

National Burden Estimates of healthy life lost in India, 2017: an analysis using direct mortality data and indirect disability data: LANCET GLOBAL HEALTH, NOVEMBER 7, 2019

Frequently Asked Questions (FAQs)

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Q. What is the study about?

A: This study provides a simple and replicative method of calculating a health metric to use to monitor health. This involves the total time (in years) spent by the people in India alive and healthy, meaning without disability. This metric is termed as Disability-Adjusted Life Years (DALYs), which combines the mortality component termed as Years of Life Lost (YLLs) due to premature death and the morbidity component that is Years Lived with Disability (YLDs). These metrics, in particular YLLs, are useful to monitor patterns of disease affecting the Indian population and to track the impact of health interventions on the public.

Q. What is the need for these national burden estimates, and how relevant are these in the country's/state's planning related to health and development?

A: The National Health Policy of 2017 envisages as its goal the attainment of the highest possible level of health and well-being at all ages, through a preventive healthcare orientation in all developmental policies, and universal access to high-quality healthcare services. These burden estimates are expected to help the health system policymakers prioritise activities addressing those diseases that need immediate attention. One such priority could be increasing access, improving quality and lowering the cost of healthcare delivery to Indians. These estimates will allow the government to monitor progress in states and the impact of the new Ayushman Bharat, the national health insurance programme covering 500 million Indians, on mortality.

We made these estimates at the request of India's Ministry of Health and Family Welfare to provide a transparent and more understandable burden of diseases estimates at national and sub-national levels. The NBE method is developed within India, and can be easily replicated in other countries.

Q. Who carried out the study, and who were the funders?

A. The study was carried out by a team of scientists from the Indian Council of Medical Research, which is the lead scientific body for biomedical research in India, and a team of researchers from the Centre for Global Health Research, University of Toronto, Canada. It is part of a larger project funded by the Ministry of Health and Family Welfare, Government of India, to derive locally-based estimates of death and disability for India and its major states. The funders had no role in writing the manuscript or in influencing the conclusions of the study.

Q. Which data did you use for calculating the health metrics?

A. The study uses cause of death data from the Registrar General of India (RGI) which has, since 2001, implemented the Million Death Study (MDS) in over one million (M or 10 lakh) homes in over 7000 randomly-selected areas of the entire country. It also uses publicly available data on the projected population for 2017. The death counts for each age and sex are grouped at 5-yearly intervals retrieved as defined by the United Nation's World Population Prospects, 2017. The World Health Organization (WHO) publishes annual counts of death and projected populations for

different countries including India. The calculations in the study also use the data on YLL and YLD for India that has been published by the WHO's Global Health Estimates 2016. Thus, effectively if a country has a system of cause of death data collection, then this method can be easily applied.

Q. How did the study calculate the time lost due to death at an early age from a disease? How about the years lived with disability?

A. We applied sub-national age- and sex-specific death rates published by RGI in the SRS report 2017 to population and death totals from the UN World Population Prospects. Then, the state wise disease-specific proportions of deaths from MDS data were applied to get the number of cause-specific deaths for each age group for either sex. This calculation was done for rural and urban India and for 21 major states. We obtained the median age of death from the MDS for each age group and subtracted this from the maximum hypothetical age that a person can live (92 years). This difference yields the average Years of Life Lost per person in an age group due to a particular disease. This value, multiplied by the number of deaths summed over all age groups, gives the total Years of Life Lost due to a disease.

To calculate Years Lived with Disability, we obtained the disability: mortality ratio for every disease age wise from the published WHO Global Health Estimates 2016 for India. The ratios were applied also to each states, as there is no reason to assume that these ratios will vary much across states. These ratios were then multiplied by the YLLs to obtain the YLDs.

Q. How useful will be the sub-national estimates?

A. Merely using a national-level estimate may not capture the remarkable variation in YLLs across Indian states, suggesting that diseases common in one part of the country may be relatively uncommon elsewhere. This also indicates the existence of differences in underlying social, behavioural, or biological risk factors, suggesting important avoidable causes that await discovery.

Q. What were the key findings of this study?

A. The key findings were:

- In 2017, India had about 9.7 million deaths and 486 million DALYs.
- There were more years of healthy life lost due to premature deaths than years lived with disability (346 million of 486 million DALYs).
- 36% of the total burden of disease was due to infectious diseases, maternal disorders, diseases for early infants, or nutritional deficiencies. This burden was greater among females.
- Cancer, deaths among infants immediately after birth, diarrhoea, road traffic injuries, tuberculosis, and respiratory infections lead to more deaths than disability.
- On the other hand, psychiatric and neurological problems, nutritional deficiencies, vision and other sensory loss, and musculoskeletal disorders result in more disability than death.

There were variations in disease distribution among different states. Diseases which were common in some states were uncommon in others, thereby making them preventable by improving the health system. For example:

- Tuberculosis and respiratory infection YLL rates were higher in the northern states of Uttar Pradesh, Rajasthan, Himachal Pradesh, and Uttarakhand.
- Respiratory infections were more pronounced in the Northeastern region. These states accounted for 52% of the national YLLs due to tuberculosis, and 41% of YLLs due to respiratory infections.
- Cancer YLLs were high in Uttar Pradesh, Rajasthan, West Bengal, Haryana, Gujarat, and Madhya Pradesh, Kerala and Karnataka and in the Northeastern states accounting for 44% of national totals.
- Chronic respiratory YLL rates were high in Rajasthan and Uttar Pradesh, accounting together for 7% of national totals.
- Liver and alcohol-related disease YLL rates were high in the Northeastern states, Bihar, Karnataka, and Maharashtra, accounting for 18% of national totals.
- Suicide YLL rates were highest in the southern states, accounting for 15% of national totals.
- Road traffic injuries were high in the northern states of Uttar Pradesh, Punjab, Uttarakhand, Haryana and Himachal Pradesh, accounting for 33% of national totals.
- Diarrhoea YLL rates showed an east-west gradient, being much higher in Odisha, Jharkhand, Bihar, and Uttar Pradesh, accounting for 15% of national totals.

Q. What is next with this research?

A. The NBE method is replicable at the district level in India as well. This will help in understanding the variation in disease occurrences even among the states, thereby helping the state health systems to concentrate on those diseases that need attention.