USDA
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School Nutrition and Meal Cost Study

Methods Used to Examine Students' Dietary Intakes

This fact sheet describes the methods used in the School Nutrition and Meal Cost Study (SNMCS) to collect, process, and analyze data on students' dietary intakes.

The study examined several aspects of students' diets at breakfast, at lunch, and over 24 hours, including:

- Average calorie, nutrient, and USDA food group intakes
- Contribution of school breakfasts and lunches to 24-hour dietary intakes
- Nutritional quality, based on the Healthy Eating Index-2010
- Prevalence of inadequate, acceptable, and excessive usual nutrient intakes (over 24 hours)

Data Collection

Sampled students in grades 1 through 12 completed a 24-hour dietary recall. Trained interviewers used USDA's Automated Multiple Pass Method (AMPM) software to collect the dietary recalls in person with students. Students were asked to report information on all foods and beverages consumed over a 24-hour period on a specific school day.

School administrative records were used to identify students who consumed school meals on the day covered in the dietary recall and classify each student as a school meal participant or nonparticipant that day. This was a key variable for the analysis.

The final analysis sample included 2,165 students. A representative subsample of students (27%) completed a second 24-hour dietary recall to estimate the prevalence of inadequate, acceptable, and excessive usual nutrient intakes.

Data Processing

Step 1

To obtain data on calorie, nutrient, and food group content, foods and beverages reported in the dietary recalls were linked to two USDA databases—the Food and Nutrient Database for Dietary Studies and the Food Patterns Equivalents Database.

Step 2

Data on the calorie, nutrient, and food group content of foods students ate as part of a school meal were obtained from a separate analysis of school menus. These data were used in place of the USDA database values to ensure that school meals were accurately represented in students' dietary intakes.

Step 3

Foods students consumed at breakfast and lunch were identified for the meal-specific analyses.

Analysis

This fact sheet describes the analysis methods used to examine the nutritional quality of students' diets—at breakfast, at lunch, and over 24 hours—using the Healthy Eating Index-2010 (HEI-2010). The HEI-2010 assigns scores to students' diets based on how well they conform with the 2010 Dietary Guidelines for Americans.[1,2] The index includes 9 adequacy components and 3 moderation components, as well as a total score.

Healthy Eating Index-2010 Components

Adequacy components: recommended for consumption

- Total fruit
- Whole fruit
- Total vegetables
- Greens and beans
- Whole grains
- Dairy
- Total protein foods
- Seafood and plant proteins
- Fatty acids

Moderation components: limit consumption

- Refined grains
- Sodium
- Empty calories

HEI-2010 Scoring Approach

The total HEI-2010 score, which provides an overall measure of nutritional quality, is the sum of component scores and has a maximum possible score of 100. Each component has a maximum possible score ranging from 5 to 20. Because dietary recommendations vary based on age, gender, and activity level, standards for assigning scores are expressed on a density basis (typically as amounts per 1,000 calories or as a percentage of calories). Intakes that don't meet the standard for the maximum possible score get fewer points, with zero being the minimum score. For all component scores and the total score, higher scores indicate better conformance with Dietary Guidelines recommendations and higher quality diets.

***Higher* HEI scores indicate *higher* quality diets.**

HEI score for *adequacy* components *(to encourage)* ↑ scores = ↑ intakes

HEI scores for *moderation* components *(to limit)* ↑ scores = ↓ intakes

Estimating HEI-2010 Scores for Students' Dietary Intakes

HEI-2010 scores were estimated using the one 24-hour dietary recall collected from all students in the sample. HEI total and component scores were estimated to reflect the diets of students at the group level (versus at the individual level) using the population ratio method. This method involves summing intakes of each HEI component across all students in the sample and applying the scoring standards.

[1] The HEI-2010 was used because the 2010 Dietary Guidelines for Americans were in effect when SNMCS data were collected.

[2] The HEI was developed by researchers at the National Cancer Institute and USDA. Additional information is available at https://epi.grants.cancer.gov/hei/; https://www.fns.usda.gov/resource/healthy-eating-index-hei; and https://fns-prod.azureedge.net/sites/default/files/healthy_eating_index/HEI2010-UpdatePaper.pdf.

For more information

More information on the methods used to examine students' dietary intakes is available in the SNMCS methods report as well as Volume 4 of the SNMCS final report. To access reports, instruments, and webinars, visit: www.fns.usda.gov/school-nutrition-and-meal-cost-study. To request access to public-use datasets, email: OPSDataRequest@usda.gov.