

## HYPERTENSION

# Salt restriction might lower blood pressure, but are there any beneficial effects on mortality?

**R**eduction of dietary salt intake might lower blood pressure, but as Professor Dong Zhao from the Capital Medical University Beijing Anzhen Hospital in China points out, “even if we have enough evidence to demonstrate that excessive salt intake is a causal risk factor for the development of hypertension, we still need to judge the benefit of salt reduction by its impact on general health outcome and not only on blood pressure.” A meta-analysis of data from randomized, controlled trials (RCTs) has demonstrated that we do not currently have strong evidence to indicate that there is a beneficial effect of salt restriction on mortality and that it might, in fact, increase the risk of all-cause mortality in patients with heart failure (HF).

“Because salt restriction is one of the lifestyle modifications [recommended] in all the hypertension guidelines,” comments Professor Toshiro Fujita from the University of Tokyo, Japan, “[gathering] evidence for the efficacy of salt restriction for the treatment of hypertension is important.” In an attempt to do just that, Professor Rod Taylor and colleagues collated and assessed data from seven RCTs that involved dietary salt restriction (or advice to reduce salt intake) in adult patients who were followed up for at least 6 months. Three trials were in normotensive patients, two in hypertensive patients, and one in a mixed population. The seventh RCT involved 232 patients hospitalized with uncompensated HF. Trial follow-up ranged from 6 to 71 months.

Urinary excretion was reported at the end of six of the trials, and average reductions were 34.2, 39.1, and 27.0 mmol per 24 h in the salt-restricted groups compared with controls, for normotensive individuals, hypertensive patients, and patients with HF, respectively. These reductions translated into significant lowering of systolic blood pressure, by 1.1, 4.1, and 4.0 mmHg, respectively. However, evidence for a

consequent reduction in mortality with reduced salt intake was weak for both normotensive (relative risk 0.67, 95% CI 0.40–1.12) and hypertensive (relative risk 0.97, 95% CI 0.83–1.13) patients. Notably, in the one small study of patients with HF, advice to reduce salt intake was associated with significantly higher mortality compared with no such advice (relative risk 2.59, 95% CI 1.04–6.44).

Advising people “to reduce their dietary salt intake (by ~50% of their usual intake of 8–9 g per day) shows a beneficial effect in the short term (up to 3 years) in reducing blood pressure by a small amount (1–4 mmHg), but no strong evidence of a reduction in deaths,” summarizes Professor Shah Ebrahim, from the meta-analysis team.

As Professor Zhao highlights, “the most significant finding from the meta-analysis is that currently available RCTs are still not good enough ... for any conclusion on the general health impact of salt reduction.” Indeed, the meta-analysis was limited by the availability of data on cardiovascular outcomes and mortality, and a high potential for confounding factors—for example, people who chose to follow advice to restrict their salt intake were also likely to eat more healthily, take more exercise, and not smoke. Furthermore, “the number of patients included in the study was not enough to draw any conclusion. The patients are heterogeneous—with or without hypertension, heart failure, and treatment with furosemide,” points out Professor Fujita.

A major issue is maintenance of a reduced-salt diet. Because individual-based (advice) strategies to restrict salt intake seem to have limited effect, the investigators recommend population-based approaches, such as improved labeling of food packaging, continued policies of salt reduction in processed foods by industry, and restriction of salt in school and work canteens and restaurants.



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The researchers will continue to update their meta-analysis, but Professor Ebrahim calls for “more robust research to demonstrate that [the population measures listed above] are, indeed, effective in not only reducing salt intake, but that these changes are sustained and convert into improvements in long-term health.” The investigators also highlight that the “potentially harmful effect of salt restriction in patients with HF requires urgent investigation to determine whether advice to these patients to reduce salt intake should be changed.” In line with these comments, Professor Fujita warns that, until we have more-robust data, “we should not change [recommendations for] salt restriction to less than 6 g per day as a life-style modification in hypertension guidelines.”

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