APPENDIX

US Army Physical Demand Categories

Category	Maximum Lift Criteria (lbs)*	
	Frequent or Occasional	Constant
Light	20	10
Medium	50	25
Moderately heavy	80	40
Heavy	100	50
Very heavy	>100	>50

*Occasional: <20% of the time
Frequent: >20% but < 80% of the time
Constant: >80% of the time

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Pawtucket Heart Health Program Point-of-Purchase Nutrition Education Program in Supermarkets

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Abstract: Point-of-purchase nutrition education in supermarkets is one intervention strategy of the Pawtucket Heart Health Program, a community cardiovascular disease prevention program in Pawtucket, Rhode Island.

Using consumer intercept interviews, awareness of shelf labels and their effect on purchase behavior have been continuously evaluated. Between 1984 and 1988, the percent of shoppers who could identify correct labels increased from 11 percent to 24 percent (95% confidence intervals of difference: 7,17). The percent who reported they were encouraged to purchase the identified foods increased from 36 percent to 54 percent (95% CI of difference: 5,41). (*Am J Public Health* 1990; 80:730–731.)

Introduction

Because 57 percent of the adult population has blood cholesterol levels that put them at moderate or high risk for cardiovascular disease (CVD),[1] many Americans need to change their dietary intake of saturated fat and cholesterol to reduce their blood cholesterol level and CVD risk.

To reach this large number of people, Blackburn and Kottke delineate the need for population strategies.[2,3] The Pawtucket Heart Health Program, a comprehensive community heart disease prevention study,[4–7] developed the "Four Heart Program," a point-of-purchase (POP) nutrition education program in supermarkets and restaurants, as one of its population strategies. We report the results of a study of consumer awareness of the supermarket program and its influence on self-reported purchase behavior.

Methods

The Four Heart supermarket program was started in three supermarkets owned by two different companies and one small family-owned market in 1983–84. The name, Four Heart, represents foods that are tasty and contain less fat, cholesterol, and sodium. The basis of the program is the placement of brand-specific shelf labels next to the unit price tags of qualifying foods. Original multi-colored shelf labels that identified products low in sodium, fat, and/or calories were replaced in 1986 with labels of uniform color with the messages: "low-fat", "low-sodium", "low-fat, low-sodium", and "fat ratio OK." Collateral and support materials include signs with health messages in areas where shelf labels cannot be applied; "Look for the Labels" posters with lucite holders for brochures; free recipe cards; periodic promotions such as contests and blood pressure and cholesterol screening, counseling and referral events (SCORES); and training of store and department managers and of lay volunteers as program monitors.

Criteria used to determine the eligibility of foods for these labels were adapted from the Minnesota Heart Health Program[8] and Food and Drug Administration (FDA) food labeling regulations and recommendations[9,10]

Whereas FDA-sponsored descriptive programs labeled all products in the store that met their nutrient criteria,[11,12] we were interested in studying a more prescriptive program. Only those foods included in meal pattern recommendations based on the US Dietary Guidelines for Americans[13] are labeled.

Consumer intercept interviews were conducted at approximately yearly intervals over four years in two supermarkets from two chains. Interviews were administered in a similar manner across all stores and time periods.

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Participants

Individuals exiting a store who were judged to be at least 18 years old were eligible for the interview. Once selected, an individual exiting the store was asked if s/he had purchased something in the store. Those who indicated that they had made a purchase were interviewed.

Procedure

Shoppers were selected for interviews based on a time sampling procedure. Using a stop watch, the interviewer selected a potential respondent by approaching the first age-eligible shopper to exit the store at five-minute intervals.

Instrument

Data on frequency of shopping were obtained. To assess awareness of shelf labels, a placard containing four sets of labels, three of which were bogus sets, was shown to the respondent. The shopper was asked if s/he saw any of these labels inside the store. If the answer was yes, s/he was asked to identify the set seen. Those shoppers who reported seeing the labels actually on the shelves were counted to assess the influence of the labels on purchase behavior.

Results

Awareness of Labeled Items

Interviews with 1,807 shoppers were conducted over the four-year period. Fifteen percent more shoppers reported seeing any labels on the store shelves between 1984 to 1988 (Table 1).

Awareness was related to gender; 32 percent of female shoppers versus 24 percent of male shoppers reported seeing one of the labels shown to them (95% CI = 4,12). Thirteen percent more shoppers were able to identify the correct label between 1984 and 1988 (Table 1). Female shoppers identified the correct labels 23 percent of the time compared with 12 percent for males (95% CI = 7,15).

Influence of Shelf Labels on Purchase Behavior

Encouragement to purchase labeled foods was reported more frequently in 1988 than in 1984 among shoppers who correctly identified Four Heart labels (Table 1). Encouragement to purchase labeled products did not differ appreciably between male and female shoppers.

TABLE 1—Consumer Awareness and Effect of Food Product Shelf Labeling

	Total Surveyed	Yes[a]	Correct[b] Label	Encouraged[c] Purchase
	n	n %	n %	n %
1984	355	72 (20)	39 (11)	14 (36)
1986	454	104 (23)	70 (15)	36 (51)
1987	418	150 (36)	98 (23)	58 (59)
1988	531	185 (35)	129 (24)	70 (54)
		95% confidence intervals of difference		
'88 vs '86		6, 18	4, 14	
'88 vs '84		9, 21	8, 18	7, 35
'87 vs '86		7, 19	3, 13	
'87 vs '84		10, 22	7, 17	5, 41

[a] Shoppers reporting having seen any label shown of total surveyed
[b] Shoppers correctly identifying the "4-Heart labels" of total surveyed
[c] Shoppers stating that label encouraged purchase of those who saw correct label

Discussion

The supermarket program reached large numbers of people with low fat, low sodium eating pattern messages over a four-year period of time. In order to quantify this reach, we applied findings from our study to industry averages obtained from the Food Marketing Institute, Washington, DC (personal communication). In 1987, the mean weekly store sales in US supermarkets was $184,210 with an average transaction of $16.30. This translates to 11,301 transactions per store per week.

Based on our interviews, customers shopped an average of 2.3 times a week. Therefore, we estimate that the participating supermarkets served 4,913 customers a week.

Projecting our findings from these averages, by 1988 each week an estimated 1,179 customers recognized Four-Heart shelf labels while shopping and 636 of them were encouraged to purchase labeled products. It would be difficult and expensive to achieve this exposure to health messages and change in purchase behavior with one-to-one or small group methods of nutrition education.

Although a larger percentage of females than males identified the correct labels, approximately one-half of both males and females reported that they were encouraged to purchase the labeled foods. This is of particular interest because males have lower participation rates in traditional nutrition education programs than females[14,15] and are at higher risk for CVD—one in three will have clinical signs of CVD before the age of 60.[16]

Two important caveats must be given to these results. The first is that this program evaluation occurred within the context of a large, broad-based intervention effort to raise awareness of, and stimulate changes in, CVD risk behaviors. Secondly, other secular trends such as the increasing media coverage of cholesterol-related topics, and the efforts of the National Cholesterol Education Program and American Heart Association in this area, may also have added to the observed increases.

Yet, our data do support the findings of other studies which have demonstrated that point of purchase nutrition education in supermarkets is feasible and effective in increasing consumer awareness of nutrition messages over time[11,17,18] and in exerting a positive influence on self-reported purchase behavior.[18] Because of the ambiguous results of studies of actual consumer purchase behavior,[11,12,17,19–22] further controlled studies of this intervention in supermarkets need to be undertaken.

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Infant Feeding Practices: An Evaluation of the Impact of a Health Education Course

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Abstract: We assessed the impact of a health education course on infant feeding practices in the West Bank territories by comparing mothers who had attended the course (n = 102) with mothers not exposed to the course (n = 133). After adjustment for child's age, maternal age and education, parity, and birth site, course participants were more likely than non-participants to breastfeed, as well as to start supplementation by semi-solid foods at the recommended time. (*Am J Public Health* 1990; 80:732–733.)

Introduction

A comprehensive project of health education for mothers of young children in the villages of the West Bank territories, a population of low socioeconomic status, was designed as part of a food distribution activity.[1,2] Prior assessment of needs and problems of the local population indicated that a growing number of the mothers wean their children too soon, and introduce semi-solid foods either too early or too late. One of the main objectives of the course was to change these feeding practices. The course was taught in small groups by specially trained local instructors who adapted teaching materials developed for the course to the specific questions and issues raised by their groups. The course focused on nutrition, hygiene, child development, and first aid. The process of course development, design, methods, and content were described elsewhere.[1,2]

From 1985 to 1987, the program offered 972 courses in 152 villages (about one-third of the 443 villages in the West Bank) and in five cities throughout the West Bank. Participation of villages in the program was voluntary. In participating villages, most mothers of young children joined the course. Participating mothers received a small supply of basic food commodities. Overall, 19,984 mothers participated in these courses.

The present paper assesses the impact of the course on infant feeding practices, by comparing a sample of mothers who had attended the health education classes with a sample of mothers who had not been exposed to the course.

Methods

A survey was conducted in 92 villages throughout the West Bank, 46 which participated in the program, and 46 which had not participated. The sample of villages was randomly selected in proportion to the population distribution in six districts. Approximately six mothers in each village were interviewed. In experimental villages, the respondents were randomly selected from the list of course participants. In the comparison villages, respondents were selected in most cases from among the mothers whose children were attending school at the time of the survey. Structured interviews were conducted between August and December 1987 by female field workers experienced in village habits and familiar with local customs and culture. The present analysis includes 235 mothers whose youngest child was one year or less. Of these, 102 attended the course and 133 mothers did not attend the course. Statistical analysis

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