Diet-Health Awareness About Fat and Cholesterol—Only a Start

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Most people seem to understand that eating too much fat and cholesterol could adversely affect their health. But when it comes to consumption, that awareness is not translated into effective behavior. Are consumers getting adequate information, ignoring the information, or misinterpreting the specifics?

For several decades, the public health community in the United States has been advising consumers to reduce their intakes of total fat, saturated fat, and cholesterol to lower the risks of coronary heart disease (see box). Eating less fat also can lower the risk of cancer and obesity.

Many consumers have heard these messages. According to a number of surveys by the Food Marketing Institute, nutrition is a major consideration for shoppers, and consumers report having changed their diets due to health concerns. In particular, consumers report eating less red meats and more fish and poultry, frying foods less often, and limiting their use of fats and oils.

National food availability data confirm some of these consumption trends. But two separate studies by USDA suggest that changes in food consumption patterns do not necessarily result in lower intakes of fat.

For example, a 1991 study by USDA's Economic Research Service showed that although women with higher education levels made greater changes in their diets between 1977 and 1988 than did women with less education, these

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Fat and Cholesterol: What Are They and Where Are They Found?

Most health authorities recommend that individuals 2 years of age and older consume less fat, saturated fat, and cholesterol. Populations with diets high in fat have more obesity and certain types of cancer. A diet low in saturated fat and cholesterol can help maintain a desirable level of blood cholesterol and reduce the risk of heart disease.

Fat is the most concentrated source of food energy (calories). Butter, margarine, shortening, and oil are obvious sources of fat. Other major sources of fat are well-marbled meats, poultry skin, whole milk, cheese, ice-cream, nuts, seeds, salad dressings, and some baked products.

All fats contain both saturated and unsaturated fat (fatty acids). Saturated fats are found in large proportions in fats of animal origin, in tropical oils (coconut, palm kernel, and palm oils), and in some hydrogenated fats (margarine and vegetable shortening).

Cholesterol is a component of all the body cells of humans and animals. It is needed to form hormones, cell membranes, and other body substances. Cholesterol is present in all animal products—meat, poultry, fish, milk and milk products, and egg yolks—and in mixtures, such as baked products and mayonnaise, that contain egg yolks, cheese, milk, butter, or lard as ingredients. Foods of plant origin, such as fruit, vegetables, grains, nuts, seeds, and dry beans and peas, contain no cholesterol.

changes did not result in significantly different levels of fat intake between the two groups. Basically, the women with higher education traded fat from one source for another, such as from red meats to dairy products and grain-based mixtures (such as pizza), with little net effect on overall intake of fat.

Similarly, a 1989 study by USDA's Human Nutrition Information Service (HNIS) shows little difference in fat intake of women in various income groups, even though higher-income women were more likely to decrease their intake of meat, whole milk, and eggs between 1977 and 1985.

New USDA surveys provide the first opportunity on a national scale to compare consumers' actual food intake with their awareness about diet and health, and their knowledge, attitudes, and self-rating of their diets. These are the 1989 and 1990 Diet and Health Knowledge Survey (DHKS) and the 1989 and 1990 Continuing Survey of Food Intakes by Individuals (CSFII), both conducted by HNIS (see the inside front cover of this issue for more details on the surveys).

In the CSFII, household members provided detailed information on what they ate for 3 consecutive days as well as personal information, such as income, race, education, and health status. In the DHKS, the main meal planner/preparer in each CSFII household was asked a series of questions to assess attitudes and knowledge about the *Dietary Guidelines for Americans*, nutrition, and diet and health relationships.

Results presented here are from data on 513 men and 2,367 women who were the main meal planners/preparers for their households, who completed the DHKS, and who provided information on their food intake for 3 days in the CSFII.

Diet-Disease Awareness Higher for Cholesterol Than for Fats

Public-health efforts to increase consumer awareness of diet-disease relationships aim to make consumers understand that what they eat may affect their health. Such efforts are based on the assumption that consumers who are aware of diet-disease relationships will be motivated to adopt more healthful diets.

Consumers interviewed in the DHKS were asked, "Have you heard about any health problems that might be related to . . . (how much fat a person eats, how much saturated fat a person eats, how much cholesterol a person eats)?"

If respondents answered "yes," they were then asked "What problems are these?" Respondents were encouraged to provide as many answers as possible. Some may not have been able to provide an answer right away, although they might have recognized some problems if cued.

For purposes of this analysis, diet-health "awareness" meant that the individual had heard of health problems that might be related to how much fat, saturated fat, or cholesterol a person eats, regardless of whether or not they correctly identified the associated health problems.

More meal planners were aware of health problems associated with cholesterol than were aware of problems associated with fat or saturated fat (table 1). This finding has important implications for nu-

Table 1
Diet-Disease Awareness Is Higher for Cholesterol Than for Fat

Consumer profile	Consumers aware of health risks associated with consumption of— Total fat	Saturated fat	Cholesterol
	Percent of meal planners		
Overall average	76	64	87
Gender:			
Women	77	63	87
Men	75	64	86
Age group:			
Under 30 years	69	55	87
30-49 years	79	66	89
50 years and over	77	65	83
Education:			
Less than high school	66	48	73
Completed high school	71	60	86
More than high school	85	74	93
Income level (percent of poverty line)[1]:			
130 percent and less	62	48	74
131-185 percent	73	63	82
186-350 percent	76	61	88
Over 350 percent	84	72	92
Race:			
White	77	66	88
Black	72	53	79

[1]The poverty line adjusts household income for household size and composition. In 1989, the average poverty threshold for a household of four was $11,669. The Food Stamp Program uses 130 percent of the poverty line as the cutoff for its income eligibility criteria; the Women, Infants, and Children (WIC) Program uses 185 percent of the poverty line as the cutoff for its income eligibility criteria.

trition education programs, since intake of saturated fats has a bigger impact on blood cholesterol levels—and, therefore, on risk for heart disease—than does intake of either total fat or cholesterol.

Awareness of the relationships between health and how much fat, saturated fat, and cholesterol a person eats was similar for both male and female meal planners (table 1). For fat and saturated fat, awareness levels were lower for meal planners under age 30 than for older meal planners. For fat, saturated fat, and cholesterol, awareness levels increased with education and income levels, and were higher among whites than among blacks.

Only a Fourth Met Recommendations for Fat Intake

Both male and female meal planners had an estimated average intake of 35 percent of calories from fat and 12 percent of calories from saturated fat—above the maximum levels recommended by the *Dietary Guidelines for Americans* of 30 percent or less of calories from fat and less than 10 percent of calories from saturated fat. Three-quarters of the meal planners exceeded these recommended levels for both fat and saturated fat (table 2).

Meal planners fared better in meeting the cholesterol level recommended by many health authorities of less than 300 milligrams (mg) of cholesterol per day for both women and men. The estimated intake for women was 221 mg, while that for men was 327 mg. Nearly four out of five women meal planners met the recommendation for cholesterol, compared with less than half of the men (table 2). This gender difference is not surprising. Because men generally eat more food and calories than women do, their average cholesterol intake is higher than women's. But the recommendation is the same for all individuals, regardless of the number of calories consumed.

Meal planners 50 years and older were more likely than younger meal planners to meet the dietary recommendations for fat, saturated fat, and cholesterol (table 2). There was no clear relationship

between education or income and meeting the recommendations. Whites did better than blacks in meeting the dietary recommendation for cholesterol, but not for fat or saturated fat, in spite of their higher awareness of the effect of all three dietary components on disease.

In general, meal planners aware of diet-disease relationships were not more likely than others to meet the recommended intakes for fat, saturated fat, or cholesterol (table 2). This suggests that whereas awareness may stimulate change, a number of other factors (such as nutrition knowledge, taste, cultural patterns, convenience, prices, and income) may intervene and reduce its influence on consumption.

Table 2
More Meal Planners Meet Recommendations for Cholesterol Than for Fat

Consumer profile	Consumers meeting dietary recommendations for— Total fat	Saturated fat	Cholesterol
	Percent of meal planners		
Overall average	24	25	73
Gender:			
Women	23	26	79
Men	24	22	49
Age group:			
Under 30 years	25	25	67
30-49 years	19	18	69
50 years and older	29	34	81
Education:			
Less than high school	25	28	72
Completed high school	22	23	74
More than high school	25	25	72
Income level (percent of poverty line)[1]:			
130 percent and less	25	24	75
131-185 percent	24	31	78
186-350 percent	27	29	70
Over 350 percent	21	22	72
Race:			
White	23	25	75
Black	20	23	61
Diet-disease awareness:			
Fat-disease relationship—			
Aware	23	25	73
Not aware	26	25	73
Saturated fat-disease relationship—			
Aware	23	26	72
Not aware	25	25	75
Cholesterol-disease relationship—			
Aware	23	25	73
Not aware	27	29	69

[1]The poverty line adjusts household income for household size and composition. In 1989, the average poverty threshold for a household of four was $11,669. The Food Stamp Program uses 130 percent of the poverty line as the cutoff for its income eligibility criteria; the Women, Infants, and Children (WIC) Program uses 185 percent of the poverty line as the cutoff for its income eligibility criteria.

Meal Planners Underestimate Fat, Overestimate Cholesterol in Diets

One factor influencing consumption could be the individual's assessment of the adequacy of his or her own intake. Individuals who believe their current intake levels are about right may see no need to act on their diet-disease awareness and change their dietary practices.

But, individual perception about the level of intake of one's diet does not always match reality. When asked to compare the levels of fat, saturated fat, and cholesterol in their own diet with "what is most healthful," both men and women meal planners tended to underestimate the amount of fat and saturated fat in their diets, but overestimate the amount of cholesterol. Whereas 41 percent of the meal planners thought the level of fat in their diets was "about right," and 49 percent thought their diets were "about right" for saturated fat, only 25 percent of the meal planners actually met the recommendations for fat and saturated fat. Conversely, slightly more than half of the meal planners thought their diets were "about right" for cholesterol, although nearly three-fourths met the recommendation for cholesterol.

Those With High Blood Cholesterol More Likely To Be on a Special Diet

A number of studies have found that the presence of a health condition plays an important role in increasing awareness of diet-disease relationships and fostering changes in dietary patterns. Not surprisingly, the existence of a health condition for which a low-fat/low-

cholesterol diet may be recommended (high blood cholesterol, heart disease, cancer, and stroke) was positively associated with being on a special low-fat/low-cholesterol diet.

Among those with at least one of the four health conditions above, 19 percent were on a special low-fat/low-cholesterol diet, compared with only 4 percent of those without any of the conditions. Among those with heart disease, 28 percent said they were on a special low-fat/low-cholesterol diet, compared with 7 percent of those without heart disease. Among those with high blood cholesterol, 32 percent were on a special low-fat/low-cholesterol diet, compared with 5 percent of those without high blood cholesterol.

It is not clear why more than two-thirds of those with high blood cholesterol or heart disease did not report being on a special low-fat/low-cholesterol diet. Had these individuals been advised by their doctors to reduce their intake of fat, saturated fat, or cholesterol? If so, had they not fully understood the advice, or had they decided not to follow the advice? Or, were they not advised to do so? How many meal planners were trying to reduce their intake of fat, saturated fat, and cholesterol, but just did not consider themselves as "being on a special diet"?

One would expect that those who had been told by a doctor about their health condition would also have been told by the doctor about the importance of diet to their condition and, would, therefore, have higher levels of awareness about the diet-disease relationship. This was true among those with high blood cholesterol, but not for heart disease (fig. 1). Those with and without heart disease had similar diet-disease awareness about fat and cholesterol, but not about saturated fat.

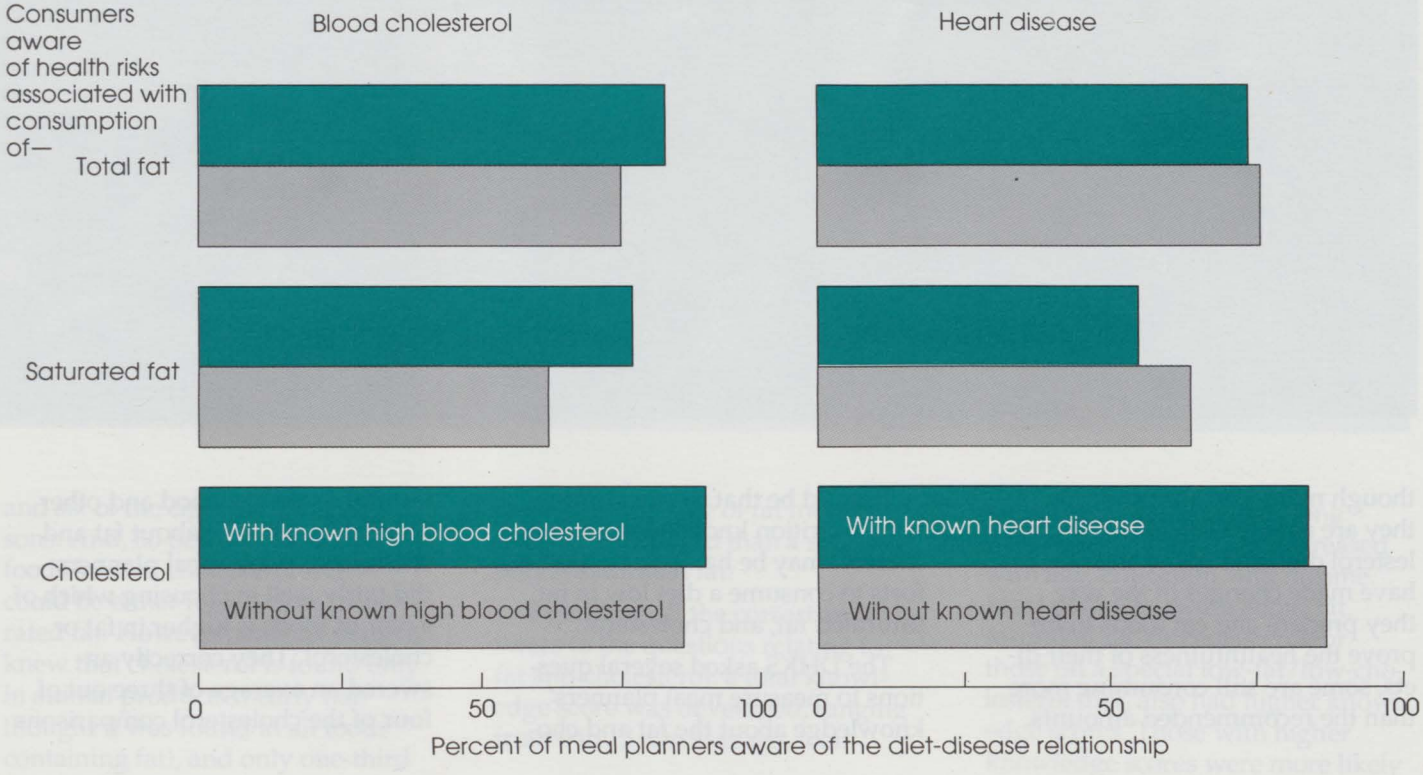
Insufficient Knowledge May Hamper Diet Efforts

Meal planners who reported being on a special low-fat/low-cholesterol diet had lower average intakes of fat, saturated fat, and cholesterol, and were more likely to meet recommendations for fat, saturated fat, and cholesterol than were those not on such diets (table 3).

However, two-thirds of those on a low-fat/low-cholesterol diet still consumed more than 30 percent of their calories from fat, and over half consumed more than 10 percent of their calories from saturated fat—suggesting that some of these low-fat/low-cholesterol diets may not be quite that low in fat. Al-

Figure 1

Meal Planners With High Blood Cholesterol Are More Aware of Diet-Health Risks Than Are Those Without High Blood Cholesterol



How To Be Wiser About Fat Intake

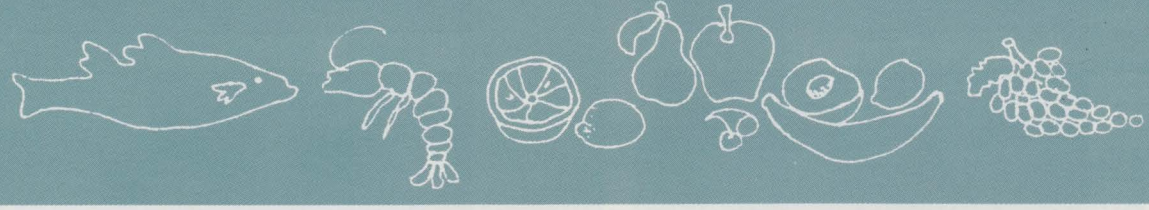
Dietary factors—particularly a high intake of fats—are associated with increased risk for obesity and certain types of cancer.

The Dietary Guidelines recommend that, for those age 2 and older, fat intake should provide 30 percent or less of calories. An easy way for adults to estimate their upper limit on grams of fat is to divide their healthy weight by 2 (see table for suggested weights). Thus, for an adult whose healthy weight is 120 pounds, total daily intake should not exceed 60 grams of fat; at 180 pounds, it's 90 grams of fat. (Note, however, that this is just a simple formula—and may need to be adjusted up or down to account for sex, age, health, and physical activity levels). This formula underestimates fat for children.

Knowledge of the fat content of foods may help consumers choose a low-fat diet. Consumers can find how many grams of fat are in a serving of food by looking at the nutrition labels. It is important to determine, however, how the serving size listed on the label compares with the amount of the foods eaten.

The list below illustrates the differences in the fat content of some foods commonly eaten. Each amount of food listed contains about 5 grams of fat.

- **Breads and cereals:** 4 English muffins, 1 biscuit or blueberry muffin, 1/5 of a cheese Danish, 1/8 donut, 1-1/3 frozen waffles, 3-1/2 egg bagels, 10 graham crackers, 43 cups Corn Chex cereal.
- **Vegetables:** 9 cups broccoli or 1 cup broccoli with 1 tablespoon cheddar cheese sauce, 6 pounds shredded romaine lettuce or 1 cup romaine lettuce with 2 teaspoons blue cheese dressing, 32 baked potatoes or 1 baked potato with 3 tablespoons sour cream.
- **Fruit:** 10 apples or bananas, 8 cups sweetened applesauce, 10 cups blueberries, 2 pounds grapes, 15 kiwis, 32 oranges, 64 peaches, 6 cups strawberries, 7 cups cubed watermelon.
- **Dairy:** 1/2 cup whole milk, 2 cups 1-percent milk, 25 cups skim milk, 1-1/3 cups lowfat or 30 cups nonfat yogurt, 1/2 ounce cheddar cheese, 1 ounce part-skim mozzarella, 1 tablespoon cream cheese or heavy cream, 3 tablespoons half-and-half or sour cream.
- **Meats:** 1-2/3 slices crisp bacon, 1 ounce extra-lean ground beef, 3-1/2 ounces eye of round roast, 1-3/4 ounce broiled sirloin steak, 1 ounce broiled or 1/2 ounce fried pork chop.
- **Poultry:** *Roast chicken:* 2-1/2 ounces breast with skin or 5 ounces without skin, 1 ounce dark meat with skin or 1-3/4 ounces without skin. *Roast turkey breast:* 1-1/4 pounds without skin, 8 ounces with skin.
- **Fish:** 7-1/2 ounces broiled striped bass, 3 ounces broiled Atlantic salmon, 1-1/2 ounces fried catfish, 2 cups steamed crab, 16 ounces steamed shelled shrimp or 1-1/2 ounces fried shrimp, 9 ounces water-packed or 2 ounces oil-packed albacore tuna.



though many consumers think they are eating a low-fat/low-cholesterol diet, and many state they have made changes in the way they prepare and eat foods to improve the healthfulness of their diets, some are still consuming more than the recommended amounts.

It could be that the meal planners' nutrition knowledge (or lack thereof) may be hampering their efforts to consume a diet low in fat, saturated fat, and cholesterol.

The DHKS asked several questions to measure meal planners' knowledge about the fat and cholesterol content of food and other general knowledge about fat and cholesterol. Most meal planners did fairly well in choosing which of a pair of foods is higher in fat or cholesterol. They correctly answered an average of three out of four of the cholesterol comparisons

Dried beans: 2 cups baked beans, 5 cups black beans, 6 cups pinto beans, 2/3 cup refried beans with cheese.

Eggs: 1 large boiled or poached, 2/3 scrambled or in an omelet, 3/4 fried.

Desserts: 1/2 small brownie, 1 chocolate chip cookie, 1/24 of a frosted chocolate cake, 1-3/4 angel food cakes, 1/3 cup chocolate pudding, 1/5 cup premium vanilla ice cream.

Fast foods: 1/7 Burger King Whopper, 1/6 Big Mac, 1/2 Taco Bell bean burrito, 1/6 sausage biscuit, 1/12 Taco Salad, 1/6 Kentucky Fried Chicken Extra Crispy thigh, 1/4 serving Chicken McNuggets, 1/2 cup french fries.

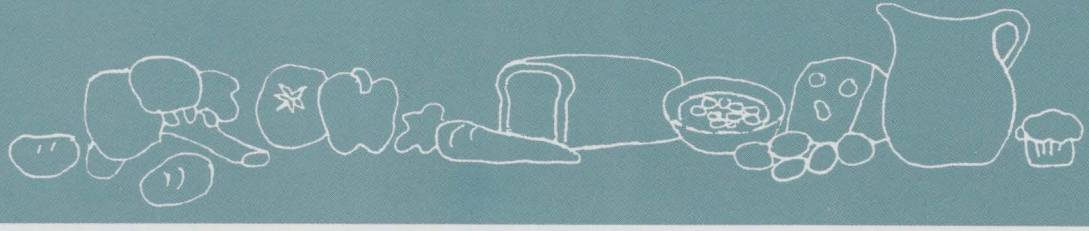
Snacks: 7 potato chips, 2 cups buttered popcorn or unlimited containers of unbuttered, 1/2 ounce corn chips, 1 tablespoon peanuts, 2 teaspoons peanut butter, 1/2 ounce milk chocolate.

Source: Adapted from (with permission from the author), Frances Price, "Making Sense of How Much Fat Is in a Gram," *The Journal*, Dec. 8, 1993.

Suggested Weights for Adults[1]

Height[2]	Weight	
	19 to 34 years	35 years and over
	Pounds[3]	
5'0"	97-128	108-138
5'1"	101-132	111-143
5'2"	104-137	115-148
5'3"	107-141	119-152
5'4"	111-146	122-157
5'5"	114-150	126-162
5'6"	118-155	130-167
5'7"	121-160	134-172
5'8"	125-164	138-178
5'9"	129-169	142-183
5'10"	132-174	146-188
5'11"	136-179	151-194
6'0"	140-184	155-199
6'1"	144-189	159-205
6'2"	148-195	164-210
6'3"	152-200	168-216
6'4"	156-205	173-222
6'5"	160-211	177-228
6'6"	164-216	182-234

[1]The higher weights in the ranges generally apply to men, who tend to have more muscle and bone; the lower weights more often apply to women, who have less muscle and bone. [2]Without shoes. [3]Without clothes. Source: U.S. Department of Agriculture and U.S. Department of Health and Human Services. *Nutrition and Your Health: Dietary Guidelines for Americans.* Third edition, 1990.



and six of the eight fat comparisons. And, 60 percent knew that foods labeled cholesterol-free could be either high or low in saturated fat. However, only 39 percent knew that cholesterol is found only in animal products (nearly half thought it was found in all foods containing fat), and only one-third knew that the type of fat more likely to be a liquid than a solid is a polyunsaturated fat.

By adding all the correct answers to the questions relating to fat and cholesterol, a total knowledge score was developed, ranging from 0 to 15. On average, total knowledge was higher among women and whites, and increased with age, education, and income. Meal planners aware about fat, saturated fat, or cholesterol, or those on a special low-fat/low-cholesterol diet, also had higher knowledge scores. Those with higher knowledge scores were more likely

Table 3
Meal Planners on Special Low-Fat/Low-Cholesterol Diet Are More Likely To Meet Recommendations for Fat, Saturated Fat, and Cholesterol

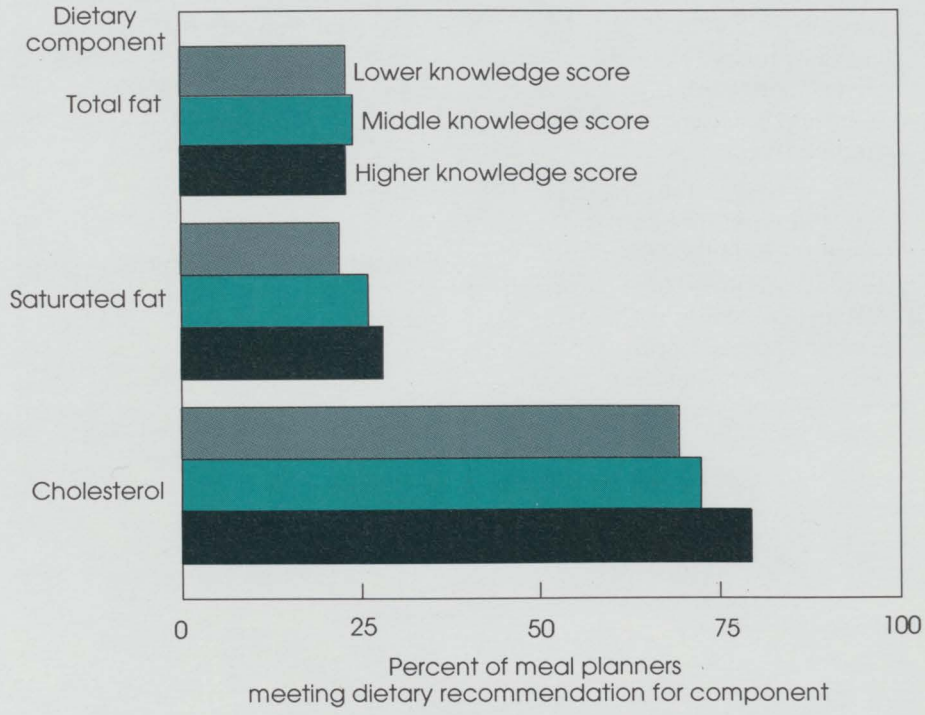
Consumer profile	Intake level of—			Consumers meeting recommendation for—		
	Total fat	Saturated fat	Cholesterol	Total fat	Saturated fat	Cholesterol
	Percent of calories		*milligrams*	*Percent of meal planners*		
On special low-fat/ low-cholesterol diet	32.1	10.5	188.6	33	49	88
Not on special low-fat/ low-cholesterol diet	34.9	12.3	247.1	23	23	72

than those with lower knowledge scores to meet the recommendations for saturated fat and cholesterol, but not for total fat (fig. 2).

Help Is on the Way for Consumers Interested in Improving Diets

The U.S. Government plays an important role in educating consumers about diet-disease relationships and good nutrition. The new nutrition labels, which will soon appear on most processed foods, will provide information on the level of fat, saturated fat, and cholesterol in one serving of that food. This should not only make it easier for consumers who are interested in improving their diets to do so, but it may also encourage food manufacturers to provide more healthful food choices to consumers.

Figure 2
Knowledge Helps Meal Planners Meet Recommendations for Saturated Fat and Cholesterol



Lower knowledge score = 0 -10 correct (34.3 percent of the sample); Middle knowledge score = 11 -12 correct (39.2 percent of the sample); and Higher knowledge score = 13-15 correct (26.5 percent of the sample).

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