

Background

This report uses data from the National Health and Nutrition Examination Survey (NHANES 1999-2004) to provide a current and comprehensive picture of the diets of school-aged children.

Data are presented for children who participated and did not participate in the National School Lunch Program (NSLP). For comparison purposes, results are provided for low-income children and higher income children for both participants and nonparticipants.

Nutrient Intake

This study examined intakes of 18 essential vitamins and minerals, macronutrients (protein, carbohydrates, and fat) as a percentage of energy, and the percentage of energy consumed as solid fats, alcoholic beverages, and added sugars (SoFAAS).

- Almost all school-aged children had adequate usual daily intakes of eight essential vitamins and minerals (niacin, riboflavin, vitamin B-12, thiamin, vitamin B-6, iron, folate, and zinc). However, the usual intakes of fiber, vitamins A, C, and E, magnesium, phosphorus, and potassium, were inadequate in more than 10 percent of children.
- For children 5-8 years old, usual intake of calcium exceeded the Adequate Intake (AI), indicating that the risk for inadequate intake is likely to be low. However, among older children, the mean usual intake of calcium was less than the AI.
- Mean usual intakes of potassium and fiber were less than the AI for all age groups. In addition, 90 percent of children had usual sodium levels exceeding the Upper Limit (UL) and were more than twice that of the AI.

- Among low-income children, NSLP participants were more likely to have adequate usual daily intakes of 10 essential vitamins and minerals (vitamins A, B-6 and B-12, folate, niacin, riboflavin, thiamin, iron, phosphorus, and zinc) but were also more likely to consume sodium at levels that exceed the UL.

Weight Status

This study used measures of the Body Mass Index (BMI)-for-age to assess the appropriateness of usual daily energy intakes.

Roughly 18 percent of all school-aged children were overweight, and another 15 percent were at risk of becoming overweight. Overall, there were no significant differences in weight status linked to income or NSLP participation status.

Overall Diet Quality

This report used two measures to assess overall diet quality: 1) The Healthy Eating Index-2005 (HEI), developed by the USDA Center for Nutrition and Policy Promotion to assess compliance with the Dietary Guidelines for Americans, and 2) a composite measure of nutrient density to assess the nutrient contribution of foods relative to their energy contribution. “Nutrient-dense” foods were defined as “low-fat forms of food in each food group that are free of added sugar.”

- School-aged children, regardless of income and NSLP participation, fell short of the diet recommended by the Dietary Guidelines for Americans. The average score on the HEI-2005 was 55 out of a possible 100.
- The diets of all school-aged children were characterized by low intakes of vegetables and fruit, very low intakes of whole grains, and high intakes of sodium, saturated fat, and SoFAAS.

- For both income groups, lunches consumed by NSLP participants were more nutrient-dense than lunches consumed by nonparticipating children. School lunch participants had higher intakes of milk, meat, and beans. Among low-income children, school lunch participants had higher scores for fruit consumption.

Food Choices

This report used two measures to assess food choices: 1) *types of foods consumed* and 2) *nutrition quality*.

- Measuring the types of foods consumed showed that NSLP participants in both income groups were more likely to consume vegetables, fruits, milk and milk products, and mixed dishes. They were less likely to consume salty snacks and beverages other than milk or juice.
- Measuring nutritional quality examined the percentage of foods consumed by children that are defined in terms of being recommended for frequent, selective, or occasional consumption. Over two-thirds of all foods consumed by children, regardless of participation and income status, came from foods that are recommended for occasional consumption.

Implications

A primary conclusion from this study is that the diets of most school-aged children in the United States are generally nutritious. Teenagers, particularly teenage girls, emerged as the subgroup at greatest risk for inadequate nutrient

intakes. These children are a prime audience for nutrition education interventions to promote consumption of nutritionally balanced diets.

Among the most important concerns for policymakers, school food service providers, and nutrition educators are:

- the increased prevalence of usual sodium intakes that exceed the UL among low-income NSLP participants, relative to nonparticipants; and
- the increased prevalence of excessive usual intakes of saturated fat among NSLP participants (in both income groups). Foods that were among the top five contributors to both saturated fat and sodium intakes are sandwiches, hamburgers and cheeseburgers, and pizza with meat. Whole milk and ice cream were also among the top five contributors to saturated fat intakes.

Specific strategies may help decrease children's intakes of saturated fat and sodium. They include limiting use of cheese in sandwiches and burgers; using the low-fat meats, including ground turkey, for burgers; using vegetables, chicken, or other low-fat/low-sodium toppings for pizza; eliminating whole milk; and limiting use of ice cream.

For More Information

Cole, Nancy, and Fox, Mary Kay (2008). *Nutrient Intake and Diet Quality of School Lunch Participants and Nonparticipants*. Prepared by Abt Associates, Inc., for the Food and Nutrition Service (available online at 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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