



Q/ Do dietary choices alone alter the risk of developing metabolic syndrome?

EVIDENCE-BASED ANSWER

A | YES, but not in the short term. In studies of patient populations controlled for differences in dietary content alone, independent of weight loss or exercise changes, diets with high glycemic index foods, low whole grain and fiber content, and low fruit and vegetable content are associated with an increased incidence of metabolic syndrome (strength of recom-

mendation [SOR]: **B**, multiple large cohort studies).

In the short term, however, switching patients at high risk for metabolic syndrome from a high- to low-glycemic index diet doesn't improve serum markers of metabolic syndrome (SOR: **C**, a small randomized controlled trial).

Evidence summary

Six studies (5 cohort studies and one randomized crossover study) attempted to isolate specific dietary components as risk factors for metabolic syndrome, by performing multivariate analyses to control for weight and exercise habits. The cohort studies all used the National Cholesterol Education Program Adult Treatment Panel III definition of metabolic syndrome. Overall, consumption of foods with a high glycemic index was associated with an increased risk of metabolic syndrome.

A cohort study that evaluated the diet, body habitus, and serum metabolic parameters of 2834 US adults using a validated, interviewer-administered food frequency questionnaire found that the rate of metabolic syndrome was significantly higher in patients with the highest glycemic index diets (highest vs lowest quintile adjusted odds ratio [aOR]=1.4; 95% confidence interval [CI], 1.04-1.9).¹ Conversely, metabolic syndrome was less common in subjects who ate diets rich in whole grains (aOR=0.67; 95% CI, 0.48-0.91) and cereal fiber (aOR=0.62; 95% CI, 0.45-0.86).

A second cohort study evaluated the diet, body habitus, and metabolic parameters in 2043 Asian women using the same food frequency questionnaire to obtain dietary history.² Metabolic syndrome was significantly more common among the women with a high refined carbohydrate intake (highest vs lowest quartile aOR=7.8; 95% CI, 4.7-13).

"Western" diet, lack of diversity associated with metabolic syndrome

Two studies from Iran evaluated the rates of metabolic syndrome according to different dietary patterns. The first evaluated a cohort of 486 female teachers 40 to 60 years of age.³ Investigators characterized dietary patterns as "healthy" (rich in fruits, vegetables, and whole grains) or "Western" (more meat and refined grains). The more "Western" the dietary pattern became, the more often metabolic syndrome was diagnosed (highest vs lowest quintile aOR=1.7; 95% CI, 1.1-1.9).

In the second study, 581 healthy adults received dietary surveys and were tested for metabolic syndrome.⁴ Diets were assessed and scored for their diversity. High

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levels of dietary diversity were inversely associated with metabolic syndrome (highest vs lowest quartile aOR=0.77; 95% CI, 0.59-0.93).

No short-term gain in switching to foods with low glycemic index

Switching to foods with a low glycemic index, however, may not provide much benefit, at least in the short term. An 11-week prospective, double-blind, crossover trial in which 15 overweight patients at risk of developing metabolic syndrome alternated eating foods with high and low glycemic indexes found no significant difference in the serum markers associated with metabolic syndrome (fasting glucose, insulin, and tri-glyceride levels).⁵

Recommendations

The 2010 Dietary Guidelines for Americans, jointly issued by the US Department of Agriculture and Health and Human Services, recommend increasing fruit and vegetable intake, eating a variety of vegetables, and consuming at least half of all grains as whole grains.⁶ The guidelines further recommend limiting consumption of foods that contain refined grains, “especially refined grain foods that contain solid fats, added sugars, and sodium.”

The American Diabetes Association (ADA) encourages consumption of low-glycemic index foods, especially foods rich in fiber and other nutrients. However, the ADA also states that there are “not sufficient, consistent” data to conclude that low-glycemic index diets reduce the risk of diabetes.⁷ **JFP**

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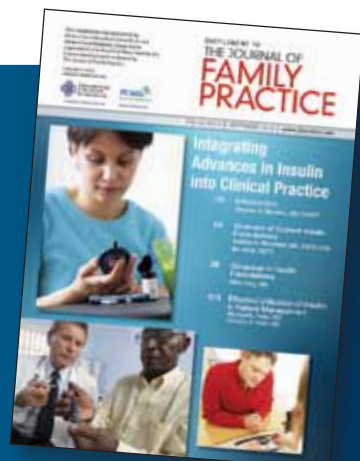
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