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You don’t get to choose how you’re going to die, or when. You can only choose how you’re going to live now.1
—Joan Baez

Eat less at dinner and you will live to 99.1
—Ancient Chinese proverb

During the past 30 years, developing countries have undergone major changes that have been paralleled by a dramatic increase in mortality and morbidity from coronary heart disease. Changes in lifestyle that have been associated with economic growth and urbanization, coupled with reductions in morbidity and mortality from communicable disease and childbirth, have resulted in the sobering statistic that 80% of the global burden from cardiovascular disease now occurs in developing countries.2,3 Indeed, it is estimated that unless current trends are halted, more than 1 billion people will die from cardiovascular disease in the first half of the 21st century—the majority coming from developing countries, with most of the life-years lost occurring in middle age.1 Two studies4,5 in this issue of Circulation yield valuable insight into the risk factors for myocardial infarction in Latin America and provide a challenge for the development of effective preventive strategies.

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Lanas and coauthors4 report a case-control study involving 1237 cases of first acute myocardial infarction from the 6 Latin American countries of Argentina, Brazil, Colombia, Chile, Guatemala, and Mexico, which were part of the larger INTERHEART study involving 15 152 cases of first acute myocardial infarction in 52 countries worldwide. Their work identifies risk factors for acute myocardial infarction in Latin America and provides important information about the population-attributable risk (PAR) in this region. Whereas the 9 risk factors for coronary heart disease—abnormal lipid levels, smoking, hypertension, diabetes, abdominal obesity, psychosocial stress, regular physical activity, and consumption of fruits, vegetables, and alcohol—account for 90% or more of the PAR for both men and women worldwide, an important difference was noted in Latin America. The PAR for abdominal obesity, defined by increased waist-to-hip ratio, was more important in the Latin American countries than in the rest of the world. The PAR for abdominal obesity in the Latin American countries studied was 48.5%, followed by 40.8% for dyslipidemia and 38.4% for smoking. Together, these 3 risk factors account for 77.6% of the PAR in Latin America. Interestingly, the PAR for waist-to-hip ratio in Chile was only 16.6%, whereas values >50% for the PAR of waist-to-hip ratio were noted in the other Latin American countries. In the study, 89.3% of cases and 95.0% of controls were Latino/Aboriginal—a group that, when compared with those of European origin (9.1% of cases and 3.9% of controls), would be expected to have a higher prevalence of abdominal obesity. Although no specific information is given for the ethnicity of patients from Chile, it is possible that the observation of lower waist-to-hip ratio was confounded by a higher number of cases with European origin in the Chilean group of the study.

In a similar, population-based control study, Kabagambe and coauthors5 have estimated the PAR for major myocardial infarction among 889 Hispanic Americans living in the central valley of Costa Rica who had no history of diabetes, hypertension, or prior medical therapy. In multivariate analyses, abdominal obesity (PAR=29.3%) and smoking (PAR=25.6%) were the 2 leading risk factors for myocardial infarction. In their study,5 important gender differences were noted, with men more likely to smoke than women (54% versus 12%) and women more likely to have abdominal obesity (35% versus 9%). With regard to diet, the majority did not meet American Heart Association or World Health Organization/Food and Agriculture Organization dietary guidelines. Using a healthy dietary score, energy-adjusted intakes of saturated fat (96% had intakes >7% energy) and trans fat (63% had intakes >1% energy) were high, whereas energy intake from polyunsaturated fat (25% had <5% energy intake) and fiber intake (53% with ≥25 g/d) were low. Kabagambe et al5 have observed that the consumption of a healthy diet and increased physical activity were inversely related to occurrence of myocardial infarction. Further, the diet of current smokers was poorer than that of those who never smoked. These 2 observations have led the investigators to recommend that joint messaging be used for diet and smoking; that is, smoking cessation and improved dietary instructions should be combined—especially among male smokers, whose diets were usually low in fruits, vegetables, and other nutrients.

The results of these 2 important studies underline the need for major lifestyle and behavioral modification in Latin America if the growing toll of coronary heart disease is to be
reversed. Of particular concern is the high prevalence of abdominal obesity as a major contributor to the PAR for myocardial infarction. Intra-abdominal fat has been shown to be independently associated with all criteria for the metabolic syndrome,\(^6\) in which patients have twice the risk of developing cardiovascular disease and a 4 times the risk for diabetes. In Latin American countries and many others with developing economies, there has been a rapid shift in diet to increased consumption of high energy--dense foods and caloric beverages, animal-source foods, and caloric sweeteners added to many other foods.\(^7\) Central adiposity has been linked to increased energy-dense diet and sedentary lifestyle. Importantly, the availability and greater consumption of caloric beverages is not associated with reduction in food intake. Economic and trade policies have resulted in a reduction in the price of meat worldwide such that the price of beef is less than 25% of the price 40 years earlier.\(^8\) The purchasing of food has shifted from open, fresh-food markets to multinational and regional large supermarkets. In Latin America, the share of all retail food sales in supermarkets has increased from 15% in 1990% to 60% in 2000.\(^9\) Consumption of high-calorie sweetened drinks has increased, especially among children and teenagers. In considering strategies to deal with the increased consumption of foods that leads to obesity, diabetes, and heart disease, some suggest that lessons may be learned from efforts to curb cigarette smoking in developed countries, where taxation has proven to be effective.

Experience from Brazil provides valuable insight into the potential benefits of innovative programs to combat the poor dietary patterns that lead to obesity.\(^10\) In 2000, facing an escalation of obesity throughout the country in association with increases in high energy-dense diets and declining physical activity, the Brazilian government initiated a wide range of activities aimed at behavioral changes that could result in healthier eating and increased physical activity. Discussions among the ministry of health and other branches of government (economic, legal, educational, and cultural), along with broad representation from Brazilian society, including academicians, professional associations, private corporations, and unions, have led to the development of a new national food and nutrition policy. The goal is to promote eating habits and lifestyles that will optimize health and nutritional patterns throughout the country.

The implementation of strategies in Brazil has involved legislation, information/communication, and capacity building.\(^10\) For the first time in the world, Brazil has combined nutritional labeling of packaged foods with recommendations on serving sizes deemed to be nutritionally adequate. Thus, consumers receive information on what they are eating and the amount that should be part of a nutritionally balanced diet. The schools in Brazil are a major focus for healthy eating programs. New legislation mandates that 70% of the schools’ annual food budget be spent on fresh vegetables, fruits, and minimally processed foods from local producers and farmers. At the same time, a special television channel has been established in Brazil to educate elementary school teachers on teaching techniques regarding health topics such as nutrition and physical activity. The benefits of this program have the potential to reach 37 million elementary school children. Major programs also have been launched to improve the ability of 150 000 community health workers to advise on healthy diets and physical activity. It is estimated that 75% of the most at-risk populations will benefit. Guidelines for healthy meals have been developed by the ministry of health to encourage restaurants to provide 1 or more healthy meal options on the menu. At a gastronomy and health festival held by restaurants, consumers who order a healthy meal are given the recipe and a book published by the festival organizers and containing other healthy recipes.

Physical activity also has been part of the innovative strategies to reduce obesity and overweight in Brazil.\(^10\) In Rio de Janeiro City, a municipal law was passed that interrupts traffic during certain hours so that people may safely use the streets for exercise. Priority is given to economically disadvantaged areas of the city where public places for physical activity are lacking or absent. Importantly, messages on healthy eating include information on physical activity relating to exercising 30 minutes per day by walking, climbing stairs, dancing, or other daily activities.

It is clear that a worldwide emphasis must be placed on changing lifestyles, and this emphasis should include nutrition, physical activity, and avoidance of tobacco products. Current global information indicates that more than 1.3 billion adults are overweight or obese.\(^7\) Using the revised World Health Organization definition of obesity that adjusts for ethnic differences, 1.7 billion children are classified as obese.\(^11\) Experience has taught us that only the highly motivated patients are able to make these changes by themselves and that efforts in prevention must be initiated among the young if we are to achieve major, long-lasting shifts in population risk for cardiovascular disease. Ultimately, broad efforts involving collaboration among multiple groups in society, including physicians and other health care providers, professional societies and foundations, and governments, may be needed to accomplish large changes in lifestyle and behavior to combat the emerging epidemic of cardiovascular disease in developing nations. The World Heart Federation has placed a focus on worldwide awareness of risk for cardiovascular disease, with its annual World Heart Day\(^12\) initiated in 2000 and occurring on the last Sunday of every September. The initial themes focused on healthy lifestyle, women, children, and adolescents; in 2005, “Healthy Weight, Healthy Shape” received worldwide emphasis. During the 2005 World Heart Day, more than 100 countries participated, resulting in more than 780 articles and broadcast features. The World Congress of Cardiology is held every 2 years and will next occur in Buenos Aires, Argentina in May 2008; there, a substantial opportunity will exist to raise awareness regarding the growing cardiovascular risk that is noted in this edition of Circulation. Hopefully, such awareness will lend further support to vitally needed programs to improve the lifestyles contributing to the epidemic of cardiovascular disease.

**Disclosures**

None.
References

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Risk Factors for Myocardial Infarction in Latin America: Sobrepeso y Obesidad
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