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The Quality of Children's Diets in 2003-04 as Measured by the Healthy Eating Index-2005

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The quality of children's and adolescents' diets is of concern because poor eating patterns established in childhood may transfer to adulthood. Such patterns are major factors in the increasing rate of childhood obesity over the past decades and are contributing factors to related health outcomes. In addition, nutrition-related diseases that were once considered adult illnesses, such as type 2 diabetes and high blood pressure, are increasingly diagnosed in children. This *Nutrition Insight* examines the diets of children ages 2 to 17 years by analyzing their Healthy Eating Index-2005 (HEI-2005) component and total scores, as estimated from the National Health and Nutrition Examination Survey, 2003-04 (NHANES).

Methods

The HEI-2005 is a dietary assessment tool designed to measure compliance with key diet-quality recommendations of the 2005 Dietary Guidelines for Americans (U.S. Department of Health and Human Services & U.S. Department of Agriculture, 2005), which represent current Federal nutrition policy. The HEI-2005 is comprised of 12 components, each representing a different aspect of diet quality. Dietary adequacy is addressed by comparing intake with recommendations for Total Fruit; Whole Fruit (forms other than juice); Total Vegetables; Dark Green and Orange Vegetables and Legumes (cooked dry beans and peas); Total Grains; Whole Grains; Milk (all milk products and soy beverages); Meat and Beans (meat, poultry, fish, eggs, soybean products other than beverages, nuts, and seeds); and Oils (nonhydrogenated vegetable oils and oils in fish, nuts, and seeds). Higher scores reflect higher intakes for these components, and intakes meeting or exceeding recommendations are given the maximum score. The remaining three components, for which moderation is recommended, are Saturated Fat; Sodium; and Extra Calories from solid fats (including fat in milk products) and added sugars. Higher scores for these components reflect *lower* intakes.

All intakes are measured on a density, or per calorie, basis thus representing diet quality rather than quantity (Guenther, Reedy, & Krebs-Smith, 2008; Guenther, Reedy, Krebs-Smith, & Reeve, 2008). Scores were estimated by using 1 day of dietary intake information for children who participated in NHANES

2003-04. Children under the age of 2 years are excluded because the *Dietary Guidelines for Americans* do not apply to them. Breast-fed children are excluded because nutrient intake data are not available for them.

Intakes of the various dietary components were estimated by using the population ratio method: the total amount of each dietary component consumed by the population was divided by the population's total energy intake (SUDAAN, version 10.0, proc ratio procedure), then the HEI-2005 scores were calculated (Freedman, Guenther, Krebs-Smith, & Kott, 2009).

Results

The mean HEI-2005 scores for children, categorized into three age groups, are presented in table 1. In 2003-04, children's diets were less than optimal regardless of the children's age. Total HEI-2005 scores were between 54.7 and 59.6 out of a possible 100 points; there was no significant difference in total scores among the age groups. Children ages 2 to 5 years had significantly better diets than children ages 6 to 11 in regard to Total Fruits, Whole Fruits, Milk, and Extra Calories. Children ages 2 to 5 also had significantly better diets than did children ages 12 to 17 in regard to Total Fruits, Whole Fruits, Whole Grains, Milk, Sodium, and Extra Calories but worse diets in regard to Meats and Beans and Oils.

All three age groups of children obtained the maximum scores for the Total Grains component of the HEI-2005. For Total Fruit and Milk, only children ages 2 to 5 met the recommendations. Children's diets were the worst in regard to Dark Green and Orange Vegetables and Legumes (scores ranged from 0.5 to 0.6 out of 5) and Whole Grains (scores ranged between 0.6 and 0.9 out of 5). HEI-2005 scores for Total Vegetables were about half the maximum score for all three age groups, suggesting a need to increase intake of all vegetables. On the other hand, HEI-2005 scores for Saturated Fat, Sodium, and Extra Calories were about 50 percent lower than the maximum scores for all age groups, suggesting that intake levels should be reduced.

Table 1. Estimated mean Healthy Eating Index-2005 total and component scores for children ages 2 to 17, United States, 2003-04

Component (maximum score)	Age 2-5 years (n=763)	Age 6-11 years (n=900)	Age 12-17 years (n=1,623)	Age 2-17 years (n=3,286)
Total Fruit (5)	5.0	2.9*	2.5†	3.2
Whole Fruit (5)	4.3	2.7*	2.2†	2.8
Total Vegetables (5)	2.2	2.3	2.4	2.3
Dark Green and Orange Vegetables and Legumes (5)	0.6	0.5	0.6	0.6
Total Grains (5)	5.0	5.0	5.0	5.0
Whole Grains (5)	0.8	0.9	0.6†	0.8
Milk (10)	10.0	8.7*	7.7†	8.7
Meat and Beans (10)	7.3	7.8	8.8†	8.1
Oils (10)	5.5	6.6	7.5†	6.7
Saturated Fat (10)	4.7	5.2	5.4	5.2
Sodium (10)	4.8	4.5	4.2†	4.4
Extra Calories (20)	9.4	7.7*	7.9†	8.1
Total HEI-2005 score (100)	59.6	54.7	54.8	55.9

*Age 2-5 versus 6-11 (significantly different, $p<0.05$).

†Age 2-5 versus 12-17 (significantly different, $p<0.05$).

Conclusions

The diets of children ages 2 to 17 years need improvement. Particularly, children need to increase the consumption of whole fruit, whole grains, and dark green and orange vegetables and legumes. On the other hand, children need to decrease their consumption of saturated fat, sodium, and extra calories from solid fats and added sugars. Nutrition education efforts for children should focus on these areas, preferably starting at a young age. This report provides an understanding of the quality of children's diets and the areas that need to be improved.

References

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