

THE EPIDEMIOLOGY AND IMPACT OF DEMENTIA

CURRENT STATE AND FUTURE TRENDS



KEY MESSAGES

- Dementia is a global epidemic— whilst many cases have been recorded in the world's richest and most aged countries, already the clear majority (63%) of people living with dementia live in low- and middle-income countries (LAMIC) where access to social protection, services, support and care are very limited.
- The future scale of the dementia epidemic may be blunted through improvements in population health; our best current estimates suggest that around 10-20% of incidence may be avoided.
- The success of initiatives to reduce risk factors of dementia, such as increasing education, needs to be monitored through population-based research programmes. These should focus upon evolving care arrangements, and access to and coverage of health and social care interventions.
- There is an urgent need to develop cost-effective packages of medical and social care that meet the needs of people living with dementia and their caregivers across the course of the illness, along with evidence-based prevention strategies. Only by investing now in research and cost-effective approaches to care can future societal costs be anticipated and managed.

THE PREVALENCE OF DEMENTIA WORLDWIDE

The number of people living with dementia worldwide in 2015 was estimated at 47.47 million, reaching 75.63 million in 2030 and 135.46 million in 2050 (1). The numbers reported here are higher than the original estimates reported in the 2009 World Alzheimer Report as the regional prevalence of dementia estimated from studies in China and sub-Saharan Africa were substantially higher than those used in the 2009 World Alzheimer Report (1). When age-standardised to a standard western European population, the prevalence for East Asia increased from 4.98% to 6.99% and in the sub-Saharan African regions from a range of 2.07% to 4.00%, to 4.76%. The net effect, as more data becomes available, is to further reduce the variation in prevalence between world regions.

Population ageing is the main driver of projected increases. Since population ageing is occurring at an unprecedentedly fast rate in low- and, particularly, middle-income countries, the bulk of the increase in numbers through to 2050 will occur in those regions. From 2015 to 2050, numbers of people living with dementia will have increased slightly less than twofold in Europe, somewhat more than twofold in north America, threefold in Asia, and fourfold in Latin America and Africa. While 37% of the people living with dementia live in high-income countries, 63% live in low and middle-income countries. For more detailed information, see Appendices 1 and 2.

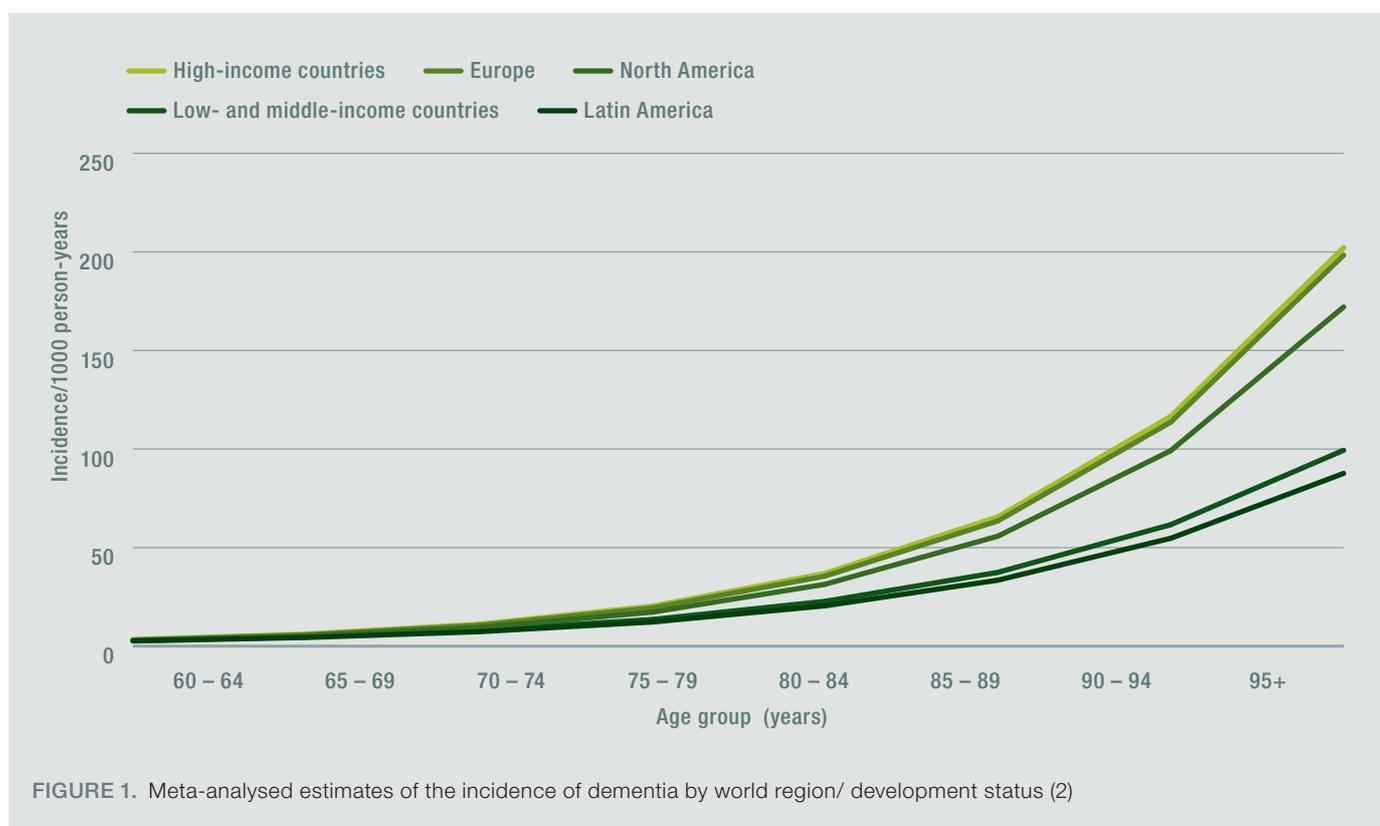
THE INCIDENCE OF DEMENTIA WORLDWIDE

The incidence of dementia increased exponentially with increasing age, based on the available estimates for the global incidence of dementia dating from 2010 (2). For all studies combined, the incidence of dementia doubled with every 5.9 year increase in age, from 3.1/ 1000 person years at age 60-64, to 175.0/ 1000 person years at age 95+ (see Figure 1). While the incidence of dementia appeared to be higher in countries with high-incomes than in low- or middle-income countries, this was largely an artifact, due to the specific diagnostic criteria used.

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Worldwide 7.7 million new cases of dementia were anticipated each year, implying one new case every 4.1 seconds. This means that there were 3.6 million (46%) new cases per year in Asia, 2.3 million (31%) in Europe, 1.2 million (16%) in the Americas, and 0.5 million (7%) in Africa. Numbers of new cases increased and then declined with increasing age in each region; in Europe and the

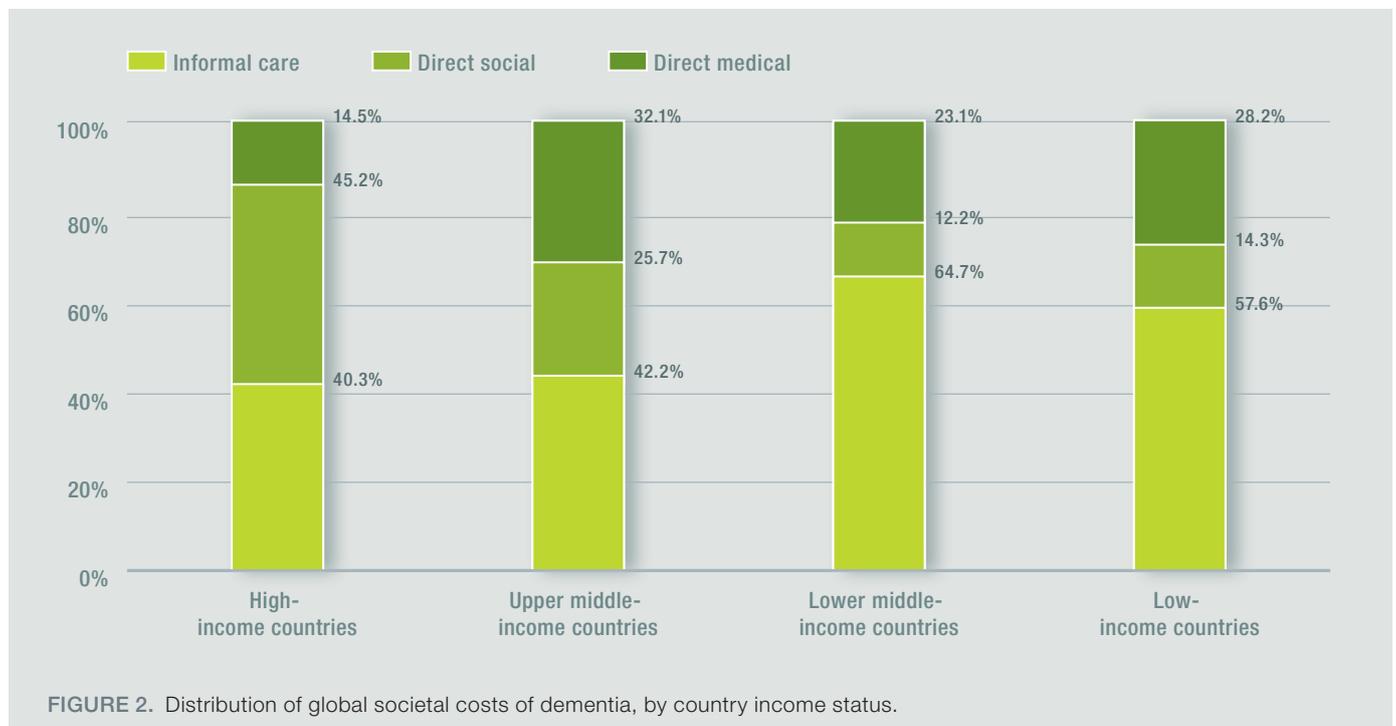
Americas peak incidence is among those aged 80-89 years, in Asia it is among those aged 75-84, and in Africa among those aged 70-79 (Table 1). For the year 2010, prevalence (35.6 million cases) is 4.6 times annual incidence, suggesting an approximate average survival from the onset of dementia till death of 4.6 years.



Region	Age group (years)							Total
	60-64	65-69	70-74	75-79	80-84	85-89	90+	
ASIA	0.39	0.48	0.62	0.72	0.66	0.44	0.26	3.56
EUROPE	0.13	0.18	0.32	0.43	0.54	0.44	0.29	2.34
THE AMERICAS	0.10	0.13	0.17	0.21	0.25	0.23	0.17	1.25
AFRICA	0.07	0.09	0.10	0.11	0.09	0.04	0.02	0.53
WORLD TOTAL	0.69	0.88	1.22	1.46	1.54	1.15	0.74	7.68

TABLE 1 Estimated annual numbers of incident cases of dementia, by age group and world region

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FUTURE TRENDS IN THE PREVALENCE AND INCIDENCE OF DEMENTIA

All current projections of the scale of the coming dementia epidemic assume that the age- and gender-specific prevalence of dementia will not vary over time, and that the increasing number of older people at risk drives the projected increases. However, the basis for this assumption is uncertain, since prevalence is a product of incidence and survival with dementia, and a fall in either or both of these indicators would lead to a fall in age-specific prevalence (3). A decline in age-specific incidence, at least in high-income countries, is theoretically possible, driven by changes in exposure to suspected developmental, lifestyle and cardiovascular risk factors for dementia. The strongest evidence for possible causal associations with dementia (plausible, consistent, strong associations, relatively free of bias and confounding) are those of low education in early life, hypertension in midlife, and smoking and diabetes across the life course. In a recent modelling exercise, it was concluded that a 10% reduction of key risk exposures would lead to an 8.3% reduction in the prevalence of dementia through to 2050, with a 15.3% reduction in prevalence of dementia anticipated assuming a 20% reduction in exposure prevalence (4).

THE IMPACT OF DEMENTIA

Dementia and cognitive impairment are the leading chronic disease contributors to disability, and, particularly, dependence among older people worldwide. While older people can often cope well, and remain reasonably independent even with marked physical disability, the onset of cognitive impairment quickly compromises their ability to carry out complex but essential tasks in daily life. In addition, people living with dementia will increasingly have difficulty to meet their basic personal care needs (5).

The need for support from a caregiver often starts early in the dementia journey, intensifies as the illness progresses over time, and continues until death. There is a large literature attesting to the extent of the strain that caregivers experience, which is practical (hours spent caregiving detracting from other activities, particularly leisure and socializing), psychological (emotional strain, leading to a high prevalence of anxiety and depression), and economic (increased costs, coupled with giving up or cutting back on work to care) (5).

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Older people frequently have multiple health conditions such as chronic physical diseases coexisting with mental or cognitive disorders, the effects of which may combine together in complex ways leading to disability and needs for care. However, studies from both high-income countries (6, 7) and low- and middle-income countries (8, 9) concur that, among older people, cognitive impairment and dementia make the largest contribution to needs for care, much more so than other types of impairment and other chronic diseases.

THE GLOBAL ECONOMIC COST OF DEMENTIA

The total estimated worldwide costs of dementia were US\$ 604 billion in 2010, equivalent to 1% of the world's gross domestic product (5). Low-income countries accounted for just under 1% of total worldwide costs (but 14% of the prevalence of dementia), middle-income countries for 10% of the costs (but 40% of the prevalence of dementia) and high-income countries for 89% of the costs (but 46% of the prevalence of dementia). About 70% of the global costs occurred in just two regions: Western Europe and North America. These discrepancies are accounted for by the much lower costs per person in lower income countries – US\$ 868 in low-income countries, US\$ 3,109 in lower-middle-income, US\$ 6,827 in upper-middle-income, and US\$ 32,865 in high-income countries.

The costs are driven mainly by social care needs; health care costs account for a small proportion of the total, given the low diagnosis rate, limited therapeutic options, and the underutilisation of existing evidence-based interventions (see Figure 2) (5).

In all world regions, informal care provided by family, friends and the community is the cornerstone of the care system. In LAMIC these informal care costs predominate, accounting for 58% of all costs in low-income and 65% of all costs in middle-income countries, compared with 40% in high-income countries. Conversely, in high-income countries, the direct costs of social care (professional care in the community, and the costs of residential and nursing home care) account for the largest element of costs – 42%, compared with only 4% in LAMIC where such services are not generally available. In LAMIC, despite larger, extended families, the economic strain on family caregivers is substantial. Typically, around a fifth of caregivers have cut back on paid work, and paid care workers are becoming common in some cities, adding to the economic burden. Moreover, compensatory benefits are practically non-existent (3).

Worldwide, the costs of dementia are set to soar. The World Alzheimer Report 2010 tentatively estimated an 85% increase in costs to 2030, based only on predicted increases in the numbers of people living with dementia. For several reasons, costs in LAMIC are likely to rise faster than in high-income countries. Wage levels are rising rapidly, and hence so is the opportunity cost or replacement cost of informal care. While currently very few people living with dementia in those regions live in care homes, this sector is expanding, particularly in urban settings in middle-income countries. This is boosted by demographic and social changes that reduce the availability of family members to provide care.

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