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Diet Quality of Americans in 1994-96 and 2001-02 as Measured by the Healthy Eating Index-2005

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The Healthy Eating Index-2005 (HEI-2005) is a tool designed to measure compliance of diets with the key, diet-related recommendations of the 2005 *Dietary Guidelines for Americans* (U.S. Department of Health and Human Services & U.S. Department of Agriculture, 2005). The HEI-2005 has 12 components: Total Fruit; Whole Fruit (forms other than juice); Total Vegetables; Dark Green and Orange Vegetables and Legumes (dry peas and beans)*; 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); Oils (nonhydrogenated vegetable oils and oils in fish, nuts, and seeds); Saturated Fat; Sodium; and Calories from Solid Fats, Alcoholic beverages, and Added Sugars (SoFAAS) (Guenther et al., 2006). For most components, higher intakes result in higher scores. Note, however, that for three components, Saturated Fat, Sodium, and Calories from SoFAAS, *lower* intake levels result in higher scores because lower intakes are more desirable. The HEI-2005 assesses dietary intakes on a per calorie basis rather than on the basis of absolute amounts of foods consumed; thus, the HEI-2005 assesses the quality of the relative proportions of foods consumed rather than the quantity of foods consumed. Details on the standards for scoring diets and on the rationale, development, evaluation, and history of the HEI-2005 have been reported (Guenther, Reedy, Krebs-Smith, Reeve, & Basiotis, 2007).

This *Nutrition Insight* provides HEI-2005 scores for the total U.S. population estimated from national surveys conducted in 1994-96 and in 2001-02. These estimates, therefore, can serve as baseline data that reflect the quality of the American diet prior to the implementation of the 2005 Dietary Guidelines. The Center for Nutrition Policy and Promotion (CNPP) will continue to estimate these scores in the future.

Methods

The HEI-2005 scores were estimated using 1 day of dietary intake data provided by 15,011 participants in the USDA Continuing Survey of Food Intakes by Individuals, 1994-96 (CSFII 1994-96), conducted by the USDA Agricultural Research Service (ARS), and 9,032 participants in the National Health and Nutrition Examination Survey, 2001-02, conducted by the National Center for Health Statistics (USDA,

2007b; National Center for Health Statistics, 2007). Energy and saturated fat intakes were estimated using the USDA Multi-year Food and Nutrient Database for Dietary Studies, 1.0 (USDA, 2004); and sodium intakes were estimated using the original CSFII 1994-96 dataset that includes information about whether salt was used in food preparation (USDA, 2007b). Food intakes for 1994-96 and 2001-02 were estimated using data appropriate for the respective time periods found in the MyPyramid Equivalents Database, version 1.0 (Friday & Bowman, 2006). This analysis, however, does not fully account for all the methodological differences between the two surveys (USDA, 2007a). Sampling weights that account for the survey sample design, nonresponse, and day of week were used. Children under the age of 2 years are excluded because the Dietary Guidelines for Americans do not specifically apply to them. Breast-fed children are excluded because nutrient intake data for them are not available.

Long-term intakes of the various dietary components assessed by the HEI-2005 were estimated using the population ratio method; that is, the total amount of each dietary component consumed by the population was divided by the population's total energy intake (SUDAAN, version 9.0.1, RATIO procedure), and the scores were then calculated. This method is the best available proxy for the long-term mean HEI-2005 scores for the population (Guenther et al., 2007).

A difference in the estimated scores across the two time periods was considered to be significant when the probability was less than .05 that the true scores were actually the same in both time periods. The confidence intervals shown for each estimated score in the table indicate that the true score has a probability of .95 of falling between them.

Results and Discussion

In both 1994-96 and 2001-02, HEI-2005 scores were below the maximum possible score for all components, except for Total Grains and Meat and Beans (see table). The following components had the lowest scores: Whole Grains; Dark Green and Orange Vegetables and Legumes; Sodium; and Calories from SoFAAS. Scores for Total Fruit, Whole Fruit, Total Vegetables, Milk, Oils, and Saturated Fat were also substantially below their maximums.

*Legumes are counted in the Meat and Beans component if a diet otherwise does not meet the Meat and Beans standard.

Table. Estimated Healthy Eating Index-2005 component and total scores, United States, 1994-96 and 2001-02¹

Component (maximum score)	1994-96 Score (CI) ²	2001-02 Score (CI)
Total Fruit (5)	3.1 (3.0, 3.3)	3.1 (2.9, 3.3)
Whole Fruit (5)	4.5 (4.3, 4.7)	3.4 (3.2, 3.7)*
Total Vegetables (5)	3.6 (3.6, 3.7)	3.2 (3.1, 3.4)*
Dark Green and Orange Vegetables and Legumes (5)	1.4 (1.4, 1.5)	1.4 (1.2, 1.5)
Total Grains (5)	5.0 (5.0, 5.0)	5.0 (5.0, 5.0)
Whole Grains (5)	1.2 (1.2, 1.3)	1.0 (1.0, 1.1)*
Milk (10)	5.9 (5.7, 6.2)	6.3 (6.0, 6.5)*
Meat and Beans (10)	10.0 (9.9, 10.0)	10.0 (10.0, 10.0)
Oils (10)	6.0 (5.8, 6.2)	6.8 (6.5, 7.1)*
Saturated Fat (10)	6.5 (6.4, 6.7)	6.4 (6.1, 6.7)
Sodium (10)	3.2 (3.1, 3.3)	4.1 (3.9, 4.2)*
Calories from Solid Fats, Alcoholic beverages, and Added Sugars (20)	7.8 (7.5, 8.2)	7.5 (6.9, 8.1)
Total HEI-2005 score (100)	58.2 (57.2, 59.2)	58.2 (56.6, 59.9)

¹ Excludes children under 2 years of age and breast-fed children.

² 95% confidence interval.

* Significantly different ($p < 0.05$). (N.B. Overlapping of confidence intervals does not, by itself, reveal if a difference is significant.)

Sources of data: Continuing Survey of Food Intakes by Individuals, 1994-96, and National Health and Nutrition Examination Survey, 2001-02.

The diet quality of Americans, as measured by the HEI-2005 using national survey data, changed little between 1994-96 and 2001-02 (see table). Scores for Total Grains and Meat and Beans components remained at the maximum value. Scores declined for Whole Fruit, Total Vegetables, and Whole Grains; improved for Milk, Oils, and Sodium; and showed no significant change for Total Fruit, Dark Green and Orange Vegetables and Legumes, and Saturated Fat. The total HEI-2005 score did not change between 1994-96 and 2001-02 because some aspects of the U.S. diet improved and others declined.

Conclusions

The diet quality of Americans needs to be improved. HEI-2005 scores are low for the “food groups to encourage” identified in the *Dietary Guidelines for Americans 2005*: fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products. To improve HEI-2005 scores, Americans need to increase their intake of fruits, vegetables, whole grains, and fat-free or low-fat milk; choose more nutrient-dense forms of foods, that is, foods low in solid fats and free of added sugars; and lower their intake of sodium

and saturated fats. These changes, if made, would provide substantial health benefits for many Americans. Further research is needed to determine how diet quality varies among subgroups of the population.

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