

EDITORIALS

Eat more fibre

The likely benefits include a lower risk of cardiovascular disease, pass it on

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One of my strongest memories from medical school is the image of two collections of stool projected in a guest lecture by Denis Burkitt. One, the stool of an African schoolboy, was large and moist; the other, that of an English schoolboy, was small and dry. Dr Burkitt, who was widely recognised for his work describing a unique cancer of the jaw in African children, went on to argue that diet, particularly one high in dietary fibre, could prevent many of the diseases common in Western countries.

In the years since, dozens of studies have investigated the association between dietary fibre and chronic disease. The linked paper by Threapleton and colleagues (doi:10.1136/bmj.f6879) is an important addition to this literature.¹

The investigators performed a state of the art meta-analysis of 22 cohort studies that related intake of dietary fibre with coronary heart disease and cardiovascular disease. Consistent with most other studies, the meta-analysis showed a consistent inverse association between intake of dietary fibre and first coronary heart disease and cardiovascular disease events. For both outcomes, every 7 g per day intake of total dietary fibre was associated with a significant 9% lower relative risk of first events. The study also generated dose-response curves, rather than simply comparing high intake and low intake groups.

The authors also analyzed the impact of fibre subtypes and fibre from specific food sources. Here, the number of studies was smaller and the confidence intervals wider. In the analysis of fibre subtype, only insoluble fibre was significantly associated with reduced risk of coronary heart disease and cardiovascular disease. A trend was seen between greater intakes of soluble fibre and lower risk, but the dose-response is weaker and the results are not significant. Cereal fibre and vegetable fibre were associated with reductions in both coronary heart disease and cardiovascular disease events, whereas fruit fibre was associated with reduced risk of cardiovascular disease.

As the authors acknowledge, this careful meta-analysis is limited by the quality of the included studies. For example, most of the data on dietary intake were obtained by food frequency questionnaires, which are better at describing dietary patterns than individual nutrient intakes. Even more important is the potential for confounding owing to the association between high intake of dietary fibre and other healthy nutritional factors and healthy behaviours. Ultimately, randomized clinical trials will

be needed to confirm the link between dietary fibre and cardiovascular disease.

Despite these limitations, clinicians should enthusiastically and skilfully recommend that patients consume more dietary fibre. Although the association between increased dietary fibre and reduced risk of colon cancer remains controversial,² increased dietary fibre has other health benefits. These include a reduction in lipids and blood sugar, less constipation and diverticular disease, and increased satiety. Some studies show a reduction in total mortality with increased intake of dietary fibre.³ Nutritional guidelines recommend that men should consume 30-38 g per day and women 21-25 g per day.⁴ Estimates in Western countries suggest that the average dietary intake is about half of the recommended amounts.⁵

Dietary recommendations should include a mix of soluble and insoluble fibre and fibre from multiple food sources. Good sources of dietary fibre include whole grains, fruits, vegetable, legumes, nuts, and seeds. Examples of soluble fibre include oats, nuts, seeds, legumes, and most fruits. Insoluble fibres are found in whole wheat, wheat bran, brown rice, other whole grains, and most vegetables. As Threapleton and colleagues illustrate, 7 g of additional total fibre can be easily provided with one portion of whole grains and one portion of legumes, or from two to four servings of fruits and vegetables.

Recommendations to eat more fibre and more high fibre foods are consistent with other nutritional recommendations, including advice to eat less sucrose and high fructose corn syrup, fewer refined carbohydrates, less *trans*-fat and saturated fat, and less meat. Clinical experience suggests that many patients will respond better to dietary counselling that recommends eating more of certain foods, rather than the constant focus on eating less.

Persuading patients to eat whole grains is particularly challenging. Whole grains include barley, bulgur, millet, quinoa, brown rice, rye, oats, and whole wheat. Guidelines suggest that at least half of the daily grain input should be from whole grains. Current food labelling does not make it easy for consumers to identify which foods are whole grains, especially when consuming baked goods and cereals. One strategy is to identify food products with whole grain listed as the first ingredient. Another strategy is to teach patients to look for the ratio of

grams of carbohydrates to grams of dietary fibre. Breads with ratios of less than 10:1 and cereals with ratios of 5:1 are consistent with a higher fibre product.

Fruits and vegetables also vary in their fibre content and patients can be taught to identify the higher fibre foods that meet their food preferences. Patients should also be encouraged to eat whole fruit, rather than drinking it, because most fruit juices contain little fibre. Other practical recommendations include increasing fibre gradually and drinking adequate amounts of water.

In conclusion, the evidence for recommending higher intakes of dietary fibre comes from several lines of imperfect evidence, mostly observational studies, and expert opinion. By systematically analyzing existing observational studies, Threapleton and colleagues' meta-analysis increases our confidence in the benefit—in terms of reduced cardiovascular disease and coronary heart disease events, of higher intakes of dietary fibre. Moreover, the increase in fibre needed to achieve such benefit is modest and a dose-response can be estimated. Given the alignment with other nutritional recommendations, it makes sense to increase our efforts to counsel patients and advise the public on increasing the intake of dietary fibre. The

recommendation to consume diets with adequate amounts of dietary fibre may turn out to be the most important nutritional recommendation of all.

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