

## Dietary Salt Reduction: Illusion or Reality?

Nereida Kilza da Costa Lima<sup>1</sup> 

Universidade de São Paulo Campus de Ribeirão Preto,<sup>1</sup> Ribeirão Preto, SP – Brazil

Short Editorial related to the article: *Effects of added salt reduction on central and peripheral blood pressure*

In spite of ample knowledge regarding systemic arterial hypertension as the main risk factor for cardiovascular diseases, the rates of control have shown a modest progressive increase, especially in Brazil. Brazilian studies have provided evidence that 50% to 60% of people with hypertension are receiving treatment, while only 20% to 30% of all people with hypertension are controlled.<sup>1</sup>

The main difficulty in controlling systemic arterial hypertension lies in managing long-term patient adherence, given that the majority of patients are asymptomatic, and they eventually begin to have symptoms as a result of antihypertensive medication use.

While adherence to medical treatment is low, adherence to lifestyle changes is even lower. Among these changes, dietary salt reduction has posed a major challenge. The benefits of moderate salt reduction to blood pressure, especially for patients with hypertension, are undeniable, as are its effects on preventing cardiovascular events, even if the reduction is by at least one third of the salt regularly ingested or a goal of no more than 5 grams of salt daily, according to the World Health Organization.<sup>2</sup> Current salt consumption is very high, especially among patients with hypertension, ranging from 9 to 12 grams daily.<sup>3</sup>

Among different strategies for successfully reducing dietary salt, the one most commonly employed by multidisciplinary teams, which include a physician, consists of advising patients to avoid processed foods (sausages, canned foods, etc.), giving preference to unprocessed foods, in combination with reducing salt when preparing meals and removing the salt shaker from the table.<sup>4</sup> The use of spices such as garlic, onion, and oregano is also frequently recommended, given that they may enhance the taste of food, thus lowering the need to use salt. A recent study found that the use of oregano in common bread dough changed the preferences of young and elderly hypertensive and normotensive individuals with respect to consumption of reduced-sodium bread, by improving the flavor.<sup>5</sup> Maintaining this preference over a long time, however, is a major challenge, and this intervention has not yet been tested. Middle-aged individuals who, in a randomized cross-over manner, used low-salt bread (0.3 g of salt per 100 g) or

bread with the conventional level of salt (1.2 g of salt per 100 g) showed a decrease in systolic blood pressure and a decrease in urine excretion of sodium after 5 weeks of consuming the low-salt bread, when compared to the moment 5 weeks after consuming the conventional bread.<sup>6</sup>

When patients are advised to make lifestyle changes, what is generally observed is that initial adherence is good, but the changes do not continue over time. It is not correct to assume that patients are the only ones responsible for poor adherence. Modern life has led to habits of eating meals outside of the home, with little time available; salt is, furthermore, the preservative most widely used by the food industry. Even with individualized advice within a well structured protocol, where all the salt for adherence was given in a package, Arantes et al.<sup>7</sup> did not observe a reduction in the total quantity of salt ingested by middle-aged volunteers, all of whom were employees of a public university, over three months of follow-up. Notwithstanding advice to prepare at least four main meals at home, in addition to advice regarding the importance of choosing foods with less salt, the total quantity of sodium excreted in 24 hours, which estimates the quantity of salt ingested during the same period, was probably not reduced due to the consumption of saltier foods outside of the house or even due to the choice of saltier foods at home. It was possible to verify an association of greater salt excretion in hypertensive patients with higher central diastolic blood pressure and casual measurement.

The actions implemented to reduce salt intake in processed foods so far have promoted the reduction of 17 tons of salt in foods between 2011 and 2016, especially in mixtures for soup, instant soup, sausage, cheese, and cottage cheese. In 2017, the target of a new agreement between the Ministry of Health and the food industries was to reduce salt in bread and instant pasta.

Reducing the quantity of salt in processed foods, without compromising their taste or jeopardizing their preservation, makes the industry's work complex, but the reduction of salt in processed foods needs to advance, as does the education of the population. It is necessary to consider that individuals who are already used to higher salt consumption may add salt to processed foods if they consider that doing so makes these foods taste better and if they are unaware of the risks associated with this practice.

An interesting Dutch study performed a simulation of two different strategies for reducing salt consumption, with a goal of up to 6 grams of salt daily, based on data from the Dutch population. One of the strategies would be substituting high-salt foods with similar low-salt foods that are already commercially available, while the other proposed reducing the salt content of processed foods to the extent that it was possible. They observed that the reduction in salt consumption, with either of these strategies, would be

### Keywords

Hypertension/prevention and control; Developing Countries; Medication Adherence; Sodium Chloride, Dietary; Cardiovascular Diseases/mortality.

**Mailing Address:** Nereida Kilza da Costa Lima •  
Rua Mariano Casadio, 275. Postal Code 14024360, Ribeirão Preto, SP – Brazil  
E-mail: nereida@fmrp.usp.br

**DOI:** <https://doi.org/10.36660/abc.20200155>

approximately 30%, decreasing systolic blood pressure by 1.6 mmHg, with a potential 4.8% reduction in the incidence of acute myocardial infarction.<sup>8</sup>

Education that promotes healthy measures is important. Unfortunately, there is still a lack of association between what is good for our health and what is most accepted by society, especially when we observe young people's behavior at parties or on weekends, when they further face the difficulty of ingesting lower amounts of alcoholic beverages or giving preference to healthier foods without suffering discrimination.

An Italian study found that both knowledge regarding salt ingestion (foods with more salt, the habit of reading labels, etc.) and behavior based on this knowledge were primarily lower in adolescents and individuals with lower levels of schooling.<sup>9</sup>

Education for lower salt consumption will have to be widely supported by government agencies, industries, schools, healthcare professionals, and the advertising industry, in order

to create a culture different from the current one. This process will have to start in early childhood, but the whole family will need to be integrated, and elderly people may be important agents of habit change within their communities.

Evaluating strategies for salt reduction in different countries in all world regions, one study identified that the regions with the fewest initiatives were Africa, South East Asia, and the Eastern Mediterranean.<sup>10</sup> Only the implementation of diverse strategies for reducing salt conception, in a concomitant and organized manner, as well as the monitoring of their effects, will be able to have a real impact on the reduction of cardiovascular diseases.

Dietary salt reduction will therefore be possible when it truly becomes the objective of national and regional health and education policies. As long as this reality, however, appears to be far off, even though efforts are growing, what remains is the impression of an illusion.

## References

1. Scala LC, Magalhães LB, Machado A. Epidemiologia da hipertensão arterial sistêmica. In: Moreira SM, Paola AV; Sociedade Brasileira de Cardiologia. Livro Texto da Sociedade Brasileira de Cardiologia. 2ª ed. São Paulo: Manole; 2015. p. 780-5.
2. Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020. [Cited in 2020 Feb 26]. Available online: [https://www.who.int/nmh/events/ncd\\_action\\_plan/en/](https://www.who.int/nmh/events/ncd_action_plan/en/)
3. De Keyser W, Tilleman K, Ampe J, De Henauw S, Huybrechts I. Effect of sodium restriction on blood pressure of unstable or uncontrolled hypertensive patients in primary care. *Nutr Res Pract*. 2015;9(2):180-5.
4. Malachias MVB, Souza WKS, Plavnik FL, Rodrigues CIS, Brandão AA, Neves MFT, et al., Sociedade Brasileira de Cardiologia. VII Diretriz Brasileira de Hipertensão. *Arq Bras Cardiol*. 2016; 107(3Supl 3):1-83.
5. Villela PTM, de Oliveira EB, Villela PTM, Bonardi JMT, Bertani RF, Moriguti JC, et al. Salt Preference is Linked to Hypertension and not to Aging. *Arq Bras Cardiol*. 2019;113(3):392-9.
6. Cashman KD, Kenny S, Kerry JP, Leenhardt F, Arendt EK. 'Low-Salt' Bread as an Important Component of a Pragmatic Reduced-Salt Diet for Lowering Blood Pressure in Adults with Elevated Blood Pressure. *Nutrients*. 2019;11(8):1725.
7. Arantes AC, Sousa ALL, Vitorino PVO, Jardim PCBV, Jardim TSV, Rezende JM, et al. Effects of added salt reduction on central and peripheral blood pressure. *Arq Bras Cardiol*. 2020; 114(3):554-561
8. Hendriksen MAH, Hoogenveen RT, Hoekstra J, Geleijnse JM, Boshuizen HC, van Raaij JMA. Potential effect of salt reduction in processed foods on health. *Am J Clin Nutr*. 2014;99(3):446-53.
9. Cairella G, Sabino P, Scalfi L, Fabbri A, Galletti F, Garbagnati F, et al on behalf of the SINU-GIRCSI Working Group. Salt and Health: Survey on Knowledge and Salt Intake Related Behaviour in Italy. *Nutrients*. 2020;12:279.
10. Trieu K, Neal B, Hawkes C, Dunford E, Campbell N, Rodriguez-Fernandez R, et al. Salt Reduction Initiatives around the World. A Systematic Review of Progress towards the Global Target. *PLoS One*. 2015; e0130247.



This is an open-access article distributed under the terms of the Creative Commons Attribution License