



Nutrition for Family Living

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September, 2004 Topics

The Affordability of Fruits and Vegetables

School Breakfast

Summary of a nutrition intervention promoting dairy intake in southern Wisconsin

The Affordability of Fruits and Vegetables

A new report by the USDA Economic Research Service shows that fruits and vegetables are more inexpensive than many shoppers realize. Here are some highlights:

- Five vegetables accounted for 60% of vegetables purchased in the U.S. in the late 1990s. They were potatoes, cabbage, carrots, onions, and sweet potatoes. They also were among the least expensive per pound.
- The average price for fresh vegetables was \$0.12 per Pyramid serving (\$0.64 per pound) and the average price for fresh fruit was \$0.18 per serving (\$0.71 per pound).
- The price difference between the most and least expensive items was \$0.87 per serving for vegetables and \$0.56 for fruit.
- Fresh vegetables were usually cheaper than their frozen or canned counterparts.

FORM OF FRUIT	AVERAGE COST PER POUND (1999 prices)	AVERAGE COST PER PYRAMID SERVING*
Fresh	\$0.71	\$0.18
Juice	\$0.53	\$0.20
Canned	\$0.90	\$0.24
Dried	\$3.07	\$0.27
Frozen	\$2.04	\$0.51

FORM OF VEGETABLE	AVERAGE COST PER POUND (1999 prices)	AVERAGE COST PER PYRAMID SERVING*
Fresh	\$0.64	\$0.12
Canned	\$0.60	\$0.17
Frozen	\$1.11	\$0.22



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MOST "ECONOMICAL" PRODUCE IN COST PER SERVING*	
VEGETABLES	FRUIT
<ul style="list-style-type: none">• Fresh cabbage• Fresh potato• Fresh broccoli• Fresh carrots• Fresh radishes• Canned green beans	<ul style="list-style-type: none">• Watermelon• Apple• Papaya• Grapefruit• Banana

*1999 prices for the U.S., after discarding non-edible components. A serving refers to Food Guide Pyramid serving sizes.

Source: <http://www.ers.usda.gov/Data/fruitvegetablecosts/>

However, if you judge a food's value in terms of how "filling" it is, the results might be quite different. We cannot directly compare food prices in terms of how well various foods satisfy a person's feelings of hunger, but we have clues from recent research by Adam Drewnowski and others (*Public Health Nutrition* 2004;7:21-27). When they compared different types of food on a per calorie basis, fruits and vegetables were not a bargain. Their study of food purchases of 837 adults in France showed that more energy-dense (high calorie) foods like refined grains, sweets and fats provided food energy at a lower cost than lean meats, vegetables and fruit.

A third study known as "State of the Plate" was published by the Produce for Better Health Foundation in October 2002. In addition to fruit and vegetable consumption, their study analyzed relevant eating patterns of nearly 5000 individuals in 2000 households. Their findings include:

- Fruit and vegetable consumption is declining.
- Americans are eating only about 4 servings of fruits and vegetables each day, including French fries and potato chips. Excluding these high-fat processed potato products, Americans are eating only about 3.6 servings of fruits and vegetables each day.
- Only 1 in 5 Americans meets the 5-A-Day minimum recommendation for fruits and vegetables.
- Only 13% of American families, 22% of single persons, 27% of 'empty nesters', and 39% of the elderly are eating the minimum recommended 5 servings per day of fruits and vegetables.
- Obesity levels are lowest among those who have high intakes of fruits and vegetables.
- 9 out of 10 teen girls (89%) and 96% of kids ages 2-12 do not eat 5 servings per day.
- Single-parent and dual-income families eat 10% fewer fruits and vegetables than families with a stay-at-home parent.
- Women (82%) are more likely than men (69%) to fall short of the five-serving minimum.
- The number of dishes in the average American dinner has declined, and the dish that's being dropped is the side-dish, historically the place for seasonal or home-grown vegetables.
- Romaine lettuce and bag lettuce are the only vegetables that Americans are eating more of than before, increasing by an average of two annual servings per capita.
- Americans are eating more meals away from home, which translates into fewer opportunities for fruits and vegetables; nearly one in six dinner meals (16%) is obtained from a restaurant, up from 12% in 1985.
- 86% of Americans who eat five daily servings of fruits and vegetables are healthy eaters (those whose diets score in the upper range on the USDA's Healthy Eating Index).
- Persons who eat 5 fruit and vegetable servings per day eat 93% of these foods with breakfast, lunch, and dinner. Teenage boys and men more frequently get 5 servings per day because of larger portion sizes.

Source: <http://www.5aday.com/html/research/consumptionstats.php>



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Implications for Extension educators

Most people know the value of eating more fruits and vegetables. In fact, 68% of people in a recent survey said they could improve their diets by eating more fruits and vegetables. But cost and taste preferences are often cited as barriers to eating the way they know they should. Extension educators help people improve the quality of their diets by teaching affordable ways to purchase and prepare fruits and vegetables that are convenient as well as healthful and delicious. The “*What will your \$5 buy?*” learn-while-you-wait display, and “*Get Fresh!*” videos are examples. A press release promoting farmers’ markets has been placed in the Family Living press release collection for you to use during national 5 A Day month (September 2004). The URL for Family Living press releases is <http://www.cft.uwex.edu/ces/news/>. A more complete list of WNEP’s recommended teaching materials on the topic of “Eat Fruits and Vegetables” topic is available at http://www.uwex.edu/ces/wnep/tch_res/res_list.cfm?topic_id=10.

School Breakfast

Many school districts in Wisconsin are considering the pros and cons of starting or expanding their breakfast programs. In addition, schools are forming wellness councils to develop their school’s policies on food, physical activity and health, as required by the newest federal legislation authorizing child nutrition programs.

A new analysis of nationwide data by the USDA Economic Research Service documents the value of school breakfast programs. Children who have access to a School Breakfast Program were found to have better overall diets, consume lower percentages of calories from fat, be less likely to have low intakes of magnesium, and be less likely to have low levels of vitamin C and folate in their blood. For more information, see

<http://www.ers.usda.gov/publications/efan04008/>

and

http://healthykids.wisconsin.gov/initiatives_statement.asp?initid=1



Summary of a nutrition intervention promoting dairy intake in southern Wisconsin

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Background: The Dietary Reference Intake (DRI) for calcium for children 9-18 years old was raised to 1,300 milligrams in 1997. Nine out of ten teenage girls do not meet the RDA for calcium, and intake among teenage boys is also sub-optimal, according to recent estimates. Reasons to optimize the intake of calcium from dairy foods during the adolescent years include achieving peak bone mass and maintaining bone health, enjoying the protein and other nutrients available in dairy foods, and developing good habits that will carry on through adulthood. In addition, calcium may play a role in maintaining a healthy weight, which is of significance today as the incidence of obesity and overweight grows.

Project aims and objectives: We tested the hypothesis that youth who are empowered and actively engaged in educating younger children about dairy products will improve their own intake of dairy products as compared with those who are not involved in such a campaign. Older girl and boy scouts (11-17 years old) in a small, rural village in southwestern Wisconsin were recruited to participate as mentors to their younger scouting counterparts. We worked with troop leaders to implement the project. Girl and boy scouts within the same age range were recruited from a neighboring village but were not charged with running a campaign. Subjects from both villages were invited to separate half-day education sessions detailing the benefits of milk, yogurt, and cheese. We provided materials with which to carry out the campaign and had periodic check-ins with team members. Nutrition interns from University of Wisconsin Hospital and Clinics conducted diet histories, which were conducted at meetings at baseline and after education.

Results/Outcomes: Forty scouts from the intervention group were recruited. The mean age was 13.1 ± 1.6 years; the group was 71% female. Fifteen scouts from the control group were recruited. The mean age was 14.7 ± 1.9 years; the group was 47% female. 80% of the subjects in the intervention group and 73% of the subjects in the control group attended the education session. Scores on the 6-question, multiple-choice, pre- and post-tests given at the education session were calculated. Subjects in both groups performed similarly with scores improving on the post-test as compared with the pre-test. There was a mean 60% score on the pre-test with an increase to 89% on the post-test in the intervention group. Significant improvement on the following questions was observed: *What is calcium? How many servings of dairy per day are recommended? How many ounces are in one cup? What is osteoporosis?* In the control group, the pre-test mean score was 75% with an increase to 88% on the post-test. Significant improvement on the following questions was observed: *What is calcium? How many ounces are in one cup?* Baseline dairy consumption was very good at 3.8 and 4.2 servings in the intervention and control groups, respectively, and changed to 4.4 and 3.9 servings in the intervention and control groups, respectively, during the campaign.

Campaign activities: Aside from the pre- and post-tests, the subjects learned through an interactive Power Point presentation the health benefits of dairy, made and taste-tested yogurt smoothies, and participated in a number of activities designed to improve understanding of the importance of dairy. These activities included: (a) calculating the calcium, vitamin D, and protein contributions of foods in three different grocery bags representing an adequate-dairy diet,



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a low-dairy diet, and a “junk food” diet; (b) visually illustrating the calcium content of various beverages and snack foods using plastic bags filled with mini-marshmallows to represent calcium; and (c) writing a dairy rap song to promote dairy to young children (examples below). In the intervention group, subjects were provided various materials to promote dairy among young children. Dairy-themed materials were obtained from various sources and included coloring books, calcium & physical activity journals, 3-A-Day of Dairy dry-erase trackers, balloons, pencils, buttons, notepads, and brochures. Activities were organized for distribution of materials, including school functions, scout troop meetings and events, and a community health fair. 300 half-pints of milk and 340 individual cheese sticks were purchased for distribution by the subjects at large events, such as fundraisers and at the school cafeteria. One of the most popular events was the milk mustache booth held at the annual all-girl scout winter beach party. For this event, whipped cream was used to “paint” on a mustache, and individual photos were taken with a Polaroid camera.

Implications: We conclude that the campaign did appear to have a slight impact on the dairy consumption of the youth in the intervention group, especially of the girls. An interesting finding was that dairy intake appeared to be slightly lower in both groups after the school year ended. Reports from subjects suggest that dairy intake of the youth was buoyed during the school year, largely due to the availability of milk in the lunch program and school vending machines. This has implications for educators and/or nutritionists who may be able to develop strategies that will help the youth maintain dairy intake during the summer months when school is not in session.

Dairy Rap Songs:

Calcium is the name of the game
It fills you up like a photograph frame.
Good for your bones, it'll make 'em hard
Kind of like a diamond shard.
So let's eat dairy, me and you,
Milk and yogurt servings equal two.

Pop is whacked if you're a teen
Don't buy it down at the soda machine.
Just drink some milk – it'll make you fit
And throw away soda, 'cuz – that's it.
Cheese is good for you
It's curdled milk, but that's cool, too.

Osteoporosis is bad
You can inherit it from mom and dad.
Talkin' with your grandma on the phone
If she falls down she could break a bone.
So let's get dairy all around
And bust osteoporosis down.



I like my yogurt, milk and cheese
Why are these things so good for me?
I eat these things every day and night
They make my bones strong, make me grow
right.

C – A – L – C – I – U – to the – M
Say it with me now, that's calcium!

Soda is sweet, don't ya know?
Drink milk, be healthy – it helps you grow!