

Dietary Sodium Consumption and Cardiovascular Disease and Mortality: What is the Current Evidence?

Andrew Mente, PhD,

Associate Professor, Department of Health Research Methodology, Evidence, and Impact, Population Health Research Institute, McMaster University, Hamilton, Ontario, Canada

Abstract

Sodium is an essential nutrient required for normal physiological function. Short-term randomized controlled trials have reported reductions in blood pressure with reduced sodium intake to <1.5 g/day. Population recommendations for low sodium intake (<2.0 g/day) have been achieved in short-term feeding clinical trials, but not sustained in longer-term clinical trials (>6 months). No randomized trials have determined whether low sodium intake reduces CVD events or deaths compared with moderate intake. Prospective cohort studies suggest a J-shaped association between sodium intake and CVD events, consistent across methods of sodium estimation. In a recent Cochrane Review of 23 epidemiological studies (n=274,683), the lowest risk of CVD events and deaths occurs at an intake between 2.7 and 5.0 g/day. PURE study findings are consistent with this evidence, with sodium excretion both >6 g/day and <3 g/day being associated with higher mortality and CVD events compared to 3 to 6 g/day, despite an overall positive association between sodium excretion and blood pressure.

More recently, in study of more than 133,000 people from 49 countries, we found that regardless of whether people have high blood pressure, low-sodium intake is related to more heart attacks, strokes, and deaths compared to average intake. Further, while there is a limit below which sodium intake would be unsafe, the harm associated with high sodium consumption appears to be confined to those with hypertension.

This indicates that the majority of individuals in the US and most countries are consuming the right amount of sodium and suggests that targeted sodium reduction in those who are most susceptible (those with hypertension and high salt consumption – which represents only about 10% of the population) may be preferable to a population-wide approach to reducing sodium intake in most countries except those where the average sodium intake is very high (i.e., >5 g/day, or higher), such as parts of central Asia or China. To resolve the controversy, what is needed are large appropriately designed randomized controlled trials to provide further evidence on optimal sodium intake for preventing CVD events.