

Smoking, high blood pressure, being overweight -- top 3 preventable causes of death in the US

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Smoking, high blood pressure and being overweight are the leading preventable risk factors for premature mortality in the United States, according to a new study led by researchers at the Harvard School of Public Health (HSPH), with collaborators from the University of Toronto and the Institute for Health Metrics and Evaluation at the University of Washington. The researchers found that smoking is responsible for 467,000 premature deaths each year, high blood pressure for 395,000, and being overweight for 216,000. The effects of smoking work out to be about one in five deaths in American adults, while high blood pressure is responsible for one in six deaths.

It is the most comprehensive study yet to look at how diet, lifestyle and metabolic risk factors for chronic disease contribute to mortality in the U.S. The study appears in the April 28, 2009 edition of the open-access journal [PLoS Medicine](#).

"The large magnitude of the numbers for many of these risks made us pause," said Goodarz Danaei, a doctoral student at HSPH and the lead author of the study. "To have hundreds of thousands of premature deaths caused by these modifiable risk factors is shocking and should motivate a serious look at whether our public health system has sufficient capacity to implement interventions and whether it is currently focusing on the right set of interventions." Majid Ezzati, associate professor of international health at HSPH, is the study's senior author.

The researchers also found large effects from a series of other preventable dietary and lifestyle risk factors. Below are the numbers of deaths in the U.S. due annually to each of the individual risk factors examined:

- Smoking: 467,000
- High blood pressure: 395,000
- Overweight-obesity: 216,000
- Inadequate physical activity and inactivity: 191,000
- [High blood sugar](#): 190,000
- High [LDL cholesterol](#): 113,000
- High dietary salt: 102,000
- Low dietary [omega-3 fatty acids](#) (seafood): 84,000
- High dietary trans fatty acids: 82,000
- Alcohol use: 64,000 (alcohol use averted a balance of 26,000 deaths from heart disease, stroke and diabetes, because moderate drinking reduces risk of these diseases. But these deaths were outweighed by 90,000 alcohol-related deaths from traffic and other injuries, violence, cancers and a range of other diseases).
- Low intake of fruits and vegetables: 58,000
- Low dietary poly-unsaturated fatty acids: 15,000

All of the deaths calculated in the study were considered premature or preventable in that the victims would not have died when they did if they had not been subject to the behaviors or activities linked to their deaths. All of these risk factors are modifiable through a range of public health and health system interventions.

While earlier studies had quantified deaths linked to a few factors, like smoking and alcohol, this is the first to look at a wide range of risk factors, including those linked to diet, lifestyle and metabolic factors, and the first to do so for the whole U.S. population. This is also the first to use methods that allowed a true comparison of a diverse set of risks in terms of how many deaths each of the risk factors is responsible for. The researchers analyzed data from a number of public sources, including from the National Center for Health Statistics and numerous published epidemiological studies and clinical trials.

The researchers also found differences between the preventable causes of death among men and women. High blood pressure was the leading cause of death in adult women, killing nearly 230,000 American women each year, 19 percent of all female deaths. By comparison, that is more than five times the 42,000 number of annual deaths in women from breast cancer.

Smoking was the leading cause of death in men, killing an estimated 248,000 annually, or 21 percent of all adult male deaths.

The mortality effects of many other risk factors were about equal in men and women, with alcohol use being a major exception. Seventy percent of all deaths caused by alcohol were among men and represented 45,000 deaths, a result the researchers said was because men consumed more alcohol and engaged in more binge drinking.

"The findings should be a reminder that although we have been effective

in partially reducing [smoking](#) and high blood pressure, we have not yet completed the task and have a great deal more to do on these major preventable factors," said senior author Ezzati. "The government should also use regulatory, pricing, and health information mechanisms to substantially reduce salt and trans fats in prepared and packaged foods and to support research that can find effective strategies for modifying the other dietary, lifestyle, and metabolic risk factors that cause large numbers of premature deaths in the U.S."

More information: "The Preventable Causes of Death in the United States: Comparative Risk Assessment of Dietary, Lifestyle, and Metabolic Risk Factors," Goodarz Danaei, Eric L. Ding, Dariush Mozaffarian, Ben Taylor, Jurgen Rehm, Christopher J.L. Murray, Majid Ezzati, *PLoS Medicine*, April 28, 2009, Volume 6, Issue 4.

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