

Design of a Social Marketing Plan on Salt Reduction for the Control and Treatment of Noncommunicable Diseases in Costa Rica

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Abstract

High blood pressure and other non-communicable diseases associated with excessive salt/sodium consumption represent a major challenge to the health of the world's population. Consumption is a human behavior that is usually influenced by significant factors, internal and external to people. The design of a national social marketing intervention is described. The whole process was developed by a national interdisciplinary team over the course of a decade (2011-2022). Its purpose is to promote changes in this behavior, through gradual reduction of salt/sodium consumption in the target populations of Costa Rica, for the prevention and control of associated diseases. The process includes four phases: research, situation analysis, creation of a proposal for the social marketing strategy, and implementation and evaluation. Last phase was not developed by the research team. The main inputs used to design this intervention were the data generated in three qualitative researchers carried out by the national work team and the social marketing regional plan for salt consumption reduction in Latin America. By analyzing these research data, marketing mix components were determined for designing the intervention. The marketing strategy is promotional and is based on encouraging a natural diet with less sodium using natural seasonings and adding less discretionary salt and industrialized products high in sodium, in the preparation of food and dishes. The primary key audience is the mother of the school-aged child, and the secondary is the adult caregivers of this child. It is expected that in the short term, health promoters from different government and non-state sectors will contribute to the implementation of the national social marketing

plan, to achieve, in the medium or long term, a consumption that approaches five grams of salt per person per day. This plan is a country initiative to position the value of a natural diet with less sodium and to contribute to the prevention and treatment of HT and NCD associated diseases.

Keywords

Salt, Social Marketing, Behavior Change, Noncommunicable Diseases, Sodium

1. Introduction

Noncommunicable Diseases (NCDs) are the leading cause of death and premature disability in most of the countries of Latin America and the Caribbean [1]. Hypertension (HT) is one of the main risk factors associated with NCDs, particularly cardiovascular diseases (CVD) and neuropathies, and affects a third of the Latin American population [2]. Since the seventies in Costa Rica, CVDs represent the main cause of death of the population. In 2018, 29% of deaths were due to CVD and the prevalence of HT in the population over 18 years of age was 37.2% [3].

As He *et al.* showed there is strong evidence for a causal relationship between sodium intake and blood pressure. Multiple complex and interconnected physiological mechanisms are implicated, including fluid homeostasis, hormonal, and inflammatory mechanisms, as well as more novel pathways such as the immune response and the gut microbiome. Target organs damage with high salt intake that increases the risk of cardiovascular disease, an all-cause mortality, and other conditions such as kidney disease, stomach cancer, and osteoporosis. High salt intake is among the three dietary risk factor worldwide [4]. In 2018, the study on the Global Burden of Disease showed that high sodium intake was the main risk factor for CVD mortality and morbidity and mortality [5].

In 2009, the Pan American Health Organization (PAHO) launched the initiative “Prevention of CVD by reducing the intake of dietary salt in the entire population”, whose goal is to achieve a gradual and sustained reduction to <2000 mg of sodium per person per day (5 grams discretionary salt/person/day by 2020 or 30% reduction in sodium intake by 2025) [6]. Interventions to reduce salt/sodium are considered “Best buys” by the World Health Organization (WHO), given that they are among the most cost-effective measures that countries can adopt to improve NCDs in the population [1]. To achieve this global goal in 2013 a global strategy was established that includes in its platform the creation of an enabling environment that “educates the consumer” with a social marketing approach. Consumer education alone has been shown to be insufficient to reduce salt/sodium intake [7].

Using the Integrated Preventable Risk Model (PRIME), the number of preventable deaths in Costa Rica was estimated if sodium consumption were reduced, finding that 13% and 4% of CVD deaths would be avoided [8]. The national so-

dium intake in 2018 was more than double WHO recommendation (11 g salt or 4.4 g sodium/p/d). The main sources were salt (65%) and processed foods (28%), including seasonings with added sodium [9].

Due to the health situation and the high sodium consumption of the national population, evidence-based public policies have been developed [10] [11] [12]. First qualitative study on knowledge, attitudes, and practices (KAP) related to salt, sodium, and its relationship with health and nutritional [13], was carried out between 2011 and 2012 in two communities (urban and rural) per country in Argentina, Ecuador, and Costa Rica. Knowledge corresponds to the fact or condition of having information or of being learned, for ex. knowing what sodium is, its daily recommended intake amount, what is HT and what are the causes of this disease. Attitudes are a settled way of thinking or feeling about someone or something, typically one that is reflected in a person's behavior, such as how do you feel reducing the use of salt when cooking. Practices refer to doing something, for example, measuring the amount of salt added to foods and reviewing the nutritional information in packaged foods [13].

The results served as the basis for designing the population study carried out during the period 2012-2016, in which it was shown that in Costa Rica beyond cultural and geographical differences, age aspects are the main differentiators in the use of salt, dressings and condiments in the preparation of food and dishes at home, as well as in the selection of establishments to eat away from home [14].

Key findings of these studies held in Costa Rica [13] [14] were: women are generally in charge of cooking and family food purchases; salt is perceived as a basic ingredient, used in small amounts that can be reduced—but not eliminated—when cooking; they believe only people who consume an excessive amount of salt have health risks; most believe that they consumed little salt and did not perceive that their health is at risk; most, doesn't measure the amount of added salt during cooking; mainly participants with more than 50 years did not know that processed food contains salt and sodium; reviewing nutritional information is not common, and those who did said that they did not understand it; changes in food preparations and emotions are associated with the consumption of home-made food with salt; participants of these studies likes to eat out, where the establishments selected depend mainly on age group and income. Blanco-Metzler *et al.* [14] concluded that beyond cultural and geographical differences, age aspects are suggested as being the main differentiators, in terms of use of salt, seasonings, and condiments in the preparation of food at home, the recipes prepared, reading nutritional labelling, and the selection of establishments in which to eat out.

Between 2016 and 2020, formative research was carried out in four Latin American countries, including Costa Rica to develop a “Regional Plan for Social Marketing and Communication for Salt Reduction in Latin America” [15]. In Costa Rica, the following were identified as motivators to reduce salt consumption: the search for family well-being associated with feelings of protection; the desire to improve the state of health, body weight, physical appearance and feel better; the healthy options available in restaurants; a positive attitude towards reducing salt:

“Everything takes its time and its habit, like eating little salt... accustoming the palate”; positive attitude in the use of “aromatics” and natural spices to flavor food, but not as a substitute for salt; family and personal history of NCDs such as hypertension; children as facilitators and promoters of behavior change; a way of being creative and innovative; and the interest in receiving messages or information on the subject from trained and reliable personnel (experts). Among the barriers were consuming processed foods and adding salt to prepared foods, the perception of limited time to cook, resistance to change, emotional attachment to traditional cooking, the association between salt and good taste, the association of low salt/sodium foods with the disease and the fear that the family will reject the modified preparations. Likewise, it was evidenced that mothers know the consequences of excessive salt consumption for health, had a certain degree of awareness on the subject, ignorance about the recommendations for salt consumption, associate reduced-salt diets with medical conditions and most of the participants reported that their family’s salt intake is moderate to low. In addition, the population does not perceive salt substitutes as an alternative to reduce salt/sodium consumption; prefers to implement other actions [14].

In this document, the term “salt” refers to discretionary salt (sodium chloride), popularly known as table salt, common salt or simply, salt; “natural seasonings” will be understood as those “aromatics” (as onion, garlic, sweet chili), spices without added salt, herbs (coriander, celery, parsley and other local herbs), and citrus fruits (lemon, orange), and as “commercial or industrialized condiments” the flavorings prepared by the food industry [14].

The aim of this paper is to describe the design of a behavior change intervention based on social marketing to reduce salt/sodium intake in adult key populations of Costa Rica for the prevention and control of NCDs and associated risk factors.

2. Methodological Framework

The main inputs used to design this intervention was the data generated in three qualitative investigations carried out by the Costa Rican Institute of Research and Teaching in Nutrition and Health (INCIENSA) research team [13] [14] [16] and the “Regional Plan for Social Marketing and Communication for the Reduction of Salt Consumption in Latin America” [15], in which the theory of behavior change was contemplated [17]. The investigations showed that the age of the participants ranged from 20 - 65, with a predominance of women of medium to low-medium socioeconomic status. The educational level of the participants ranged from complete elementary school to university degree. The fieldwork techniques used in these studies were: interviews and focus groups, workshops, demonstrations, and observations [13] [14] [16]. The formative research allowed to delve into the characteristics that the target audience should have and the motivators and barriers that influence behavior change. This scientific evidence is basic to establish the objectives and the social marketing strategy. All these studies were approved by the INCIENSA’s Ethical-Scientific Committee. All par-

ticipants provided informed consent.

Subsequently, a SWOT analysis (strengths, weaknesses, opportunities, and threats) was carried out to prepare the situation analysis that included the KAP's, beliefs and perceptions, barriers, and motivators of the target population. In addition, the demand, supply, and competition associated with the reduction of salt/sodium consumption were analyzed, as well as the current public policies on salt in the country [18] [19].

The situational analysis was used to establish the communication goal, that is, the desired behavior changes and the communication objectives according to KAP for the audiences. Subsequently, together with an advertising agency, several proposals for creative concepts and strategies were prepared and finally was selected the one most in line with the value proposition defined by the research team. Based on selected creative strategy, the agency designed communication materials (advertising pieces), that were validated according to the criteria of attractiveness, understanding, acceptance, identification of the audience with the material and induction to action, in six focus groups made up of participants from four communities of the Great Metropolitan Area (GMA) of Costa Rica and with characteristics like those established for the primary and secondary audience. Feedback received during these validation sessions justified making the next specific changes to improve the developed materials, particularly to facilitate communication: the number of messages were reduced, new photos were taken to control the elements displayed around the models, overall layout was redesign with a cleaner distribution of elements and new use of colors, the heart figure was inclined to bring more dynamism and a better flow of lecture, one of three proposed slogans was selected and the message associated with heart disease was enhanced.

Table 1 indicates the phases and describes the aspects considered for the design of this intervention.

3. Results/Findings

3.1. Knowledge, Beliefs, Perceptions, Attitudes, Practices, Motivators and Barriers about Salt and Sodium of the Studied Populations

The main results on the KAP, beliefs, perceptions, barriers, and motivators resulting from the situational analysis are described below.

3.1.1. Knowledge, Beliefs and Perceptions about Salt and Sodium

There is popular knowledge in relation to salt, but not with “sodium”, although they have a vague notion of this last since it is an abstract concept and is not visible, contrary to salt, which is tangible. Most of the participants over 44 years of age indicate that there is no difference between salt and sodium, they cannot identify its function or which foods contain the highest amount. However, young adults (20 - 44 years) mostly know what sodium is and differentiates it from salt, although they do not associate it with food.

Table 1. Phases of the national social marketing plan to reduce salt/sodium intake developed in Costa Rica, 2022.

Phases	Description
I Qualitative research	Exploratory
	Population
	Formative
II Analysis of the situation	The consumer
	The demand and supply
	The competition
III Social marketing strategy proposal	Purpose and expected impact of its implementation
	Target audience
	Knowledge and behavioral goals and objectives
	Value proposition
	Marketing Mix Strategies: Product, price, place, and promotion (4P's)
IV Implementation, monitoring, evaluation, and budget plan	Creative strategy
	To be developed by social actors that will implement the local social marketing plan

Salt is considered an essential, irreplaceable, and permanent ingredient in the kitchen to give flavor to food and provides identity and validity to preparations. They indicated that the taste of salt is an acquired taste, the amounts used are increasing, and that certain foods cannot be prepared without salt. Despite this assessment, they recognize that salt consumption is harmful to health. They believe that it can be reduced, but not eliminated or replaced, and that the use of “aromatics”, herbs, natural spices, and citrus fruits, among others, can help improve the flavor of food. They consider pink (Himalayan) salt “better or healthier” than common salt “by helping or minimizing the negative results” on health, and perceive they cook with little salt or with “the right amount”.

Regarding diseases associated with salt consumption, they mentioned hypertension and diabetes; however, they are not clear about the effect of salt on them. The consequences of excessive salt consumption referred to were high blood pressure, fluid retention, tiredness, and headache.

3.1.2. Practices and Attitudes about Salt and Sodium

Among the practices and attitudes studied, there were identified “risk” and “protection” types.

1) Risk practices and attitudes

One of a popular risky practice is the purchase of foods high in salt and sodium. Consumers do not review the nutritional information declared on the label of prepackaged foods and refer to buying preparations in restaurants and

canteens, e.g., fried chicken, Chinese food, fast food.

Regarding the preparations, they mention adding the amount of salt according to their experience, so they say they have no notion of how much they use. To add the salt and “spice up” the food, they use the ladle used for cooking, the fist (of the hand) and the pinch (amount taken between the thumb and forefinger); few expressed that they use measuring utensils such as spoons or teaspoons. They stated that they also use industrially produced condiments (broth, curry, complete seasoning, cubes, flavored salts), sauces, dressings, dehydrated soups, among others; a practice that some associate with “family tradition” and criteria of convenience, due to the little time devoted to food preparation. Others use natural seasonings in small amounts and claim to be unaware of the benefits of eliminating liquids (brine) from canned foods. They use a brand of iodized and fluorinated salt, and other types of salt (marine, pink, flavored, or seasoned).

In relation to the consumption of food and preparations, they express a taste for those that are salty. For example, processed foods, fast food and Chinese, among others. In the kitchen they usually have a container with salt for cooking, known as a “salt bottle”, from which they use themselves if the prepared food does not have the desired amount. They add salt to the avocado, custard and to the acidic fresh fruits, such as orange, pineapple, and mango.

2) Protection practices and attitudes

Among the protective practices and attitudes that favor reducing salt consumption is the use of natural seasonings. It was identified that, at the time of purchase, they prefer to buy fresh food and some participants are not influenced by prepackaged food promotions, which are often high in sodium.

To prepare food they already use spices and natural herbs, aromatics; but they use them in very small quantities and just a few. Also, they mention they combine them with condiments and sauces of industrial production. Some mention that they prepare natural dressings, use a measuring spoon and try to reduce the use of condiments during food preparation.

During the consumption of food, the majority (two thirds) do not have a salt-shaker on the table, an aspect that was corroborated by observation. Some add lemon to salad instead of industrial dressing and look for healthier options when eating out.

3.1.3. Barriers and Motivators for Reducing Excessive Salt/Sodium Consumption and Increasing the Use of Natural Seasonings

Table 2 summarizes the main barriers and motivators grouped by aspects “of the person and their family”, “lifestyle of the inhabitants”, “environment” and “health services”.

3.1.4. Demand, Supply, and Competition

A fundamental aspect for designing a social marketing intervention is the analysis of the demand and supply of products and foods related to this critical nutrient, as well as the study of the competition.

Table 2. Barriers and motivators to reduce salt/sodium consumption and to increase the use of natural seasonings. Costa Rica, 2022.

Aspects	Barriers	Motivators
Personal/family	<ul style="list-style-type: none"> Perceive they consume an “adequate amount or low level of salt”. Salt is an essential source of flavor during food preparation. Food without salt is not tasty and/or is associated with illness (“hospital food taste”). There is a fear family members reject less salty foods. 	<ul style="list-style-type: none"> Search for family well-being associated with feelings of protection. Positive attitude towards reducing salt use. Positive attitude in the use of “aromatics” and natural spices to flavor meals. Children can figure as facilitators and promoters of behavior change. Family and personal history of NCDs and risk factors (HT).
Population lifestyle	<ul style="list-style-type: none"> Perceive that the availability of time to cook is reduced. Mention that food preparation is not a priority as it competes with other activities. Trend in the consumption of harmful culinary preparations, especially in young generations. 	<ul style="list-style-type: none"> Desire to improve the state of health, body weight, physical appearance and feel better.
Environmental	<ul style="list-style-type: none"> Growing consumption and accessibility of unhealthy foods. Healthy foods are perceived as more expensive than others. Unaware of the existence of salt substitutes. Increased exposure to prepackaged food advertising with a wide variety of persuasive marketing strategies (low cost, promotions, lifestyle trend). Nutritional information is unclear and sometimes considered unreliable. High variability in sodium content in prepackaged products. Wide range of products with medium and high sodium content in food services. 	<ul style="list-style-type: none"> Availability of some healthy eating options in restaurants.
Health services	<ul style="list-style-type: none"> The health team does not provide the population with the information required on the subject. 	<ul style="list-style-type: none"> Interest in receiving information on the subject from trained and reliable personnel (experts)

1) The demand

The demand for salt and food products with added sodium in Costa Rica has been monitored by the research team of the INCIENSA from 2004 to date [9] [20] through the indirect method of the family budget survey described by PAHO [6]. The apparent consumption of sodium in the national population for 2018 was 3.83 g/p/d (adjusted to 2000 kcal/p/d), with greater availability in urban areas than in rural areas [9]. The main sources of sodium in the diet were salt with an estimated intake of 2.49 g/p/d (65.0%) and processed foods (including seasonings with added sodium), 27.4%. Regarding the estimated apparent consumption in 2012-2013 [20] a statistically significant decrease was found, since

the rise in intake was interrupted and stabilized over time with a downward trend (reduction of 0.52% in a period of 6 years) [9].

2) The supply

In the Costa Rican market, the supply of salt is wide, varied and growing for domestic consumption. Salt also comes from industrialized foods, prepared and fast foods, artisanal and street foods (ready-to-eat foods).

A study carried out in 2018 in supermarkets in the Metropolitan Area of Costa Rica showed the existence of 13 brands of salt and 11 different types. A total of 6884 different prepackaged products were counted [16], 1016 belonged to the categories with national sodium reduction targets and of these, 87% were below the maximum allowed limit [18].

Other foods popularly consumed in the Metropolitan Area were analyzed for their sodium content [16] [21]. Among the most relevant findings was found that some fast foods made by transnational and/or national restaurants contain less sodium than street and artisan foods [16]. Another study carried out in 2013 showed that fast foods sold in popular chains of Costa Rica have a significant variation in salt levels between fast food and chains [21].

3) The competition

The main attribute that national consumers refer to salt is to give flavor to food; however, there is an opening to reduce its use, but not to eliminate it [14] [21]. It was evidenced that convenience food products have generated culinary changes in food preparation and eating due to their low cost, flavor, high availability, being consistent with the current lifestyle (ease of use) and consumption trends. There is the practice of combining natural seasonings with commercial ones [14]. The lower cost of some processed foods and frequently consumed high-sodium fast foods competes with the preparation of healthier home-cooked meals and the choice of eating out venues [14] [21].

In the country, the commercialized prepackaged food and beverage industry is represented by the Costa Rican Chamber of the Food Industry (CACIA), with which the Costa Rican Ministry of Health established an alliance in 2016 to reduce the sodium in six key categories of prepackaged foods [22] and was renewed in 2019 [23]. The first monitoring of these products carried out in 2018 showed an effort of the food industry to reduce the sodium content, since compliance with the limit targets improved [18], but then, it weakened according to the most recently study carried out [24]. Since the current year (2023), this alliance has not been renewed [24].

In national food services such as canteens, restaurants, cafeterias, and fast-food outlets, was found that owners, administrators, and cooks have a good attitude, when cooking, towards reducing the use of salt and products with a high sodium content, as well as in its acquisition. More than 70% indicate that they use industrialized products in the preparation of food, more than half place saltshakers, sauces and dressings on the table or have them available to the customer and add salt to ready-to-serve preparations. 98.3% perceive that they use the “adequate”

or “little salt” amount in their preparations. Half perceive that there are barriers to implementing salt/sodium reduction strategies in preparations, standing out in descending order: low knowledge and skills to prepare low-sodium foods and beverages, low market availability of low-sodium ingredients, non-acceptance by customers, and increased cost. Despite this, more than 68% are willing to receive training and take actions to reduce excess salt/sodium [25].

In Costa Rica, street and artisanal foods are an important source of dietary sodium, mainly for the population with lower economic resources. Most contributed medium (120 to 600 mg sodium per 100 grams of food) sodium according to the UK Traffic Light System nutrient profiling criteria [16] [26].

The use of marketing strategies in products with a high sodium content represents a challenge, especially in the child and adolescent population, due to the low cognitive KAP capacity to identify their persuasive intention [27]. In a study carried out in supermarkets in Costa Rica, it was found that the most used marketing strategy to influence the purchase of food and non-alcoholic beverages is the reduction of prices by promoting caloric-dense products with a high content of critical nutrients associated with NCD and that the nutritional profile of the products that included promotional characters on the main face of the packaging and premium offers, were less healthy than those that did not include them [28] [29].

To combat goiter, a public health problem in Costa Rica, since 1972 salt has been fortified with iodine [30]. In 1987 the National Salt Fluoridation Program in Costa Rica was implemented to reduce the high rates of dental caries in the population and, two years after a National Salt Iodine-Fluoridation Program was developed [31]. In Costa Rica, efforts have been made to coordinate actions between salt fortification and salt reduction programs [32], but no progress has been made to date although programs are synergistic and not antagonistic [33].

3.2. Social Marketing Strategy Proposal

3.2.1. Purpose and Expected Impact of Its Implementation

The purpose of this national social marketing plan is to contribute to the reduction of excessive salt and sodium consumption in the Costa Rican population for the prevention and control of hypertension, CVD and others associated with excessive sodium consumption and thus reduce early mortality. The expected impact is to achieve a “3% relative reduction in the average daily intake of salt/sodium in the adult population by 2030” [12].

3.2.2. Target Audience

The primary and secondary target audience was like that defined in the formative research carried out in Costa Rica [16]; however, in the national plan was adjusted as described next.

The primary target population was composed of mothers between 25 and 44 years old and with at least one child of school age (7 - 12 years old); urban with medium-low or medium socioeconomic level; with paid work, inside or outside

the home, and with or without hypertension or comorbidities associated with excessive sodium intake. She is responsible for the purchase, preparation, and consumption of food at home. She has completed primary school and even with a university degree. The marital status of the majority was married or living with a partner. Most of the population is in the pre-contemplation stage, since they consider that they consume “little” amount of salt/sodium and there is no need to make changes. The secondary target population were urban adult caregivers (men or women) of child between the ages of 7 and 12 of the primary target population; with medium-low or medium socioeconomic level and residents of the GMA.

3.2.3. Knowledge and Behavioral Goals and Objectives

The communication goals agreed upon by the national research team were to reduce the demand for the use of salt/sodium and high sodium foods, and to increase the use of natural seasonings during food preparation.

1) Knowledge objectives

It is considered essential that the primary and secondary audiences know, distinguish, or identify the following: the amount of salt/sodium considered safe and healthy to eat; how to prepare foods with less salt and sodium; how to use herbs, aromatics, unsalted spices, citrus and natural flavorings in food preparation; that “hidden salt” is present in large quantities in condiments, industrialized sauces and dehydrated soups; the benefits of healthy salt and sodium intake; the relationship between salt intake and CVD; and how to interpret nutrition labeling on prepackaged foods.

2) Belief goals

Primary and secondary audiences are intended to believe or feel that; meals with less added salt, seasonings and industrialized sauces, during and after their preparation are tasty and healthy; having high blood pressure is not “normal”; your family may be at risk of CVD if they are consuming excess salt/sodium; regard herbs and spices as essential ingredients in food preparation; that she has the power and knowledge to prepare food with less salt that her family would accept.

3) Desired behavior goals

In a first stage, it is intended to sensitize primary and secondary audiences of the health consequences of sodium consumption in excess and interest them in consulting information on the subject. In a second stage it would be expected to: increase the use of aromatics, herbs, spices, citrus, and other natural flavor enhancers in food preparation; add less salt and industrialized products (condiments, sauces, dressings and soups) in the preparation of food; reduce or eliminate their use at the table; become interested in purchasing and preparing healthier low-sodium foods; asking the members of the family nucleus to get involved and support her by not adding salt to ready-to-eat culinary preparations and to fresh fruits; and check the nutrition information on prepackaged products.

3.3. Value Proposition of the Marketing Strategy

The marketing strategy is based on promoting a natural diet low in sodium that generates value for the target population and that responds to national public health policies. Efforts are being made to promote and transfer knowledge so that health promoters from different governmental and non-state sectors contribute in the short and medium term to the implementation of the national social marketing plan and to achieve the international target of consuming less than five grams of salt per person per day.

The value proposition consists of influencing gradually the behavior change of the primary and secondary audiences through the objectives, positioning the value of a healthy diet with less salt/sodium and the use of natural seasonings; to achieve a healthy lifestyle that promotes a coexistence of love and health with myself and my family in the medium term, and cardiovascular health in the long term.

3.4. Marketing Mix Strategies (4P's)

Like the regional social marketing plan, this plan focuses on Promotion (13). The other considered three "Ps" are: Product, Price, and Place.

To achieve the purpose established in this social marketing plan, the strategies of the marketing mix are described below:

3.4.1. Product Strategy

The product of this plan constitutes the promotion of a change in behavior in the preparation and consumption of food in the mother of the family and the caregiver of the children by using less salt and more quantity and variety of natural seasonings. See product levels in **Figure 1**.

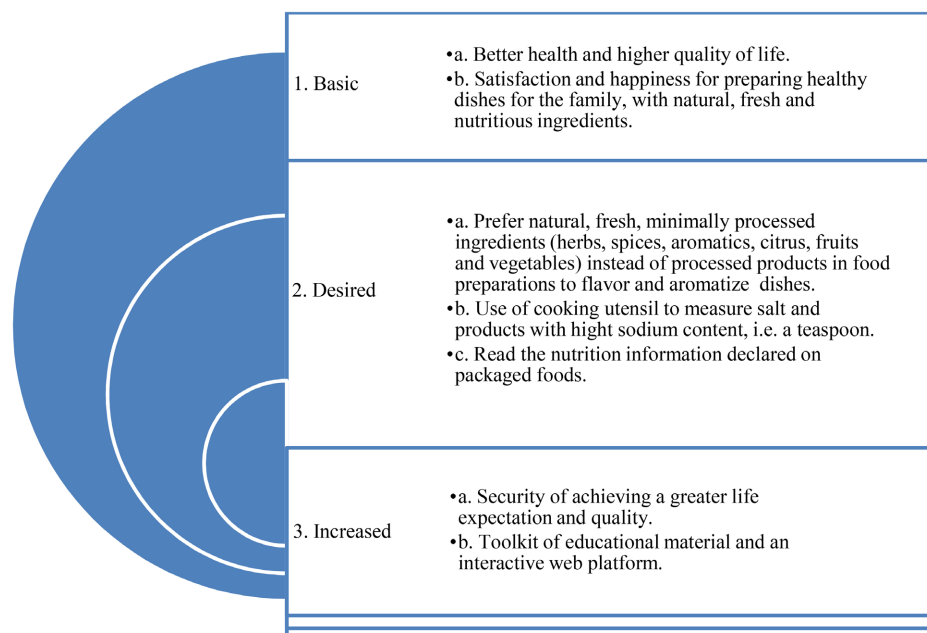


Figure 1. Product levels of the national social marketing plan.

3.4.2. Price Strategy

The proposed strategy to deal with the price, that is, psychological, social, and financial barriers or costs that the target population must face to adopt the new behavior, requires considering the tactics to combat the price (Table 3).

3.4.3. Distribution Strategy (Place/Channel)

It arises in the areas of food purchase, preparation, and consumption in the national food system. The main purchase channels for natural seasonings in Costa Rica are farmer's fairs, municipal markets, and supermarkets where the sale of herbal plants and "aromatics" could be promoted, and buyers sensitized with messages and educational material. Regarding foods high in sodium, alliances with the industrial sector could be renovated so that they offer accessible and low-sodium options in supermarkets and other food stores, for use at home and in the gastronomy sector.

The home is the place for excellence to promote the product through training and the implementation of specific interventions for the development of skills in the preparation of food and beverages, awareness of the health risks of excessive salt/sodium consumption, promotion of the cultivation of herbs and aromatics in orchards, hydroponic media and/or pots, among others.

3.4.4. Promotion Strategy

It is proposed to carry out: 1) An advertising campaign aimed at primary and secondary audiences in the mass media identified in the qualitative researches: traditional (television, radio, press and popular magazines) and digital (WhatsApp, Facebook, Tik-Tok), 2) Promote sales of healthy foods to learn how to eat healthy through low-salt recipe tastings flavored with fresh herbs, aromatics,

Table 3. Price of behavior changes and proposed intervention tactics according for the target population of social marketing plan. Costa Rica, 2022.

Price	Tactic
Feeling of guilt and frustration due to the non-acceptance of food by perceiving it with less flavor.	Sensitize the mother/caregiver about the health risks of excessive salt and sodium consumption. Promote the development of skills in the use of natural seasonings in food preparation through training and healthy recipes.
Anxiety at not having food ready and/or the need to invest more time in the acquisition of ingredients and food preparation.	Promote planning techniques for the purchase and preparation of food.
Depending on factors such as selected foods and season, possible higher cost and shorter shelf life when purchasing fresh and natural foods.	Promote growing herbs and "aromatics" in homes, schools, municipalities, among others. Stimulate the purchase of fresh seasonal foods at farmer's fairs. Promote days of discounts for fruits and vegetables in commerce. Promote a basic food basket with a nutritional focus. Promote planning techniques for the purchase and use of fresh food to avoid waste and enhance its use.

spices without added salt and citrus fruits; provide healthy eating and living tips and promote learning new cooking recipes. The channels would be supermarkets, farmer's fairs, municipal markets, and the mass media. 3) Alternative market for healthy foods in communities, in city shopping centers and in other public places.

3.5. Creative Strategy

Natural was chosen as the value proposition because it represents the positive, the healthy, what has not been transformed by man, the undeniable, the indisputable, has no defects and is well received by the population. Therefore, it is a viable alternative to the reality of the consumption of salt and prepackaged foods high in sodium, due to the preference of part of the target market and the existing competition. It is based on five pillars or components: natural (it is the main one); my family and I; coexistence; love and health. These pillars were embodied in the arts of 10 selected advertising pieces that include the slogan "Enjoy the natural flavor and protect your heart." Additionally, "memes" and educational videos alluding to the creative concept and its elements were developed. It is proposed to disclose them in the social networks, public spaces and other means of communication mentioned as promotional material in the activities for use by the strategic actor that implements the plan.

3.6. Implementation, Monitoring, Evaluation, and Budget Plan

The institution or organization implementing the national social marketing plan will be responsible for carrying it out, according to the available resources, among others.

All these results were documented in the National Social Marketing Plan for the Reduction of Excessive Salt, and Sodium Consumption in Costa Rica addressed to local social actors related to health promotion [34]. This first document was produced outside of traditional publishing and distribution channels, technically known as gray literature.

4. Discussion

The efforts and achievements to design a national social marketing plan of a Costa Rican interdisciplinary research team are documented in the current paper. This plan is specific, comprehensive, and tailored to the local context.

Specific because the motivators and barriers selected were specific to the target population. For example, we found contrary to what has been reported in other countries of the region a positive attitude towards reducing salt consumption [15] [35] and as a barrier the use of salt substitutes [15] [36] [37]. On the other hand, in most countries of the world salt is closely associated with the flavor of meals, cooking time is limited, and healthy foods are perceived as expensive [6] [13] [14] [15] [16] [33]-[38].

It is comprehensive and adjusted to the local context because it is based on

scientific evidence generated in research carried out in Costa Rica and on the characteristics of supply, demand, and local competition.

In this national plan, natural is the value proposal that promotes what has not been transformed by man, is positive, undeniable, indisputable, has no defects, and is well received by the population because is healthy, nutritious, fresh, full of flavor, aroma, and color. Therefore, in Costa Rica the use of natural seasonings it is a viable alternative to the reality of salt and high-sodium prepackaged foods consumption, their preference by the target market, and existing competition [9] [13] [20].

At the regional level, a pilot study of a social marketing intervention to reduce sodium consumption was carried out in Peru. Consisted of the use when cooking meals of salt substitutes [34], a processed product instead of natural one. Also, since 2015 the Healthy Caribbean Coalition integrated social marketing in their wider Salt Reduction Strategy [38]. No other interventions of this type are known in Latin America countries; however, product of the Social Marketing Program for Public Health developed by the Pan American Health Organization and the School of Public Health of the University of Florida there are new intervention proposals in salt reduction [39]. At the international level, several interventions to reduce sodium consumption based on social marketing have been implemented [40] [41] [42].

The selection of the primary target public of this national plan were mothers of schoolchildren, an open population, prone to change and easy to reach because they are concerned about the health of their children, in addition to instilling healthy eating habits that require more immediate results. With it, it is expected to obtain a maximum benefit because they decide the food that is bought, how it is prepared and consumed at home [13] [14] [15] [16].

As in other studies [15] [35] [38] [41], the home is the place for excellence to promote the product proposed in this plan. However, since the marketing strategy is promotional, it could be complemented with a tangible product. For example: a measuring spoon (salt spoon) was successfully carried out in some provinces of China [42]. Other options are developing a tragedy for selling culinary herbs and “aromatics” plants and sensitizing buyers with educational material at the farmer’s fair, municipal markets and supermarkets, main channels for purchasing natural seasonings; as well as stimulating growing and using with the aid of healthy recipe books, herbs and “aromatics” at home, school, and local government projects [15]. On the other hand, it is required the reduction of sodium content in processed food used at home and gastronomic sector, through the renewal of alliances or creation of regulation of these products to offer more healthy options [24].

When comparing the regional marketing plan [15] with the national [34], there are some common motivators for reducing salt consumption: it is a way of caring for and nurturing the family; a way of being creative and innovative; and a way to stay in good shape. Among the coincident barriers are the habit of eating processed foods and adding salt to prepared foods; the perception of limited

time to cook; the association between salt and good taste; the association of low salt/sodium foods with disease; and the fear that the family will reject the modified preparations. In addition, it was evidenced that the fathers and mothers of the target populations know or at least have the idea of the consequences of excessive salt consumption for health; they have a certain degree of awareness on the subject; they are unaware of the recommendations for salt intake; associate low-salt diets with various medical conditions (high blood pressure, diabetes, CVD) and most perceive that the salt intake in their family is moderate to low, although it is high [13] [14] [16]. It is important to consider that even though there are common motivators and barriers, the relevance they occupy may be different among the target populations of Latin American countries, which could explain the differences found. There are also some particular or country-specific barriers; for example, those related to the emotional attachment to traditional cuisine where, unlike other Latin American countries, in Costa Rica its influence is not as strong or does not have as much weight, as coexistence and family are. Another identified barrier is that the health team, referring mainly to the Costa Rican social security system, does not provide the population with the information required on the subject.

The marketing mix proposed in the regional plan is broad, that is, quite general, so that each country could select, adjust, and validate its 4 P's. On the other hand, in the regional plan four creative concepts were developed: tradition, flavor, love and secret source that in the same way each country had to adapt to the national context and validate it in the target populations [15]. Of these, in Costa Rica only "love" is a pillar of the common creative concept, since "promoting a natural diet" constitutes the value proposition accompanied by the following elements: my family and I, coexistence and health [34].

With the development of advertising pieces and other educational material in this national plan, a toolkit was created that can be used or adapted by the social actors that implement the national plan.

Some limitations of this proposal are the target populations can be further segmented. For example, in healthy and sick population; children and adolescents are not included, because the KAP, motivators and barriers related to reducing the consumption of salt and foods high in sodium have not been studied in-depth; and the selection of the marketing mix strategies to be used is defined by the social actor that will implement the marketing plan, because it depends on the availability of the budget and other resources for its execution.

5. Conclusions

This plan is a country initiative to position the value of a natural diet with less sodium and to contribute to the prevention and treatment of HT and NCD associated diseases.

Health promoters from different government and non-state sectors are expected to contribute to the implementation of the national social marketing plan, in the short and medium term to achieve a consumption of less than five grams

of salt per person per day.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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