

EDITORIAL COMMENT

# The Promise of Lifestyle for Cardiovascular Health

## Time for Implementation\*

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In this issue of the *Journal*, Åkesson et al. (1) investigate how 5 basic lifestyle factors relate to the risk of a first myocardial infarction (MI) in a large, community-based cohort of generally healthy Swedish men. In multivariable models, a healthy diet, moderate alcohol use, no smoking, and low waist circumference each were independently associated with a lower risk of MI. In sum, together with regular physical activity, the combination of all 5 healthier lifestyle factors was associated with a 79% lower risk, and nearly 4 of 5 MIs in this population were attributed to the absence of these simple healthier lifestyle factors.

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As summarized by Åkesson et al. (1), several previous analyses found that combinations of healthier lifestyle behaviors are associated with a substantially lower risk of cardiometabolic events, including studies in North America, Europe, and Asia. The present investigation adds to these previous reports by evaluating a large, contemporaneous study population enrolled from the general community, increasing generalizability and relevance to modern guidelines. Other strengths include the prospective cohort design, which minimizes selection and recall bias; the valid assessments of lifestyle and MI, which reduce measurement error and misclassification; the large number of events, which provides reasonable statistical power;

and appropriate adjustment for other risk factors, which reduces confounding. In addition, participants with existing hypertension and high cholesterol were separately evaluated, demonstrating consistency with the overall findings among generally healthy men.

The authors correctly recognize that the influence of multiple combined lifestyle habits on MI would be nearly impossible to test robustly in a randomized, controlled trial. For primary prevention, such a long-term trial would require tens of thousands of subjects, cost hundreds of millions of dollars, and be ethically highly questionable. In addition, double-blinding would not be viable, and crossover and noncompliance would be substantial. Thus, even if funding and ethical challenges were overcome, such a trial would be unlikely to provide meaningful, valid results. Contrary to the widely quoted notion that randomized, controlled trials represent the gold standard for decision making and priority setting, crucial scientific questions such as the one assessed by Åkesson et al. (1) make it clear that true evidence-based medicine must incorporate *all* the scientific evidence, based on informed recognition of the diverse strengths and limitations of different research designs (2).

What are the implications of the present findings? Substantially lower MI risk was seen with adherence to very basic lifestyle behaviors. For example, eating a diet richer in minimally processed, healthful foods such as fruits, vegetables, legumes, nuts, reduced-fat dairy, whole grains, and fish was associated with a nearly 20% lower risk. These healthful diets were neither extreme nor exceptional, but reasonable and consistent with dietary guidelines (e.g., ~5 daily servings of fruits and vegetables, 4 daily servings of whole grains, and 2 weekly servings of fish). Of note, the observed benefits were related to higher intakes of more healthful foods, not lower intakes of unhealthy foods (i.e., benefits were seen independent of

\*Editorials published in the *Journal of the American College of Cardiology* reflect the views of the authors and do not necessarily represent the views of JACC or the American College of Cardiology.

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differences in intakes of red and processed meats, fried potatoes, solid fats, white bread, refined cereals, and sweets). These findings are consistent with the PREDIMED (Prevención Dieta Mediterránea) clinical trial, in which increasing healthful foods such as nuts and extra virgin olive oil reduced cardiovascular events by 23% (3). These results are also consistent with previous global analyses suggesting that an insufficiency of healthful foods produces larger chronic disease burdens than excesses of unhealthful foods and nutrients (4).

Lack of adherence to a modestly healthier diet and absence of moderate alcohol use (~1 drink/day) together accounted for ~1 in 4 of all MIs in this population. Nearly half of all MIs were attributed to the combined absence of just 3 lifestyle behaviors: a modestly healthier diet, moderate alcohol use, and no smoking. The addition of physical activity raised the attributable proportion to nearly two-thirds of MIs and of abdominal obesity to 4 in 5 MIs. These findings highlight the primacy of healthy lifestyle. For both individual patients and populations, lifestyle goals should not be formulated solely for control of weight or blood pressure, cholesterol, and glucose levels. Although lifestyle has major benefits on these physiological factors, a healthier diet, greater activity, and nonsmoking influence numerous other pathways of risk and produce substantial additional benefits for cardiovascular and noncardiovascular health (5). For example, in the present investigation among >20,000 Swedish men, the combination of a healthier diet, moderate alcohol use, nonsmoking, and regular exercise was associated with a 64% lower risk of MI even when excluding all subjects with existing hypertension, high cholesterol, or diabetes.

In light of the breadth of previous mechanistic, physiological, observational, and clinical trial evidence on the impact of lifestyle, it is time to prioritize these most basic and fundamental behaviors to reduce the health and economic burdens of cardiometabolic diseases (5,6). The American Heart Association has explicitly highlighted diet, physical activity, and smoking as crucial to its agenda for promoting cardiovascular health, independent of blood pressure, cholesterol, glucose, or obesity levels (7). This shift in focus from preventing disease to promoting health represents a “quiet revolution” (8), a relatively radical departure from viewing lifestyle as simply a means to

an end and instead recognizing the relevance of lifestyle as a primary target for health. It is time for medical educators, clinicians, health administrators, and insurance providers to follow suit by designing and implementing a comprehensive, ambitious agenda to incorporate measures of and targets for dietary quality, physical activity, smoking, and central obesity into every aspect of the health system (9). Patients should enter their doctor’s office and not simply ask “How are my blood pressure, cholesterol, and glucose levels?” but also ask “How are my dietary habits, physical activity level, smoking, and waist measurement?”

Similarly, local, state, and federal government officials must act on their responsibility to protect the public’s health and the country’s economic viability by implementing evidence-based policies to alter our schools, work sites, restaurants, and neighborhoods, so that healthier lifestyle options are the natural default. On the basis of available evidence (10), the best options include taxation and subsidies to alter prices of less healthful versus more healthful foods; multicomponent school and work-site wellness programs focused on diet, physical activity, and tobacco; coordinated national programs to limit trans fat and sodium content of foods; improved neighborhood design to integrate residential, school, work, retail, and public spaces, increase accessibility of recreation spaces and facilities, encourage active commuting, and improve traffic safety, aesthetics, and walkability; and comprehensive approaches to tobacco reduction including sustained media and education campaigns, graphic warning labels, higher taxes, advertising restrictions, community-based cessation counseling and support, and restrictions on smoking in public places, work sites, and residences.

By pursuing complementary strategies within and outside the health system, we can achieve the promise demonstrated by Åkesson and colleagues, as well as by a wealth of additional evidence, that the great majority of cardiovascular events are preventable or can be delayed until late in life by means of a healthier lifestyle.

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**KEY WORDS** diet, myocardial infarction, physical activity, policy, prevention, smoking