Nutrition Briefs

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Obesity

Prevalence and Trends in Obesity Among US Adults, 1999-2008

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Significance: The increases in the prevalence of obesity do not appear to be continuing at the same rate over the past 10 years, particularly for women and possibly for men.

This study examined trends in obesity from 1999-2008 and the current prevalence of obesity and overweight for 2007-2008 using height and weight measurements from 5555 adult men and women aged ≥20 years obtained in 2007-2008 as part of the NHANES. The data were compared with results obtained from 1999-2006. In 2007-2008, the age-adjusted prevalence of obesity was 33.8% (95% confidence interval [CI], 31.6%-36.0%) overall, 32.2% (95% CI, 29.5%-35.0%) among men, and 35.5% (95% CI, 33.2%-37.7%) among women. The corresponding prevalence estimates for overweight and obesity combined (BMI ≥25) were 68.0% (95% CI, 66.3%-69.8%), 72.3% (95% CI, 70.4%-74.1%), and 64.1% (95% CI, 61.3%-66.9%). Obesity prevalence varied by age group and by racial and ethnic group for both men and women. Over the 10-year period, obesity showed no significant trend among women (adjusted odds ratio [AOR] for 2007-2008 vs 1999-2000, 1.12 [95% CI, 0.89-1.32]). For men, there was a significant linear trend (AOR for 2007-2008 vs 1999-2000, 1.32 [95% CI, 1.12-1.58]).

Cardiovascular Disease

Cardiovascular Disease Risk of Dietary Stearic Acid Compared with Trans, Other Saturated, and Unsaturated Fatty Acids: A Systematic Review

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Significance: The replacement of TFA with STA compared with other saturated fatty acids in foods that require solid fats beneficially affects LDL cholesterol, the primary target for CVD risk reduction; unsaturated fats are preferred for liquid gat applications. Research is needed to evaluate the effects of STA on emerging CVD risk markers such as fibrinogen and to understand the responses in different populations.

This study assessed the cardiovascular health effects of dietary stearic acid (STA) versus trans, other saturated, and unsaturated fatty acids. In comparison with other saturated fatty acids (FA), STA lowered LDL-cholesterol, was neutral with respect to HDL-cholesterol, and lowered the ratio of total to HDL-cholesterol. In comparison with unsaturated FA, STA tended to raise LDL-cholesterol, lower HDL-cholesterol, and increase the ratio of total to

HDL-cholesterol. In 2 of 4 studies, high-STA diets increased lipoprotein(a) in comparison with diets high in saturated fatty acids. Three studies showed increased plasma fibrinogen when dietary STA exceeded 9% of energy. Replacing industrial trans fatty acids (TFAs) with STA might increase STA intake from 3.0% (current) to ≈4% of energy and from 4% to 5% of energy at the 90th percentile. One-to-one substitution of STA for TFAs showed a decrease or no effect on LDL-cholesterol, an increase or no effect on HDL-cholesterol, and a decrease in the ratio of total to HDL-cholesterol.

Diabetes

Dietary Fiber, Magnesium, and Glycemic Load Alter Risk of Type 2 Diabetes in a Multiethnic Cohort in Hawaii

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Significance: Protection against diabetes can be achieved through food choices after taking into account body weight, but risk estimates may differ by ethnic group.

The influence of dietary fiber, magnesium (Mg), and glycemic load (GL) on diabetes was examined in 75,512 participants in the Hawaii component of the Multiethnic Cohort. After 14 y of follow-up, 8587 incident diabetes cases were identified. Total fiber intake was associated with reduced diabetes risk among all men [hazard ratio (HR)=0.75; 95%CI: 0.67, 0.84; P-trend <0.001) and women (HR=0.95; 95%CI: 0.85, 1.06; P-trend=0.05). High intake of grain fiber reduced diabetes risk significantly by 10% in men and women. High vegetable fiber intake lowered risk by 22% in all men but not women. Mg intake reduced risk (HR=0.77 and 0.84 for men and women, respectively) and, due to its strong correlation with fiber (r=0.83; P<0.001), may explain the protective effect of fiber. The top GL quintile was associated with a significantly elevated diabetes incidence in Caucasian men and in all women except Japanese Americans.

Lipids

Dose Effects of Dietary Phytosterols on Cholesterol Metabolism: A Controlled Feeding Study

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Significance: Dietary phytosterols in moderate and high doses favorably alter whole-body cholesterol metabolism in a dose-dependent manner.

The effects of 3 phytosterol intakes on whole-body cholesterol metabolism were examined in this placebo-controlled, crossover feeding trial. Eighteen adults received a phytosterol-deficient diet (50 mg phytosterols/2000 kcal) plus beverages supplemented with 0, 400, or 2000 mg phytosterols/d for 4 wk each, in random order. Primary outcomes were fecal cholesterol excretion and intestinal cholesterol absorption. Phytosterol intakes (diet plus

supplements) averaged 59, 459, and 2059 mg/d during the 3 diet periods. Relative to the 59-mg diet, the 459- and 2059-mg phytosterol intakes significantly increased (P<0.01) total fecal cholesterol excretion (36±6% and 74±10%, respectively) and biliary cholesterol excretion (38±7% and 77±12%, respectively) and reduced percentage intestinal cholesterol absorption (–10±1% and –25±3%, respectively). LDL-cholesterol declined significantly only with the highest phytosterol dose (–8.9±2.3%). A moderate phytosterol intake (459 mg/d) can be obtained in a healthy diet without supplementation.

Omega-3 Fatty Acids

Association of Marine Omega-3 Fatty Acid Levels With Telomeric Aging in Patients With Coronary Heart Disease

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Significance: There was an inverse relationship between baseline blood levels of marine omega-3 fatty acids and the rate of telomere shortening over 5 years in patients with coronary artery disease.

The association of omega-3 fatty acid blood levels with temporal changes in telomere length, an emerging marker of biological age, was examined in this prospective study of 608 ambulatory outpatients with stable coronary artery disease. Multivariable linear and logistic regression models were used to investigate the association of baseline levels of omega-3 fatty acids (docosahexaenoic acid [DHA] and eicosapentaenoic acid [EPA]) with subsequent change in telomere length. Individuals in the lowest quartile of DHA+EPA experienced the fastest rate of telomere shortening (0.13 telomere-to-single-copy gene ratio [T/S] units over 5 years; 95%CI=0.09-0.17), whereas those in the highest quartile experienced the slowest rate of telomere shortening (0.05 T/S units over 5 years; 95%CI=0.02-0.08; P<.001 for linear trend across quartiles). Levels of DHA+EPA were associated with less telomere shortening before (unadjusted β coefficient x 10^{-3}=0.06; 95%CI=0.02-0.10) and after (adjusted β coefficient x 10^{-3}=0.05; 95%CI=0.01-0.08) sequential adjustment for established risk factors and potential confounders. Each 1-SD increase in DHA+EPA levels was associated with a 32% reduction in the odds of telomere shortening (adjusted odds ratio, 0.68; 95%CI=0.47-0.98).

Dietary Supplements

Total folate and folic acid intake from foods and dietary supplements in the United States: 2003–2006

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Significance: Improved total folate intake is warranted in targeted subgroups, which include women of childbearing age and non-Hispanic black women, whereas other population groups are at risk of excessive intake.

This study, which used the NHANES, combined data on dietary folate (as measured by two 24-h recalls) and folic acid from dietary supplements (collected with a 30-d frequency questionnaire) with the use of the bias-corrected best power method to adjust for within-person variability. Results showed that in 2003–2006, 53% of the US population used dietary supplements; 34.5% used dietary supplements that contained folic acid. Total folate intake (in dietary folate equivalents) was higher for men (813±14) than for women (724±16) and higher for non-Hispanic whites (827±19) than for Mexican Americans (615±11) and non-Hispanic blacks (597±12); 29% of non-Hispanic black women had inadequate intakes. Total folate and folic acid intakes were highest for those aged ≥50 y, and 5% exceed the Tolerable Upper Intake Level.

Peanut Allergy

Allergy or tolerance in children sensitized to peanut: Prevalence and differentiation using component-resolved diagnostics

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Significance: The majority of children considered peanut-sensitized on the basis of standard tests do not have peanut allergy.

This study established, by oral food challenge, the proportion of children with clinical peanut allergy among those considered peanut-sensitized by using skin prick tests and/or IgE measurement at age 8, and investigated whether component-resolved diagnostics using microarray could differentiate peanut allergy from tolerance. Among sensitized children, peanut allergy versus tolerance by oral food challenges was observed. An open challenge among children consuming peanuts (n=45) was used; others underwent double-blind placebo-controlled challenge (n=34). Of 933 children, 110 were peanut-sensitized. Nineteen were not challenged. Twelve with a convincing history of reactions on exposure, IgE ≥15 kUA/L and/or skin test ≥8mm were considered allergic without challenge. Of the remaining 79 children who underwent challenge, 7 had ≥2 objective signs and were designated as having peanut allergy. The prevalence of clinical peanut allergy among sensitized subjects was estimated at 22.4% (95% CI, 14.8% to 32.3%). Marked differences in the pattern of component recognition between children with peanut allergy were detected (n=29; group enriched with 12 children with allergy) and peanut-tolerant children (n=52).