Medical Xpress

Estimated 1.65 million global cardiovascular deaths each year linked to high sodium consumption

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More than 1.6 million cardiovascular-related deaths per year can be attributed to sodium consumption above the World Health Organization's recommendation of 2.0g (2,000mg) per day, researchers have found in a new analysis evaluating populations across 187 countries. The findings were published in the August 14 issue of *The New England Journal of Medicine*.

"High sodium intake is known to increase blood pressure, a major risk factor for cardiovascular diseases including heart disease and stroke,"

said first and corresponding author Dariush Mozaffarian, M.D., Dr.P.H., dean of the Friedman School of Nutrition Science and Policy at Tufts University, who led the research while at the Harvard School of Public Health. "However, the effects of excess sodium intake on cardiovascular diseases globally by age, sex, and nation had not been well established."

The researchers collected and analyzed existing data from 205 surveys of sodium intake in countries representing nearly three-quarters of the world's adult population, in combination with other global nutrition data, to calculate sodium intakes worldwide by country, age, and sex. Effects of sodium on blood pressure and of blood pressure on cardiovascular diseases were determined separately in new pooled meta-analyses, including differences by age and race. These findings were combined with current rates of cardiovascular diseases around the world to estimate the numbers of cardiovascular deaths attributable to sodium consumption above 2.0g per day.

The researchers found the average level of global sodium consumption in 2010 to be 3.95g per day, nearly double the 2.0g recommended by the World Health Organization. All regions of the world were above recommended levels, with regional averages ranging from 2.18g per day in sub-Saharan Africa to 5.51g per day in Central Asia. In their meta-analysis of controlled intervention studies, the researchers found that reduced sodium intake lowered blood pressure in all adults, with the largest effects identified among older individuals, blacks, and those with pre-existing high blood pressure.

"These 1.65 million deaths represent nearly one in 10 of all deaths from cardiovascular causes worldwide. No world region and few countries were spared," added Mozaffarian, who chairs the Global Burden of Diseases, Nutrition, and Chronic Disease Expert Group, an international team of more than 100 scientists studying the effects of nutrition on health and who contributed to this effort. "These new findings inform

the need for strong policies to reduce dietary sodium in the United States and across the world."

In the United States, average daily sodium intake was 3.6g, 80 percent higher than the amount recommended by the World Health Organization. [The federal government's Dietary Guidelines for Americans recommend limiting intake of sodium to no more than 2,300mg (2.3g) per day.] The researchers found that nearly 58,000 cardiovascular deaths each year in the United States could be attributed to daily sodium consumption greater than 2.0g. Sodium intake and corresponding health burdens were even higher in many developing countries.

"We found that four out of five global deaths attributable to higher than recommended sodium intakes occurred in middle- and low-income countries," added John Powles, M.B., B.S., last author and honorary senior visiting fellow in the department of public health and primary care at the University of Cambridge. "Programs to reduce sodium intake could provide a practical and cost effective means for reducing premature deaths in adults around the world."

The authors acknowledge that their results utilize estimates based on urine samples, which may underestimate true sodium intakes. Additionally, some countries lacked data on sodium consumption, which was estimated based on other nutritional information; and, because the study focuses on cardiovascular deaths, the findings may not reflect the full health impact of sodium intake, which is also linked to higher risk of nonfatal cardiovascular diseases, kidney disease and stomach cancer, the second most-deadly cancer worldwide.

More information: Mozaffarian, D; Fahimi, S; Singh, G; Micha, R; Khatibzadeh, S; Engell, R; Lim, S; Goodarz, D; Ezzati, M; and Powles, J. "Global sodium consumption and death from cardiovascular causes." *N*

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