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Reducing salt intake at population level: is it really a public health priority?

Rebuttal of Dr Graudal’s arguments

Francesco P Cappuccio, DSc, FRCP

University of Warwick, WHO Collaborating Centre, Warwick Medical School, Division of Health Sciences (Mental Health & Wellbeing), Gibbet Hill Road, Coventry, CV4 7AL, UK

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Abbreviations: BP: blood pressure; CVD: cardiovascular disease; NCDs: non-communicable diseases; WHO: World Health Organization

Correspondence to:

Prof. Francesco P Cappuccio

University of Warwick, WHO Collaborating Centre, Warwick Medical School, Division of Health Sciences (Mental Health & Wellbeing), Gibbet Hill Road, Coventry, CV4 7AL, UK

f.p.cappuccio@warwick.ac.uk
Dr Graudal’s hostile and scare-mongering article is full of inaccuracies, selected arguments and false statements. He considers the 2013 IOM Report, the remit of which was limited\(^1\), dismissing the positions of the previous IOM Report, the World Health Organization, the US CDC, the AHA, the British NICE and many other national health organizations statements which informed the 2011 United Nations resolution and the 2013 World Health Assembly deliberation that population salt reduction strategy is the second most effective strategy for the prevention of cardiovascular disease (CVD) globally. The presence of a food industry conspiracy biasing research and co-opting unscrupulous opinion leaders to divert attention from salt with surreptitious new theories has been extensively documented over the years\(^2\). On the contrary the alleged conspiracy of global health organizations in producing a sound piece of public health advice is another fabrication to divert attention again.

Sodium chloride (salt) is not a nutrient. At the current levels added to food salt is a toxic chemical. Dr Graudal makes confusion between the concepts of usual/habitual and adequate/normal. If we all smoked, smoking would be normal. If we were to define obesity today, we would have to raise the cut-off points for obesity in many countries. A body mass index of 30 kg/m\(^2\) would not indicate obesity because most people in the population weigh that much. If we were to define the adequate levels of physical activity, we should accept that the normality would be not exercising at all. So it is for salt intake! The usual/habitual levels are not adequate/normal levels.

Dr Graudal continues to pursue two surreptitious arguments: a) that the effect of salt reduction on blood pressure (BP) is non-existent and b) that salt reduction increases hormones that could be dangerous. His first argument is answered in my Figure 1. For the second, he only quotes his meta-analyses including short-term acute studies of salt deprivation. I have already addressed the flaw of his argument and shown that the meta-analyses published are consistent with each other that there is a beneficial effect on BP. No need to remind Dr Graudal that treatment with diuretics reduces stroke mortality and other CVD events due to the fall in BP, despite a chronic stimulation of the renin-angiotensin-aldosterone system, much greater than that seen with a moderate salt reduction.
There are published positions of the NHLBI, the TOHP and the DASH authors that dismiss the
allegations Dr Graudal needlessly uses to win his argument. When referring to the ‘WASH’
group, he lumps together all those who do not agree with him (although separate and
independent researchers around the world), as if they had been running studies altogether
for 20 years! I would consider their results ‘consistent’ with each other.

Dr Gradual maintains that population moderate salt reduction kills. This is an irresponsible
statement based on few selected studies (mostly observational) that are flawed for the
presence of biases and confounding (see my Table). In brief, in the EPOGH cohort, the
lowest sodium intake tertile was flawed by urine under-collections (urinary creatinine in first
tertile 12 v 16 mmol in third tertile) and lower socio-economic status\(^3\). In the analysis of
ONTARGET/TRANSCEND studies participants were old and sick patients on multiple
medications (29% on diuretics but 41% of them in the lowest sodium group)\(^4\) and sodium
intake was estimated using inaccurate methods\(^5\). Finally the PURE Study\(^6\)\(^-\)\(^7\) is flawed on many
grounds. The sodium measurement by single fasting morning urine collection to assess
individuals’ salt intake is unreliable and biased. The sodium study only included ~100,000 of
the ~160,000 participants, introducing a self-selection bias, and there were fewer
participants from India and more from China, the majority with ill-health (hypertension, BP
medications, CHD, CVD). The lower sodium group (<3g per day equivalent to <7.5g salt per
day) was unable to discriminate on a ‘low’ salt intake of <5g, hence the result are irrelevant
to the debate on population salt reduction and targets. Finally, compared to the ‘higher’
sodium group, those in the ‘lower’ sodium group were older, had fewer men, Asians and
smokers and higher LDL-cholesterol, history of CVD, diabetes, medication use, therefore
biasing the ‘lower’ sodium group to older men with ill-health, hence the reverse causality
risk of dying earlier!

\(^3\) See my Table for details.

\(^4\) See my Table for details.

\(^5\) See my Table for details.

\(^6\) See my Table for details.

\(^7\) See my Table for details.
References


