



# The Lancet: Latest global disease estimates reveal perfect storm of rising chronic diseases and public health failures fuelling COVID-19 pandemic

## Publication date:

October 15, 2020

- Most comprehensive global study—analysing 286 causes of death, 369 diseases and injuries, and 87 risk factors in 204 countries and territories—reveals how well the world’s population were prepared in terms of underlying health for the impact of the COVID-19 pandemic.
- Global crisis of chronic diseases and failure of public health to stem the rise in highly preventable risk factors have left populations vulnerable to acute health emergencies such as COVID-19.
- Urgent action is needed to address the global syndemic of chronic diseases, social inequalities, and COVID-19 to ensure more robust health systems and healthier people, making countries more resilient to future pandemic threats.
- The Global Burden of Disease Study provides a roadmap to where need is greatest, with country-specific data on risk factors and chronic disease burden.

The interaction of COVID-19 with the continued global rise in chronic illness and related risk factors, including obesity, high blood sugar, and outdoor air pollution, over the past 30 years has created a perfect storm, fuelling COVID-19 deaths.

The latest findings from the Global Burden of Disease Study (GBD) [1], published today in *The Lancet*, provide new insights on how well countries were prepared in terms of underlying health for the COVID-19 pandemic, and set out the true scale of the challenge to protect against further pandemic threats.

The study also reveals that the rise in exposure to key risk factors (including high blood pressure, high blood sugar, high body-mass index [BMI], and elevated cholesterol), combined with rising deaths from

cardiovascular disease in some countries (e.g., the USA and the Caribbean), suggests that the world might be approaching a turning point in life expectancy gains.

The authors stress that the promise of disease prevention through government actions or incentives that enable healthier behaviours and access to health-care resources is not being realised around the world.

“Most of these risk factors are preventable and treatable, and tackling them will bring huge social and economic benefits. We are failing to change unhealthy behaviours, particularly those related to diet quality, caloric intake, and physical activity, in part due to inadequate policy attention and funding for public health and behavioural research”, says Professor Christopher Murray, Director of the Institute for Health Metrics and Evaluation (IHME) at the University of Washington, USA, who led the research [2].

Several of the risk factors and non-communicable diseases (NCDs) highlighted by the study, including obesity, diabetes, and cardiovascular disease, are associated with increased risk of serious illness and death from COVID-19. But diseases don't just interact biologically, they also interact with social factors. Urgent action is needed to address the syndemic of chronic diseases, social inequalities, and COVID-19—referring to the interaction of several epidemics that exacerbate the disease burden in populations who are already burdened, and increase their vulnerability.

Dr Richard Horton, Editor-in-Chief of *The Lancet*, says: “The syndemic nature of the threat we face demands that we not only treat each affliction, but also urgently address the underlying social inequalities that shape them—poverty, housing, education, and race, which are all powerful determinants of health.”

He continues, “COVID-19 is an acute-on-chronic health emergency. And the chronicity of the present crisis is being ignored at our future peril. Non-communicable diseases have played a critical role in driving the more than 1 million deaths caused by COVID-19 to date, and will continue to shape health in every country after the pandemic subsides. As we address how to regenerate our health systems in the wake of COVID-19, this Global Burden of Disease Study offers a means of targeting where the need is greatest, and how it differs between countries” [2].

### **Health systems ill-prepared for rapid rise in NCDs and disabilities**

Although global healthy life expectancy—the number of years a person can expect to have good health—has increased steadily (by over 6.5 years) between 1990 and 2019, it has not risen as much as overall life expectancy in 198 of the 204 countries assessed, indicating that people are living more years in poor health [3].

Disability, rather than early death, has become an increasingly large share of the global disease burden—rising from around a fifth (21%) of total burden in 1990 to more than a third (34%) in 2019. In 11 countries, more than half of all health loss (measured by disability-adjusted life-years [DALYs] [4]) is now due to disability caused by NCDs and injuries—including in Singapore, Iceland, Norway, Ireland, Australia, New Zealand, and Qatar.

Global health efforts to tackle infectious diseases and address prenatal care have been successful in improving the health of children aged under 10 years in the past few decades (with the overall disease burden declining by approximately 55%), but this has not been matched by a similar response in older age groups.

The top ten contributors to increasing health loss worldwide over the past 30 years, measured as the largest absolute increases in number of DALYs, include six causes that largely affect older adults—*ischaemic heart disease* (with numbers of related DALYs increasing by 50% between 1990 and 2019), *diabetes* (up 148%), *stroke* (32%), *chronic kidney disease* (93%), *lung cancer* (69%), and *age-related hearing loss* (83%). In addition, four causes are common from teenage years into old age—*HIV/AIDS* (128%), *musculoskeletal disorders* (129%), *low back pain* (47%), and *depressive disorders* (61%). For example, from 1990 to 2019, the number of DALYs due to *ischaemic heart disease* rose by more than 400% in the Philippines, while the number of DALYs due to *diabetes* rose by more than 1000% in the United Arab Emirates. Such increases in ill health threaten to strain health-care systems ill-equipped to handle the chronic conditions associated with growing, ageing populations.

In 2019, the leading causes of health loss differed substantially across age groups. Road injuries, headache disorders, HIV/AIDS, low back pain, and depressive disorders were the dominant health problems in younger people aged 10–49 years old. In contrast, *ischaemic heart disease*, *stroke*, and *diabetes* were the major contributors to health loss in people aged 50 and older.

Over the past decade, global progress on health has been uneven. Low- and middle-income countries (LMICs) have made impressive gains in health, largely as a result of successful efforts against infectious, maternal, and neonatal diseases. For example, Ethiopia, Sudan, and Bangladesh have seen 2% or greater yearly reductions in age-standardised rates of health loss (DALYs).

But the authors warn that LMICs' health systems are not well equipped to address the growing disease burden caused by NCDs—which has risen among lower-middle-income countries from around a third of the overall disease burden in 1990 to nearly two-thirds in 2019. Further, while deaths due to infectious diseases have fallen substantially across LMICs, NCD deaths are on the rise. In Uzbekistan, for example, *diabetes* has risen from the 21<sup>st</sup> to the fifth leading cause of death (a 600% increase in the number of deaths). Likewise, in the Philippines, *ischaemic heart disease* has risen from the fifth to the leading cause of death (a more than 350% increase).

In contrast, improvements in health have started to stagnate in most higher-income countries, and have even reversed in several countries, particularly the USA, where the age-standardised rate of health loss has increased by nearly 3% over the past decade. The authors believe the reasons for this lack of progress might include rising rates of obesity as well as diminishing potential to reduce smoking and to make further improvements in coverage of treatments for high blood pressure and high cholesterol, which will be necessary to maintain declines in cardiovascular deaths.

“As disability becomes an increasingly large share of the global disease burden and a larger component of health expenditure, there is an urgent and compelling need to identify new, more effective interventions”, says Murray. “With a rapidly ageing global population, demands on health services to deal with disabling outcomes and chronic conditions, which increase with age, will demand greater levels of funding, strong political commitment, accountability supported by better data, and a coordinated global effort that prioritises the most vulnerable” [2]

### **Failure of public health to stem rise in critical risk factors**

Over the past decade, there have been particularly large and concerning increases (over 0.5% per year globally) in exposure to several highly preventable risks—obesity, high blood sugar, alcohol use, and drug use—which are contributing to the growing burden of NCDs, and highlight the critical need for stronger public health efforts.

The greatest cumulative impact on health comes from the striking rise in metabolic risks, which have risen 1.5% a year since 2010. Collectively, metabolic risks (namely high BMI, high blood sugar, high blood pressure, and high cholesterol) accounted for nearly 20% of total health loss worldwide in 2019— 50% higher than in 1990 (10.4%). They are also responsible for a huge number of deaths globally—with high blood pressure contributing to 1 in 5 deaths (almost 11 million) in 2019, high blood sugar (6.5 million deaths), high BMI (5 million), and high cholesterol (4.4 million).

Among the major NCD risks, only smoking has declined substantially. Major efforts to implement international tobacco control policies have seen exposure to smoking fall by nearly 10% worldwide since 2010, although tobacco (smoked, secondhand, and chewing) remains the leading cause of death in many high-income countries, including the USA, Canada, the UK, Japan, Belgium, and Denmark in 2019; and claimed nearly 9 million lives worldwide.

The impact of risk factors also varies widely across regions. In much of Latin America, Asia, and Europe, high blood pressure, high blood sugar, high BMI, and tobacco use are key contributors to poor health. In Oceania, malnutrition and air pollution are among the leading risks. The most marked differences are in sub-Saharan Africa, which, unlike other regions, is dominated by malnutrition; unsafe water, sanitation, and handwashing; air pollution; and unsafe sex (appendix 2, figure S3).

“Simply providing information on the harms of these risks is not enough”, said co-author Professor Emmanuela Gakidou from IHME. “Given that individual choices are influenced by financial considerations, education, and the availability of alternatives, governments should collaborate globally on initiatives to make healthier behaviour possible for everyone. And, drawing lessons from decades of tobacco control, when there is a major risk to population health, such as obesity, concerted government action through regulation, taxation, and subsidies may be required” [2].

### **Findings highlight need to tackle wider determinants of health**

Since 2000, there has been stronger progress in less developed countries than those at the highest level of development—fuelling faster gains in life expectancy and healthy life expectancy through efforts to increase income, provide more years of education, and support family planning.

The authors stress that there is now overdue recognition of how important social and economic development is to overall health, and the need for a much broader approach that pays more attention to all the drivers of population health.

“Given the overwhelming impact of social and economic development on health progress, doubling down on policies and strategies that stimulate economic growth, expand access to schooling, and improve the status of women, should be our collective priority”, says Murray. [2]

An accompanying Editorial from *The Lancet* states, “Although attention should be given to controlling community transmission of severe acute respiratory syndrome coronavirus 2 and protecting those most vulnerable to its consequences, success will require a more capacious strategy. COVID-19 is a syndemic of coronavirus infection combined with an epidemic of non-communicable diseases, both interacting on a social substrate of poverty and inequality. The message of GBD is that unless deeply embedded structural inequities in society are tackled and unless a more liberal approach to immigration policies is adopted, communities will not be protected from future infectious outbreaks and population health will not achieve the gains that global health advocates seek. It's time for the global health community to change direction.”

#### NOTES TO EDITORS

The study was funded by the Bill & Melinda Gates Foundation. It was conducted by GBD 2019 Diseases and Injuries Collaborators.

[1] The GBD, which is coordinated by IHME, is produced by a global network of 5,647 collaborators in 152 nations and territories and who are working in more than 1,100 universities, research centres, and government agencies. The 2019 study analyses 286 causes of death, 369 diseases and injuries, and 87 risk factors in 204 countries and territories. The GBD has been used to inform health policies in numerous nations and local jurisdictions, as well as international organisations, including the World Bank and the World Health Organization.

[2] Quotes direct from authors and cannot be found in text of papers.

[3] Only six countries have seen numbers of years spent in poor health decrease between 1990 and 2019—Lesotho, Uzbekistan, Nicaragua, Tajikistan, the Philippines, and Zimbabwe.

[4] Total health loss is measured in disability-adjusted life-years (DALYs), which combines the years lost due to disability, illness, and early death. It is calculated as the number of years lived with disability (YLDs, i.e., time spent in less than optimum health) + number of years of life lost (YLLs). Total health loss (measured in DALYs) is also referred to as disease burden.

### **Risks associated with highest number of deaths worldwide for females, all ages, in 2019:**

1. High systolic blood pressure (5.25 million deaths)
2. Dietary risks (e.g., low fruit, high salt) (3.48 million deaths)
3. High fasting plasma glucose (3.09 million deaths)
4. Air pollution (2.92 million deaths)
5. High body-mass index (2.54 million deaths)
6. Tobacco (2.15 million deaths)
7. High LDL cholesterol (2.04 million deaths)
8. Kidney dysfunction (1.53 million deaths)
9. Child and maternal malnutrition (1.36 million deaths)
10. Non-optimal temperature (direct effects high and low temperature; 946,000 deaths)

### **Risks associated with highest number of deaths worldwide for males, all ages, in 2019:**

1. Tobacco (6.56 million deaths)
2. High systolic blood pressure (5.60 million deaths)
3. Dietary risks (4.47 million deaths)
4. Air pollution (3.75 million deaths)
5. High fasting plasma glucose (3.41 million deaths)
6. High body-mass index (2.48 million deaths)
7. High LDL cholesterol (2.36 million deaths)
8. Alcohol use (2.07 million deaths)
9. Kidney dysfunction (1.63 million deaths)
10. Child and maternal malnutrition (1.58 million deaths)

### **Risks associated with the highest number of deaths worldwide for both sexes combined, all ages, in 2019:**

1. High systolic blood pressure (10.8 million deaths)
2. Tobacco (8.71 million deaths)
3. Dietary risks (e.g., low fruit, high salt) (7.94 million deaths)
4. Air pollution (6.67 million deaths)
5. High fasting plasma glucose (6.50 million deaths)
6. High body-mass index (5.02 million deaths)
7. High LDL cholesterol (4.40 million deaths)
8. Kidney dysfunction (3.16 million deaths)
9. Child and maternal malnutrition (2.94 million deaths)

10. Alcohol use (2.44 million deaths)

### **Leading causes of DALYs or health loss globally for both sexes combined, all ages, in 2019:**

1. Neonatal disorders
2. Ischaemic heart disease
3. Stroke
4. Lower respiratory infections
5. Diarrhoeal diseases
6. Chronic obstructive pulmonary disease (COPD)
7. Road injuries
8. Diabetes
9. Low back pain
10. Congenital birth defects

For leading causes of DALYs by age group please see global burden of diseases and injuries paper figure 2.

The labels have been added to this press release as part of a project run by the Academy of Medical Sciences seeking to improve the communication of evidence. For more information, please see:

<http://www.sciencemediacentre.org/wp-content/uploads/2018/01/AMS-press-release-labelling-system-GUIDANCE.pdf> if you have any questions or feedback, please contact The Lancet press office [pressoffice@lancet.com](mailto:pressoffice@lancet.com).

**For interviews with article authors Professor Christopher Murray or other IHME faculty, University of Washington, Seattle, USA, please contact:**

- **Dean Owen**, IHME Communications, University of Washington, USA T) +1-206-434-5630 (mobile) E) [dean1227@uw.edu](mailto:dean1227@uw.edu)
- **Amelia Apfel**, IHME Communications, University of Washington, USA T) +1-206-359-5111 (mobile) E) [arapfel@uw.edu](mailto:arapfel@uw.edu)

**For interviews with Dr Richard Horton, Editor-in-Chief, The Lancet, please contact**

[pressoffice@lancet.com](mailto:pressoffice@lancet.com)

**For additional spokespeople, including authors based in the UK, US, Russia, Middle East, Mexico, Norway, Italy, Poland, South Africa, Pakistan, India, please contact [pressoffice@lancet.com](mailto:pressoffice@lancet.com) or IHME media contacts.**

**The GBD study is part of a special issue of The Lancet, published on October 15, which can be found here: <https://www.thelancet.com/gbd>**

Contact *The Lancet* press office:

LONDON

**Ashleigh Smith, Media and Communications Assistant**

[a.smith.5@lancet.com](mailto:a.smith.5@lancet.com)

**Jessica Kleyn, Press Officer**

Tel: +44 (0) 7342 068540

[jessica.kleyn@lancet.com](mailto:jessica.kleyn@lancet.com)

**Emily Head, Media Relations Manager**

Tel: +44 (0) 7920 530997

[emily.head@lancet.com](mailto:emily.head@lancet.com)

USA

**Johanna Harvey, Media and Communications Manager, North America**

Tel: +1 267-515-1767

[johanna.harvey@lancet.com](mailto:johanna.harvey@lancet.com)

OUTSIDE OF UK HOURS

Tel: +44 (0) 207 424 4249

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