Editorial

Reduction of salt intake: time for more action

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European Society of Cardiology (ESC)/European Society of Hypertension (ESH), the WHO and other organizations recommend a goal of reducing salt intake to less than 5 g/day, but the achievement rate is low [1–3]. Populations in almost all countries in the world exceed this threshold, with Asian populations having an average daily salt intake as high as 10 g. The recent publication by the World Hypertension League (WHL), Resolve to Save Lives (RTSL) and International Society of Hypertension (ISH) provides a drive to create momentum in the global 'Call to Action' [4] to lower salt intake around the world.

The impact of sodium on blood pressure (BP) and cardiovascular disease has long been under investigation. Historical reports demonstrate a flat line of BP across age groups in populations not exposed to higher sodium diets [5,6]. The change in BP in response to sodium has led to the term salt sensitivity, which is more prevalent in patients who are elderly, or have obesity, diabetes mellitus, chronic kidney disease or a family history of hypertension. Salt sensitivity is consistent with a greater reduction in BP in response to salt restriction and, conversely, an exaggerated BP increase in response to salt load.

Salt sensitivity may be a consequence of evolutionarily conserved response to a low sodium lifestyle with an increased need for sodium retention. Sub-Saharan African populations are considered to be particularly salt sensitive, with several genetic polymorphisms linked to increased sodium reabsorption [7]. Similarly, genetic studies comparing Japanese and individuals of white European ancestry showed higher frequencies of salt-sensitive variants in five candidate genes in the Japanese populations, suggesting a high prevalence of salt-sensitivity among those of East-Asian ancestry [8]. This was supported in a clinical trial that reported salt sensitivity in 35% of Korean and Chinese patients with mild-to-moderate hypertension [9]. Within populations of white-European ancestry, the inter-individual variation to salt sensitivity is, at least in part, determined genetically.

The recent integration of data from genome-wide association studies (GWAS) of BP, kidney transcriptomics and epigenomics further demonstrates the critical importance of kidney genes involved in sodium homeostasis and salt sensitivity as contributors to BP regulation and human hypertension [10,11].

Previous studies support a general recommendation to reduce high salt intake as a form of primary prevention [12,13]. Reduction in salt intake is generally well tolerated and will be a cost-effective strategy to reduce the burden of hypertension, its cardiovascular consequences and save lives [4]. Unfortunately, much of sodium intake is hidden in processed food. Foods/ meals particularly rich in dietary sodium are bread, meat products, baked products, instant noodles [14], preserved foods, dairy and condiments. In the recently published ISH 2020 Global Hypertension Practice Guidelines [3], the recommendation was to reduce salt added when preparing foods, and at the table and, importantly, the avoidance or limited consumption of high salt foods. These are foods consumed regularly by billions of people, and include soy sauce, fast foods and processed food, such as breads and cereals high in salt. The guidelines refrained from recommending amounts, as this is hard to implement in the real-world scenario.

The WHL, RTSL and ISH fact sheet provides the opportunity to amplify this message and to focus our endeavours [4].

The highest salt containing bread was found in Nigeria [15]. Salt legislation is particularly needed in Africa and other LMIC. Commercial food preservation and convenience foods are high in sodium content. Governmental regulation of processed food sodium content is an effective way to reduce population-based sodium intake. The legislation developed in South Africa in 2016 introduces a stepwise reduction in the maximum sodium content of food. The initial reduction was in 2016, followed by stricter reductions in 2019. The AFRICAN-PREDICT study in young adults demonstrated a 1.2 g reduction in sodium intake over around 4 and a half years, spanning the introduction of the salt legislation. The reduction in sodium intake was particularly evident in the Black African participants and those

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from a low socioeconomic background [16]. The WHO study on Global Aging (WHO-SAGE) investigated the effect of the South African legislation on urinary sodium and BP from 2015 and 2017–2018 [17]. The findings from this study demonstrate an impressive drop in population sodium intake of 1.15 g/day.

Strong evidence is now supporting the decrease in sodium in the diet to mitigate the effects of elevated BP on cardiovascular disease [18–20]. Extrapolating these data, a reduction of salt intake would reduce BP and cardiovascular disease. INTERSALT has shown the association between excessive salt intake and an increase in BP [21]. Furthermore, two randomized lifestyle intervention trials [22,23] and one long-term observational cardiovascular events follow-up study [24] found that dietary salt reduction over 18–48 months reduced BP and decreased cardiovascular events.

Potassium intake is also increasingly recognized as an important factor in optimizing BP control [25]. The recent study substituting potassium chloride for sodium chloride, performed in China, demonstrates the clear benefit of sodium-potassium balance [26]. In this study, patients who already had a stroke or, who were age 60 years or over with poorly controlled BP, were recruited and randomized to either sodium chloride or sodium chloride partially replaced with potassium chloride. In less than 5 years of follow up, those in the potassium chloride arm experienced fewer strokes, major cardiovascular events and death, with no significant increase in complications from hyperkalaemia. Data from over 10 000 healthy adults demonstrated that each daily increment of 1000 mg of sodium was associated with an 18% increase in cardiovascular events and each daily increment of 1000 mg of potassium was associated with an 18% decrease in cardiovascular events [27].

The recent publication as a joint statement from the ISH, WHL and RTSL has provided us with a platform to engage with policy makers when it comes to lowering sodium intake [4]. The statement highlights the burden of disease associated with a high sodium diet, the global excessive sodium use and debunks many of the controversies around lowering sodium intake. The aim is to lower dietary sodium by 30% by 2025. The document provides pointers to resources on how to implement dietary sodium lowering strategies, including the WHO developed SHAKE package, and identifies key research priorities.

The Call to Action has further summarized the activities of as many as 96 countries who have national strategies to reduce dietary sodium intake [4]. Reducing dietary salt intake requires a multipronged approach. ISH-endorsed MyWASSH (The Malaysian Society for World Action on Salt, Sugar and Health) is helping the drive to lower sodium in Malaysia and the WHL, RTSL and ISH dietary sodium (salt) global call to action provides much needed stimulus and guidance for such activities everywhere around the world.

We all need to heed the 'Call to Action', as this cannot be achieved by policy makers alone. Organizations, experts, scientists, clinicians, healthcare workers and patient advocacy workers must all contribute to the WHO's aims to achieve recommended sodium intake levels. Reducing dietary salt intake should be one of our priorities if we wish to reduce the burden of hypertension around the world. The impressive number of national and international Societies and organisations endorsing the WHL, RTSL and ISH statement promises that there is a global readiness to act on sodium intake.

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Conflicts of interest

There are no conflicts of interest.

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