

GBD PROFILE: INDIA

GLOBAL BURDEN OF DISEASES, INJURIES, AND RISK FACTORS STUDY 2010

The Global Burden of Disease Study 2010 (GBD 2010) is a collaborative project of nearly 500 researchers in 50 countries led by the Institute for Health Metrics and Evaluation (IHME) at the University of Washington. It is the largest systematic scientific effort in history to quantify levels and trends of health loss due to diseases, injuries, and risk factors. GBD serves as a global public good to inform evidence-based policymaking and health systems design.

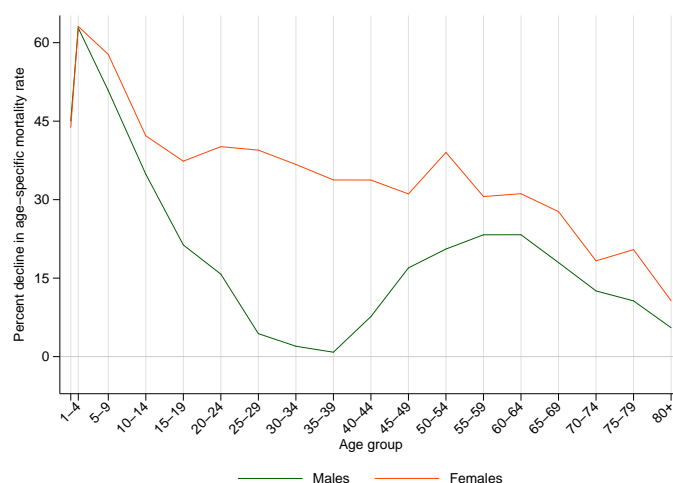
PROFILE OVERVIEW

- In terms of the number of years of life lost (YLLs) due to premature death in India, preterm birth complications, lower respiratory infections, and diarrheal diseases were the highest ranking causes in 2010.
- Of the 25 most important causes of burden, as measured by disability-adjusted life years (DALYs), measles showed the largest decrease, falling by 63% from 1990 to 2010.
- The leading risk factor in India is dietary risks.

ALL-CAUSE MORTALITY RATE

- This chart shows the decline in mortality rate at every age range. The higher points on the chart indicate that declines in mortality rates were faster in those age groups between 1990 and 2010.
- The greatest reductions in all-cause mortality rate were experienced by females aged 1-4 years (63%). Males aged 35-39 years saw the smallest decrease in mortality rate (1%).

Percent decline in age-specific mortality rate by sex from 1990-2010 in India



CAUSES OF PREMATURE DEATH

Years of life lost (YLLs) quantify premature mortality by weighting younger deaths more than older deaths.

Ranks for top 25 causes of YLLs 1990-2010, India

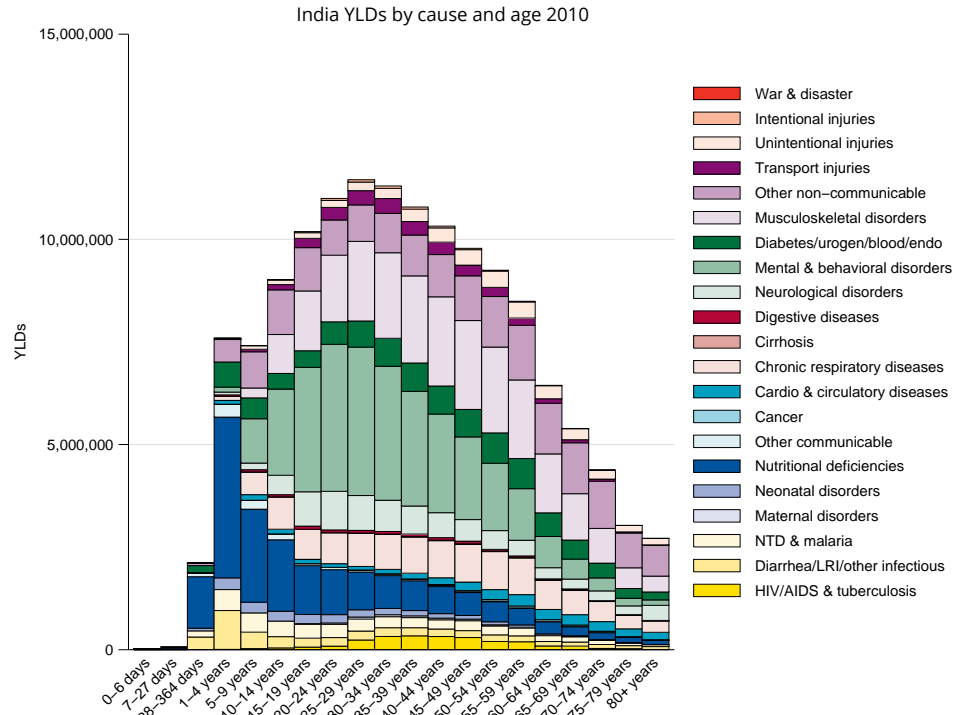
# YLLs in thousands (% of total)	Rank and disorder 1990	Rank and disorder 2010	# YLLs in thousands (% of total)	% change
57,828 (12.4%)	1 Diarrheal diseases	1 Preterm birth complications	27,808 (7.4%)	-31
47,806 (10.3%)	2 Lower respiratory infections	2 Lower respiratory infections	26,127 (6.9%)	-45
40,134 (8.6%)	3 Preterm birth complications	3 Diarrheal diseases	25,589 (6.8%)	-56
20,533 (4.4%)	4 Tuberculosis	4 Ischemic heart disease	25,253 (6.7%)	66
21,336 (4.6%)	5 Neonatal sepsis	5 COPD	17,761 (4.7%)	2
18,808 (4.1%)	6 Protein-energy malnutrition	6 Neonatal sepsis	16,594 (4.4%)	-23
17,426 (3.8%)	7 COPD	7 Tuberculosis	13,732 (3.6%)	-32
15,294 (3.3%)	8 Ischemic heart disease	8 Self-harm	12,981 (3.4%)	154
13,328 (2.9%)	9 Neonatal encephalopathy	9 Road injury	12,588 (3.3%)	63
16,651 (3.5%)	10 Measles	10 Stroke	11,726 (3.1%)	54
9,317 (2.0%)	11 Meningitis	11 Neonatal encephalopathy	11,099 (2.9%)	-17
9,031 (1.9%)	12 Tetanus	12 HIV/AIDS	8,696 (2.3%)	6,147
7,904 (1.7%)	13 Stroke	13 Fire	8,172 (2.2%)	19
7,923 (1.7%)	14 Maternal disorders	14 Congenital anomalies	7,073 (1.9%)	4
7,399 (1.6%)	15 Road injury	15 Protein-energy malnutrition	6,528 (1.7%)	-66
7,057 (1.5%)	16 Malaria	16 Cirrhosis	6,134 (1.6%)	84
6,949 (1.5%)	17 Congenital anomalies	17 Meningitis	5,790 (1.5%)	-38
6,694 (1.4%)	18 Fire	18 Diabetes	5,056 (1.3%)	92
6,446 (1.4%)	19 Encephalitis	19 Measles	5,861 (1.5%)	-63
5,699 (1.2%)	20 Self-harm	20 Drowning	4,717 (1.2%)	1
4,578 (1.0%)	21 Drowning	21 Encephalitis	4,214 (1.1%)	-35
4,082 (0.9%)	22 Peptic ulcer	22 Falls	4,281 (1.1%)	85
3,873 (0.8%)	23 Syphilis	23 Maternal disorders	3,627 (1.0%)	-54
3,911 (0.8%)	24 Asthma	24 Typhoid fevers	4,336 (1.1%)	34
3,849 (0.8%)	25 Mechanical forces	25 Asthma	3,130 (0.8%)	-20
	27 Cirrhosis	27 Peptic ulcer		
	30 Typhoid fevers	32 Mechanical forces		
	31 Diabetes	36 Malaria		
	33 Falls	41 Syphilis		
	78 HIV/AIDS	44 Tetanus		

This chart shows the change in the top 25 causes of YLLs due to premature mortality from 1990 to 2010. Solid lines indicate a cause has moved up in rank or stayed the same. Broken lines indicate a cause has moved down in rank. The causes are color coded by blue for non-communicable diseases, green for injuries, and red for communicable, maternal, neonatal, and nutritional causes of death.

YEARS LIVED WITH DISABILITY (YLDs)

Years lived with disability (YLDs) are estimated by weighting the prevalence of different conditions based on severity. The top five leading causes of YLDs in India are iron-deficiency anemia, low back pain, major depressive disorder, chronic obstructive pulmonary disease, and migraine.

The size of the colored portion in each bar represents the number of YLDs attributable to each cause. The height of each bar shows which age groups had the most YLDs in 2010. The causes are aggregated. For example, musculoskeletal disorders include low back pain and neck pain.

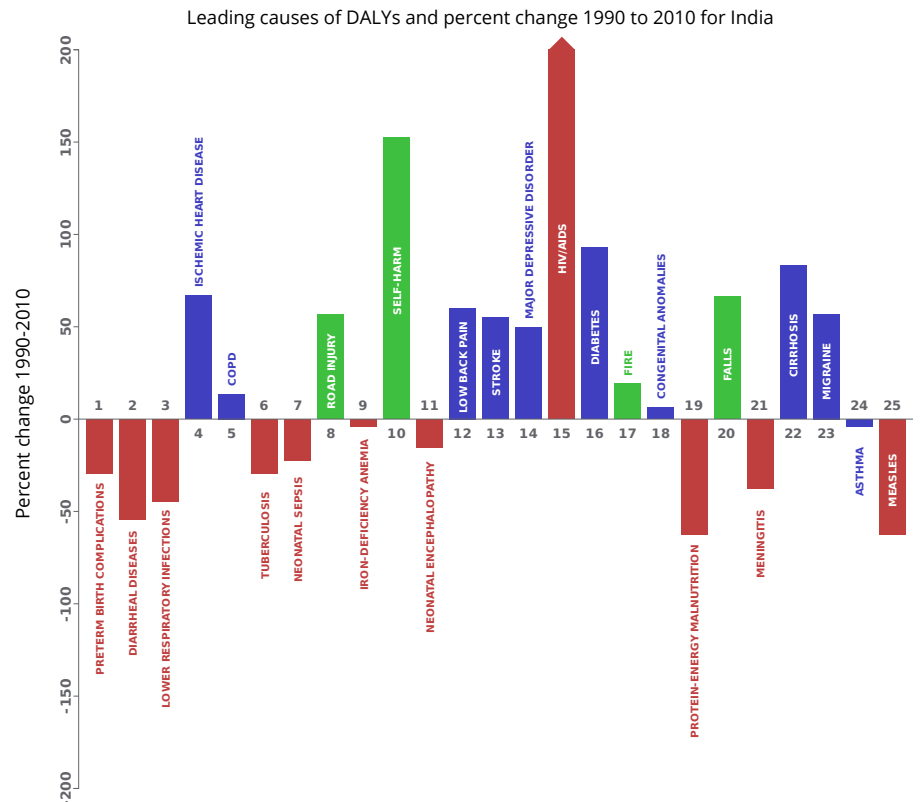


DISABILITY-ADJUSTED LIFE YEARS (DALYs)

Disability-adjusted life years (DALYs) quantify both premature mortality (YLLs) and disability (YLDs) within a population. In India, the top three causes of DALYs in 2010 were preterm birth complications, diarrheal diseases, and lower respiratory infections. Two causes that appeared in the 10 leading causes of DALYs in 2010 and not 1990 were road injury and self-harm.

The top 25 causes of DALYs are ranked from left to right in order of the number of DALYs they contributed in 2010. Bars going up show the percent by which DALYs have increased since 1990. Bars going down show the percent by which DALYs have decreased. Globally, non-communicable diseases and injuries are generally on the rise, while communicable, maternal, neonatal, and nutritional causes of DALYs are generally on the decline.

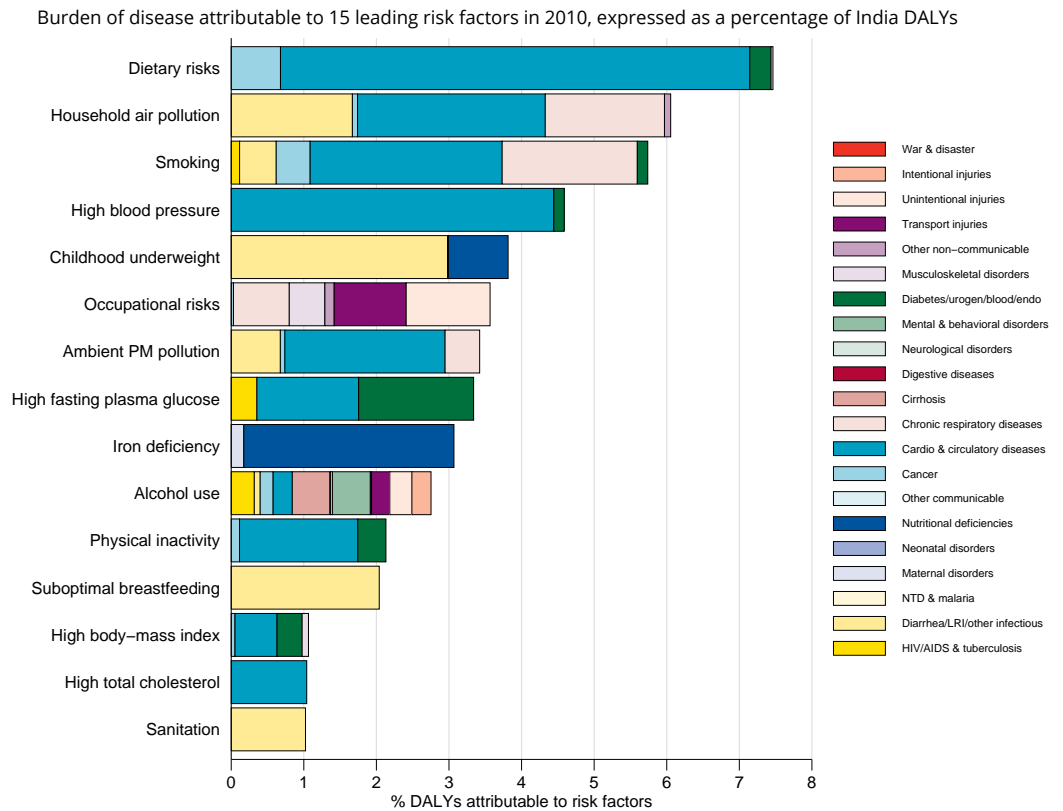
- Communicable, maternal, neonatal, and nutritional
- Non-communicable
- Injuries



RISK FACTORS

Overall, the three risk factors that account for the most disease burden in India are dietary risks, household air pollution from solid fuels, and tobacco smoking. The leading risk factors for children under 5 and adults aged 15-49 years were childhood underweight and occupational risks, respectively, in 2010.

The graph shows the top 15 risk factors for India. The colored portion of each bar represents the specific diseases attributable to that risk factor while bar size represents the percentage of DALYs linked to specific risk factors.



COUNTRY BENCHMARKING OF BURDEN OF DISEASE

Understanding the relative performance of India against other comparator countries provides key insight into public health successes and areas where India might be falling behind. The table identifies India's rank across 14 other comparator countries, selected and ordered by income per capita, for five metrics of interest, with 1 indicating the best rank and 15 indicating the worst rank.

- Age-standardized rates are used to make meaningful comparisons across time by adjusting for changes in population size and age structure.
- Life expectancy incorporates mortality, and health-adjusted life expectancy further incorporates years lived in less than ideal health.
- In 2010, India ranked 9th for age-standardized YLD rate and 12th for life expectancy.

Age-standardized death rates, YLL rates, YLD rates, and life expectancy at birth and health-adjusted life expectancy at birth for 1990 and 2010, both sexes combined																				
Country	Age-standardized death rate (per 100,000)				Age-standardized YLL rate (per 100,000)				Age-standardized YLD rate (per 100,000)				Life expectancy at birth				Health-adjusted life expectancy at birth			
	1990		2010		1990		2010		1990		2010		1990		2010		1990		2010	
	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	LE	Rank	LE	Rank	HALE	Rank	HALE	Rank
Iraq	809	4	783	5	24,631	2	22,488	5	12,166	3	11,933	5	69.9	3	70.9	5	59.8	3	60.8	6
Federated States of Micronesia	1,476	13	1,258	13	42,732	10	31,526	9	13,632	11	12,681	11	61.1	10	65.6	11	52.3	11	56.7	9
Kiribati	1,879	15	1,528	15	58,098	14	43,508	14	15,513	15	14,585	15	56	14	61	14	47.2	14	51.8	14
Congo	1,696	14	1,401	14	60,756	15	49,063	15	15,443	14	14,357	14	54.7	15	58.8	15	46	15	49.9	15
Cape Verde	785	2	586	1	25,843	4	16,730	2	13,500	10	12,947	12	69.8	4	75.1	2	59.1	6	63.7	3
Philippines	909	6	868	6	28,515	7	23,262	7	13,334	9	12,483	8	67.8	7	70.1	6	57.8	8	60.3	7
Mongolia	1,283	10	1,218	12	44,720	11	34,325	13	11,523	1	11,482	3	60.5	11	64.6	13	52.8	10	56.5	11
India	1,447	12	1,097	11	50,084	13	33,366	11	13,727	12	12,494	9	58.3	13	65.2	12	49.8	12	56.2	12
Vietnam	876	5	595	2	26,230	5	15,123	1	12,188	4	10,909	1	68.9	5	75.6	1	59.5	4	65.8	1
Moldova	1,000	8	912	8	26,698	6	22,769	6	11,653	2	11,362	2	68.1	6	70	7	59.3	5	61	5
Nicaragua	762	1	652	3	25,101	3	16,911	3	12,459	6	11,835	4	70.3	2	74.4	3	60.1	1	64	2
Palestine	794	3	694	4	23,225	1	18,413	4	12,827	7	12,639	10	70.6	1	73.2	4	59.9	2	62.2	4
Pakistan	1,120	9	982	9	41,231	9	33,518	12	12,877	8	12,323	7	62.3	9	65.7	10	53.3	9	56.5	10
Yemen	1,361	11	1,068	10	47,661	12	32,041	10	15,157	13	14,318	13	59.3	12	65.8	9	49.4	13	55.2	13
Uzbekistan	972	7	911	7	29,477	8	26,063	8	12,381	5	12,150	6	67.3	8	68.8	8	57.8	7	59.3	8

COUNTRY BENCHMARKING OF BURDEN OF DISEASE, CONTINUED

This figure shows the rank of India relative to the same comparator countries for the leading causes of DALYs in 1990 (top) and 2010 (bottom).

- The columns are ordered by the absolute number of DALYs in India for that particular year, with greatest burden on the left.
- The numbers indicate the rank across countries for each cause in terms of age-standardized DALY rates, with 1 as the best performance and 15 as the worst.

Ranking of leading age-standardized rates of disability-adjusted life years (DALYs) relative to comparator countries in 1990																									
Country	Diarrheal diseases	Lower respiratory infections	Preterm birth complications	COPD	Tuberculosis	Neonatal sepsis	Protein-energy malnutrition	Ischemic heart disease	Iron-deficiency anemia	Neonatal encephalopathy	Measles	Meningitis	Road injury	Tetanus	Maternal disorders	Stroke	Low back pain	Congenital anomalies	Malaria	Fire	Major depressive disorder	Encephalitis	Self-harm	Asthma	Drowning
Iraq	6	3	3	3	3	12	4	11	7	5	6	6	3	7	10	5	12	13	4	7	4	11	1	5	2
Federated States of Micronesia	8	7	6	10	10	7	12	9	6	6	7	13	8	11	9	12	7	3	6	13	6	1	14	14	12
Kiribati	14	9	8	12	15	8	14	10	5	10	10	15	11	12	12	15	8	2	7	14	10	3	15	15	14
Congo	12	8	12	13	11	9	15	5	12	8	14	14	15	6	14	10	3	9	15	12	13	10	7	9	7
Cape Verde	9	4	4	9	6	13	9	2	14	4	9	10	4	9	8	6	10	1	11	8	8	4	4	10	3
Philippines	3	12	7	11	13	1	10	6	8	1	11	4	1	8	7	4	13	5	9	1	9	5	11	12	6
Mongolia	4	14	11	7	7	4	5	13	1	14	3	12	14	3	6	14	9	10	1	10	1	13	9	2	13
India	13	10	15	15	14	15	13	8	15	12	15	11	9	14	13	2	6	6	12	15	3	15	12	13	9
Vietnam	5	5	5	8	9	3	6	1	9	2	13	7	6	10	4	7	2	7	13	3	2	6	6	6	15
Moldova	1	2	1	5	2	6	1	14	2	9	1	1	13	1	1	8	15	12	3	5	11	8	13	1	11
Nicaragua	10	6	10	2	5	11	7	4	3	11	4	3	5	5	5	3	4	8	8	2	12	2	5	8	5
Palestine	2	1	14	1	1	10	3	7	4	7	5	2	7	4	3	13	14	14	2	6	15	7	3	4	1
Pakistan	11	11	13	14	12	14	8	3	11	15	12	9	2	15	11	1	1	11	10	11	5	14	8	7	8
Yemen	15	15	9	6	8	5	11	12	13	3	8	8	10	13	15	9	11	15	14	9	14	12	2	11	4
Uzbekistan	7	13	2	4	4	2	2	15	10	13	2	5	12	2	2	11	5	4	5	4	7	9	10	3	10

Ranking of leading age-standardized rates of disability-adjusted life years (DALYs) relative to comparator countries in 2010																									
Country	Preterm birth complications	Diarrheal diseases	Lower respiratory infections	Ischemic heart disease	COPD	Tuberculosis	Neonatal sepsis	Road injury	Iron-deficiency anemia	Self-harm	Neonatal encephalopathy	Low back pain	Stroke	Major depressive disorder	HIV/AIDS	Diabetes	Fire	Congenital anomalies	Protein-energy malnutrition	Falls	Meningitis	Cirrhosis	Migraine	Asthma	Measles
Iraq	8	7	6	12	3	2	14	3	9	1	9	11	6	5	2	13	10	13	6	3	8	1	3	8	1
Federated States of Micronesia	2	9	7	8	8	9	7	6	6	12	2	10	13	3	1	14	12	2	11	11	11	9	6	14	12
Kiribati	4	11	9	6	11	12	8	10	4	14	10	9	14	12	9	15	9	4	14	13	14	12	5	15	6
Congo	11	15	13	7	13	15	11	15	12	8	11	3	10	13	15	8	14	14	15	12	15	11	4	10	14
Cape Verde	3	10	3	2	9	4	12	8	13	4	3	8	4	8	14	4	8	1	9	4	10	2	11	9	10
Philippines	10	6	10	10	10	14	5	2	8	5	6	12	7	10	4	10	2	8	7	2	6	5	9	13	13
Mongolia	9	5	11	14	12	8	3	14	2	11	13	5	15	6	5	2	11	9	4	7	9	14	13	2	4
India	15	12	8	9	15	11	15	13	14	15	12	7	2	2	12	5	15	6	13	15	12	7	14	11	15
Vietnam	5	3	2	1	7	5	2	9	1	6	1	2	5	1	11	1	3	3	5	5	3	6	10	5	11
Moldova	1	1	4	13	4	6	4	7	5	13	4	15	9	4	13	3	7	7	1	9	1	15	8	1	3
Nicaragua	7	8	5	3	2	3	9	1	3	7	8	4	1	9	7	9	1	11	8	1	4	8	7	7	5
Palestine	13	2	1	5	1	1	10	5	7	3	7	14	12	15	3	11	4	10	3	6	2	3	1	4	8
Pakistan	14	13	12	4	14	13	13	4	11	9	15	1	3	7	8	7	13	12	10	14	13	10	15	6	9
Yemen	12	14	15	11	6	10	6	11	15	2	5	13	8	14	6	12	5	15	12	8	7	4	2	12	7
Uzbekistan	6	4	14	15	5	7	1	12	10	10	14	6	11	11	10	6	6	5	2	10	5	13	12	3	2

Ranking Legend	1 - 3	4 - 7	8 - 11	12 - 15