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5. Holvoet P, Kritchevsky SB, Tracy RP, et al. The metabolic syndrome, and the increased risk of high waist circumferences with oxidized LDL increased the risk of myocardial infarction in this women aged 70–79 y. Most importantly, high concentrations of oxidized LDL is more damaging to the arterial wall than is native LDL (4).


Whole-grain intake, metabolic syndrome, and mortality in older adults

Dear Sir:

In an interesting study of older adults in a recent issue of the Journal, Sahyoun et al (1) reported the association between whole- and refined-grain intakes, the metabolic syndrome, and cardiovascular disease (CVD) mortality. After control for some potential confounding variables, the authors concluded that whole-grain intake is inversely associated with the metabolic syndrome and CVD mortality in this age group.

Metabolic syndrome and CVD mortality in elderly people are certainly worthwhile topics for study, particularly when the intake of whole grains is considered. Although whole grains contain higher amounts of health-protective nutrients than do refined grains (2), little research has been conducted on the physiologic effects of a diet high in whole grains, particularly in older adults. However, we think that there are some difficulties with the study of Sahyoun et al that may confound the results. The authors enrolled their subjects on the basis of their willingness to participate in the study, but they did not select the subjects randomly from a population of older persons. We cannot, therefore, extrapolate the results to other older adults. It is not clear how the authors treated underreporters and overreporters of energy intake with respect to study participation. This point is important because the studied population is elderly; previous studies have shown that underreporting of energy intake increases directly with age (3). Although Sahyoun et al controlled for the effect of energy intake in their analysis, it should be kept in mind that some foods are underreported more than other foods (4), and simply implementing a control for energy intake does not correct for the confounding that may be caused by underreporting. Another important issue has to do with which foods are categorized as whole grains and which ones as refined grains. Furthermore, the authors did not mention whether there was any significant interaction between sex and whole-grain intake. We showed that the association of whole-grain intake and the metabolic syndrome in healthy Tehranian adults is similar in the 2 sexes (5), but it remains to be shown whether similar associations exist between whole-grain intake and the metabolic syndrome in elderly men and women.

The independent association of whole- and refined-grain intakes with chronic diseases should be assessed by control for the effect of other food. For example, recent evidence from 2 parts of a study showed the beneficial effects of dairy products, fruit, and vegetables on body weight (6) and the metabolic syndrome (7). Lack of control for the effects of other foods in the study of Sahyoun et al makes the conclusion misleading. Another major weakness of their study of Sahyoun et al is that they used a 3-d dietary record to collect dietary data. This method of gathering data does not reflect the subjects’ usual dietary intake; because a 3-d dietary record measures short-term intake, its use as a predictor of a long follow-up analysis is problematic (8).

It seems that the proportion of women in the highest quartile of whole-grain intake is less than that in the lower quartiles. This finding that more men than women are seating whole grain is unusual, and it may be confounded with energy intake, because men probably eat more food in general than do women. However, energy intake increases with the quartiles of both refined-grain and whole-grain intake. Do the sex-specific data shed any light on this issue? The finding that energy intake increases significantly across quartiles of whole-grain intake, whereas BMI decreases, is also somewhat questionable. Identifying diet-disease relations is extremely important in
preventing chronic diseases. However, careful methods should be adopted to avoid incorrect conclusions.

Neither of the authors had a conflict of interest.

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Whole-grain intake cools down inflammation

Dear Sir:

We read with interest the study of Sahyoun et al (1) reporting a lower prevalence of the metabolic syndrome and a reduced risk of cardiovascular disease (CVD) mortality in older people consuming diets high in whole-grain foods. Although these results are for the most part confirmatory, adding to the existing evidence that whole-grain intake may confer protection against the metabolic syndrome and CVD risk, the message about the healthy benefits conferred by increasing whole-grain intake in an older population is important. One problem with the study is the use of body mass index (BMI) as a measure of waist circumference. BMI may be not equivalent to waist, either in terms of measurement (cm) or in predicting CV risk. The recent data from the INTERHEART Study (2) clearly showed that, worldwide, waist is superior to BMI in relation to the risk of myocardial infarction. Therefore, the results of Sahyoun et al must be viewed with caution, because their report does not specify how many subjects with abdominal obesity (men with BMI < 31 and women with BMI < 27) escaped evaluation or what was the frequency of abdominal obesity (with BMI used as a surrogate measure) in the definition of the syndrome.

Among the biologically plausible mechanisms of the beneficial effects of whole-grain intake on CVD risk, the authors failed to include inflammation. Recent evidence suggests that inflammation may be an important mediator in the association between the consumption of dietary fiber, one important constituent of whole-grain foods, and CVD. In a nationally representative sample of 4900 adults aged 40–65 y, the likelihood of elevation of C-reactive protein (CRP) was significantly lower in subjects in the highest fiber quartile than in those in the lowest quartile (odds ratio: 0.51; 95% CI: 0.27, 0.95), regardless of age and BMI (3). A cross-sectional analysis of 780 diabetic men from the Health Professionals’ Follow-up Study (4) showed that high intakes of cereal fiber were associated with higher plasma concentrations of adiponectin, an insulin-sensitizing adipocytokine with anti-inflammatory properties. Meal modulation of circulating inflammatory and anti-inflammatory cytokines may also play a role in the detrimental or beneficial effects of different types of carbohydrates. For instance, the fiber content of a high-carbohydrate meal may influence plasma concentrations of adiponectin and interleukin 18 (IL-18); the greater the quantity of fiber in the load, the greater the inhibition of plasma IL-18 and the stimulation of adiponectin (5). IL-18 is a potent proinflammatory cytokine that may be important in the process of plaque destabilization and hence in predicting cardiovascular death in patients with acute coronary syndromes (6). It is interesting that, in the study by Sahyoun et al, fasting glucose concentrations decreased across increasing quartile categories of whole-grain intake, a finding consistent with a proinflammatory effect of increasing glucose concentrations (7). Increased consumption of high-density and low-quality foods, such as those rich in refined grains and poor in natural antioxidants and fiber, may cause an activation of the innate immune system, most likely by excess production of proinflammatory cytokines associated with a reduced production of anti-inflammatory cytokines. This imbalance may favor the generation of an inflammatory milieu, which in turn may predispose susceptible persons to a greater incidence of the metabolic syndrome (8).

Neither of the authors had a personal or financial conflict of interest.

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