

Fiber

Dietary Fiber and Subsequent Changes in Body Weight and Waist Circumference in European Men and Women

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Significance: There may be a beneficial role of higher intake of dietary fiber, especially cereal fiber, in prevention of body-weight and waist circumference gain.

This prospective cohort study investigated the association of total dietary fiber, cereal fiber, and fruit and vegetable fiber with changes in weight and waist circumference in 89,432 adults who were free of cancer, cardiovascular disease, and diabetes at baseline and who were followed for an average of 6.5 y. Dietary information was collected by food-frequency questionnaires. Results showed that total fiber was inversely associated with subsequent weight and waist circumference change. For a 10-g/d higher total fiber intake, the pooled estimate was -39 g/y (95%CI: $-71, -7$ g/y) for weight change and -0.08 cm/y (95%CI: $-0.11, -0.05$ cm/y) for waist circumference change. A 10-g/d higher fiber intake from cereals was associated with -77 g/y (95% CI: $-127, -26$ g/y) weight change and -0.10 cm/y (95% CI: $-0.18, -0.02$ cm/y) waist circumference change. Fruit and vegetable fiber was not associated with weight change but had a similar association with waist circumference change when compared with intake of total dietary fiber and cereal fiber.

Whole-Grain Ready-to-Eat Oat Cereal, as Part of a Dietary Program for Weight Loss, Reduces Low-Density Lipoprotein Cholesterol in Adults with Overweight and Obesity More than a Dietary Program Including Low-Fiber Control Foods

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Significance: Consumption of a whole-grain ready-to-eat oat cereal as part of a dietary program for weight loss had favorable effects on fasting lipid levels and waist circumference.

This randomized, controlled trial evaluated whether or not a whole-grain, ready-to-eat (RTE) oat cereal containing viscous fiber, as part of a dietary program for weight loss, LDL-cholesterol and improves other cardiovascular disease risk markers more than a dietary program alone. Overweight and obese adults (N=204) with baseline LDL-cholesterol (130-200 mg/dL) were randomized to two portions/day of whole-grain RTE oat cereal (3g/day oat β -glucan) or energy-matched low-fiber foods (control); 144 completed the trial. Results showed that LDL-cholesterol was reduced significantly more with whole-grain RTE oat cereal vs control (-8.7 ± 1.0 vs $-4.3 \pm 1.1\%$, $P=0.005$).

Total cholesterol (-5.4 ± 0.8 vs $-2.9\pm 0.9\%$, $P=0.038$) and non-high-density lipoprotein (HDL)-cholesterol (-6.3 ± 1.0 vs $-3.3\pm 1.1\%$, $P=0.046$) were also lowered significantly more with whole-grain RTE oat cereal. Weight loss was not different between groups (-2.2 ± 0.3 vs -1.7 ± 0.3 kg, $P=0.325$), but waist circumference decreased more (-3.3 ± 0.4 vs -1.9 ± 0.4 cm, $P=0.012$) with whole-grain RTE oat cereal. Larger reductions in LDL, total, and non-HDL-cholesterol and waist circumference were evident as early as week 4 in the whole-grain RTE oat cereal group.

Sodium

Projected Effect of Dietary Salt Reductions on Future Cardiovascular Disease

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New England Journal of Medicine, Vol 362, No. 7; pp. 590-99, 2010

Significance: Modest reductions in dietary salt could substantially reduce cardiovascular events and medical costs and should be a public health target.

The Coronary Heart Disease (CHD) Policy Model was used to quantify the benefits of population-wide reductions in dietary salt of up to 3 g/day (1200 mg of sodium/day). Results showed that reducing dietary salt by 3 g/day is projected to reduce the annual number of new cases of CHD by 60,000-120,000, stroke by 32,000-66,000, and myocardial infarction by 54,000-99,000 and to reduce the annual number of deaths from any cause by 44,000-92,000. The cardiovascular benefits of reduced salt intake are on par with the benefits of population-wide reductions in tobacco use, obesity, and cholesterol levels. A regulatory intervention designed to achieve a reduction in salt intake of 3 g/day would save 194,000-392,000 quality-adjusted life-years and \$10 billion-\$24 billion in health care costs annually. Such an intervention would be cost-saving even if only a modest reduction of 1 g/day were achieved gradually between 2010 and 2019 and would be more cost-effective than using medications to lower blood pressure in all persons with hypertension.

A Systematic Survey of the Sodium Contents of Processed Foods

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Significance: Many products have salt amounts above reasonable benchmarks and the variation in salt concentrations between comparable products suggests that reformulation is highly feasible for many foods.

Data on the sodium content of Australian processed food products were systematically collated and the sodium values were compared against maximum target levels established by the UK Food Standards Agency (UK FSA). Categories of processed foods that contribute the majority of salt to Australian diets were identified. Food-composition data were sought for all products in these categories, and the sodium content in mg/100 g (or mg/100 mL for liquids) was recorded for each. Sodium data were collected for 7221 products in 10 food groups, 33 food categories, and 90 food subcategories. The food groups that were highest in sodium were sauces and spreads (1283 mg/100 g) and processed meats (846 mg/100 g). Cereal and cereal products (206 mg/100 g) and fruit and vegetables

(211 mg/100 g) were the lowest in sodium. Sixty-three percent of food categories had mean sodium concentrations above the UK FSA targets, and most had wide ranges between the most and least salty product.

Consumption of Sodium and Salted Foods in Relation to Cancer and Cardiovascular Disease: the Japan Public Health Center–Based Prospective Study

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Significance: Sodium and salted foods have differential influences on the development of cancer and CVD.

This study examined associations between sodium and salted food consumption and the risk of cancer and cardiovascular disease (CVD). A validated food-frequency questionnaire was administered to 77,500 adults. During up to 598,763 person-years of follow-up, 4476 cases of cancer and 2066 cases of CVD were identified. Results showed a higher consumption of sodium was associated with a higher risk of CVD but not with the risk of total cancer: multivariate hazard ratios for the highest compared with lowest quintiles of intake were 1.19 (95% CI: 1.01, 1.40) for CVD and 1.04 (95% CI: 0.93, 1.16) for total cancer. Higher consumption of salted fish roe was associated with higher risk of total cancer, and higher consumption of cooking and table salt was associated with higher risk of CVD. Similar results were seen for the risk of gastric or colorectal cancer and stroke.

Diabetes Mellitus

Consumption of Restaurant Foods and Incidence of Type 2 Diabetes in African American Women

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Significance: A risk factor for type 2 diabetes that may be readily modifiable by dietary changes has been identified.

The relation of restaurant meal consumption to incidence of type 2 diabetes among African American women with the use of data from the prospective Black Women's Health Study was investigated. The participants completed mailed follow-up questionnaires every 2 y, including food-frequency questionnaires that asked about the frequency of eating restaurant meals of various types. Among 44,072 adults and those free of diabetes at baseline, 2873 incident cases of type 2 diabetes occurred during 10 y of follow-up. Consumption of restaurant meals of hamburgers, fried chicken, fried fish, and Chinese food were independently associated with an increased risk of type 2 diabetes. Incidence rate ratios for ≥ 2 such meals/week relative to none were 1.40 (95% CI: 1.14, 1.73) for hamburgers and 1.68 (95% CI: 1.36, 2.08) for fried chicken. Control for body mass index greatly reduced the estimates, which suggests that the associations are mediated through weight gain and obesity.

Cardiovascular Disease

Relationship of 25-hydroxyvitamin D with All-Cause and Cardiovascular Disease Mortality in Older Community-Dwelling Adults

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Significance: Older community-dwelling adults with low serum 25-hydroxyvitamin levels are at higher risk of all-cause and cardiovascular disease mortality.

This study hypothesized that low serum 25-hydroxyvitamin D (25(OH)D) levels predicted all-cause and cardiovascular mortality in older adults. Serum 25(OH)D and all-cause and cardiovascular disease mortality were examined in 1006 adults, aged ≥ 65 years, who participated in the InCHIANTI study, a population-based, prospective cohort study of aging in Tuscany, Italy. During 6.5 years of follow-up, 228 participants died, of whom 107 died due to cardiovascular diseases. Compared with participants in the highest quartile of serum 25(OH)D (>26.5 ng/ml), those in the lowest quartile (<10.5 ng/ml) had increased risk of all-cause mortality (hazard ratio (HR) 2.11, 95% CI: 1.22–3.64, $P=0.007$) and cardiovascular disease mortality (HR 2.64, 95% CI: 1.14–4.79, $P=0.02$), after adjustment for potential confounders.

Glycemic Index

The Effect of the Fat and Carbohydrate Contents in the Evening Meal Preceding GI Testing on GI

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European Journal of Clinical Nutrition, Vol. 64, No.2; pp. 224–26, 2010

Significance: Varying the fat and carbohydrate contents of the evening meal before glycaemic index (GI) testing the next morning did not affect the GI.

A crossover study was designed to determine whether the fat and carbohydrate contents of evening meals consumed the night preceding glycaemic index (GI) testing had an effect on the GI. Twenty participants consumed two different evening meals in which the energy contributions from fat, carbohydrate and protein were in the ratio 50:30:15 and 25:60:15, respectively. Each participant completed eight tests that involved two evening meals with different macronutrient compositions followed the next morning by two treatments, glucose beverage or fruit bread, all carried out in duplicate. The GI of fruit bread was determined on the mornings following each of the evening meals. The GIs (95% CI) were 68 (60, 76) and 59 (52, 67) after the high-carbohydrate and high-fat meals, respectively, and were not different ($P=0.11$).

Hydration

Water as an Essential Nutrient: The Physiological Basis of Hydration

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Significance: The physiology and water balance and new recommendations for water requirements are reviewed in this article.

Water acts as a building material; as a solvent, reaction medium and reactant; as a carrier for nutrients and waste products; in thermoregulation; and as a lubricant and shock absorber. The regulation of water balance is very precise, as a loss of 1% of body water is usually compensated within 24h. Both water intake and water losses are controlled to reach water balance. Healthy adults regulate water balance with precision, but young infants and elderly people are at greater risk of dehydration. Human water requirements are not based on a minimal intake because it might lead to a water deficit due to numerous factors that modify water needs. The regulation of water balance is essential for the maintenance of health and life. On an average, a sedentary adult should drink 1.5L of water/day, as water is the only liquid nutrient that is really essential for body hydration.