



United States
Department of
Agriculture

Center for
Nutrition Policy
and Promotion

November 2008

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

Nutrition Insight 41

The Healthy Eating Index-2005 (HEI-2005) is a tool designed to measure diet quality of the American public in terms of compliance 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).

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 (Guenther, Reedy, & Krebs-Smith, 2008; Guenther, Reedy, Krebs-Smith, & Reeve, 2008).

Methods

This study examined the diet quality and changes in diet quality, measured by the HEI-2005, among adults age 65 years and older using 1-day food consumption data from the 1994-96 Continuing Survey of Food Intakes by Individuals (n=2,314) and the 2001-02 National Health and Nutrition Examination Survey (n=1,061). Data were analyzed using SAS 9.1 and SUDAAN 9.0.1.

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

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

total energy intake (SUDAAN, proc ratio procedure), and the HEI scores were then calculated. A difference in estimated scores between survey years was considered to be significant if the probability of attaining an estimated difference of that size, when the true scores were actually the same for both groups, was less than 5 percent (i.e., $p < 0.05$) (Freedman, Guenther, Krebs-Smith, & Kott, 2008).

Results and Discussion

Table 1 shows the HEI-2005 component and total scores by survey years. Figure 1 shows how diets compare to recommendations by expressing the HEI-2005 component scores as a percent of the HEI-2005 maximum scores. In 2001-02, diets of older adults scored the lowest for Whole Grains, Dark Green and Orange Vegetables and Legumes, Milk,

Table 1. Healthy Eating Index-2005 total and component scores, ages 65 years and older, United States, 1994-96 and 2001-02

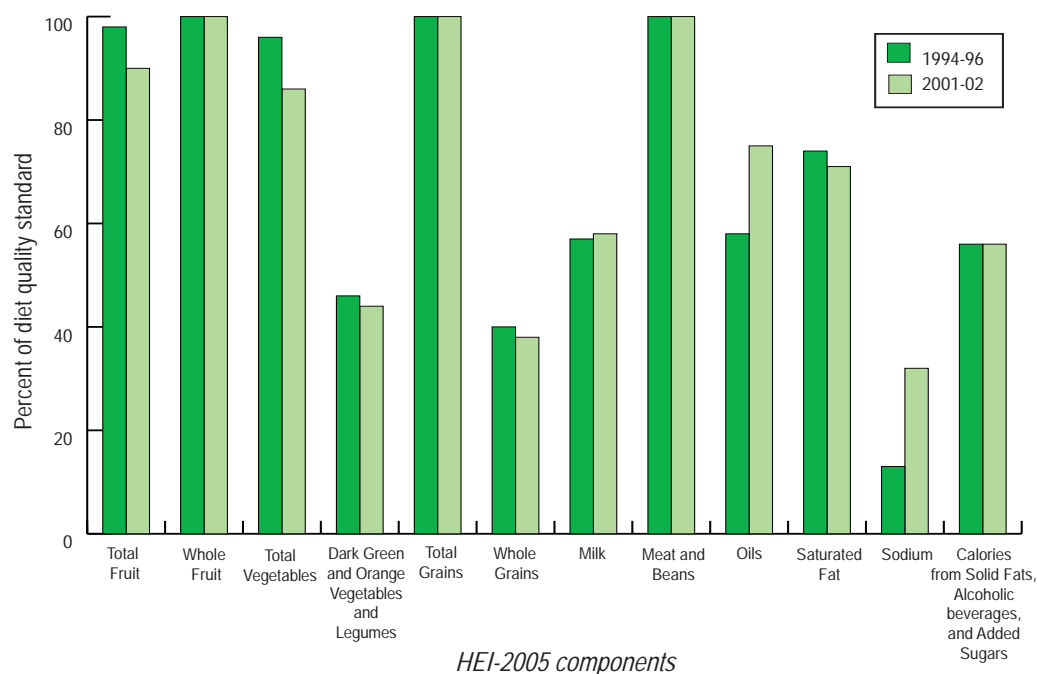
Component (maximum score)	1994-96 Score (95% CI) ¹	2001-02 Score (95% CI)
Total Fruit (5)	4.9 (4.7, 5.0)	4.5 (4.2, 4.9)
Whole Fruit (5)	5.0 (5.0, 5.0)	5.0 (5.0, 5.0)
Total Vegetables (5)	4.8 (4.6, 4.9)	4.3 (4.0, 4.5)*
Dark Green and Orange Vegetables and Legumes (5)	2.3 (2.1, 2.5)	2.2 (1.9, 2.5)
Total Grains (5)	5.0 (5.0, 5.0)	5.0 (5.0, 5.0)
Whole Grains (5)	2.0 (1.9, 2.1)	1.9 (1.7, 2.0)
Milk (10)	5.7 (5.4, 5.9)	5.8 (5.3, 6.2)
Meat and Beans (10)	10.0 (10.0, 10.0)	10.0 (10.0, 10.0)
Oils (10)	5.8 (5.5, 6.1)	7.5 (7.0, 8.1)*
Saturated Fat (10)	7.4 (7.0, 7.7)	7.1 (6.6, 7.7)
Sodium (10)	1.3 (1.0, 1.5)	3.2 (2.8, 3.6)*
Calories from Solid Fats, Alcoholic beverages, and Added Sugars (20)	11.2 (10.7, 11.7)	11.2 (10.4, 11.9)
Total HEI-2005 score (100)	65.4 (63.8, 67.0)	67.6 (64.8, 70.5)

¹ 95% confidence interval

* Significantly different ($p < 0.05$)

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

Figure 1. Extent to which diets meet recommendations, age 65+, United States, 1994-96 and 2001-02



Sodium, and Calories from SoFAAS (32 to 58 percent of maximum scores). Compared to 1994-96, older adults in 2001-02 had significantly improved scores for Oil and Sodium and a lower score for Total Vegetables ($p < 0.05$). Scores for Whole Fruit, Total Grains, and Meat and Beans remained at the maximum levels. The total HEI-2005 score in 2001-02 (67.6) was not significantly higher than in 1994-96 (65.4).

Conclusions

The overall diet quality of Americans age 65 and older did not significantly improve from 1994-96 to 2001-02. To improve their diet quality, older Americans need to increase their intakes of whole grains, dark green and orange vegetables, legumes, and 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 fat. These changes, if made, would provide substantial health benefits. Further research is warranted to examine the relationships between diet quality and other sociodemographic characteristics (i.e., gender, race/ethnicity, and education level) or psychosocial factors (i.e., self-perception of health status).

References

- Freedman, L.S., Guenther, P.M., Krebs-Smith, S.M., & Kott, P.S. (2008). A population's mean Healthy Eating Index-2005 scores are best estimated by the score of the population ratio when one 24-hour recall is available. *Journal of Nutrition*, 138,1725-1729.
- Guenther, P.M., Reedy, J., & Krebs-Smith, S.M. (2008). Development of the Healthy Eating Index-2005. *Journal of the American Dietetic Association*, 108, 1886-1901.
- Guenther, P.M., Reedy, J., Krebs-Smith, S.M., & Reeve, B.B. (2008). Evaluation of the Healthy Eating Index-2005. *Journal of the American Dietetic Association*, 108, 1854-1864.
- U.S. Department of Health and Human Services & U.S. Department of Agriculture. (2005). *Dietary Guidelines for Americans, 2005* (6th ed.). Washington, DC: U.S. Government Printing Office.
- Authors:** WenYen Juan, PhD¹ and Patricia M. Guenther, PhD, RD²; and Phillip S. Kott, PhD.³
- ¹USDA Center for Nutrition Policy and Promotion (currently at Center for Food Safety and Applied Nutrition/Food and Drug Administration).
- ²USDA Center for Nutrition Policy and Promotion.
- ³USDA National Agricultural Statistics Service.



Nutrition Insights are issued by the Center for Nutrition Policy and Promotion, an agency of the U.S. Department of Agriculture. **Nutrition Insights** may be accessed at the CNPP Web site at <http://www.cnpp.usda.gov>.

The mission of the Center for Nutrition Policy and Promotion is to improve the health of Americans by developing and promoting dietary guidance that links scientific research to the nutrition needs of consumers.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.