Supplemental Online Content

eAppendix. Supplementary Methods

eReferences

This supplemental material has been provided by the authors to give readers additional information about their work.

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Dietary Assessment in the National Health and Nutrition Examination Survey (NHANES)

Dietary intake data collection was conducted in the NHANES interview component called What We Eat in America (WWEIA). The 24-hour recall method was used to estimate the types and amounts of foods and beverages consumed during the 24-hour period prior to the interview (midnight to midnight) and to estimate the intake of energy, nutrients, and other food components from those foods and beverages. The first day (day 1) data were collected in the Mobile Examination Center (MEC) and, from the 2003-2004 cycle, the second day (day 2) data were collected through a telephone interview scheduled 3 to 10 days later. In 2003-2004, 87% of MEC participants had day 2 dietary data. A set of standard measuring guides (measuring cups and spoons, a ruler, and a food model booklet) was available in the MEC dietary interview room for the respondent to use to report amounts of food. After completing the in-person interview, the measuring guides were given to participants for reporting food and beverage amounts during the ensuing telephone interview. There was a change in the measuring guides in 2002.[1] In addition, dietary intake data were collected using the NHANES computer-assisted dietary interview system (CADI) in 2001 and earlier.[2] In 2002 and all later cycles, WWEIA data were collected using the dietary data collection instrument created by the US Department of Agriculture, the Automated Multiple-Pass Method (AMPM).[3] AMPM is a fully computerized recall method that includes an extensive compilation of standardized food-specific questions and possible response options. It features automated routing of questions based on previous answers. AMPM has a 5-step interview: (1) quick list, (2) forgotten foods, (3) time and occasion, (4) detail cycle, and (5) final probe. AMPM is updated yearly to capture the changing food supply and to address research needs from the data user community.

NHANES data prior to the 2003-2004 cycle, including NHANES III (1988-1994) and the 1999-2000 cycle, were not included in the present study because the dietary vitamin A intake levels were captured in microgram retinol equivalents, an older unit, and the conversion to microgram retinol activity equivalents, which was used in the later NHANES cycles, was not feasible. In addition, because of changes in the instruments used (the measuring guides; CADI vs AMPM) in 2002, the present study reported data points only from the 2003-2004 cycle and onward.

Regression Method

The distribution of vitamin A was examined. Gamma generalized linear regression models were used to estimate mean vitamin A intake of the day 1 recall and the differences among the race groups, with adjustment for confounders through propensity score stratification per NHANES cycle using SAS. The MEC exam weight in each cycle was applied for population estimates. The intake levels within each racial group by NHANES cycles were examined using simple linear regression; whether the slope deviated from zero was used as a trend test. Racial group differences were estimated using Stata.

Covariates

A variable was considered as a covariate if it fulfilled a definition of confounder, i.e., associated with both exposure and outcomes, but not in the causal pathway based on biological knowledge and literature. The covariates and the corresponding levels were sex (male, female), age group (20-39, 40-59, ≥60 y), educational level (<grade 9, grades 9-11, high school graduate or

65 General Educational Development [GED], some college or advanced degree, ≥college
66 graduate), marital status (married; divorced, widowed, or separated; never married), family
67 income to poverty ratio (0 to <1, 1 to <2, 2 to <3, 3 to <4, 4 to <5, ≥5), body mass index (<25, 25
68 to <30, ≥30 kg/m^2), smoking status (current, former, never), physical activity (yes for any
69 moderate or vigorous activity, otherwise no), total energy intake (continuous value), and history
70 of cancer (yes, no [included "Refused" and "Don't know"]), arthritis (yes, no), congestive heart
71 disease (yes, no), "heart attack" (yes, no), diabetes (yes, no), "thyroid problem" (yes no), and
72 stroke (yes, no).
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