

## Background

This study uses the most recent data from the National Health and Nutrition Examination Survey (NHANES) to examine the diets of children who received Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) benefits. The report compares the diets of WIC-participant children to the diets of income-eligible nonparticipant children and higher income children who were not eligible for WIC benefits. The study was not designed to measure or attribute an effect of WIC participation on diet quality, individual food choices, or health outcomes.

It should be noted that in December 2007, USDA modified the content of the WIC food packages consistent with recommendations of the Institute of Medicine. This study examines the diets of children prior to implementation of the changes and will serve as a reference for comparison with future studies conducted after adoption of the new food packages.

## Data and Methods

The report relies primarily on 24-hour dietary recall data from the 1999-2004 NHANES, supplemented with the NHANES household interview, health survey, and physical examination data, to describe food choices and supplement use, as well as to assess the adequacy of nutrient intakes of children by income class and WIC-participant status.

## Findings

### *Nutrient intakes*

The study compared usual daily intakes of 13 vitamins and minerals with defined Estimated Average Requirements (EARs). Virtually all children ages 1 to 4 met requirements for all but one of these essential nutrients, the exception being vitamin E. The study found no significant differences between WIC children, low-income nonparticipants, or higher income children.

For nutrients without defined EARs, mean usual intakes of calcium, potassium, and fiber are measured against Adequate Intake (AI) levels. All three groups of young children had intakes of calcium above the AI but below adequate intake levels of fiber and potassium.

The usual daily sodium intakes of most children exceeded the upper limit (UL). The prevalence of excessive intake, however, was greater among WIC-participant children than higher income nonparticipants (87 percent compared to 81 percent).

Vitamin supplements were taken by 39 percent of children age 1 to 4. Consumption was greatest (at 47.9 percent) among higher income non-WIC participant children. Supplement intake by WIC children averaged 29.6 percent.

### *Energy intakes*

Although 70.3 percent of children had usual daily intakes of total fat consistent with recommendations, 22.3 percent of children had usual intakes below these levels and 7.4 percent had usual intakes above these levels. At the same time, children age 2 to 4 obtained an average of 36 percent of total calories from solid fats and added sugars (SoFAAS), more than twice the appropriate level for that group. WIC children consumed a somewhat smaller percentage of total energy from SoFAAS than income-eligible nonparticipants (36 percent versus 38 percent).

More than 90 percent of WIC participants, income-eligible nonparticipants, and higher income children had acceptable usual energy intakes from protein and carbohydrates.

The study used Body Mass Index (BMI) to assess the appropriateness of usual daily energy intakes. Roughly 20 percent of WIC children and higher income nonparticipants age 2 to 4 were overweight or at risk of overweight based on their BMI-for-age scores, while 24 percent of income-eligible nonparticipants were overweight or at risk of overweight.

### *Diet quality*

Data for both WIC participant and nonparticipant children indicate that overall diets do not conform to the Dietary Guidelines for Americans. By this measure, children's diets were most deficient in whole grains, dark green and orange vegetables, and legumes. Children consumed too much saturated fat, sodium, and calories from SoFAAS.

WIC children did better, on average, than income-eligible nonparticipants in consuming fruit and keeping calories from SoFAAS within appropriate limits. WIC participant intakes of meat and beans

exceeded those of higher income nonparticipants. However, WIC children did less well than higher income children in consuming whole grains and oils.

The overall diets of WIC children were more nutrient-rich than the overall diets of low income nonparticipant children, and were comparable to those of higher income children.

### ***Food choices***

Among WIC food package items, WIC participant children were more likely to consume program-approved breakfast cereal than income-eligible nonparticipants. WIC children are also more likely to consume eggs and dry beans, but less likely to consume peanut butter than higher income children.

Across a wider class of 10 major food groups, WIC children were less likely than higher income nonparticipants to consume whole grains, fruit, fruit juice, yogurt, sweets, added fats and oils, and, among 2- to 4-year-olds, reduced-fat milk. WIC children were more likely, however, to consume regular soft drinks than higher income nonparticipants.

WIC children were more likely than income-eligible nonparticipants to consume fruit and fruit juice. They were less likely to consume sweetened noncarbonated drinks.

WIC participant children were more likely than either nonparticipant group to consume unflavored whole milk.

On a nutritional quality scale, the diets of most children were far from ideal. Over half of all foods consumed by WIC participant and nonparticipant children alike were from groups that should be

consumed only occasionally. WIC children consumed relatively more foods from the category recommended for frequent consumption than did low-income nonparticipant children. However, WIC children consumed relatively more of their food from the category recommended for occasional consumption than higher income nonparticipants.

### **Implications for WIC Nutrition Education**

This report highlights specific areas in which the diets of WIC participant children fall short of formal dietary recommendations and other measures of dietary quality. To remedy these shortfalls, the report recommends that WIC pursue nutrition education strategies to:

- *Reduce children's intakes of saturated and solid fats*, including substitution of reduced-fat or fat-free milk for whole milk for children 2 years and older;
- *Reduce consumption of sweetened beverages*;
- *Increase intakes of dietary fiber through consumption of whole-grain products, vegetables, and whole fruits (rather than fruit juice)*; and
- *Discourage the use of dietary supplements by children*, as young children show very low rates of inadequate vitamins and mineral intake from food. The study suggests that dietary supplements may increase the risk of adverse health consequences due to overconsumption of certain micronutrients.

### **For More Information**

Cole, Nancy, and Fox, Mary Kay (2008). *Nutrient Intake and Diet Quality of WIC Participants and Nonparticipants*. Prepared by Abt Associates, Inc., for the Food and Nutrition Service (available online at [www.fns.usda.gov/fns](http://www.fns.usda.gov/fns)).

This study was sponsored by the Office of Research, Nutrition and Analysis, Food and Nutrition Service, U.S. Department of Agriculture as part of its ongoing research agenda (contract number 43-3198-4-3810). Points of view or opinions stated in this report are those of the authors and do not necessarily represent the official position of the Food and Nutrition Service.

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