Epidemiological Transition of Stroke in China?

Thomas Truelsen, MD, PhD, DMSC; Ruth Bonita, MPH, PhD

See related article, pages 1668–1674.

Results from the long-term surveillance of stroke as part of the Sino-MONICA project in Beijing, published in this month’s issue of Stroke, show marked changes in both stroke incidence and stroke subtypes. The authors conclude that characteristics of the stroke transition found over 2 decades and which reflected a period of economic development is in line with the theory of the epidemiological transition. According to this theory, with economic and social development, the disease pattern in a population shifts from a predominance of nutritional deficiencies and infectious diseases to chronic, noncommunicable diseases such as cardiovascular disease, diabetes, and cancers. A first step in the transition is associated with an increasing disease burden related to hypertension such as hemorrhagic stroke, whereas ischemic heart disease and ischemic stroke emerge at later stages in the transition. China and other Asian countries appear to be in the midstage of the transition supported by studies reporting higher hemorrhagic stroke rates compared with white populations in high-income countries.

The authors suggest that economic development has had an early impact on lifestyle in Beijing, whereas the level of treatment and control of risk factors may be delayed. In the Sino-MONICA population, the observed changes occurred during a period where total fat intake, cholesterol levels, and obesity increased and there was a modest improvement in the control of hypertension. In addition, in line with the fact that China is one of the largest producers and consumers of cigarettes, two-thirds of all Chinese men use tobacco. Diabetes prevalence has also increased in Chinese populations in recent decades. It is possible that the effects of today’s prevalence of risk factors in the Chinese population will reach many years into the future, not only with respect to stroke, but also ischemic heart disease.

Establishing a link between the epidemiological transition and economic level in the population is complex. Early in the transition, high income may increase the risk of hemorrhagic and ischemic stroke whereas at later stages, the poorer population is burdened. Thus, while economic development may, in general, be associated with the epidemiological transition, local health policy is equally important in determining the extent to which a population has to go through each of the steps, the duration of each step, and whether all subgroups within the population will be burdened. Early prevention through legislation and active public health policy could reduce the potential harmful effects of an improved economy. A recent analysis of the health effects of reducing salt intake and implementation of key elements of the World Health Organization Framework Convention on Tobacco Control at the population level would result in 4.5 million fewer deaths in China over 10 years. The majority of these averted deaths would be from fewer cardiovascular disease events, including stroke. The estimated financial costs associated with these two interventions were 0.2 USD per person in China.

The latest results from the Sino-MONICA-Beijing project shed important light on the relatively rapid changes taking place in this major city; they also raise some questions. Throughout the data registration period, from 1984 to 2004, the team adhered to the clinical criteria for stroke events outlined by the World Health Organizations MONICA project. The diagnosis of stroke subtype depended on clinical symptoms and lumbar puncture in the early stage of the study in the absence of access to CT scans. The proportion of patients who had a CT examination increased dramatically—from 4% in 1984 to 90% by 1994 and 97% in 2004. This change in practice is likely to have affected the classification of stroke subtypes, at least for the earlier decade. Rates for first-ever hemorrhagic stroke remained stable around 40 to 50/100 000 in the early phase but was then followed by a rapid decrease from 40/100 000 in 2000 to only 26/100 000 in 2004; at the same time, this pattern coincided with a marked increase in ischemic stroke rates. The decrease in stroke case-fatality from one-in-four in 1995 to less than one-in-ten in 2004 is dramatic and is in line with the lower case fatality for ischemic stroke but needs confirmation.

The epidemiological transition is a useful, but blunt, tool for understanding trends and changes in disease burden in populations for the use of preventing increases in new diseases. It is to be regarded as an opportunity for health policy leaders to react timely.

The authors are to be congratulated on their comprehensive and sustained approach to studying stroke in Beijing. We hope that this work will continue as the social and economic context changes in China. However, action is even more important than further research. It is imperative that the evidence presented is converted into a high level and sustained government commitment to the prevention and control of all chronic, noncommunicable diseases and their risk factors.
Disclosures

None.

References


KEY WORDS: epidemiology incidence rate stroke
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Stroke. 2008;39:1653-1654; originally published online February 28, 2008;
doi: 10.1161/STROKEAHA.107.510552
Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0039-2499. Online ISSN: 1524-4628

The online version of this article, along with updated information and services, is located on the
World Wide Web at:
http://stroke.ahajournals.org/content/39/6/1653

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