

Global Burden of Disease Part 1:

Narrator: You've probably heard of the phrase, "you are what you eat," but you might not have heard anyone say, "you are where you live." The Global Burden of Disease study is painting the picture that where you live, and all the exposures that result from your environment, may be an indicator of your risk for disease.

In part one of our two-part series, we'll hear about the Global Burden of Disease (GBD) study and how researchers are collaborating to shed light on the global health issues that most urgently need to be addressed.

Joining us is Dr. Howard Hu, affiliate professor at the University of Washington School of Public Health, who has been involved with the Global Burden of Disease study for the last 15 years. The study seeks to quantify health loss from various diseases, injuries, and social and environmental risk factors, and in doing so, better inform health systems so global health disparities can be reduced. He says that traditional approaches to measure the burden of disease rely on death records from hospitals, but this approach misses any deaths that occur outside of a hospital and the many impacts of living with disease, illness, and injury.

Hu: By only concentrating on mortality, there was missing information on what would really affect people. The Global Burden of Disease study was created more than 20 years ago by my former colleague at Harvard, Chris Murray, to try to capture the impact of disease, not only on mortality but also on disability, all over the world.

The Global Burden of Disease created this metric called the Disability Adjusted Life-Year, which would really tell the story of how much disease is affecting the economy, people's ability to work and function, and quality of life.

Narrator: Dr. Hu explained that the Disability Adjusted Life-year (often referred to as DALY) quantifies the number of years lost due to illness, disability, or early death and gives a more complete picture of how disease impacts people.

The GBD study has brought together thousands of collaborators across the globe to share their country's health data and work towards a systematic, comprehensive understanding of the contributing risk factors of disease around the world, particularly in countries that carry the greatest burden.

Dr. Hu explained that low- and middle-income countries have higher rates of communicable diseases, such as HIV, malaria, and tuberculosis, and are impacted by the newly emerging health risks of modern globalization. For example, he says that with urbanization, a shift towards a higher fat food diet, and reduced exercise, these countries are seeing increases in obesity, diabetes, and cardiovascular disease on top of their existing health risks.

Through the GBD study, researchers are starting to better understand these health risks and how they impact people across the world. The project is also beginning to focus more attention on the role environmental pollutants have on DALYs by contributing to a variety of health problems.

Hu: We now realize that the impact of environmental risk factors, particularly those associated with pollution, like air pollution and lead exposure, are contributing to a very large proportion of the disease burden.

A report that was published by The Lancet Commission on Pollution and Health in 2017 calculated that air pollution, lead exposure, radon, and a few other environmental risks were responsible for an estimated 9 million premature deaths in 2015 -- which was 16 percent of all deaths worldwide, three times more deaths than age, tuberculosis and malaria combined, and 15 times more than all the wars and other forms of violence that occurred during that year.

And in the most severely affected countries, the low- and middle-income countries, pollution-related disease is responsible for more than one death in four. That's a huge risk burden, particularly since, in our view, these are preventable deaths.

Narrator: To better understand the impact of real-world environmental factors on human health, Dr. Hu and his colleagues initiated the Global Burden of Disease Pollution and Health initiative to improve and expand the GBD's estimates of pollution to include other harmful chemical exposures and the impacts of climate change. They are also working to be able to predict or forecast health risks in the future.

Hu: So far, the GBD is only telling us the disease burden that's currently happening, but our ability to forecast is going to be critical so we understand where the worst burdens are going to happen. That's a big challenge for researchers and something that some of our researchers are already starting to tackle.

It's an effort that falls down to thousands of scientists around the world, and I think the collaborative nature of it is one of the great efforts in science.

The effort to try to include pollutants and the expansion of the GBD will necessitate a significant step up in this collaborative nature, because it'll have to involve environmental scientists from around the world, and this is something that our initiative is trying to do.

Narrator: According to Dr. Hu, the Global Burden of Disease study and the Pollution and Health Initiative are helping to provide countries, particularly low- and middle-income countries, with the information they need to better prioritize which risks need to be addressed. They are also working to help health organizations understand where to direct resources to address public health risks.

For example, one of their achievements has been greater focus globally on the need to educate the population on the importance of diet and exercise in order to curb the obesity and diabetes epidemics. Another positive outcome has been increased campaigns to vaccinate against infectious disease.

Through the Global Burden of Disease project and the Pollution and Health Initiative, Hu and his colleagues are also raising greater awareness of the health impacts of air pollution, lead, and other emerging pollutants of concern while providing useful data and information to help decisionmakers protect human health.

To learn more about the Pollution and Health Initiative and how collaborators are expanding the GBD to include more pollutants and potential health impacts, tune in to part two of this podcast.

Thanks to today's guest, Dr. Howard Hu, for joining us. You can find background information and additional resources on our website at niehs.nih.gov/podcasts.

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