

EDITORIAL COMMENT

A Series of Unhealthy Developments

The Multiple Facets of Cardiovascular Risk Factors in China*



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Cardiovascular disease (CVD) is the leading cause of mortality worldwide (1). In the 2012 World Health Assembly, all member states of the United Nations committed to reducing premature cardiovascular mortality by 25% by 2025 (2). China has the biggest population in the world and approximately 230 million Chinese have CVD, which is equivalent to the total populations of the United Kingdom, Australia, Canada, and Mexico combined (3). Addressing the CVD burden in China is imperative to reduce global cardiovascular mortality.

China has undergone rapid development over the past decades, mostly as a result of urbanization and westernization. Behavioral changes toward suboptimal nutrition and decreasing physical activity in China have been more rapid compared to other low- and middle-income countries (4) with attendant worsening of the cardiometabolic risk profile of the

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Chinese population (5). In this issue of the *Journal*, the study by Li et al. (6) is important and timely relative to the CVD burden in China. The trend analysis in the current study reveals that increased blood pressure, high body mass index (BMI), decreased physical activity, poor dietary habits, and smoking are key risk factors in this population.

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Elevated blood pressure is considered to be the most important risk factor for CVD worldwide. However, the association between blood pressure and stroke risk appears to be stronger among Asian than among Western populations (7). Furthermore, salt sensitivity differs among ethnic groups, and East Asians may have a higher genetic predisposition to salt-sensitive hypertension (7). It is now established that high sodium intake (>2 g/day) contributes to high blood pressure and death from cardiovascular causes (8), although the debate about the lower limit of normal sodium intake continues (9). The conversation about sodium intake in China is on a different level altogether. Averaging >5 g/day, the current sodium intake in China is indisputably in the range where continued action will be needed to mitigate CVD.

Li et al. (6) have characterized well how the consumption of some foods or nutrients has changed over time. Yet the complexity of the food matrix often makes it hard to simply categorize a specific food or nutrient as “healthy” or “unhealthy.” Shifts in dietary patterns also need to be examined and the China Health and Nutrition Survey has shed light on China’s extensive nutrition transition (4,10). Results from Li et al. (6) also show that snacking and eating out have become more frequent. Such shifts of eating and cooking behaviors toward a more Western type of diet have been associated with more adverse health effect (11).

There is a clear disparity between urban and rural living in terms of cardiovascular risk factors. However, urbanization is closing the gap between urban and rural residents. A recent study found that from 1985 to 2014 there was a rapid increase in the prevalence of obesity among children and adolescents in rural areas of China, leading to a decrease in the urban-rural disparity (12). With regards to physical activity, the study by Li et al. (6) indicates that

residents of urban regions are more sedentary than rural residents, and that in both regions physical activity levels have been decreasing. Nonetheless, simple dichotomization of urban or rural may not capture all the important dimensions of social, economic, and physical change. Although not employed in this analysis, linear scales such as the one developed by the China Health and Nutrition Survey may be more appropriate measures of urbanicity (10).

Between 1991 and 2011, the prevalence of many CVD risk factors in China improved, but obesity rates increased. The average BMI in 2011 (23 to 24 kg/m²) is above the theoretical-minimum-risk exposure distribution of 21 kg/m², and has been for over a decade. Yet although BMI is a validated marker, waist-to-height ratio has been suggested to be a better screening tool for cardiovascular risk factors (13). Moreover, increasing trends of central obesity among Chinese adults with normal BMI have been observed (14). Waist circumference (WC) has been increasing more in China compared to other countries such as the United States or United Kingdom (15). Even with a normal BMI, increased adiposity or WC likely put the Chinese population at higher cardiometabolic risk (16). Thus, the results presented in the current study may have underestimated the CVD risk in those who have a normal weight but a high WC. Analyses that

incorporate other obesity measures, which assess central obesity, would likely more accurately evaluate its impact on China's CVD burden.

Strategies to improve life-style factors are critically needed to improve the health of the Chinese population and counter the urbanization effect. The most compelling targets based on the Li et al. (6) study are blood pressure, BMI, physical inactivity, smoking tobacco, and unhealthy dietary factors. Although their feasibility and acceptability in the Chinese context is less clear, some of the most effective strategies appear to be economic incentives such as subsidy strategies to decrease the price of healthful foods and beverages, as well as multicomponent interventions in the school setting that aim to encourage healthier lifestyle habits (17). Therefore, various policy strategies that target the multifaceted aspects of CVD and consider the environment, the food system, and psychosocial and socioeconomic factors, are critical in improving the health of the Chinese population and combating CVD worldwide.

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