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Diet/Health Concerns About Fat Intake

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For more than a generation, Americans have been warned that a diet high in fat increases the probability of chronic health problems, such as coronary heart disease (CHD) and cancer. Whether based on awareness of this relationship or on economic and social factors, consumers are changing their eating habits. We are eating less red meats and eggs, and more poultry, fish and seafood, and fresh fruits and vegetables (see *USDA per capita consumption data, July-September 1990 National Food Review*). While the change in diet has lowered fat intake, many women are merely substituting one source of fat for another.

Changes in Diet/Health Awareness

Starting in the mid-1950's the American Heart Association began informing the public about high fat intake as a possible CHD risk factor. Fat was also later linked to certain types of cancer. As scientific evidence grew, the American Heart Association, the Federal Government (through publications such as the *Surgeon General's Report on Nutrition and Health* and *Dietary Guidelines for Americans*), and others intensified their efforts to educate the public about the chronic health risks associated with diets high in fat.

The message is getting through. Using open-ended questions, researchers found that public awareness of the link between CHD and fat intake has been increasing. (From here on, the term "awareness" will refer to awareness of

the adverse health effects associated with a diet high in fat.) In 1970, awareness was only 8 percent and grew 5 percentage points over the next 7 years. After 1977, awareness grew more rapidly, rising to 29 percent in 1982, 42 percent in 1986, and 55 percent in 1988.

These increases in awareness, however, have not been distributed evenly across the population. On average, after 1977, awareness of the possible links between fat intake and CHD increased the most among individuals with higher levels of schooling (figure 1). While there was little difference in awareness levels across education groups in 1977, differ-

ences were clearly evident in 1982 and 1986. Although formal education level does not directly translate into awareness, differences in education were indicative of differences in awareness. For example, an individual with a college degree was more likely to be aware of the adverse health effects associated with a diet high in fat than an individual who did not complete high school, all other factors being equal.

Changes in Dietary Fat Intake

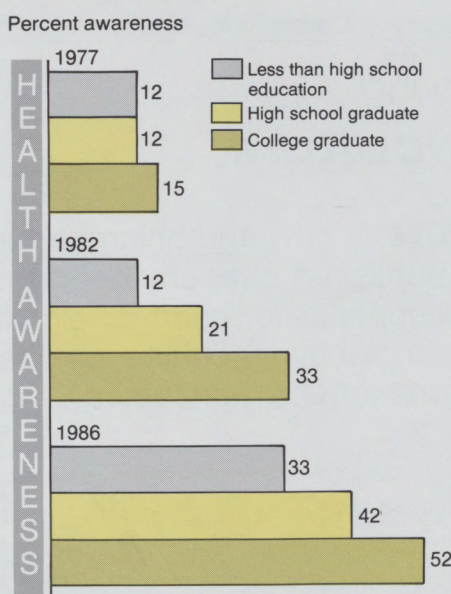
Increases in awareness appear to have had some impact on dietary behavior. Based on two USDA surveys, average fat intake by women between ages 19 and 50 fell from 41.8 percent of calories in 1977 to 37.3 percent in 1985. (See box for details on the surveys.) Despite this reduction, fat intake remains above the maximum 30-percent level recommended by the National Research Council of the National Academy of Sciences, the American Heart Association, and the newly issued Federal Dietary Guidelines. (See box for more information about the dietary guidelines.)

Although average fat intake fell between 1977 and 1985, it declined by approximately the same degree for all women (figure 2), regardless of their education level, even though highly educated women showed the greatest increase in awareness.

Changes in Sources of Dietary Fat

Between 1977 and 1985, significant changes in the amount of fat obtained from various foods were observed. In

Figure 1. Educated Women Have Higher Diet/Health Awareness Levels



Sources: 1977: Shekelle and Liu, 1978.
1982 and 1986: Food and Drug
Administration's Diet and Health Surveys.

The authors are agricultural economists in the Food Marketing and Consumption Economics Branch, Commodity Economics Division.



Will she make this a high fat dessert by adding high fat toppings?

The Food Groups

In this analysis, foods were grouped as follows:

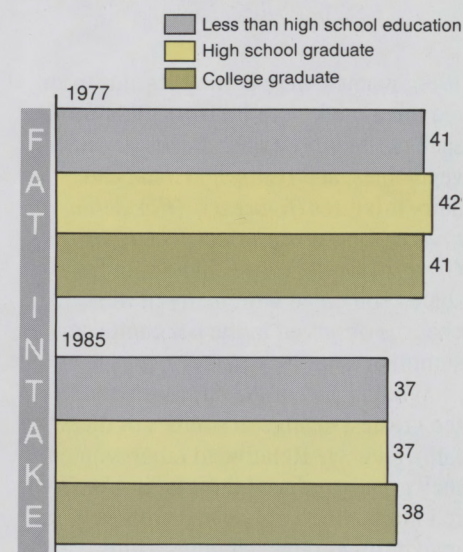
- The red meats group: beef, pork, veal, and game, as well as mixtures in which meat is the main ingredient (e.g., beef goulash);
- The grains, legumes, vegetables, and fruit group: fresh and cooked fruits and vegetables, legumes, casseroles, and baked goods that have no animal or dairy protein;
- The meat and dairy mixtures: dishes with meat or dairy protein combined with grains or other plant foods, such as pizza, fast food sandwiches, frozen dinners, spaghetti with meat sauce, lasagna, and dishes with cheese sauce;
- Dairy products: milk, cheese, yogurt, whipped cream, sour cream, puddings, and ice creams. It does not include butter (see animal fats below);
- Poultry: chicken, turkey, duck, as well as poultry sausages and cold cuts, and mixtures in which poultry is the main ingredient (e.g., chicken divan);

- The fish and seafood group: fish and shellfish, as well as mixtures in which these items are the main ingredients (e.g., tuna salad);
- The vegetable oils group: margarine, liquid vegetable oils, and salad dressings;
- The animal fats group: butter, lard, and bacon grease;
- The eggs group: eggs and egg dishes, such as omelettes;
- The meat/dairy/egg substitutes group: non-dairy creamers and whipped toppings, imitation cheeses, soy-based milks, and egg substitutes.

It should be noted that most of the fat contributed by meat and dairy mixtures is derived from either the meat (e.g., beef, poultry, etc.) or the dairy component of the mixture. Although these effects should be included in the discussion of changes in the share of fat from red meats and dairy products, the data do not allow us to identify the specific food items in the mixture.

Figure 2. Education Doesn't Influence Percentage of Fat Intake

% of calories from fat



Sources: 1977-1978 National Food Consumption Survey, 1985 Continuing Survey of Food Intake by Individuals.

Comparing Food Consumption Surveys

This analysis used data from USDA's 1977-78 Nationwide Food Consumption Survey (NFCS) and the 1985 Continuing Survey of Food Intakes by Individuals. The data were used to address two related questions: First, how did dietary intake of total fat change between 1977 and 1985; and second, which food groups represent the primary sources of dietary fats and how did their contribution to fat intake change over time?

The 1977-78 NFCS

USDA's Human Nutrition Information Service (HNIS) conducts the Nationwide Food Consumption Survey about every 10 years. The NFCS provides information on food intake by individuals. The 1977-78 NFCS consists of four 3-day surveys taken during each season of the year. An interviewer obtains a 1-day dietary recall record with the respondent completing a food intake diary for the following 2 days.

The 1985 CSFII

The Continuing Survey of Food Intake by Individuals, also conducted by USDA's HNIS, began in April 1985 to provide annual updates to the decennial NFCS. The core of the CSFII is a national sample of households containing women 19 to 50 years of age and their preschool children. The 1985 CSFII consists of 6 waves over a 12-month period, using the same households in each wave. Individual food intake data were collected using only 1-day dietary recall records for each of the 6 waves.

The Sample for This Study

Differences in the sampling and methodological procedures for the two surveys required that the study sample be selected carefully. The following criteria maximize comparability between the two surveys:

- Individuals in the 1977 NFCS were women 19-50 years of age, for comparison with the 1985 CSFII.

- Individual food intake data were limited to those obtained by means of the 1-day dietary recall by personal interview. This restricts the 1977 NFCS intake data to only the first day of intake, and the 1985 CSFII to the first wave.

- The above constraint restricts CSFII data to the April-June period. To minimize potential seasonal differences in dietary intake, 1977 NFCS data were restricted to the same period.

- Women had to be heads of households since the 1977 NFCS did not collect important demographics of individuals who were not the heads of households, and the 1985 CSFII only had information on the female head of household if she provided the food intake data.

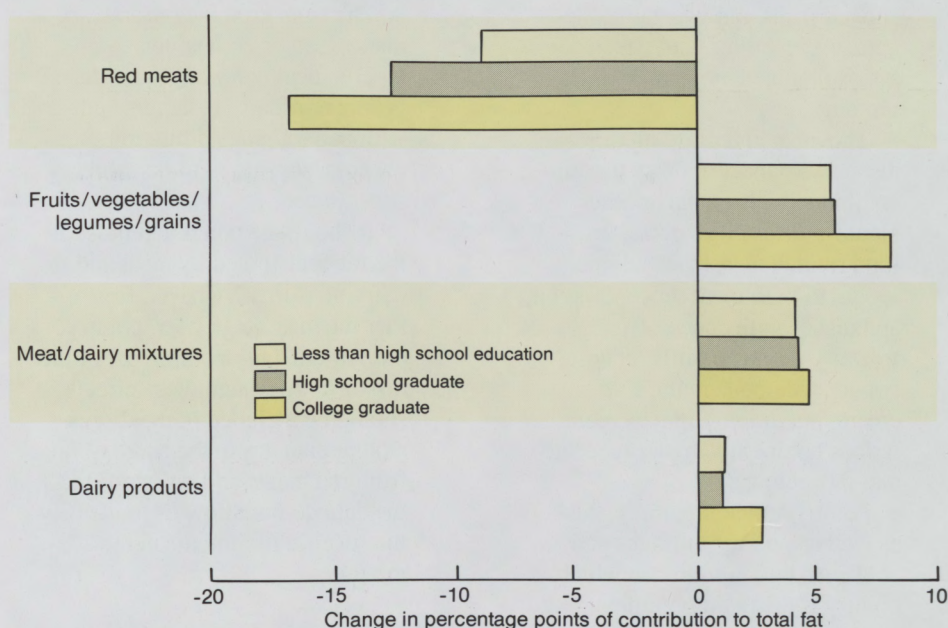
- Only women with complete data on food intake, education, and income were included.

Based on these criteria, the 1977 sample contains 1,435 usable responses and the 1985 sample has 1,230.

1985, women were getting less fat from red meats and more fat from other foods such as dairy products; breads, legumes, vegetables, and fruits; and meat and dairy mixtures (figure 3). (For definitions of food groups, see "The Food Groups" box.) These changes in fat shares coincided with many of the changes observed in the per capita consumption data.

Women with more education made the greatest change in sources of dietary fat (figure 3). Relative to other women, they greatly reduced their fat intake from red meats, but had larger increases in fat intake from grains, legumes, fruits, vegetables, and dairy products. This is consistent with the notion that women with higher diet/health awareness should exhibit greater behavior changes. As shown in figure 2, this change of diet did not lower the total fat intake of highly educated women relative to other women. Highly educated women were largely trading sources of dietary fat.

Figure 3. Educated Women Had the Greatest Decline In Fat Shares From Red Meats, 1977-85



Source: 1977 NFCS and 1985 CSFII.

Education was not the only demographic factor that significantly influenced changes in dietary sources of fat between 1977 and 1985. Whether or not a woman was black, on a special diet, or lived in a household with a man as head were also significant factors.

Black women received a higher share of fat from red meats and a lower percentage from grains, legumes, vegetables, and fruits than did white women in 1985. Since this pattern was not evident in 1977, it suggests that black women did not change their sources of fat by as much as white women between 1977 and 1985.

In 1985, but not in 1977, women on special diets had a lower share of fat

from red meats, dairy/meat mixtures, and animal food fats, and a higher share from poultry compared with women not on special diets. Women in households with male heads ate significantly higher shares of fat from red meats in 1985 compared to women in households without male heads. A likely explanation for this is that the man influences the woman's food choices and men, according to a Gallup survey, tend to be less concerned with their diets than women.

Although we believe that changes in awareness were responsible for much of the change in the importance of different foods in providing fat between 1977 and 1985, the effect of changes in relative

meat prices should not be ignored. For example, the increase in the price of beef between 1977 and 1985 was responsible for some of the decreased consumption of red meat. However, inclusion of prices for beef, pork, poultry, and fish, in statistical analyses not reported here, indicates that changes in relative prices for meat products only had significant effect on the share of fat from beef. Including meat prices did not lessen the importance of education, race, and other demographic variables in explaining changes in fat shares. While this suggests that changes in relative meat prices have had some effect on dietary sources of fat, it

New Dietary Guidelines Are Available

In November 1990, the U.S. Departments of Agriculture and Health and Human Services released the third edition of the Dietary Guidelines for Americans, Home and Garden Bulletin No. 232. The guidelines are:

- Eat a variety of foods.
- Maintain healthy weight.
- Choose a diet low in fat, saturated fat, and cholesterol.
- Choose a diet with plenty of vegetables, fruits, and grain products.
- Use sugars only in moderation.
- Use salt and sodium only in moderation.
- If you drink alcoholic beverages, do so in moderation.

To receive a single free copy of the dietary guidelines contact:

Consumer Information Center
Department 514-X
Pueblo, CO 81009

Quantities of 1,000 or more are available at a cost of \$293.10 per 1,000 copies. Contact:

John Riley
Superintendent of Documents
Government Printing Office
Washington, DC 20401
(202) 275-3325

To help consumers put the Dietary Guidelines for Americans

into action, the Human Nutrition Information Service, USDA, has developed the following publications. Unless otherwise noted, all publications are available from the Consumer Information Center (*see below*).

HG-232-1-7 Dietary Guidelines and Your Diet. 52 pp. A series of seven bulletins, each focusing on one of the guidelines. Tips and recipes. Stock No. 001-000-04467-2, \$4.50. (Order from—Government Printing Office, Washington, D.C. 20402. Make check or money order payable to the "Superintendent of Documents.")

HG-232-8 Preparing Foods and Planning Menus Using the Dietary Guidelines. 32 pp., 11 color photos. Tips for cooking with less fat, sugars, and sodium. "Hows" and "whys" of planning healthful menus. 10 recipes. Item No. 125-W, \$2.50.

HG-232-9 Making Bag Lunches, Snacks, and Desserts Using the Dietary Guidelines. 32 pp., 7 color photos. Ideas for creative bag lunches. Tips for desserts and snacks with less fat and sugar. 27 recipes. Item No. 124-W, \$2.50.

HG-232-10 Shopping for Food and Making Meals in Minutes

Using the Dietary Guidelines. 36 pp., 7 color photos. Tips on reading labels and a supermarket shopping guide. Tailoring Guidelines-style meals to busy lifestyles. 18 recipes. Item No. 126-W, \$3.00.

HG-232-11 Eating Better When Eating Out Using the Dietary Guidelines. 20 pp., line illustrations. Hints on eating Guidelines-style when away from home—from fast food to gourmet dining. Item No. 123-W, \$1.50.

Good Sources of Nutrients. A set of 17 fact sheets on food sources of vitamins, minerals, and dietary fiber. Item No. 171-W, \$5.00

AIB-364 Calories and Weight: The USDA Pocket Guide. Calorie content of nearly 400 foods in an easy-to-read format. Item No. 178-W, \$1.75.

TO ORDER: Send check or money order, payable to "Superintendent of Documents," with item number to:

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also suggests that changes in awareness have had a large, separate effect.

Balloon Effects

The results from this study are interesting. Women in groups associated with high awareness levels altered their dietary sources of fat more than other women. However, the decline in fat intake from 1977 to 1985 was similar for most groups of women. The diet/health aware women were largely trading sources of dietary fat. Such fat trading can be explained as a "balloon" effect.

Visualize total fat intake as a partially inflated balloon. The effect of awareness has been to push down on one area of the balloon, for example, that represents fat intake from red meats. The balloon reacts by expanding in other directions, such as the increase in fat from dairy products.

The observed "balloon" effect is probably a result of consumers converting nutrition information into simple, but often ineffective, rules of thumb. Recent work by researchers at FDA on the public's knowledge about dietary fats and cholesterol is consistent with this fat-trading hypothesis. FDA researchers identified one commonly used rule of thumb, the "good/bad" rule. Using this rule, consumers tend to lump foods into one of three categories: good, bad, and neutral foods. Frequently, consumers use only partial information to group foods into a category. For example, if consumers know that a particular product is low in cholesterol, they may infer that it is a "good food," even though the food may be high in fat and calories. Similarly, belief that a food is high in fat may lead to the conclusion that the food is a "bad food," and therefore consumption should be reduced or eliminated. Inferences about products based on partial information can frequently be wrong, and lead to "balloon" effects.

Nancy Wellman, president of the American Dietetic Association, provides an illustration of a "balloon" effect. She reports that a neighbor believed he could no longer eat any red meat because his cholesterol level was high. Instead, he regularly ate a tunafish salad sandwich, unaware that the fat content of the sandwich was probably higher than that in a lean cut of red meat.

Additional Information on Diet and Health

The 1989 California Dietary Practices Survey: Focus on Fruits and Vegetables provides additional information about consumer awareness, knowledge, and attitudes towards diet and health. The report has been released by the California Department of Health Services, 714 P Street, Sacramento, CA 95814.

As of 1985, these "balloon" effects resulted in offsetting dietary changes among women with higher education levels. There are indications, however, that some of the "balloon" effects may be diminishing, although recent surveys indicate that consumers are still having difficulties translating their increased awareness into appropriate food choices. A 1990 Gallup survey showed that more than two-thirds of the adult respondents chose food partially based on the "good/bad" perception.

Increases in public awareness may also have indirect effects on the diets of both aware and unaware consumers. The indirect effects result from movements away from products that aware consumers view as high in fat. These movements act as signals to producers and retailers to introduce "low-fat" products and to lower the fat content of existing food products. In turn, these changes reduce the fat intake of all consumers.

Taken in total, this analysis suggests that awareness may have had both direct and indirect effects on diets. However, simply raising public awareness levels about diet-disease relationships may not be effective in achieving desired nutritional goals, since even aware consumers have difficulties translating awareness into effective dietary changes. ■

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