A global perspective on the burden of multiple sclerosis

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Multiple sclerosis is the most common neuroimmunological disorder. Onset is usually seen in young adults and the disease course is characterised by long survival and increasing disability over time. Owing to medication being expensive, the need for continuous care, and rehabilitation in the late stages of the disease, multiple sclerosis is putting increasing demands on health-care resources. In *The Lancet Neurology*, the GBD 2016 Multiple Sclerosis Collaborators[1] provide a basis for estimating this demand in their analysis of the global, regional, and national burden of multiple sclerosis from 1990 to 2016. The report is based on data from the Global Burden of Diseases, Injuries, and Risk Factors study,[2] in which modelling provides estimates of disease prevalence. Deaths are summarised as disability-adjusted life-years, and the Socio-demographic Index (SDI), a composite indicator of income per person, years of education, and fertility, is used to assess outcomes in relation to country development level. The prevalence of multiple sclerosis in 2016 was 2·22 million, representing a 10·4% (95% uncertainty interval 9·1–11·8) increase in the age-standardised prevalence since 1990. Prevalence increased with increasing latitude, being lowest in eastern sub-Saharan Africa (3·3 cases per 100 000 population, 95% uncertainty interval 2·9–3·8), central sub-Saharan African (2·8, 2·4–3·1), and Oceania (2·0, 1·71–2·29), and highest in North America (164·6, 153·2–177·1), western Europe (127·0, 115·4–139·6), and Australasia (91·1, 81·5–101·7). Additionally, there was a strong female preponderance. The authors note that the increasing prevalence of multiple sclerosis could partly be explained by decreases in disease-related mortality.

As a limitation, the authors discuss the statistical collinearity between SDI and distance from the equator, which might mean that results are not always robust for a single predictor, such as latitude. However, as the regions with the highest prevalence of multiple sclerosis also have the most detailed data, this finding might reflect that high-income countries provide the most rigorous epidemiological studies. If so, the prevalence data from the remaining regions, which, as the authors point out, are sparse or incomplete, should be interpreted cautiously. Furthermore, socioeconomic factors are not a major risk factor for multiple sclerosis overall,[3] although can have important effects for individual patients in high-income regions, such as reduction in income and living standards.[4]

By far, the most surprising finding in the GBD 2016 analysis of multiple sclerosis[1] is that Greenland had the highest age-standardised prevalence, with more than 270 cases per 100 000 general population. This estimate, however, was based on one survey of chronic diseases that estimated prevalence of multiple sclerosis on the basis of hospital records in a community of fewer than 2000 inhabitants in the period 1950–74, during which no cases of multiple sclerosis were reported.[5] Of note, native Inuits made up more than 90% of the Greenland study population in the 1950–74 observation period, and no cases of multiple sclerosis have been reported among Inuits in Greenland.[5] In 2016, approximately 10–12 people with multiple sclerosis were living in Greenland (unpublished data), which gives a prevalence of less than 22 cases per 100 000 general population. Most of the patients were of Danish ancestry living temporarily in Greenland, probably including some of mixed ethnicity, but none was registered as ethnic Inuit. Greenland, therefore, should have a prevalence value among the lowest on the map in the GBD report.

Greenland is geographically close to North America but comprises a realm along with the Faroe Islands and Denmark. Surveillance of health issues and allocation of resources are partly collaborative and all contribute to a joint multiple sclerosis registry. People in Greenland suspected of having multiple sclerosis are diagnosed and treated at the Rigshospitalet in Copenhagen, Denmark. The reason for the Faroe Islands not being included in the GBD 2016 study is unclear, especially given that increasing prevalence of multiple sclerosis on the islands has been reported.[7] The GBD 2016 Multiple Sclerosis Collaborators cite this report, although they exclude another that showed low incidence in the Faroe Islands[8] that would not give reason to expect high prevalence. Furthermore, data from Scotland, Northern Ireland, and Ireland[9] also suggest that high prevalence would not be expected in the Faroe Islands. The data for Greenland and the Faroe Islands do not support the conclusion of the GBD 2016 Multiple Sclerosis Collaborators that prevalence increases with increasing latitude, at least in that region of the North Atlantic.

Given my reservations, I advise extreme caution in using the results from nations or regions with few or no studies or with studies that have no clearly defined and comparable methods. I agree with the GBD 2016 Multiple Sclerosis Collaborators that policy makers, administrators, care providers, and multiple sclerosis societies globally should call for valid information to improve resource allocation and health-service planning, but the first step should be to encourage the formation of administrative registers in nations and regions to enhance the accuracy of estimates. The next step could be to use the data to remap the burden of multiple sclerosis.

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I declare no competing interests.

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The long journey towards uniform epidemiological monitoring of TBI around the globe

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Reliable epidemiological data and improved awareness of traumatic brain injury (TBI) are both essential to fully understand the scale and socioeconomic burden of this condition, including our ability to plan and implement prevention measures, and to allocate health-care resources.[1] Although accomplishing these tasks, at first glance, might be considered straightforward, reality has proven the contrary. To date, all attempts to harmonise data collection and analyses across Europe and USA still confirm wide variation and discrepancies in reported incidence and mortality.[1–3] These differences are mostly attributable to methodological diversity, including differences in case ascertainment, non-standardised definitions of TBI, and variations in hospital admission policies.[1–3] Moreover, robust data for many parts of the world, particularly for low-to-middle-income countries (LMICs) where TBI is likely to occur much more frequently, are almost entirely absent.

In *The Lancet Neurology*, Jiang and colleagues try to narrow this gap by providing a snapshot of the epidemiology and current status of care and research for TBI in China.[4] Based on a series of large-scale population-based investigations, a TBI incidence of 55·4–64·1 per 100 000 people per year is reported, which translates to 770 060–890 990 new cases of TBI every year in China.[4] This reported incidence appears lower than population-based incidence for USA (823·7 per 100 000 per year), Canada (979·1), and New Zealand (811·0), as well as reported hospital discharge rates from Europe (81·0–643·5 per 100 000 per year).[3] However, the interpretation and the comparison of these data need caution. Apart from incomplete patient ascertainment, in particular for patients with mild TBI or for patients in rural areas, all data from China originate from studies done in the 1980s. Over the past 30 years, no new nationwide data for the incidence of TBI have been made available for China.[4] Thus, the figures might have changed against the background of a growing population and increasing use of motor vehicles, but also advancements in the prevention and care for