

China facing epidemic of heart disease, stroke

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Micrograph showing cortical pseudolaminar necrosis, a finding seen in strokes on medical imaging and at autopsy. H&E-LFB stain. Credit: Nephron/Wikipedia

A 20-year rise in cardiovascular disease (CVD) in China appears to have been spurred largely by increases in high blood pressure, according to a new study from Harvard T.H. Chan School of Public Health. Increasing body mass index (BMI), decreasing physical activity, a high prevalence of smoking, and unhealthy diet have also contributed to the growing

burden of CVD—now the leading cause of death in China.

This is the first large study to analyze a wide range of dietary, lifestyle, and metabolic [risk factors](#) that may be impacting CVD burden in China. The authors suggested that major changes in Chinese society—including a dramatic shift from a traditional to a more "Western" diet and lifestyle and rapid urbanization and industrialization—may have contributed to the jump in cardiovascular diseases, such as [heart attack](#) and stroke. These changes have been accompanied by marked increases in [high cholesterol](#), obesity, and type 2 diabetes among the Chinese population.

The study will be published August 15, 2016 in the *Journal of the American College of Cardiology*.

"We described trends from 1991 to 2011 in dietary and other [lifestyle risk factors](#) for CVD in China and projected how these trends might play out from 2011 to 2031," said Yanping Li, research scientist in the Department of Nutrition at Harvard Chan School and lead author of the study. "Our estimates suggest that the continued rise in high [blood pressure](#), an increasingly sedentary lifestyle, increasing obesity, and worsening dietary trends will add millions of new cases of heart attacks and stroke over the next two decades."

The researchers analyzed data collected over a 20-year period, from 1991-2011, from 26,000 people living in nine Chinese provinces, as part of the [China Health and Nutrition Survey](#). They looked at 17 dietary and lifestyle risk factors that have been previously linked with heart attack and stroke—including high systolic blood pressure, high cholesterol, high blood glucose, high BMI, low physical activity, smoking, and 11 dietary factors—and analyzed that data along with information on CVD-related disease and death incidence extracted from the China Health Statistical Yearbook and the National Population Census.

The study found that high blood pressure, high cholesterol, and [high blood glucose](#) accounted for most of the CVD disease burden in China in 2011. That year, those three risk factors were associated, respectively, with 3.1, 1.4, and 0.9 million new cases of heart attack or stroke. Of 6.8 million Chinese over age 35 who died in 2011, about 3 million of the deaths—44%—were CVD-related.

The researchers estimated that high blood pressure alone was responsible for roughly 40% of heart attacks or stroke. High blood pressure has jumped dramatically in China over the past three decades, the authors noted: In 1979, its prevalence in the population was 7.7%; by 2010 it was 33.5%—comparable to that among U.S. adults.

The study also found that decreased [physical activity](#) during the study period was associated with a 0.7 million increase in CVD cases and BMI increases were associated with a 0.6 million increase. Although tobacco use is declining in China, a large percentage of the population still smokes (53.4% of men); the study found that, in 2011, tobacco use was associated with 1.3 million CVD-related cases—roughly a third of the CVD burden in men. The authors also noted that while the Chinese diet has improved in certain ways—with increased consumption of fiber, fruit, nuts, and omega-3 fatty acids—dietary quality is still far short of optimal goals. Consumption of red meat and sugary beverages is increasing. High sodium intake—which averaged 5.4g/day in 2011—was estimated to be responsible for one fifth of CVD cases in China.

Both increases in [high blood pressure](#) and increases in BMI over time were more pronounced among younger people and rural residents, the authors said.

"China is facing a rising epidemic of cardiovascular disease and it shows no sign of abating," said senior author Frank Hu, professor of nutrition and epidemiology at Harvard Chan School. "It's imperative to continue

to monitor the problem, which has serious social and economic consequences. Prevention of chronic diseases through promoting healthy diet and lifestyle should be elevated to a national public policy priority."

More information: "Time Trend of Lifestyle Factors on Cardiovascular Disease Burden in China," Yanping Li, Dong D. Wang, Sylvia H. Ley, Annie Green Howard, Yuna He, Yuan Lu, Goodarz Danaei, and Frank B. Hu, *Journal of the American College of Cardiology*, online August 15, 2016, [DOI: 10.1016/j.jacc.2016.06.011](https://doi.org/10.1016/j.jacc.2016.06.011)

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