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New study calls sodium intake guidelines into question

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For years doctors have warned that too much salt is bad for your heart. Now a new McMaster University study suggests that both high and low levels of salt intake may put people with heart disease or diabetes at increased risk of cardiovascular complications.

The study, published in the Journal of the American Medical Association (*JAMA*) today, found that moderate salt intake was associated with the lowest risk of cardiovascular events, while a higher intake of sodium was associated with an increased risk of stroke, heart attack and other cardiovascular events and a low intake was associated with an increased risk of cardiovascular death and hospitalization for congestive heart failure.

The research, conducted by investigators in the Michael G. DeGroote School of Medicine at McMaster University and the Population Health Research Institute (PHRI) at McMaster and Hamilton Health Sciences, was co-led by Dr. Martin O'Donnell, an associate clinical professor of medicine, and Dr. Salim Yusuf, a professor of medicine and executive director of the PHRI.

"This research addresses an important population health issue – the association between salt intake and cardiovascular disease," said O'Donnell, who is also appointed at the Health Research Board Clinical Research Facility, National University of Ireland.

"In general, previous observational studies have either reported a positive

association, no association or an inverse association between sodium intake and heart disease and stroke. This has resulted in a lot of controversy. Our study is the first to report a J-shaped association between sodium intake and cardiovascular disease, which may explain why previous studies have found different results."

For the McMaster observational study, the researchers examined 28,880 people at increased risk of heart disease from clinical trials conducted between 2001 and 2008. The researchers estimated 24-hour urinary sodium and potassium excretion from a morning fasting urine sample. Follow-up found more than 4,500 cardiovascular events occurred, making this one of the largest studies examining the relationship between sodium excretion (a surrogate measure of sodium consumption), as well as potassium excretion and cardiovascular events. Extensive and careful statistical analytic methods were used to determine the association of urinary sodium and potassium with cardiovascular events, in particular heart attack, stroke, hospitalization for congestive heart failure and death.

Compared with moderate sodium excretion (between 4 to 5.99 grams per day), the researchers found that sodium excretion of greater than seven grams per day was associated with an increased risk of all cardiovascular events, and sodium excretion of less than three grams per day was associated with an increased risk of cardiovascular death and hospitalization for congestive heart failure.

The findings call into question current guidelines for salt intake, which recommend less than 2.3 grams (or 2,300 mg) per day. The guidelines are mostly based on previous clinical trials that found blood pressure is lowered modestly when sodium intake is reduced to this level (which was also found in the present study). However, there are no large studies looking at whether such low levels of sodium intake reduce the incidence of heart attacks and stroke.

Clarifying the optimal daily intake of sodium is particularly important in patients with established heart disease, as they may be especially vulnerable to the cardiovascular effects of very high- and low-salt intake and are most likely to receive recommendations on restricting sodium in their diets, the authors concluded.

"Our study confirms the association between high-sodium intake and cardiovascular disease. Our findings highlight the importance of reducing salt intake in those consuming high-salt diets and the need for reducing sodium content in manufactured foods that are high in salt," said Yusuf, who is also vice-president of research, Hamilton Health Sciences.

"However, for those with moderate (average) intake, whether further reduction of salt in the diet will be beneficial is an open question. We believe that large clinical trials are the most reliable way to determine if reducing sodium intake to lower levels is of benefit."

More information: JAMA. 2011;306[20]:2229-2238.

Provided by McMaster University

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