

Global, regional, and national burden of neurological disorders during 1990-2015: a systematic analysis for the Global Burden of Disease Study 2015.

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Abstract

BACKGROUND: Comparable data on the global and country-specific burden of neurological disorders and their trends are crucial for health-care planning and resource allocation. The Global Burden of Diseases, Injuries, and Risk Factors (GBD) Study provides such information but does not routinely aggregate results that are of interest to clinicians specialising in neurological conditions. In this systematic analysis, we quantified the global disease burden due to neurological disorders in 2015 and its relationship with country development level.

METHODS: We estimated global and country-specific prevalence, mortality, disability-adjusted life-years (DALYs), years of life lost (YLLs), and years lived with disability (YLDs) for various neurological disorders that in the GBD classification have been previously spread across multiple disease groupings. The more inclusive grouping of neurological disorders included stroke, meningitis, encephalitis, tetanus, Alzheimer's disease and other dementias, Parkinson's disease, epilepsy, multiple sclerosis, motor neuron disease, migraine, tension-type headache, medication overuse headache, brain and nervous system cancers, and a residual category of other neurological disorders. We also analysed results based on the Socio-demographic Index (SDI), a compound measure of income per capita, education, and fertility, to identify patterns associated with development and how countries fare against expected outcomes relative to their level of development.

FINDINGS: Neurological disorders ranked as the leading cause group of DALYs in 2015 (250.7 [95% uncertainty interval (UI) 229.1 to 274.7] million, comprising 10.2% of global DALYs) and the second-leading cause group of deaths (9.4 [9.1 to 9.7] million), comprising 16.8% of global deaths). The most prevalent neurological disorders were tension-type headache (1505.9 [UI 1337.3 to 1681.6 million cases]), migraine (958.8 [872.1 to 1055.6] million), medication overuse headache (58.5 [50.8 to 67.4 million]), and Alzheimer's disease and other dementias (46.0 [40.2 to 52.7 million]). Between 1990 and 2015, the number of deaths from neurological disorders increased by 36.7%, and the number of DALYs by 7.4%. These increases occurred despite decreases in age-standardised rates of death and DALYs of 26.1% and 29.7%, respectively; stroke and communicable neurological disorders were responsible for most of these decreases. Communicable neurological disorders were the largest cause of DALYs in countries with low SDI. Stroke rates were highest at middle levels of SDI and lowest at the highest SDI. Most of the changes in DALY rates of neurological disorders with development were driven by changes in YLLs.

INTERPRETATION: Neurological disorders are an important cause of disability and death worldwide. Globally, the burden of neurological disorders has increased substantially over the past 25 years because of expanding population numbers and ageing, despite substantial decreases in mortality rates from stroke and communicable neurological disorders. The number of patients who will need care by clinicians with expertise in neurological conditions will continue to grow in coming decades. Policy makers and health-care providers should be aware of these trends to provide adequate services.

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