

# Still Not Enough

## Can We Achieve Our Goals for Americans to Eat More Fruits and Vegetables in the Future?

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Since 1990, *Dietary Guidelines for Americans*<sup>1</sup> has recommended consuming at least two servings of fruits and three servings of vegetables daily. The 2005 release of the guidelines expanded the specificity of recommended intakes for individuals of different ages, genders, and levels of physical activity, increasing recommended fruit and vegetable intake for most of the population, and changed the recommendations to cups from servings. In this journal issue, two manuscripts provide estimates and describe trends in fruit and vegetable consumption in U.S. adults across a variety of race and demographic groups using National Health and Nutrition Examination Surveys (NHANES) data.<sup>2,3</sup> Their findings are similar to previous findings<sup>4,5</sup> and report that over time, the majority of U.S. adults continue to consume fewer than five servings of fruits and vegetables daily. This is a public health concern because consuming a diet high in fruits and vegetables is associated with a decreased risk of certain chronic diseases, such as cardiovascular disease, diabetes, and some cancers.<sup>6,7</sup>

The NHANES I (1971–1975), II (1976–1980), III (1988–1994), and 1999–2002 are cross-sectional nationally representative surveys of the U.S. civilian, non-institutionalized population that employ a complex, stratified, multistage probability cluster sampling design.<sup>8</sup> Dietary intake information is collected by a trained interviewer using a single 24-hour dietary recall. NHANES incorporates the most comprehensive approach for national dietary surveillance within the United States. These data are critical in their ability to track national dietary consumption patterns, as well as to provide key evidence to help form research directions aimed at improving dietary intake behaviors. Although other surveys exist for collecting national estimates of fruit and vegetable intake, NHANES is

considered the most valid, because it uses a 24-hour dietary recall, considered the gold standard self-report, rather than a short fruit and vegetable screener.

Previous behavioral intervention research has focused on increasing fruit and vegetable intake mostly through increasing knowledge and skills at the individual level with some environmental or policy components. Ammerman and colleagues<sup>9</sup> found an average increase in fruit and vegetable consumption of 0.6 serving per day in an evidence-based review of the literature. Multicomponent school food environment interventions directed toward youth have been more successful increasing fruit consumption (0.2–0.6 servings daily) than vegetable consumption (0–0.3 servings daily).<sup>10</sup> Specifically with regard to particular settings, faith-based programs have had some success, as demonstrated by the original Black Churches United for Better Health<sup>11</sup> and Eat for Life<sup>12</sup> interventions. These programs were merged into the Body and Soul Program that in an effectiveness trial showed up to a 1.4 serving difference in the change in fruit and vegetable consumption between treatment and control groups.<sup>13</sup> This successful program continues to be disseminated by the National Cancer Institute, African-American churches, and their partners across the United States.<sup>14</sup> More recent policy approaches such as the United States Department of Agriculture (USDA) Fruit and Vegetable Pilot Program<sup>15</sup> hold promise for increasing fruit and vegetable consumption. The original project, to provide free fruits and vegetables to schoolchildren, was implemented in schools in four states and one Indian Tribal Organization (ITO). This project was made permanent in 2004 and in 2006 was expanded to 13 states and three ITOs.

Increases in public awareness of the importance of and recommendations for fruit and vegetable consumption<sup>16,17</sup> are yet to be accompanied by increased intake, demonstrating the need for a reinvigorated effort to promote fruit and vegetable consumption. On March 19, 2007, “Fruits & Veggies—More Matters” will be launched.<sup>18</sup> This effort will build on the strong public-private partnership begun in 1991 by the 5-A-Day for Better Health Program. This program previously incorporated nutrition education and social marketing strategies to raise awareness of recommendations for

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fruit and vegetable consumption and sought to increase intake as well.<sup>19</sup>

Future research should evaluate which strategies are most effective for increasing fruit and vegetable consumption, with attention focused on environmental and policy activities that complement existing traditional education and communication strategies. Innovative programs to increase fruit and vegetable consumption such as community gardens, farmers markets, school gardens, farm-to-school, salad bars, policies for food provided at meetings, and access to supermarkets in low-income communities need to be evaluated to find best practices. A new call-to-action—such as “Fruits & Veggies—More Matters,” in combination with continued research at multiple levels as described above—is needed to first affect behavior and then help enable sustainable change.

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