

## Advances in reducing salt and sodium intake in Costa Rica\*

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### SYNOPSIS

*This article describes the progress—as well as the challenges and limitations—in reducing salt intake in Costa Rica. The National Plan to Reduce Public Consumption of Salt/Sodium in Costa Rica 2011–2021 was complemented with multisectoral programs and projects specifically designed to: 1) determine sodium intake and the salt/sodium content of the most widely consumed foods; identify the consumer knowledge, attitudes, and behaviors with regard to salt/sodium, their relationship to health, and nutritional labeling; evaluate the cost-effectiveness of measures aimed at reducing the incidence of hypertension; 2) implement strategies to reduce the salt/sodium content of processed foods and foods prepared at home; 3) promote behavioral changes in the population to reduce salt in people's diets; and 4) monitor and evaluate action geared to reducing salt/sodium intake in the population. Meeting the proposed targets will require successful interinstitutional coordination among the strategic actors, the negotiation of commitments with the food industry and food services, and tighter regulation of critical nutrients in foods associated with chronic noncommunicable diseases. Given the progress made during the implementation of the National Plan, Costa Rica is expected to meet the international goal of reducing salt intake.*

**Key words:** sodium, dietary; cardiovascular diseases; Costa Rica.

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Diseases of the circulatory system, which are included in codes I00-I99 of the tenth edition of the International Statistical Classification of Diseases and Related Health Problems (1), have been the leading cause of death in Costa Rica since 1970. After a slightly downward trend in the previous eight years, in 2011 an adjusted rate of 94.58 deaths per 100 000 population was reported. The main specific causes of mortality were ischemic heart disease (45.7%), cerebrovascular disease (22.6%), and hypertensive disease (13%) (2).

Hypertension is the leading reason for medical consultation in the adult population (3). In 2004 a total of 25% of the population over 20 years of age living in the metropolitan area (4) had hypertension and in 2010 this condition affected 37.8% of the national population (5). Onset can occur at early ages and prevalence increases with age (4, 5). Similarly, the prevalence of cases classified as pre-hypertensive continues to increase: in 2004 there were 25.4% (3) and in 2010 there were 26.8% cases (5). However, there are significant differences according to sex (4, 5).

In order to reduce incidence of hypertension and cardiovascular disease, the Pan American Health Organization (PAHO) and the World Health Organization (WHO) presented the initiative on Cardiovascular Disease Prevention Through Dietary Salt Reduction (6).

This article describes the progress—as well as challenges and limitations—achieved in Costa Rica in reducing salt intake based on the recommendations of the initiative promoted by PAHO and WHO.

### SALT AND SODIUM INTAKE IN COSTA RICA

In 2001 the average national intake of table salt in the households of Costa Rica was estimated at 7.1 g/person/day. However, since national consumption of dietary sodium (7) is still unknown, it is difficult to prepare policies and adopt specific measures that contribute to reduced salt/sodium intake by the population.

In 1972 the decree on addition of iodine to salt was enacted and in 1987 addition of fluorine was approved. The amount of iodine added to food grade salt is 30–60 mg/kg (expressed as I). The amount of fluorine added is 175–225 mg/kg of salt (expressed as F). According to the regulations, salt used by the food industry must meet the iodine content requirements that are indicated and it cannot contain fluorine, except for that used in preparation of condensed or dehydrated processed consommés (8).

\* Complete translation of the article published in the special issue on Cardiovascular disease prevention and dietary salt reduction, *Pan American Journal of Public Health*, October 2012.

## National and international agreements

Approval of the 2011-2021 Food and Nutritional Safety Policy of Costa Rica (9) fulfilled the agreement to adopt a national policy for regulation of salt content, made by the country in the 2010-2015 Central America and Dominican Republic Health Plan (10).

In 2011, Costa Rica contributed to the work conducted by PAHO and WHO by supporting the Policy Statement on Reducing Salt Intake in the Americas (6) and authorized the 2011-2021 National Plan to Reduce Salt/Sodium Intake in the Population of Costa Rica (11). This plan was based on the WHO Population-wide Strategy to Reduce Salt Intake (12). The objective of the plan is to contribute to reduced morbidity and mortality associated with hypertension and cardiovascular disease in Costa Rica by reducing the salt content of the food consumed by the population to the recommended level of 5 g salt/person/day or 2 g sodium/person/day. The specific objectives of the national plan are as follows: 1) determine the national baseline situation with regard to sodium intake, the primary food sources and salt content of the most widely consumed foods; identify the knowledge, attitudes, and behavior of consumers with regard to salt/sodium, as well as their relationship to health and nutritional labeling; evaluate the cost-effectiveness ratio of the measures that aim to reduce prevalence of hypertension; 2) implement strategies, in coordination with the food industry and food services, to reduce the salt/sodium content of processed and home-prepared foods; 3) promote behavioral changes in the population in order to reduce excessive dietary intake of salt through a social marketing and training plan; and 4) monitor and evaluate the actions that aim to reduce salt/sodium intake in the population (11). The first objective generates the scientific evidence that serves as support for the three pillars of the WHO Strategy (6), which correspond to targets 2-4.

## National actions on food and healthy lifestyles

In Costa Rica, the nutritional guides for the general population were updated in 2011 (13). These guides indicate the national recommendation on salt intake from all sources and propose educational messages to reduce dietary intake of salt and sodium.

As of the 2012 school year a regulation on sales of food and beverages in educational institutions took effect as a result of executive decree No. 36910-MEP-S proposed by the Ministry of Education and Ministry of Health (14). The purpose of this regulation is to protect the health of children and adolescents by promoting, developing, and maintaining healthy eating habits in public schools throughout the country. It recognizes that establishment of healthy eating habits in children is the joint responsibility of the family and the State, and limits sales of food with high fat, sugar, sodium, and caloric contents. Compliance with the provisions of this regulation is verified by review of complaints by committees made up of staff members of the mi-

nistries that promoted it. The Ministry of Health is responsible for controlling the validity of the health permit and seizure of food that does not comply with the stipulations set forth in the regulation. The requirements are consistent, and they are supplemented and strengthened by a series of educational and research actions conducted by the State and its institutions.

In seeking to establish a framework of cooperation and dialogue between public and private institutions, in June 2012 the national food industry—represented by the Costa Rican Chamber of the Food Industry—organized a discussion forum that analyzed global trends and national challenges related to health and nutrition. The Healthy Lifestyle Program (15) was presented on this occasion. In this program, the food industry agrees to develop on a joint basis, in conjunction with the social actors involved, a comprehensive strategy to combat obesity and other noncommunicable diseases that affect the Costa Rican population. To this end, it plans to work in five strategic areas: consumer information, physical activity, nutritional education, healthy lifestyle, and development of nutritionally improved products.

## KNOWLEDGE ASSOCIATED WITH REDUCED SALT/SODIUM INTAKE

Two studies sponsored by PAHO were conducted in 2010-2011. These studies, which used different methodologies, researched knowledge, perceptions, and behavior related to salt/sodium intake, as well as their relationship to health and nutritional labeling, in the adult population of the countries of the Region (16, 17). The first of these studies, which used a quantitative methodology and was conducted by the non-governmental organization Consumers International, concluded that the majority of the adult population surveyed in Costa Rica did not know what sodium and salt are, could not differentiate between them, and did not have the ability to explain the relationship between salt and diseases associated with excessive salt intake (16). The second study, which was based on a qualitative methodology, was a collaborative multicenter study that was conducted in Argentina, Costa Rica, and Ecuador by the Costa Rican Institute for Research and Teaching on Nutrition and Health (INCIENSA). The results of this study have been published in this special issue of the Pan American Journal of Public Health (17).

With regard to food, INCIENSA participated in an international survey conducted in 2011 by World Action on Salt and Health (18) in order to study the declaration of sodium content on the label of pizzas sold in supermarkets and on the Web sites of local fast food restaurants, and compare the results obtained in the participating countries (Table 1). Wide variability was found between the brands as well as the different types of pizza of a single brand with regard to portion size (63-280 g) and sodium content (0.40–3.50 g sodium/portion). The absence of data on sodium content on the nutritional label, as well as in-

**TABLE 1. Sodium content of pizzas sold in Costa Rica, 2011**

Source of information	Brand	No. <sup>a</sup>	Portion size (g)		Sodium content per portion (g)	
			Average	Variation	Average	Variation
Label of food sold in supermarkets	El Arreo	4	138	100–150	3.50	NA
	Red Baron	2	164	155–172	0.80	0.70–0.99
	D. Thompson	2	125	100–150	ND	NA
	Coneinn	3	155	NA	ND	NA
	Pasta Basta	1	280	NA	ND	NA
	Viblen	3	92	85–100	ND	NA
Web site of fast food restaurants	Pizza Hut <sup>b</sup>	92	114	63–165	1.06	0.40–1.39
	Domino's <sup>c</sup>	10	ND	NA	0.53	0.41–0.67

<sup>a</sup> No. number of different types of pizzas according to pizza filling, base, and size.

<sup>b</sup> Reference 19.

<sup>c</sup> Reference 20.

NA: Not applicable.

ND: Not available.

consistencies and errors in the pizza labels, were confirmed. When Web sites were the data source for local consumers, these results included other restaurants of the chain on the American continent, regardless of the country of preparation (18). The majority of the pizzas sold on the local market have high sodium content (> 480 mg/portion). The highest sodium content found in the international survey was declared in one of these (18). As a result of this surprising finding, the company that prepares this brand of pizza showed the investigators that there was an error in the sodium content stated on the label.

### Programs and research projects underway

With the financial support of the International Development Research Centre (IDRC), implementation of the Program to Reduce Salt/Sodium Intake in Costa Rica began in September 2012. The main purpose

of this program is to contribute to implementation of the National Plan to Reduce Salt/Sodium Intake in the Population of Costa Rica mentioned above, as well as support application and monitoring of policies, plans, standards, and national interventions related to reduced salt/sodium intake. During the 2012–2016 period, it is expected that the baseline scientific information needed will be obtained and transfer of the knowledge generated will begin.

Table 2 shows the projects underway and the main outcomes expected. The national work team will have the advisory services, training, and tools developed by institutional experts from Australia, Brazil, and Canada, as well as PAHO.

INCIENSA, the State Distance University, and the University of Costa Rica are conducting the research project “Education as promoter of integral health in childhood and adolescence in and by the Costa Rican educational institutions.” This project

**TABLE 2. Projects and expected outcomes of Program to Reduce Salt/Sodium Intake in Costa Rica, 2012–2016**

Project or activity	Main outcome expected
Situation and trends of nutritional labeling of processed food and fast food prepared by commercial chains with highest sales in Costa Rica	Processed food and fast food with high sodium content identified Nutritional quality of processed food and fast food monitored National team trained in international methodology developed by The George Institute for Global Health, Australia <sup>a</sup>
Daily salt/sodium content available in Costa Rican households, main food sources and trends	Processed food and fast food most widely consumed by the population identified Establishment of negotiation priorities with food industry and food services National team trained in methodology developed by University of São Paulo, Brazil <sup>b</sup>
Knowledge, perceptions, and behavior related to salt/sodium and their relationship to health and labeling	Input generated to develop a social marketing and training plan for primary school (7–12 years) and secondary school (13–17 years) children
Sodium content of processed food and fast food with high sodium content and frequent consumption	Sodium content of food verified Compliance with agreements entered into by food industry and food services monitored
Knowledge transfer to key sectors involved in dietary salt and sodium	Representatives of key sectors involved in salt/sodium sensitized and trained Agreements with food industry and food services defined
Program evaluation	Program evaluated by effectiveness of knowledge generated, measures adopted, and gaps or barriers to implementation

<sup>a</sup> Reference 22.

<sup>b</sup> Reference 23.

includes efforts that aim to prevent obesity and reduce intake of trans fats, sugar, and sodium in these population groups (23). Finally, the Technological Institute of Costa Rica and INCIENSA are conducting a project on quantification of sodium in bread—including industrial bread as well as bread prepared in bakeries—and sandwiches that are consumed widely at the national level.

## CHALLENGES AND LIMITATIONS

The main challenge for the country is to reach the goal of reducing salt/sodium intake. Achievement of this aim requires successful interinstitutional coordination with strategic actors, negotiation of agreements with the food industry and food services, and improved regulation of critical nutrients in the foods available in Costa Rica, particularly those associated with chronic noncommunicable diseases.

The actions planned have some limitations that must be overcome. One of them is that there is no fixed term or magnitude defined for the goal established in the national plan. In addition, the resources for continued implementation and support of the national plan are insufficient to generate representative data for urinary sodium excretion (24-hour studies) in the national population.

In spite of these limitations, based on the progress achieved with implementation of the 2011-2021 National Plan to Reduce Salt/Sodium Intake in the Population of Costa Rica, the country is expected to be in a position to reach the international goal of reduced salt intake. For this purpose, the political support needed to achieve the plan objectives, as well as collaboration and commitment by the food industry and food services to reduce the sodium content of their products, are required.

In conjunction with these efforts, consolidation of a national strategy on noncommunicable disease prevention and control is essential in order to en-

sure that the interventions will be integrated and multisectoral.

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## SINOPSIS

### Avances en la reducción del consumo de sal y sodio en Costa Rica

En el presente artículo se describen los avances logrados en Costa Rica —así como los desafíos y limitaciones— en la reducción del consumo de sal. El establecimiento del Plan Nacional para la Reducción del Consumo de Sal/sodio en la Población de Costa Rica 2011–2021 se complementó con programas y proyectos multisectoriales específicos dirigidos a: 1) conocer la ingesta de sodio y el contenido de sal o sodio en los alimentos de mayor consumo; identificar los conocimientos, actitudes y comportamientos del consumidor respecto a la sal/sodio, su relación con la salud y el etiquetado nutricional; evaluar la relación costo-efectividad de las medidas dirigidas a reducir la prevalencia de hipertensión arterial; 2) implementar estrategias para disminuir el contenido de sal/sodio en los alimentos procesados y los preparados en casa; 3) promover cambios de conducta en la población para reducir el consumo de sal en la alimentación; y 4) monitorear y evaluar las acciones dirigidas a reducir el consumo de sal o sodio en la población. Para alcanzar las metas propuestas se debe lograr una exitosa coordinación interinstitucional con los actores estratégicos, negociar compromisos con la industria alimentaria y los servicios de alimentación, y mejorar la regulación de los nutrientes críticos asociados con las enfermedades crónicas no transmisibles, en los alimentos. Se espera que a partir de los avances logrados durante la ejecución del Plan Nacional, Costa Rica logre alcanzar la meta internacional de reducción del consumo de sal.

**Palabras clave:** sodio en la dieta; enfermedades cardiovasculares; Costa Rica.

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