Adherence to dietary guidelines: benefits on atherosclerosis progression\textsuperscript{1,2}

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Throughout the annals of history, good nutritional practices have maintained a time-honored position for attaining optimal health and preventing disease. Early documentation of the importance of good nutrition dates back to the time of Hippocrates (460–377 BCE), who is quoted as saying, “Let thy food be thy medicine and thy medicine be thy food.” Today, diet is the cornerstone of healthy lifestyle recommendations issued by many federal agencies and health organizations. The foundation for healthy lifestyle recommendations is a robust evidence base that has evolved over time.

We currently have evidence from major clinical trials that show efficacy of nutrition practices in “curing” diseases, slowing disease progression, and markedly decreasing risk of chronic diseases to a similar extent as pharmacologic therapy. With respect to diabetes, recommended lifestyle behaviors surpass the benefits of drug therapy. In the Diabetes Prevention Program, intensive lifestyle intervention (with a 7% weight loss) lowered the incidence of diabetes in subjects with elevated fasting and postload plasma glucose concentrations from 11.0 (placebo) to 4.8 cases per 100 person-years (1). The metformin treatment group was beneficial (7.8 cases per 100 person-years) compared with placebo but clearly not as effective as intensive lifestyle intervention (with a 7% weight loss) (2). Remarkable cardioprotective benefits of fish and fish oil have been shown in the Diet and Reinfarction Trial (DART) (3) and the Gruppo Italiano per lo Studio della Sopravvivenza nell’Infarto Micocardio (GISSI)–Prevenzione Study (4). In the DART Study, subjects who had survived a myocardial infarction and who were advised to eat fatty fish (200–400 g/wk) had a 29% reduction in 2-y all-cause mortality compared with the nonintervention group (3). In the GISSI Study, 850 mg eicosapentaenoic acid plus docosahexaenoic acid/d decreased sudden death by 47% in patients surviving a myocardial infarction. In the Lyon Diet Heart Study (5), a Mediterranean-style diet high in \textalpha;-linolenic acid had a striking protective effect on recurrence after a first myocardial infarction compared with a prudent Western-type diet after 27 mo of follow-up. Regression of atherosclerosis was shown in the Lifestyle Heart Trial (6) in patients with moderate to severe coronary heart disease in response to a 5-y intensive lifestyle change program compared with the usual-care group.

In addition to benefits of diet and lifestyle interventions on chronic disease outcomes, there is impressive evidence that shows marked benefits of diet on major risk factors for coronary heart disease. Subjects who consumed the Portfolio Diet, a diet low in saturated fat and cholesterol and high in plant sterols, viscous fibers, soy protein, and almonds, showed a pharmacologic reduction in LDL cholesterol after 1 mo (7). Moreover, subjects in the Dietary Approaches to Stop Hypertension (DASH) clinical trial (8) and the DASH sodium trial (9) showed pharmacologic reductions in blood pressure, especially in certain population groups (eg, individuals with hypertension, African Americans, and the elderly).

Collectively, these results are a stunning demonstration of the extent to which a healthy diet and lifestyle practices, consistent with current dietary recommendations, can lower events and risk of major chronic diseases. It is now widely recognized that behavioral patterns are an important determinant of health and contribution to premature death (10). Consequently, behavioral change is an important “target” for lifestyle behaviors that have shown efficacy. Thus, positive lifestyle behaviors, including diet and physical activity, have great potential to decrease the burden of chronic diseases.

In this issue of the Journal, the article by Imamura et al (11), with the use of data from the Estrogen Replacement and Atherosclerosis Study, reports seminal findings about the association of adherence to the 2005 Dietary Guidelines for Americans, with reduced progression of coronary artery atherosclerosis in women with established coronary artery disease. A new method was used to assess adherence to the 2005 Dietary Guidelines that assigned differential weights to 20 key dietary recommendations. A hybrid method was developed that consisted of a criteria-based approach and a data-driven approach in which a priori criteria were

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used to score adherence to dietary recommendations, and a data-driven approach was used to derive weights of the respective components. The authors showed that adherence to recommendations for whole-grain, total fat, and cholesterol intake was associated with decreased atherosclerosis progression. Two important findings are reported. First, the study supports our current dietary recommendations and provides further impetus for championing aggressive implementation of contemporary dietary guidelines. Second, the differential weighting of dietary indexes offers a new tool for evaluating associations of dietary practices with health and disease outcomes. Thus, we are now positioned to evaluate associations of dietary practices with other diseases. Also of significance is that this new tool can be used to assess the effect of changes in many different lifestyle practices on health and disease outcomes.

The authors noted that no subjects reported complete adherence with the dietary guidelines. It is clear that we have much to do to achieve maximal adherence with diet and lifestyle recommendations in the population, as others also have noted (12). The pressing issue is to identify new strategies that facilitate adherence to diet and lifestyle recommendations, which continue to be a daunting challenge in an era in which new dietary guidelines continue to evolve. The availability of a new tool will provide a better understanding of the relation between adherence to specific dietary components and disease outcomes. In turn, this information will be valuable for identifying dietary components that have the greatest potential efficacy for specific disease outcomes. Therefore, the tool developed by Imamura et al (11) will guide interventions that target significant diet and disease relations so that maximal benefits on disease risk reduction can be achieved.

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REFERENCES