



LITERATURE REVIEW ON STRATEGIES FOR HEALTHY VENDING San Diego and Imperial Regional Nutrition Network

1. French SA. et al (2001). Pricing and promotion effects on low-fat vending snacks purchases: The CHIPS study.¹

Population: Adults and adolescents/ 12 worksites and 12 schools.

Aims: Examine pricing and promotion strategies of low-fat vending. Sales data was the outcome of the study.

The overall design was a 4 (pricing equal, 10%, 25% and 50% reduction) X 3 (promotion: none, label only and plus sign).

Intervention: Route drives and supervisors were trained on the study protocol at the beginning and midpoint of the intervention. Study staff set up the each of the 55 vending machines, which included placement of low-fat foods in vending machines with appropriate signs and labels. Vending machine company staff were trained at the beginning and midpoint of the intervention.

Twelve conditions were randomly assigned in sequence to each of the sites. Each condition lasted 4 weeks in all vending machines in each site. About 17% total placement of the snacks were low-fat.

Results: Average sales of low-fat snacks were 12.6% at schools and 16.9% at worksites. Promotion of low-fat snacks was significantly associated with greater low-fat snack sales.

Discussion: Sales of low-fat snacks increased proportionately with increasing price reductions. Pricing and promotion had a similar effect on adolescent and adult populations.

Limitations: High SES and majority of white populations

2. French A.S., Story M., Fulkerson J.A., Hannan M. (2004). An environmental intervention to promote lower-fat food choices in secondary schools: Outcomes of the TACOS study.²

Population: Secondary school children.

Study design: 2 year group-randomized school based nutrition intervention trial with a two group design. The environmental intervention consisted of food availability in cafeteria à la carte areas and peer influence via peer promotions for low-fat foods and control school (no change). There were 10 schools in the intervention and 10 schools in the control group.

Low-fat was defined as 5 grams or less of fat per serving.

À la carte was defined as food sold separately from the school lunch.

Aims: The initial goal was to increase à la carte low-fat offerings to 30% and the ultimate goal was to increase it to 50% at the end of the intervention period (Two year intervention).

Interventions: Study and school staff met to tailor list of low-fat available foods and progress of the program.
Peer influence on adolescents' food choices was addressed by using peer low-fat food promotions.
Study staff worked with a group of students to develop low-fat à la carte food promotions. Study staff served as a liaison between students and food service staff.
Each promotion required 2 to 3 weeks to prepare and lasted 1 to 5 days
Promotions consisted of posters, newsletter articles and videos.
Financial incentives were given to students groups that completed a promotion.

Results: Intervention schools showed a significantly higher mean percentage of sales of lower fat foods in both years.
Students in the interventions schools were more likely to identify low-fat foods and they perceived that more adults encouraged them to eat low-fat foods.
Environmental changes in schools to increase the availability and promotion of low-fat foods is a feasible and violable intervention.

Limitations: The study was only implemented in suburban schools in Minnesota. An average of 14% students were not Caucasian in the schools (neither ethnicity nor average age was reported). Only 9% of the students were eligible for free and reduced lunch.

3. Fiske and Weber Cullen (2004). Effects of promotional materials on vending machines sales of low-fat items in teachers' lounges.³

Populations: Adults/schools/Teachers.

Aim: To examine the impact of availability of low-fat items and to explore the effect of two promotional levels on the total sales of low-fat snacks.

Intervention: The unrefrigerated vending machines were of equal size and held 28 snack food items. There were three intervention levels: control, level I and level II.
Intervention level I: consisted of a yellow price strip highlighting the price stickers for the low-fat items. Intervention level II: labels plus signs: a matching small yellow sign indicating that the yellow items were low-fat was placed on the front glass of the machine above the selection bottom. Large motivational signs encouraging low-fat selections were placed on top of the vending machines.
All vending machine had five low-fat items in their vending machines.
Three new low fat items were added to each vending machine, in rows C and D, which was consistent through the intervention period.

Results: More low-fat items were sold from vending machines in the intervention level II. Moderate effects on total dollar sales were observed in response to the interventions.
Sales revenue was not reduced as a result of the increased selection of low-fat items.

Limitations: This study was unique in that the prices of low-fat items were not altered, but instead the number of low-fat alternatives were increased and marketing of the items occurred at two levels: labels and signs.
Intervention messages were not pre-tested with teachers or other school staff.
Sample size was small.
The intervention was only 4 weeks long, reducing the possibility of examining the effects of seasonality or other influences.

4. Davee A.M., et al. The vending machine and à la carte policy intervention in Maine Public High Schools.⁴

Population: High schools/ children.

Aim: Describe the facilitators and barriers of implementing a healthy vending machine and à la carte policy in Maine high schools.

Design: Seven schools volunteered to participate in this demonstration project. Four schools were assigned to the intervention (made changes to the nutrition environment) and 3 in the control (no changes).

Intervention: Changes focused on low-fat and low-sugar snack and foods. Strategies used were early communication with school officials, monetary stipends for participating, identifying a school liaison, and establishing a committee to promote healthy changes. Project team met with school vendors to present the guidelines and identify items that met the criteria.
Changes in vending machines and à la carte occurred on the first day of school year. Presentations to emphasize the potential for the environmental changes had a positive impact on students and staff.
Letters were sent home to inform students and parents the changes in the nutrition school environment.
Project staff and school committees met biweekly and monthly to develop and implement changes in the schools.
Activities to promote the changes included: taste-testing, display of banners encouraging consumption of fruit and vegetables, and visual demonstrations of the amounts of fat and sugar in foods.

Results: At baseline 80% of snacks and 54% of the beverages did not meet the nutrition guidelines. Barriers: vendors neither collected sales information for vending machines nor kept inventories of the stock in each vending machine.
Some foods did not provide nutrition labels.
Sales data are considered proprietary and was not obtained from many vendors

5. Neumark-Sztainer D et al. (2005). School lunch and snacking patterns among high school students: Associations with school food environment and policies.⁵

Population: Random selection of 1088 high school students from the TACOS study.
TACOS: Trying Alternative Cafeteria Options in High Schools

- Aim:** Examine the associations between high school student's lunch patterns, vending machine purchases and the school food environment and policies.
- Design:** Data on lunch patterns and vending machine practices were collected from 1088 high school students prior to the beginning of the TACOS intervention. Adolescents eating patterns survey was sent home. Participants completed the survey and returned it to study staff. Principal and school staff were interviewed to ascertain school food-related policies.
- Results:** On average, students purchased snacks from vending machines nearly once a week. Students purchased soft drinks from vending machines 1.6 days/week, and 61.5% of the students reported buying soft drinks at least once a week. Boys purchased soft drinks from vending machines more often (once a week) than girls. There were not gender differences in a la carte, fast food and convenience store lunch purchases or in snacks from vending machines food. A la carte food purchases were most frequent among younger students (9th and 10th grades). Eating from a fast food restaurants was more frequent among older students (11th and 12th). Only 15.8% of the schools had policies regarding the types of food that could be sold in vending machines. Each school had an average of 2.7 vending machines in their campuses. The mean number of soft drink vending machines in each school was 5.3%. Twenty percent of snacks machines and 50% of the soft drinks vending machines were closed during lunch time. Students at schools with open campuses policies during lunchtime were significantly more likely to eat lunch at a fast food restaurant or convenience store. Students in schools with policies about the types of foods sold in vending and soft drinks machines were less likely to buy from them than students in schools with no policies. Greater number of snack vending machines increased the student snack food purchase frequency. School based programs should take into account the eating patterns of younger and older students.
- Limitations:** All schools were from the same Midwestern area of the US, serving a population with a low representation of minorities and lower SES. Data was self-reported. The study assessed the number of time a day/week students purchased food from vending machines; however it didn't assess number of items per purchase. This study only examine eating patterns related to lunch time, further research is needed to examine the association with the school food environment and before, during and after school hours.

7. Kille B (2003). Healthy Employees are More Productive Employees.
Presentation delivered at Great Lakes Regional Cardiovascular Health Conference.⁶

- Population: The heart healthy labeling program was institutionalized in all worksites serviced by Maumee Valley Vending.
- Aims: Henry County Heart Health Coalition in Ohio and Maumee Valley Vending, Inc. collaborated to determine whether a *5 a Day* labeling program on vending machines would increase consumption of heart healthy foods by worksite employees.
- Design: Cold machine items were labeled with a heart healthy or *5 a Day* sticker as they came off the production line. In snack machines, “Healthy Vending Choices” static clings were placed on the front glass of machines to assist customers with selections, and beverage machines promoted healthy items through educational information.
- Results: An evaluation from March through September 2003 indicated an 80 percent increase in the sale of heart healthy items and a 14 percent increase in *5 a Day* items. Surveys indicated that 100 percent of the companies believed that having access to healthy food choices in vending machines is beneficial and 57 percent of employees used the program to identify Heart Health and/or *5 a Day* foods to purchase.

Examples of successful healthy vending machine programs in schools

- US Senator Charles Schumer proved successful in his effort to put milk vending machines in a number of Buffalo-area schools. He asserts that “Vendi-Milk” promotes child nutrition and creates a new market for dairy farmers. In Springville, New York, these in-house milk vending machines are generating \$330 a month in revenue for farmers.⁷
- Venice High School in Los Angeles eliminated unhealthy snack and beverage sales on campus. The school vending machines now offer a variety of waters, 100% juices and soy milk, as well as a variety of healthy snacks including granola and cereal bars. After one year, snack sales in the student store were up by over \$1,000 per month compared to the same time the previous year. Two years after the changes, snack sales per month had roughly doubled (\$6,100 in May 2002 compared with \$12,000 in March 2004).⁸
- North Community High School in Minneapolis replaced most of its soda vending machines with machines stocked with 100% fruit and vegetable juices and water and slightly reduced the prices of those healthier options. As a result, the sale of healthier items increased and the school has not lost money.⁸
- Old Orchard Beach Schools in Maine wrote school vending policies that led to the removal of sodas and junk foods, and replaced them with water, 100% fruit juices, and healthier snack options. The vending machine signage was changed to advertise water instead of soda. Vending revenues have remained the same as it was prior to the changes.⁸
- Vista High School in San Diego County instituted a policy to eliminate junk food vending machine contracts from campus. Healthy vending machines now offer yogurt, fruit/vegetable plates, bagels, and salads. Machines have grossed \$25,000/month, averaging a \$6,000/month profit, which is twice the profit received under contracts.⁹

How is the vending machine industry reacting to the idea of having healthy foods in vending machines?

- An article in *Vending Times* (August 24, 2000) reported that vending machine operators who make the effort to locate “better-for-you” snacks are finding them a valuable marketing tool and strong sellers. Vending companies find there is a demand for low-fat and healthier products. Although consumers are demanding healthy choices in vending machines, businesses find that the vending machine industry has been slow to respond to requests for healthier foods.¹⁰
- The “Heart Smart International Red Heart Food Vending Program” analyzes vending menu items for nutritional content. Operator subscribers pay an annual fee and receive updated lists of compliant products and stickers to be placed next to price inserts. Approval must be given by Heart Smart International before the **Red Heart**  emblem is displayed.¹¹
- The “500 Club” is a healthy eating program coordinated by Gundersen Lutheran Registered Dietitians and recommended by physicians. Shelf markers are provided to indicate low-fat selections. Operators are given a brochure for each machine that lists the approved selections and the nutritional breakdown of each. Businesses find that clients are attracted by the fact that they offer a healthy eating program coordinated by a major medical center.¹²
- The Automatic Merchandiser State of the Vending Industry Report indicated that the industry generated \$23.1 billion in sales in 2002. The industry has added more healthy snacks, for example, baked potato chips and low-fat granola bars, to meet the nutritional requirements of schools. A big part of the growth is based on people at work: if people aren't working, they're not putting their coins in the machines. Sales dropped about 5 percent each year since 2000, according to the industry report.¹³
- Canteen Vending Services, one of North America's largest vending machine operators, has announced plans to install hundreds of machines with 100% better-for-you food choices in 11 cities. It expects to install at least 7,500 such machines in dozens of cities in the next five years. The company is also making at least 15 percent of the items in all 160,000 of its traditional vending machines nutritious products. Just five years ago, healthy vending selections accounted for just 2 percent.¹⁴
- National Automatic Merchandising Association (NAMA) Knowledge Source consultant Ruth Lahmayer-Chipps tackled the issue of obesity and the steps vending operators can take to address current concerns over the nationwide epidemic at the NAMA National Expo. The Registered Dietician, who has worked extensively with vending operators on menu improvements to meet wellness objectives, led two interactive sessions at the convention: “Obesity In Vending Update: Ask the Dietician” and “Enhancing Your Foodservice Image Through Variety and Healthy Eating Options.” The workshops were designed to update operators on mainstream dietetic thought, and provide guidance and tools with which to review their own product mixes and deal confidently with customer questions. She urged operators to be proactive by featuring healthier foods in their machines and making their presence known, and meeting special requests for “better-for-you” options. The speaker emphasized that operators should provide educational materials to their customers, especially schools, to drive home the importance of balance and moderation and exercise, and to dispel some of the myths that contribute to the negative image associated with vending and its impact on obesity.¹⁵
- The Food Service & Vending Division of PepsiCo. sponsored a seminar on “Preventive Medicine and Health Promotion: 21st Century Medicine,” led by Dr. Kenneth Cooper. The session, an expansion of one presented by the renowned aerobics pioneer at the NAMA National Expo in Atlanta, will address the health challenge facing America and the recommended steps operators can take to improve matters for themselves, their employees and their customers.¹⁶

- Maumee Valley Vending Inc. of Ohio was awarded an Honorable Mention from the Produce for Better Health Foundation for employee and community education efforts in promoting the *5 a Day--for Better Health! Program*.¹⁷

What is being done at the state and local level to offer healthy food options in vending machines?

- Contra Costa County in California has established standards for foods served in cafeterias, vending machines, and snack stands on city and county property and government buildings.¹⁸
- The Fit City/Schools campaign is a community-level initiative that encourages and empowers program participants to increase physical activity and fruit and vegetable consumption. They have created a suggested list of items for Fit City vending machines.¹⁹
- Henry County Heart Health Coalition in Ohio is working with Maumee Valley Vending and local schools to develop a snack machine that only provides healthy choices and a cold machine offering milk and milk products, juices, fruits, and vegetables.²⁰
- Nutritious School Vending. “Step by Step Guide to Implementing Colorado” State Senate Bill04-103. This is a project of the Colorado Action for Healthy Kids (COAFHK) and the Colorado Physical Activity and Nutrition Program. Foods and beverages sold through school vending machines must meet acceptable nutritional standards, including:
 - Plain, unflavored, noncarbonated water,
 - Milk, as that term is defined in section 25-5.5-101, C.R.S., and shall include but not necessarily be limited to chocolate, milk, soy beverage, rice beverage, and other similar dairy or nondairy beverage,
 - One hundred percent fruit juices or fruit-based drinks composed of no less than fifty percent juice, without additional sweeteners.
 - An electrolyte replacement beverage that contains forty-two grams or fewer of additional sweetener per twenty-ounce serving.
 - Nuts, seeds, dairy products, fresh fruits or vegetables, dried fruits or vegetables, and packaged fruits in their own juice.²¹
- Healthy Maine Partnership Vending Machine Policy Packet 2002: “The Soda/Snack Vending Machine Policy Initiative.” In March of 2002, the Maine Bureau of Health’s Oral Health Program, the Maine Dental Association, and the Maine Center for Public Health met to discuss health concerns related to the consumption of soda and other non- or low-nutritive snacks among young people. By the summer of 2002, the Soda/Snack Vending Machine Policy Initiative committee grew to 25 people with individuals representing a variety of organizations including schools, community coalitions, State-level organizations, and universities. The purpose of the policy was to improve the health of children by promoting healthy food and beverage choices by replacing non-nutritious foods and beverages with more nutritious choices in vending machines.²²
- The City of Berkeley, Marin County and The San Francisco Unified School District have endorsed or passed policies to promote healthy vending in worksite and youth settings.²³

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