

**DIET QUALITY OF AMERICAN SCHOOL CHILDREN BY NATIONAL SCHOOL LUNCH PROGRAM PARTICIPATION STATUS: DATA FROM THE NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY, 2005-2010 – SUMMARY**

**Background**

This report uses data from the National Health and Nutrition Examination Survey (NHANES 2005-2010) to provide a comprehensive picture of the nutrient intakes, food choices, and diet quality of USDA National School Lunch Program (NSLP) participants.

Data are presented for school-aged children who participated and those who did not participate in the NSLP. Participants include children who consumed free, reduced-price, or full-price school meals. For comparison purposes, results are provided for low-income children, those eligible for free or reduced-price meals, and higher income children for both participants and nonparticipants.

**Data and Methods**

The report relies primarily on 24-hour dietary recall data from the 2005-2010 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 school children by income class and NSLP-participant status.

The differences between NSLP participants and nonparticipants described should not be interpreted as an effect of NSLP, because children who chose to participate may be different from nonparticipants in ways that affect food choices and diet quality. The data are from a time prior to the most recent changes in Federal nutrition standards for NSLP meals and for all food sold at school during school hours.

**Diet Quality**

This study examined the overall quality of diets using the Healthy Eating Index-2005 (HEI-2005), a measure used to assess how well individuals' diets compare to the *Dietary Guidelines for Americans*. Higher scores indicate healthier diets.

- On average, all school children fell far short of the *Dietary Guidelines for Americans*. The overall average score on the HEI-2005 was 58 out of a possible 100.
- ***Free and reduced-price NSLP participants had a higher average HEI-2005 score than nonparticipants at the same income level (61 versus 57).*** There were no differences between NSLP participants and nonparticipants at higher incomes.
- For all school-aged children, the average scores achieved or came close to achieving the maximum score for total grains, milk, and meat and beans. However, scores for whole grains, dark green and orange vegetables and legumes, sodium, and empty calories were low.
- Among income-eligible children, NSLP participants had a higher score for total fruit than nonparticipants (3.9 versus 2.7).

The report includes findings on the updated version of the HEI (HEI-2010) in an appendix.

**Nutrient Intakes**

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 (empty calories).

- Almost all school children had adequate usual intakes of most nutrients. However, a substantial minority did not have adequate usual intakes of phosphorus, vitamin C, vitamin A, and magnesium. Most children had inadequate usual intakes of calcium, vitamin E, and vitamin D.
- Almost all children consumed excess sodium, and four out of five children consumed saturated fat in excess.

- Average usual intake of potassium and fiber was below the Adequate Intake (AI) levels, but among income-eligible children, NSLP participants had higher potassium intake than nonparticipants (55 percent of AI versus 47 percent).
- Low-income NSLP participants were also more likely than low-income nonparticipants to have adequate usual intakes of vitamin A, calcium, and zinc. For calcium, more than half of low-income NSLP participants have adequate intake (56 percent) compared to only one-third (33 percent) for low-income non-participants. However, low-income NSLP participants were less likely to have adequate intakes of vitamin C, folate, thiamin, and iron, and most of these differences are limited to 14- to 18-year-old children.
- For all nutrients except for vitamin D, the prevalence of adequate usual intakes decreases with age and was lowest for those aged 14-18.
- Empty calories accounted for 36 percent of all calories consumed by school-age children. This proportion was slightly lower for income-eligible NSLP participants (34 percent) than for income-eligible nonparticipants (37 percent).

### Intake of Calories and Weight Status

The study estimated children's usual calorie intakes and measured Body Mass Index (BMI) to assess the appropriateness of those intakes.

- Most children (62 percent) had a healthy weight. Sixteen percent were overweight and another 19 percent were obese.
- Among school-age boys overall, higher income NSLP participants were more likely than higher income nonparticipants to have a healthy weight (66 versus 60 percent).
- Among school-age girls overall, lower income participants were slightly less likely than lower income nonparticipants to have a healthy weight (58 versus 60 percent).

### Food Consumption Patterns

This study examined the proportion of school children consuming foods from 10 broad food groups and the average amounts consumed, both at lunch and over the course of a day. At lunch, NSLP participants were more likely than nonparticipants to consume vegetable dishes and fluid milk, and less likely to consume beverages other than milk or 100% juice, salty snacks, and sweets and desserts. Over 24 hours, most of these differences persisted but at a lower magnitude.

### Implications for NSLP Nutrition Education

This analysis revealed a number of issues that can inform nutrition education efforts among NSLP participants.

- **Focus on older children.** Older children, especially teenage girls, are at the greatest risk for inadequate nutrient intakes. They could be a prime audience for nutrition education efforts that promote balanced diets.
- **Increase consumption of nutrient-dense food.** All school children had inadequate intake of whole grains and dark green and orange vegetables and legumes.
- **Reduce consumption of empty calories, saturated fat, and sodium.** All school children had excess consumption of these. Decreased intakes of foods that contribute empty calories would improve the overall quality of school children's diet and could contribute to reducing the prevalence of overweight and obesity.
- **NSLP is an important source of nutrition and healthy foods, particularly for low-income children.** All participants, but especially low-income participants, generally consumed more healthful food at lunch than nonparticipants.

### For More Information

Condon, Elizabeth and Susan Drilea, Carolyn Lichtenstein, James, Mabli, Emily Madden, and Katherine Niland. (2015). *Diet Quality of American School Children by National School Lunch Participation Status: Data from the National Health and Nutrition Examination Survey, 2005-2010*. Prepared by Walter R. McDonald & Associates, Inc. for the Food and Nutrition Service (available online at [www.fns.usda.gov/research-and-analysis](http://www.fns.usda.gov/research-and-analysis)).