residential complex that houses about 2,000 students, and is also very close to two other campus residential units that house an addi-



Figure. “Fuel Your Life” logo found on shelf tags, used to identify healthful foods in the “Eat Smart” campaign.

tional 1,300 students. The purchase of a university meal plan is mandatory for the approximately 1,900 freshman and lower-division students living in these on-campus housing units, but the meal plan is optional for 1,400 upper-division students living in the high-rise residential complex who have apartments with full kitchens. Although anyone can shop at the on-campus convenience store, its primary customers are students who live on campus. Food items available for purchase at the on-campus convenience store include staples (eg, bread, cereal, luncheon meats, frozen meals, fruits); snacks (eg, chips, nuts, candy, energy bars, crackers); beverages (eg, water, milk, soft drinks, juice, energy drinks); and made-to-order coffee and sandwiches. The on-campus convenience store is open from 7 AM to 1 AM Monday through Friday and from 10 AM to 1 AM on weekends. Because outcomes measures were based on sales data, the San José State University Institutional Review Board for human subjects categorized this research as exempt.

Study Design and the Eat Smart Intervention

This 11-week quasi-experimental study collected baseline sales data for 6 weeks during the middle of the Fall 2008 semester. These 6 weeks were chosen to allow students to establish baseline food-purchasing habits after starting the school year. Then, after students returned from Winter break, Eat Smart program materials were placed in the on-campus convenience store. Sales data were collected during the middle of the Spring 2009 semester for 5 weeks, ending just before students left campus for Spring break.

The intervention included 1.25-inch×3-inch shelf display tags (Daydots Zippy Tags, #11206-01-00, Fort Worth, TX) featuring the Fuel Your Life logo (Figure)

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