

National Burden Estimates of healthy life lost in India, 2017: an analysis using direct mortality data and indirect disability data

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Key findings (1)

- In 2017, India had about 9.7 million deaths and 486 million years of healthy life lost to death and disability (DALYs)
- 346 of the 486 million DALYs (70%) were due to death and not disability
- 36% of total national DALYs arose from communicable, maternal, perinatal, and nutritional causes, and this proportion was greater among females and rural residents
- Urban residents lost more years of healthy life from non-communicable diseases (55% of total DALYs lost)
- DALY rates in rural areas were at least twice those of urban areas for perinatal and nutritional conditions, chronic respiratory conditions, diarrhoea, and fever of unknown origin

Key findings (2)

- 11% of the total DALYs were due to injuries
- Males accounted for 54% of all DALYs (More than half of the years lost due to death or disability from diseases and injuries were in males)
- Cancer, diseases among infants immediately after birth, diarrhoea, road traffic injuries, tuberculosis, and respiratory infections lead to more deaths than disabilities
- Psychiatric and neurological problems, nutritional deficiencies, vision and other sensory loss, and musculoskeletal disorders result in more disability

Background and Rationale

- Locally-constructed health statistics help to improve a country's health policies.
- The Government of India seeks to create an understandable and locally applicable metrics for measuring health.
- There are huge disparities in allocation of resources, health systems access and utilization of health care services across the states of India, who implement health programs.
- There are variations in the morbidity and mortality indicators in the urban and rural areas, between sexes, and among low and high socioeconomic groups.
- States differ in lifestyles, diet, culture, systems of medical practices, valuation of disease, and access to health care.

Disease Burden Metrics

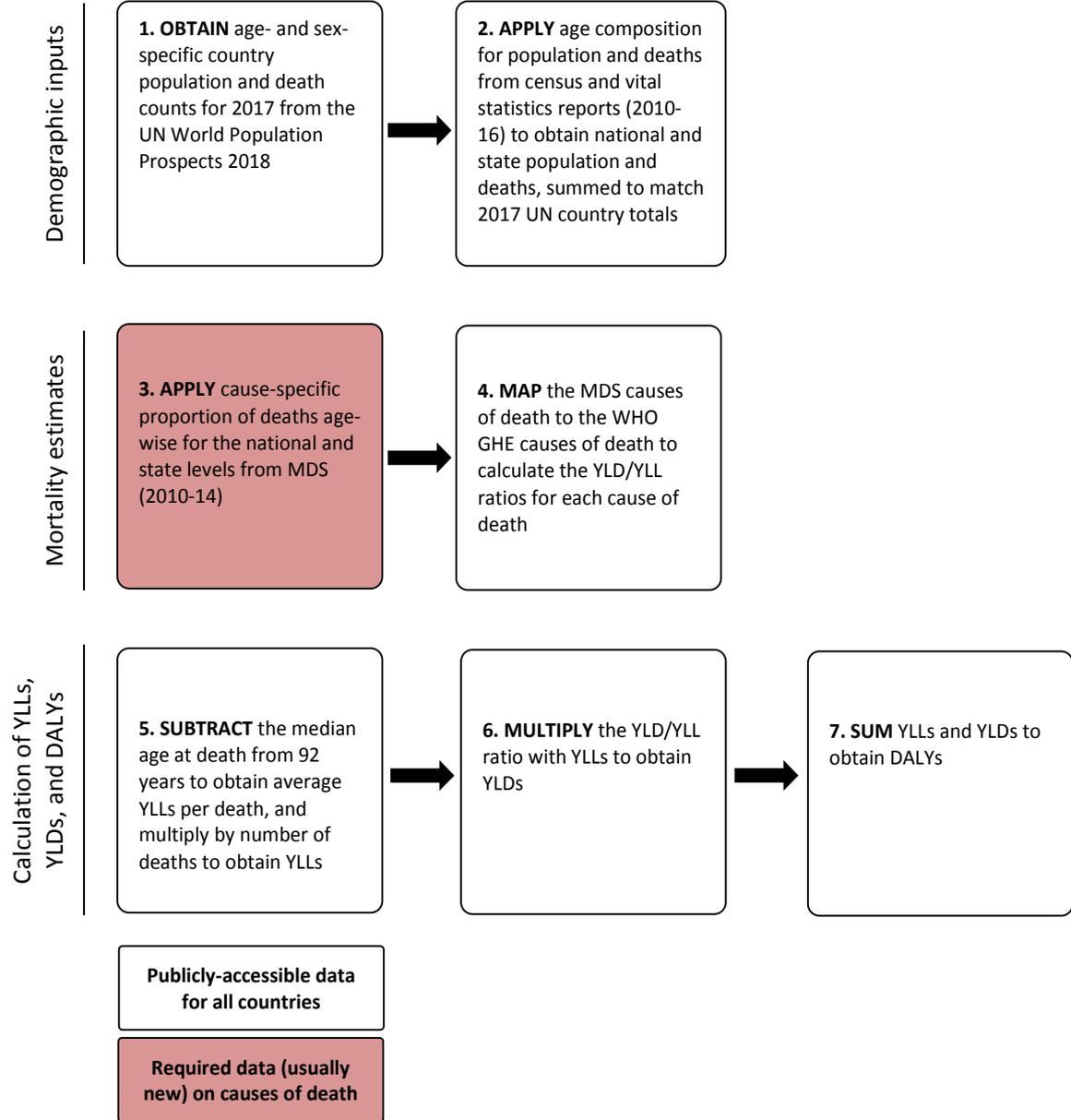
- Burden of disease (DALYs) is a composite metric that combines the time lost by a population due to death (YLL) before the age of 92 years and the time lived with a disability (disease) (YLD). This metric assumes that every individual in a country can live up to a maximum of 92 years.
- For example: A woman who dies at the age of 32 loses $92-32 = 60$ years of life. Her YLL is therefore 60.
- A man who gets a disease at the age of 40 and lives to 65 years lives with the disease for 25 years. The disability is assessed as half as bad as death. His YLD is 12.5 years (i.e. $[(65-40) * .5]=12.5$)

What's new about this research?

- The Indian Council of Medical Research, the largest research body under the Ministry of Health and Family Welfare, Government of India, has created a method called the “National Burden Estimates”, or NBE, to estimate the number of deaths and disabilities using available data from India.
- The NBE is a transparent, reproducible method to calculate disease burden produced locally in India using nationally-representative cause of death data from India.

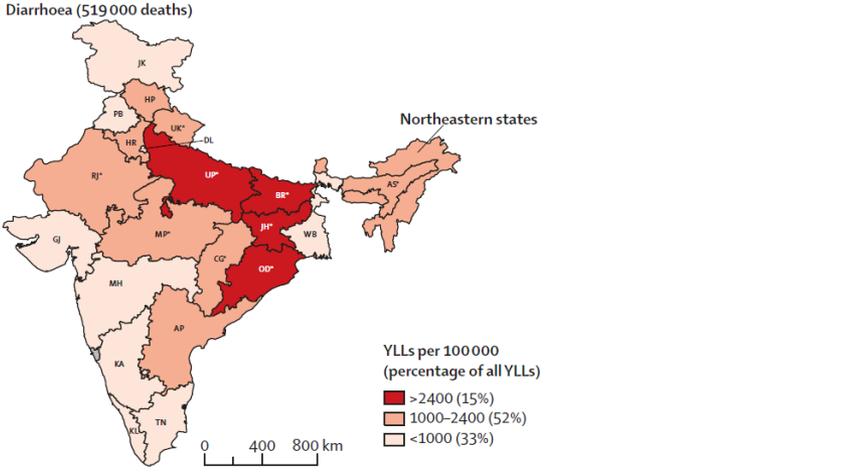
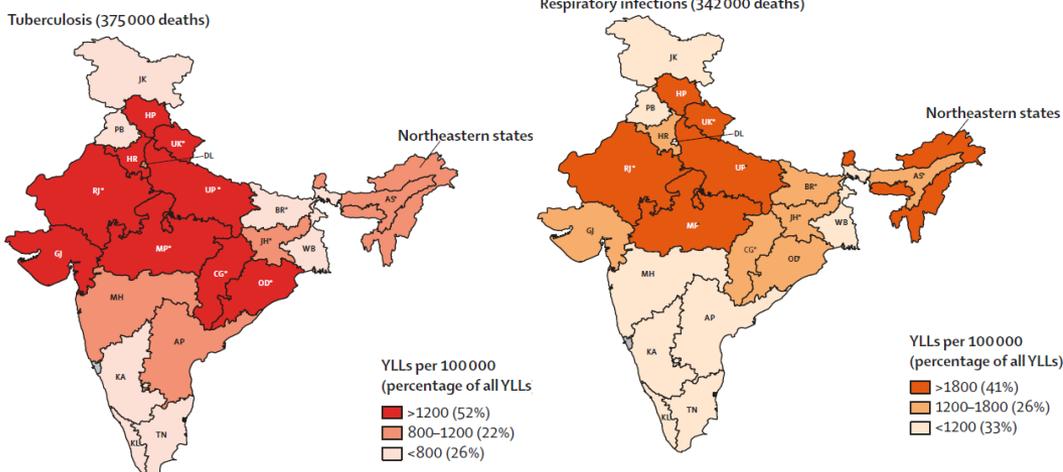
How does the NBE work?

- The analyses have been done at the national and state levels.
- It involves 7 simple steps, using existing data from the United Nations on death and population totals, WHO published data on deaths/disability ratios, and the Registrar General of India's Million Death Study.



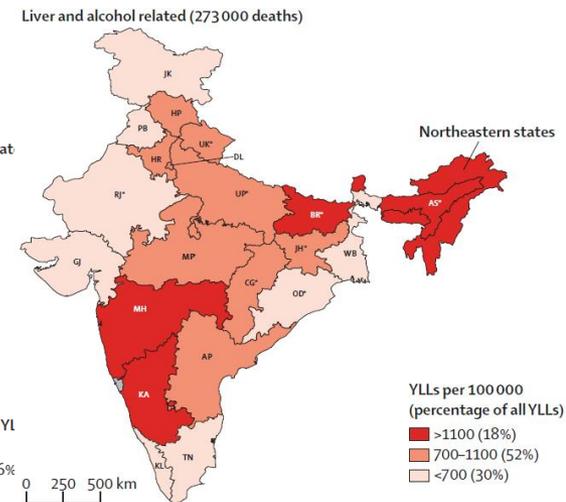
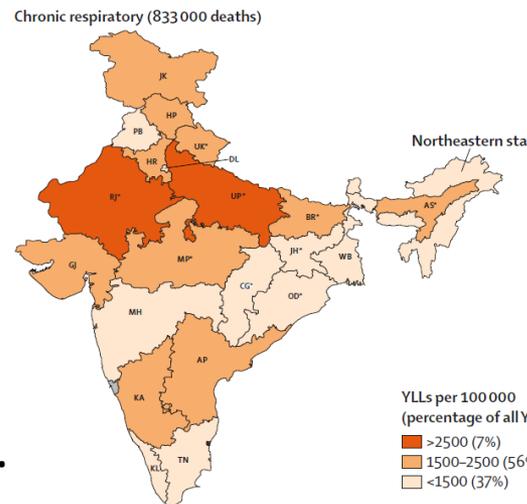
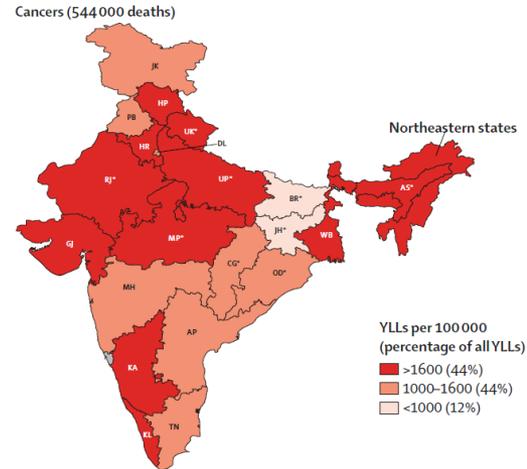
State-wise variation in premature mortality from Tuberculosis, Respiratory Infections, and Diarrhoea

- Years of life lost (YLLs) due to TB and respiratory infection were high in Uttar Pradesh, Rajasthan, Himachal Pradesh, and Uttarakhand. These states accounted for 52% of India totals.
- Respiratory infection rates were higher in the northern and Northeastern regions, accounting for 41% of India totals.
- Diarrhoea showed an east-west gradient being much higher in Odisha, Jharkhand, Bihar, and Uttar Pradesh, accounting for 15% of India totals.



State-wise variation in premature mortality from Chronic Diseases

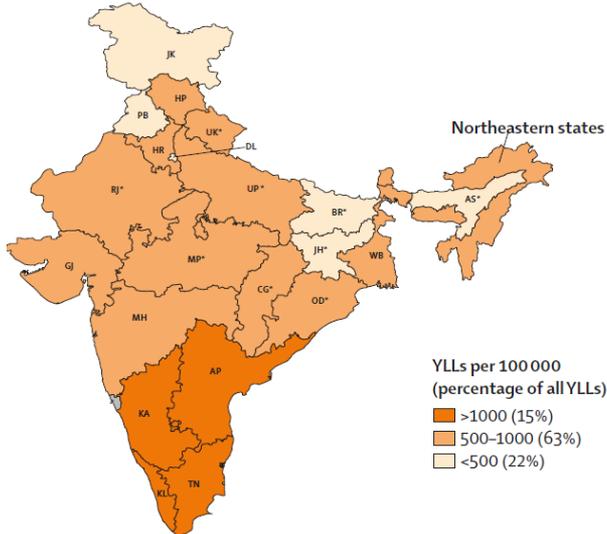
- Cancer YLLs were high in Uttar Pradesh, Rajasthan, West Bengal, Haryana, Gujarat and Madhya Pradesh, Kerala and Karnataka and in the Northeastern states, accounting for 44% of India totals.
- Chronic respiratory YLL rates were high in Rajasthan and Uttar Pradesh, accounting for 7% of India totals.
- Liver and alcohol-related disease YLL rates were high in the northeastern states, Bihar, Karnataka, and Maharashtra, accounting for 18% of India totals.



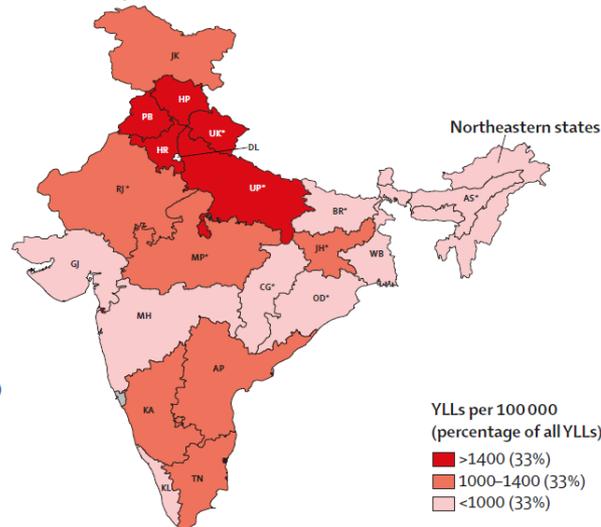
State-wise variation in premature mortality from injuries

- Suicide YLL rates were highest in the southern states, accounting for 15% of India totals.
- Road traffic injuries were high in the northern states of Uttar Pradesh, Punjab, Uttarakhand, Haryana, and Himachal Pradesh, accounting for 33% of India totals.
- Drowning YLL rates were highest in the central states of Madhya Pradesh and Chhattisgarh, and in Assam in the northeast, accounting for 11% of India totals.

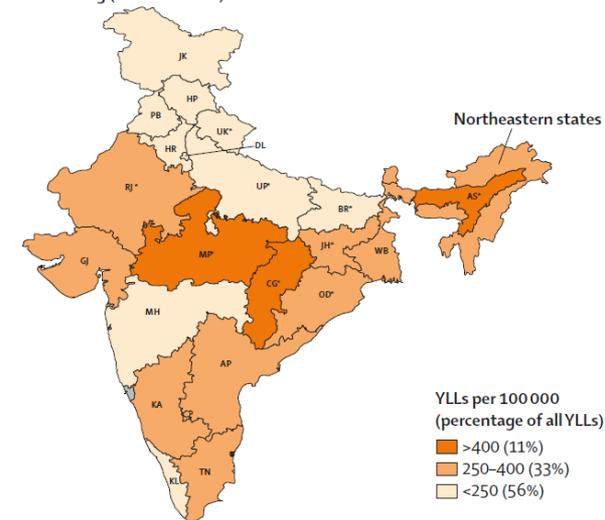
Suicide (199 000 deaths)



Road traffic injuries (275 000 deaths)



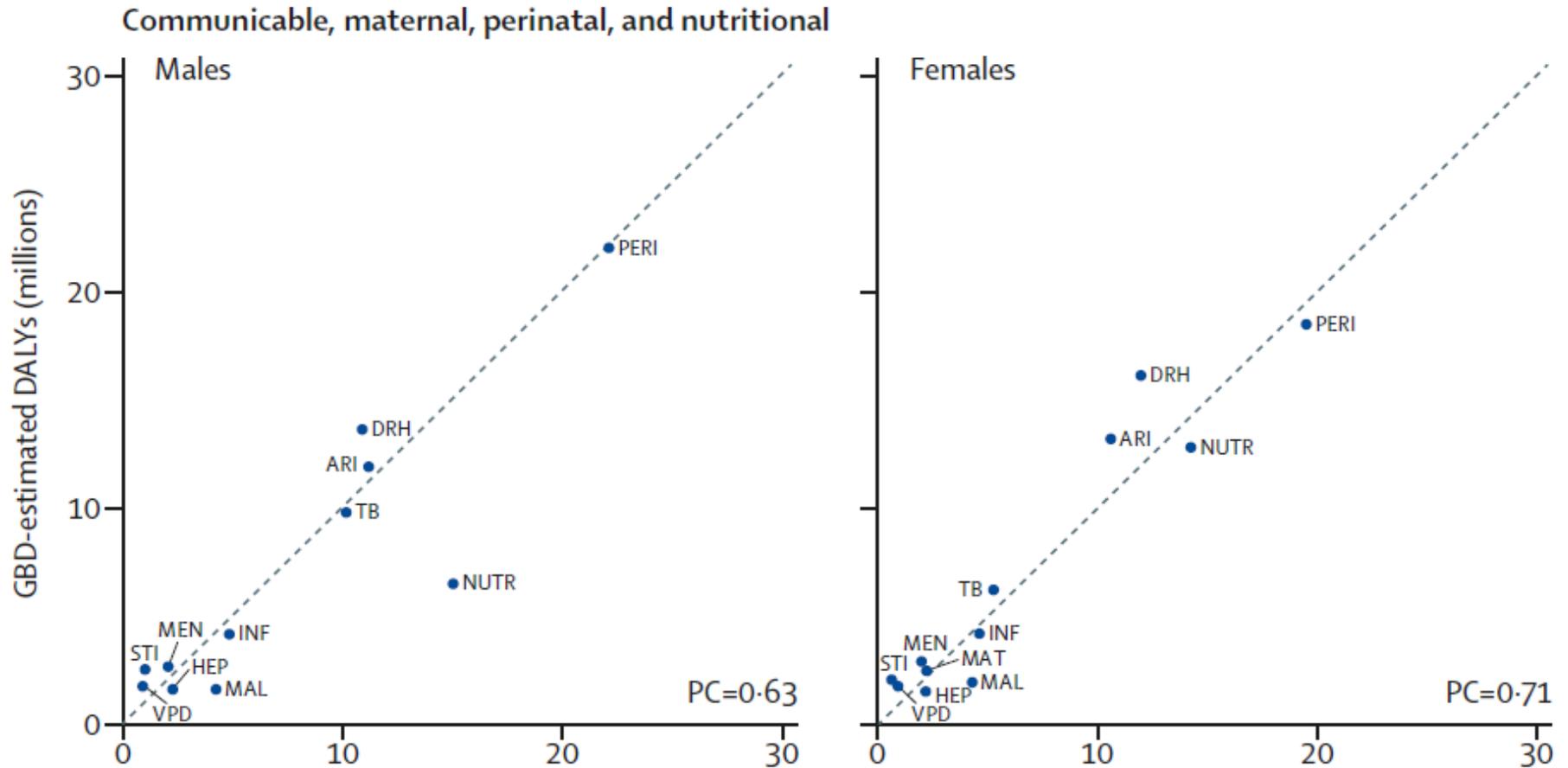
Drowning (62 000 deaths)



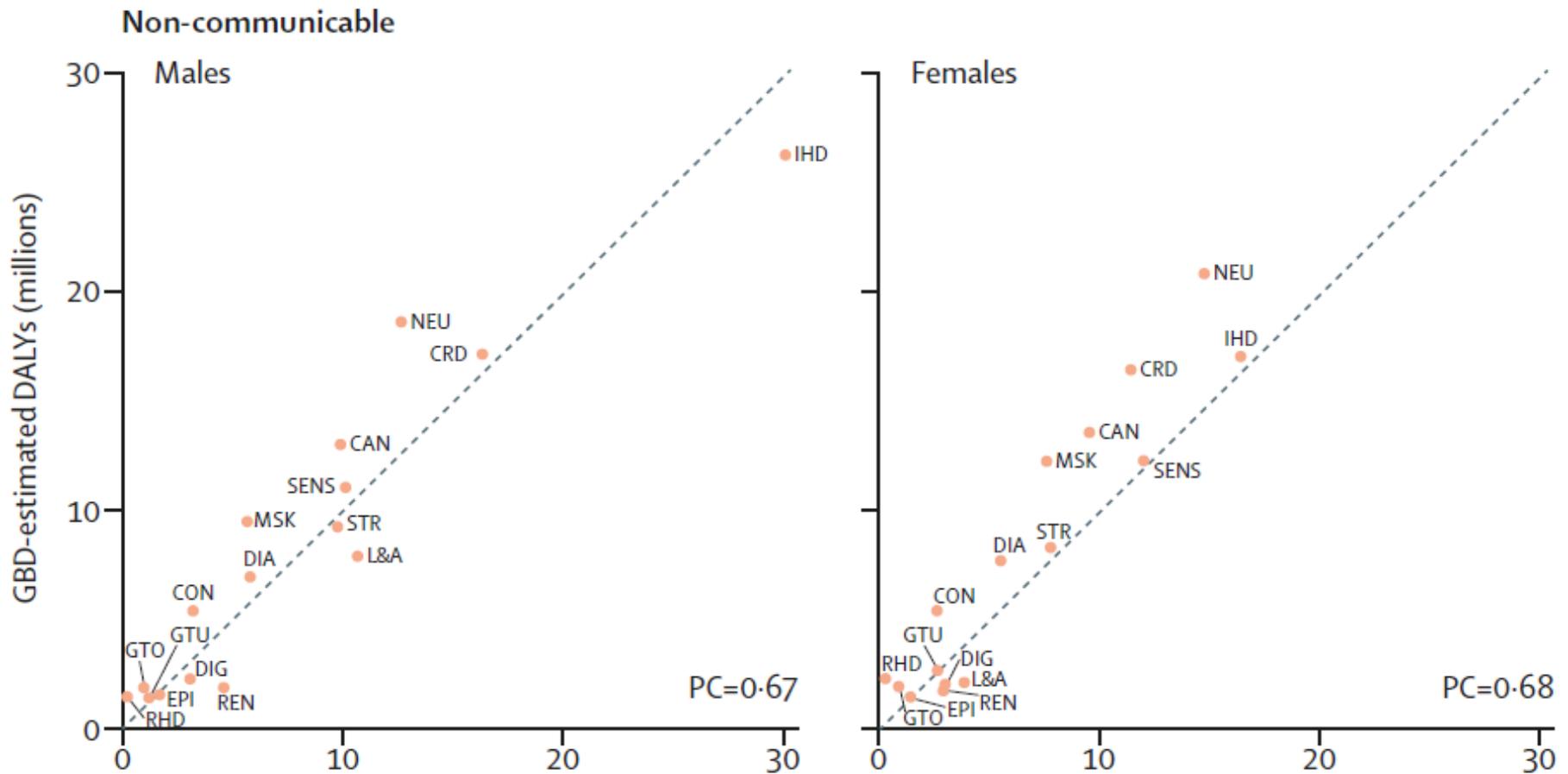
Implications

- Variation in disease rates across India indicates the existence of differences in underlying social, behavioural, or biological risk factors, suggesting important avoidable causes.
- The NBE method is an indigenous, transparent, and reproducible method to calculate deaths and disabilities at the national and sub national levels in India.
- Mortality and Years of Life Lost alone can be a robust measure to monitor disease burden, and trends over time.
- To measure disability, large multi-state surveys are needed, which are lacking for diseases that account for more disability like nutritional deficiencies, genitourinary diseases, neuropsychiatric disorders, musculoskeletal disorders, and vision and other sensory loss.
- Decentralized NBE methods can help other countries to address data and reporting needs relevant to UN goals for Universal Health Coverage and to track progress towards the 2030 Sustainable Development Goals.

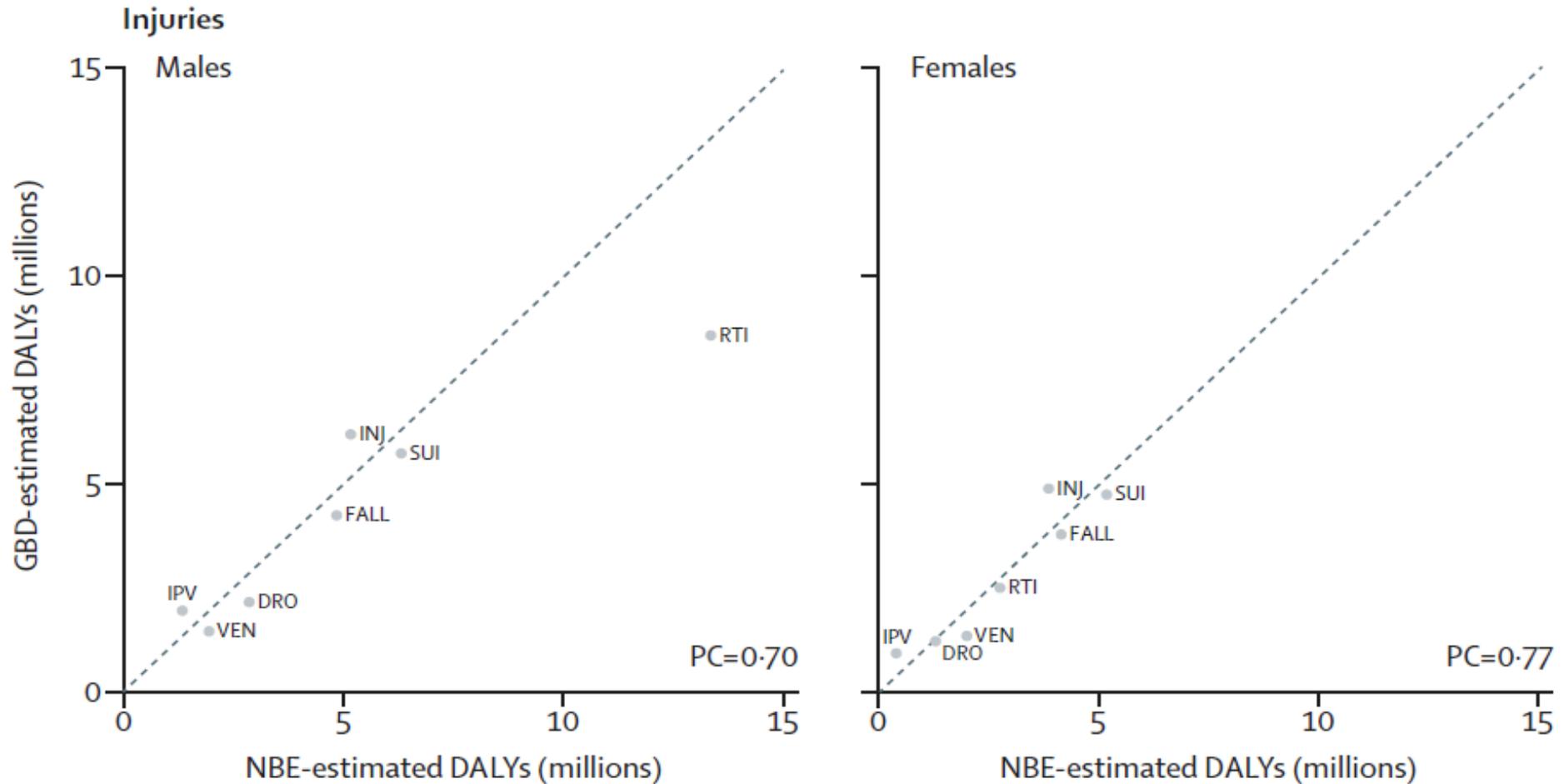
Background: Compared with the NBE, the model-based Global Burden of Disease (GBD) underestimated absolute totals of nutritional conditions for males



Compared with the NBE, GBD overestimated totals of most NCDs in both sexes



Compared with the NBE, GBD underestimated road traffic injuries in males



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- Full text of paper (free) including the Web appendix (Excel version of tables)
- Press release in English
- Frequently Asked Questions
- PowerPoint presentation