Letter to the Editor

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Mortality Benefits From US Population-Wide Reduction in Sodium Consumption: Projections From 3 Modeling Approaches

To the Editor:

The intent of Coxson et al[1] in using computer simulations to estimate mortality benefits from population-wide reductions in dietary sodium (Na) is admirable. However, we have several methodologic concerns.

First, the authors used the observational follow-up of Trials of Hypertension Prevention (TOHP) to estimate the direct effect of Na on cardiovascular disease (CVD) risk. This trial was designed to assess the effect of Na reduction on blood pressure (BP), which it clearly did. In the extended follow-up (which probably was initially unplanned), 23% of participants were lost to follow-up, and of the remainder who were followed up, medical records were obtained to adjudicate CVD events in 66% of events, and so a substantial number of CVD events were not included in the analyses—this precludes reliable analyses and conclusions on CVD events. The data on mortality that are complete show no significant difference and wide confidence intervals, which includes no benefit or harm. Therefore, this study with its methodologic limitations and few events does not inform us reliably as to whether or not reduction in Na intake affects CVD or mortality. Thus, use of the data from TOHP in any modeling exercise is potentially misleading.

Second, the authors projected from meta-analyses of BP trials of Na reduction and assumed that BP reduction with Na reduction in an entire population can lead to a reduction in CVD proportionate to the degree of BP lowering, similar to that observed in randomized controlled trials (RCTs) of diuretics in those with hypertension. However, recent trials of lowering BP in those with systolic BP <140 mm Hg are yet to provide clear evidence of a reduction in CVD from BP lowering per se (eg, Diabetes Reduction Assessment with Ramipril and Rosiglitazone Medication [DREAM] and Action to Control Cardiovascular Risk in Diabetes [ACCORD]). Furthermore, recent trials have indicated that BP reduction may not be a reliable surrogate outcome because some agents reduce BP but have no effect on clinical outcomes (eg, Aliskiren Trial in Type 2 Diabetes [ALTITUDE]), other agents reduce BP only modestly but have a significant reduction in CVD (eg, Heart Outcomes Prevention Evaluation [HOPE]), and different agents reduce BP to approximately similar extent and yet differ in their impact on CVD (eg, Avoiding Cardiovascular Events in Combination Therapy in Patients Living with Systolic Hypertension [ACCOMPLISH]). Therefore, a reduction in BP cannot be assumed to be a reliable indicator of potential CVD reduction in a normotensive population, especially if as with Na reduction there are concerns about adverse effects.

Third, the authors ignore several observational studies published recently raising concerns that Na intake <3 g/d is associated with increased mortality or CVD or may have no lower rate of CVD compared with those who have Na intakes between 4 and 6 g/d.[2] Furthermore, 4 RCTs in individuals with heart failure indicate a doubling in mortality with very low compared with moderate Na intake.[3]

Therefore, robust data to conduct reliable modeling of the effects of reducing Na intake are unavailable, and the analyses conducted by Coxson et al[1] are of uncertain validity. Although we respect the authors' efforts, what is needed is not more modeling exercises, but large well-designed prospective observational studies and large RCTs of Na reduction to assess the impact on CVD to enable evidence-based policy recommendations.

Disclosures

None.

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