important insights into cause or protection against CNS tumours.

The high mortality of CNS tumours is reflected in the much larger rates of years of life lost (YLLs) than of years lived with disability (YLDs); even though disability can be severe from these diseases, early mortality overwhelms the effect of short-term disability. The overall assessment of the effect of these metrics is captured in disability-adjusted life-years (DALYs), which comprises YLLs plus YLDs. The GBD 2016 Brain and Other CNS Cancer Collaborators[4] show the effect of SDI on DALYs; increasing SDI until an inflection point around 0·80 is associated with increasing DALYs regardless of incidence.

The GBD report[4] provides data on the incidence and consequences of malignant CNS tumours on the world's population. However, low grade and benign tumours can cause severe disability and early death as well. Unlike benign tumours in other areas of the body, benign CNS tumours can cause the same disabling symptoms as seen with malignant tumours. However, their slower growth often means that the patient has these disabilities for many years, if not decades. These tumours often cause early death because they can transform into a malignancy or cause such disability that the patient succumbs to a benign CNS tumour. The GBD report does not clarify which of the malignant tumours included in this study might have started as a lower grade tumour, and it might never capture the transformation if a repeat histology is not obtained. More importantly, it does not measure the considerable burden of these lower grade lesions, which tend to occur in young adults. These patients, even if they remain independent in their own activities of daily living, are often unable to work or be employed in accordance with their level of education, causing substantial financial hardship for a family. Such patients might be erroneously classified as cured according to the definition of 10-year survival of the GBD study even though they usually succumb to their CNS tumour. Those patients who present with a seizure, but are otherwise well, might have a delayed diagnosis in resource-poor regions of the world, leading to underestimation of YLDs.

Therefore, the GBD Study gives us the most up-to-date assessment of the minimum burden of malignant CNS tumours over time. Ascertainment bias, poor consensus on histological diagnoses, and access to therapy all affect the incidence and DALYs chronicled here. Furthermore, understanding the effect of lower grade and benign CNS tumours remains a challenge that can no longer be ignored while understanding is sought of the cause of these illnesses and their full effect on the global population.

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Stroke epidemiology in China: which are the next steps?

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In China, stroke epidemiology is not terra incognita; several epidemiological trends are known. Among them are the north–south disparity, with differences in the epidemiology of risk factors, and higher prevalence and incidence of stroke in the north; and rural–urban differences, to the disadvantage of rural regions.[1] Nevertheless, a lot of variation is to be expected because of the vastness of the country, harbouring so many people with differing genetic backgrounds, risk behaviours, and access to health services. Whether one epidemiological


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study can adequately describe China, which includes a fifth of the world population, is questionable.

An impressive number of epidemiological studies has now been evaluated by Simiao Wu and colleagues[2] in *The Lancet Neurology*. The authors are to be applauded for having been able to compile existing data into one descriptive review coauthored by notable experts from inside and outside of China. Wu and colleagues estimate that there were 1·1 million stroke-related deaths in the country in 2013 (among a global total of 7 million reported in 2013[3]), and a higher prevalence, incidence, and mortality in northern China than in the rest of the country. They argue that this predominance is due to the increased prevalence of risk factors, such as air pollution, unhealthy dietary habits, and smoking, in the north than in the south of the country.

How do the incidence and prevalence of stroke reported for China fit into global epidemiological trends? The analyses from the Global Burden of Disease (GBD) 2016 Lifetime Risk of Stroke Collaborators and the GBD 2016 Stroke Collaborators[4,5] allow that comparison. On a global scale, the lifetime risk of stroke from the age of 25 years has increased between 1990 and 2016, from 22·8% to 24·9%, but in China the risk in 2016 was 39·3% (95% uncertainty interval 37·5–41·1). These data show that China has the highest incidence worldwide, followed by central and eastern European countries (risk of 36·5% in 2016; 95% uncertainty interval 31·2–41·9).

The GBD Study[4] reported that, among all countries, the greatest lifetime risk of stroke in men was observed in China (41·1%; 95% uncertainty interval 39·2–42·9). Among women, the risk was 36·7% (95% uncertainty interval 35·0–38·6), which represented the largest difference in risk between men and women in any country.[3]

What is to be done? The largest challenges to overcome are in risk awareness and stroke prevention. In northern China, up to two-thirds of men smoke and more than a third report drinking alcohol regularly, compared with less than 5% of women.[2] Furthermore, only 20% of people with hypertension are aware that they are hypertensive. Although a number of national and regional awareness campaigns have been rolled, prevention clearly needs most attention in the future.

Another urgent priority is the improvement of stroke care in rural areas. Up to 80% of patients with stroke have been reported to undergo CT in urban areas, whereas no data are available for rural districts. More than half of the Chinese population live outside of the cities and, according to Wu and colleagues, there is an incidence of approximately 300 cases per 100 000 person-years in rural areas, compared with approximately 200 cases per 100 000 person-years in the cities. Wu and colleagues report that this incidence is increasing in rural areas, while remaining stable in urban areas. The World Stroke Organization has developed a road map of stroke care with recommendations for rural regions[6]. Following this road map for community health care, a lot can be done for patients with stroke, including basic stroke care that provides diagnosis, rapid assessment and symptomatic management of blood pressure, avoidance of aspiration pneumonia, detection and prevention of fever, and monitoring clinical course to decide whether a referral to a higher grade care-centre is needed.

The increase of the stroke burden in China is excessive, but this burden is also increasing (albeit to a slightly lesser extent) in most other countries of the world,[7] which confirms that current stroke prevention strategies are not sufficiently effective. On the global scale, due to the ageing of the population, further population growth, and a trend towards increasing prevalence of risk factors, the global burden of stroke will likely increase, unless cost-effective primary stroke preventive strategies can be found and implemented. Likewise, basic stroke care has to be implemented in rural areas to enable early assessment and management of patients with stroke.

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