

# Global, regional, and national burden of dementia, 1990–2016

## Predictions need local calibration

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Dementia is 1 of the 5 major global causes of death.<sup>1</sup> In 2015/2016, an estimated 43–47 million people were living with dementia disease, expected to increase to over 100 million by 2050.<sup>1</sup> The largest increase is anticipated in low- and middle-income countries.<sup>1</sup> To give policy makers a tool to delay the onset of dementia, it is pertinent to map the contributing risk factors nationally. Studies report up to 35% of dementia burden to be due to known, potentially modifiable risk factors: hearing loss, low education, midlife hypertension, smoking, depression, physical inactivity, social isolation, diabetes, and midlife obesity.<sup>2</sup> A report from the Global Burden of Diseases, Injuries, and Risk Factors Study 2016 Dementia Collaborators<sup>1</sup> attempts to provide such a tool for further research and national public health decisions. However, the authors state that their data are tainted by several major limitations relating to considerable heterogeneity in diagnostic procedures, inconsistencies in registration of dementia as cause of death, and assumption of transferability of findings between countries with different health care systems.

The authors had to overcome multiple challenges relating to discrepancies in data in order to create prediction models. The challenges included within-country death rate estimates with 50 times variation between the highest and lowest estimate in different locations and Mini-Mental State Examination scores, where the cutoff score varied from 18/30 to 28/30. Comparing data from 1990, 2006, and 2016 also presented challenges given the development of new diagnostics protocols during this time period modulated with 230 different diagnostic procedures used in 237 available data sources. Critics<sup>3</sup> have noted that mortality data from 4 predominately high-income locations with good systems for record-keeping were used in order to estimate dementia-specific mortality in all of the 191 other countries and territories. In low-income countries where fewer data were available, estimates from high-income countries cannot necessarily be applied. In addition, case ascertainment varies significantly even within each country, adding uncertainty to the assumptions underlying the models used. Overall, the current data are not robust enough to inform policy makers, researchers, and clinicians about global differences in dementia trends, clusters of dementia, and causal risk factors.

The value of the report,<sup>1</sup> however, should not be understated, as it is probably the best estimation of the severity of the global dementia burden to date. Due to the limitations mentioned above, additional national and regional data need to be added to the model, as the intended use of the report for national policy-making may be of limited value.

The authors and others<sup>1,3</sup> point to the importance of identifying causal risk factors in the population that can trigger interventions to prevent or delay dementia. In the current study, 4 risk factors contributed to 22% of disability-adjusted life-years.<sup>1</sup> The distribution of these risk factors and other risk factors currently not considered in this report may vary greatly between cultures and socioeconomic conditions, which may or may not transpose to national statistics. This is exemplified by the double burden of disease in low-income and selected middle-income countries, which also has repercussions on the causes of dementia that, in those countries, are of both communicable and noncommunicable nature. A future version of this report therefore would

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benefit from more active national involvement and calibration using in-depth analysis and systematization of existing or gathering of new national data. Although record-keeping varies and quality improving feedback on cause of death, prevalence, and disability-adjusted life-years may be inadequate in several countries, the report needs more local consideration to increase its credibility. A future global approach may also find inspiration in the Lancet Neurology Commission on Alzheimer's disease and related dementias of aging, which included genetic studies in addition to epidemiologic studies, in an attempt to map the challenges in dementia prevention and care at a European level.<sup>2</sup>

Although investigation into the different causes of dementia is important in terms of locally adapted disease prevention, culturally sensitive management of individuals who already have dementia seems equally relevant and not only refers to patients but also to their families and caregivers. Little is known about the effect of cultural differences on care for the elderly, but it may be assumed that quality of life in patients with dementia varies irrespective of the socioeconomic status of a country.<sup>4</sup> Where dementia is misunderstood, it causes preventable suffering for families burdened with informal care and for patients with dementia.<sup>5</sup> Dementia care in family and community-based cultures may provide important lessons that may be of value in more institution-based cultures and clearly points to the importance of a multidisciplinary approach, not only including biomedical aspects but also a social science perspective. Local and cultural particularities, benefits, and risk factors are not considered in the current report; however, the necessity for national calibration seems to be the

most important future focus and will require national teams to conduct synchronous work throughout the world.

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## Appendix Authors

Name	Location	Contribution
<b>Maria Stylianou Korsnes</b>	Oslo University Hospital, University of Oslo, Norway	Drafted the manuscript for intellectual content
<b>Andrea Sylvia Winkler</b>	Technical University of Munich, University of Oslo, Norway	Drafting and revision for intellectual content

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