Forecasting the prevalence of dementia

In *The Lancet Public Health*, the GBD 2019 Dementia Forecasting Collaborators provide estimates of the number of prevalent cases of dementia in 2019 and 2050, globally and by region and country.[1] The authors build on GBD 2019 in three main ways.[2] First, they assessed all-cause dementia, including cases that might be caused by four specific conditions (ie, stroke, Parkinson's disease, traumatic brain injury, and Down syndrome) and that are embedded in the burden of each of these conditions in GBD 2019. Second, GBD 2019 considers only three risk factors for dementia (high body-mass index [BMI], high fasting plasma glucose, and smoking);[3] the authors of this Article assessed exposures to five other risk factors,[4] and found that educational attainment was associated with dementia prevalence that is not attributable to GBD risk factors. Third, predictions of prevalent cases of dementia were based on demographic projections as well as any expected improvement in educational attainment and expected worsening of GBD risk factors (ie, increases in BMI and fasting plasma glucose) by age, gender, location, and year. Their findings suggest that population growth and ageing will lead to 2·7 times more dementia cases globally in 2050 than in 2019—from 57·4 (95% uncertainty interval 50·4–65·1) million to 152·8 (130·8–175·9) million cases—with more than half of them living in high-income countries (32·4 million [56·4%] cases in 2019 and 77·6 million [50·8%] cases in 2050).

As much as older age is the main risk factor for dementia, it is of no surprise that population growth and population ageing will lead to proportionate increases in prevalent cases of dementia. However, public health crises, such as the ongoing SARS-CoV-2 pandemic, illustrate the difficulty in making projections over a long time horizon. The death toll due to COVID-19 among the oldest age groups in 2020 has been striking.[5] Independent of age, dementia and multiple conditions related to dementia risk were also associated with increased COVID-19 death risk.[5] Accordingly, the SARS-CoV-2 pandemic should reduce the expected number of individuals with dementia in today and the near future.

More generally, the study findings are disappointing from a public health perspective, as they suggest that increases in prevalent dementia cases are inexorable. In our opinion, the authors' efforts to build on GBD 2019 are still oversimplifying the underlying mechanisms that cause dementia. Prevalence studies rely on various case definitions of dementia, leading to highly heterogeneous results. The authors elaborated on sophisticated regression models that produced mean prevalence estimates somewhere between an upper boundary based on National Institute on Aging–Alzheimer's Association (NIA-AA) diagnostic criteria and a lower boundary based on general practice records. At the upper end of the spectrum, recent evolutions of NIA-AA diagnostic criteria are associated with identifying more cases at a preclinical stage or with mild cognitive impairment in specialised centres than were identified previously,[6–8] although these additional criteria might merely inflate dementia prevalence and years of life with disability in a foreseeable future without treatment.[9]

At the lower end of the spectrum, dementia records in general practices might reflect unselected populations with more severe dementia burdened with frequent and competing health problems. Many risk factors and conditions can accelerate dementia onset; the *Lancet* Commission on dementia prevention, intervention, and care included 12 modifiable risk factors for dementia in their 2020 report.[4] In a nationwide retrospective hospital cohort study, we found that more than 30 risk factors and conditions were independently associated with earlier dementia onset.[10] Given the many methodological challenges and potential biases in dementia research,[11] it is unclear how meta-analyses done in silos in GBD 2019 could provide sufficient evidence to select independent risk factors or conditions that are interrelated over an individual's lifetime. For instance, the four selected conditions (including stroke) would explain 10·0% (95% uncertainty interval 6·0–16·5) of all-cause dementia prevalence in 2019,[12] whereas we found that vascular dementia alone might be involved in 19·1% (based on records of vascular dementia from the International Classification of Diseases, tenth edition [ICD-10]) and up to 34·5% (based on additional ICD-10 records of mixed dementia or a history of stroke or transient ischaemic attack) of 503 516 new dementia cases in 2011–13 in France.[10] We also found that the three selected GBD risk factors of dementia (including smoking) had much weaker

associations than those reported in fully adjusted models that included alcohol use disorders.[10] Altogether, the GBD 2019 Dementia Forecasting Collaborators provide somehow apocalyptic projections that do not factor in advisable changes in lifestyle over the lifetime. There is a considerable and urgent need to reinforce a public health approach towards dementia to better inform the people and decision makers about the appropriate means to delay or avoid these dire projections.[4]

We declare no competing interests.

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