

## Report

# Advocacy Strategies and Action Plans for Reducing Salt Intake in Iran

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## Introduction

It has been estimated that in 2008, non-communicable diseases (NCDs) accounted for 36 million death worldwide, contributing to 63 percent of all-cause global mortalities.<sup>1</sup> Without any serious action, the NCD epidemic is projected to kill 52 million people annually by 2030.<sup>2,3</sup> High blood pressure has been reported as the leading underlying cause of as many as 7.6 million premature global deaths and 92 million disability adjusted life years (DALYs) in 2001.<sup>4</sup> Globally, 51 percent of deaths due to stroke (cerebrovascular disease) and 45 percent of deaths due to ischemic heart disease are attributable to high systolic blood pressure. At any given age, the risk of dying from high blood pressure in low- and middle-income countries is more than double that in high-income countries. In the high-income countries, only 7 percent of deaths caused by high blood pressure occur under age 60; in the African Region, this figure increases to 25 percent.<sup>5</sup> Nearly 80 percent of current deaths due to non-communicable diseases occur in low- and middle-income countries, disproving the myth that non-communicable diseases are mostly affecting affluent societies.<sup>6</sup>

There is abundant evidence on a causal relation between salt intake and high blood pressure.<sup>7-10</sup> In a meta analysis of salt reduction randomized clinical trials with the median duration of 5 weeks (ranging from 4 weeks to 3 years), for each 100 mmol

reduction in 24-hour urinary excretion of sodium, there was 3.99 mmHg reduction in systolic blood pressure (95% CI: 2.93 – 5.05) and 1.92 mmHg reduction for diastolic blood pressure (95% CI: 1.26 – 2.59).<sup>11</sup> The increase in blood pressure leads to an increased risk of cardiovascular disease.<sup>12,13</sup> In a meta-analysis of 19 independent cohort samples from 13 studies, with 177,025 participants and average follow up of 3 years (5 – 19 years) and over 11,000 vascular events, a higher salt intake was associated with a greater risk of stroke (pooled relative risk 1.23, 95% confidence interval 1.06 – 1.43, P = 0.007) and cardiovascular disease (pooled relative risk 1.14, 95% confidence interval 0.99 – 1.32, P = 0.07).<sup>14</sup> There is also substantive evidence suggesting that excessive salt intake is also causally associated with increased risk of gastric cancer.<sup>15</sup>

The UN high level meeting on NCD urged member states to adopt urgent preventive actions to tackle the NCD's rapidly rising burden.<sup>16</sup> It has been estimated that reducing dietary salt intake across populations, as a single, inexpensive, cost effective measure, can hugely reduce the burden of cardiovascular disease (CVD).<sup>17-19</sup> According to the World Health Organization (WHO), reducing populations' salt intake is by far the most effective preventive approach for all countries and in all settings.<sup>20</sup> It has been estimated that reducing the salt intake at a population level can reduce total mortality rate, on average, by 1 – 2 percent and increase mean life expectancy by 1.6 months.<sup>21</sup>

Iran is undergoing epidemiological transition and is facing a rapid increase in the burden of NCDs.<sup>22</sup> Based on a WHO report, NCDs are estimated to account for 72 percent of all deaths in Iran, 24 percent of which happens under age 60.<sup>23</sup> The estimated age standardized prevalence of hypertension was 34 percent in the adult population (36 percent in men and 32 percent in women). It has been estimated that the circulatory system diseases contributed to about 1,500,000 Disability Adjusted Life Years Lost (DALYs) in Iran in 2003.<sup>22</sup> Cardiovascular diseases were responsible for 45 percent of total national mortality, while communicable diseases, maternal, perinatal, and nutritional conditions together contributed to 13 percent of total mortality in Iran in 2008.<sup>23</sup> So far, compared to infectious diseases, chronic diseases have received less attention in the Iranian health care system.<sup>24</sup> However, recently the Iranian

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**Table 1.** Twenty-four hour urinary salt equivalent excretion values based on 24-hour urinary sodium excretion studies in Isfahan

Year	Source population	Sample size	Age range (years)	Sampling method	Equivalent 24-hour salt excretion based on 24-hour urinary excretion values (g/d)	Equivalent salt intake (g/d) *
1999–2000	General urban adult population	1059	20–60	Multistage random sampling	8.2	9.1
2001–2002	General urban adult population	374	+19	Multistage random sampling	12.5	13.9
2007	General urban adult population	806	+19	Multistage random sampling	10.6	11.8

\* Assuming that 90 percent of sodium intake is excreted into the urine

ministry of health has acknowledged tackling NCDs as one of its priorities.<sup>25</sup> A road map for reducing salt intake in Iran was proposed in the previous issue of this journal.<sup>26</sup> Here, we present the national advocacy strategies and action plans for implementing a nation-wide salt reduction program that was developed by Isfahan Cardiovascular Research Institute (ICRI) and proposed to the Iranian Ministry of Health.<sup>27</sup>

### ***Main steps in designing a comprehensive national salt reduction plan***

#### Creating a national salt reduction task force

As a first step, and after initial considerations by ICRI experts, a steering committee was formed in 2010 in order to set out the priorities and devising an action plan for reducing the salt intake in Iran. This committee encompassed a wide range of experts engaged with various aspects of NCD control in Iran and included ICRI senior members with expertise in cardiovascular preventive strategies and nutrition sciences, representatives from the Health, and “Food and Drug” deputies of Isfahan University of Medical Sciences and Institute of Standard and Industrial Research of Isfahan province, Director General of Nutrition Department in the Ministry of Health, and food technologies of Isfahan University of Technology, an officer from the NCD branch of WHO office in Tehran, and delegates from the food industry. In parallel an executive committee was formed in 2010 in order to define target groups and key messages based on the decisions made by the steering committee. The executive committee encompassed members of ICRI with a wide variety of expertise including its executive director and heads of nutrition group; education and training unit; evaluation, assessment and quality control group; and IT department.

#### Estimating the current salt intake in Iran

The next step was to get the best estimate for current salt intake in Iran. Details of the best methods for the estimation of populations salt intake and current estimates of salt intake in Iran, and its comparison to estimates from other countries was explained elsewhere.<sup>26</sup> In brief, there have been no studies that measured 24-hour urinary sodium excretion in a nationally representative Iranian sample. However, there were three 24-hour urinary sodium excretion studies performed in representative adult population samples in the city of Isfahan. Equivalent 24-hour salt excretion values based on 24-hour urinary sodium excretions, in the years 1999, 2002, and 2007, were 8.2, 12.5, and 10.6 g/d, respectively.<sup>28,29</sup> Assuming that about 90 percent of sodium intake is excreted into the urine, they correspond to salt intakes of 9.1, 13.9, and 11.8 g/d. These values are in line with most of the countries around the world, in which the intakes are higher than recommended daily

intake.<sup>26</sup>

Table 1 provides further details of the 24-hour urinary sodium excretion studies in the city of Isfahan.

There have also been dietary sodium studies that used food frequency questionnaire to estimate the salt intake in the cities of Rasht and Sari and those residing in “Ilam province” according to which the average intake for the population aged 2 – 79 were 7.2, 7.7, and 10.3 g/d, respectively.<sup>30,31</sup> There is a general consensus that the dietary estimation of salt intake considerably under-reports the true salt intake; data from these studies support the notion that the salt intake of Iranians is high.

#### Setting a salt intake target

A joint WHO/FAO working group on Diet, Nutrition and the Prevention of Chronic Disease suggested reducing salt intake to less than 5.0 g/d.<sup>32</sup> In the UK, the recommended salt intake is to be less than 6 g/d in the British adult population.<sup>33</sup> However, more recently, the UK government’s health advisory agency, the National Institute for Health and Clinical Excellence (NICE), has recommended that by the year 2025 the population’s salt consumption should be reduced to less than 3 g/d.<sup>34</sup> In the USA, it is currently recommended salt intake should be reduced to less than 6 g/d for adults, with an even further reduction to less than 4 g/d salt for those at higher risk of developing adverse effects including African Americans, those with hypertension, diabetes or chronic kidney disease, and all adults 51 years old and older.<sup>35</sup> The recommended daily salt intake in Iran was judged to be less than 5 g/d.<sup>27</sup>

#### Getting lessons from the experiences of other countries

With revived interest worldwide on the importance of salt reduction as a tool for reducing the burden of salt intake, various countries of the world are in the development stages of their salt reduction plan.<sup>26,36</sup> Currently, only a few countries worldwide have successful operational salt reduction plans in place. They include countries such as the UK, Finland, and Canada. Such activities in the UK led to drop of about 10 percent in average populations salt intake, from 9.5 g/d in 2000 to 8.6 g/d in 2008.<sup>37</sup> Efforts were made to get the lessons from the experience of such countries as well as those of international action alliances such as World Action on Salt and Health (WASH).

#### Choosing the key target groups

Based on the experience from other countries and by considering the role that individuals and groups can potentially play, four key target groups were identified: First group were those who were engaged in decision making processes; they included the legislative authorities, policy makers, and the executive authorities. Engaging with the above mentioned authorities would help ensuring that ap-

**Table 2.** Targets groups with current or potential impacts on a national salt reduction plan

1	<b>Legislative authorities</b>	Iranian parliament's high council for health, food security and nutrition	
	<b>Policy makers</b>	Iranian parliament's; high council for health, food security and nutrition; Minister of health; Vice-chancellors in health and treatment affairs of the ministry of health; Food and drug organization; Nutrition improvement office; Institute of standard and industrial research; The ministry of agriculture; Ministry of industry, mining, and commerce; Governors of the provinces	
	<b>Decision makers</b>	The ministry of Sciences; The welfare organization; The office for monitoring supply of flour and bread; The health, food and drug and treatment deputies of the Isfahan university of medical sciences; The medical education development center of Isfahan university of medical sciences; Institute of standard and industrial research of Isfahan province; The office for industries, mining, and commerce of Isfahan province; The office for agricultural of Isfahan province; Organizations that provide food for their employees; Food industries; The restaurant, bakeries sandwich, pizza shop and nuts unions	
	<b>Executive forces</b>		
2	<b>Beneficiaries</b>	<b>General population</b>	Children; Adolescents; Adults; The elderly
		<b>Primary High risk groups</b>	Individuals aged more than 40 years; Those suffering from high blood pressure, CVD, diabetes mellitus, renal disease, osteoporosis, or some types of cancer; First degree relatives of individuals with high blood pressure or suffering from CVD; Individuals with overweight or obesity
		<b>Secondary</b>	Medical universities; Health insurance agencies; Ministry of education; Welfare organization; Organizations that provide food for their employees
3	<b>Partners</b>	National Iranian broadcasting corporation; Religious authorities; Celebrities (actors, sportsmen); National and local media; Isfahan university of medical sciences; The Institute of standard and industrial research of Isfahan province; The office for agricultural of Isfahan province; The office for industries, mining, and commerce of Isfahan province; The office for monitoring supply of flour and bread; Health sector personnel; Non-governmental organizations	
4	<b>Potential opposition</b>	Producers of processed foods with high salt content; Syndicate of restaurant owners; Syndicate of fast food shops; Syndicate of bakers; Individuals with wrong beliefs	

**Table 3.** Core key messages and some of the secondary key messages for communicating salt intake reduction plan

<b>Core key messages</b>	
High blood pressure is one of the leading causes of mortality and morbidity worldwide	
Excessive salt intake causes high blood pressure	
Reducing salt intake is the most cost-effective way for reducing blood pressure	
Iranian's salt intake is more than twice recommended	
Up to two-thirds of salt intake of Iranians comes from processed foods , and salty snacks such as potato chips	
<b>Secondary core messages*</b>	
High blood pressure, usually has no symptoms and is therefore also called " a silent killer"	
The recommended daily intake for salt is less than 5 grams ( less than one large teaspoon)	
High blood pressure is the most important risk factor for CVD in Iran	
Reducing salt intake will lower the blood pressure levels and decreases the chance of CVD, diabetes, osteoporosis, and some types of cancers	
Bread and cheese are the main sources of salt intake of the Iranians	
Currently, the Salt intake in Iranians is more than twice the recommended intake	
Those suffering from high blood pressure should reduce their salt intake to less than 4 grams per day	
* A selection of the secondary core messages, the full list of the messages can be accessed at <a href="http://www.icrc.ir/pdf/advocacy.pdf">http://www.icrc.ir/pdf/advocacy.pdf</a>	

appropriate legislations and regulations would be put into place to incentivize the food industry to reduce foods salt content. Second group were the beneficiaries engaged with salt which itself comprised two major sub-groups: A primary beneficiary group which included : a) general population and b) the high risk groups and a secondary group that included institutions and organization such as universities of medical sciences, health insurance agencies, 'education and training organization', and 'welfare and social security organization'. The third target group consisted of those who can potentially act as partners and included bodies like the Iranian broadcasting corporation, religious authorities, and local as well as

national media. The last group was those who may oppose the salt reduction plan. Table 2 presents the different target groups whose views and actions has potential impacts on the success of a national salt reduction plan.

**Holding meetings with key stake holders**

Several meetings were held with a subset of the target groups in order to understand to their viewpoints and assess their beliefs and help clarify the mutual needs and priorities. These meetings helped identify the key messages for communicating the salt reduction plan.

**Table 4.** Different methods for communication of salt reduction plan

1	Regular contacts and meetings with the stakeholders
2	Publication of booklets, pamphlets , and posters
3	Initiating volunteer salt reduction campaign groups
4	Holding debates on the health effects of salt on the national media
5	Holding training courses, conferences and seminars
6	Making documentaries, and animations on the importance of salt reduction
7	Engaging the public through partnerships with popular figures, sportsmen and celebrities

**Table 5.** Surveillance and monitoring plan for evaluation and assessment the Iranian national salt reduction program

Stage of the intervention	Elements to be assessed and monitored
<b>Processes</b>	Existence and quality of educational programs and trainings provided through/at the time of: a) families attending health clinics b) attending mandatory continuing qualification courses for employees c) the meetings of “parents and teacher associations” d) TV programs e) bulletins f) competitions g) emails h) text messages i) attending health clinics specially for those suffering from obesity or diabetes
<b>Impacts</b>	a) public awareness and attitude towards harmful effects of excessive salt intake b) level of salt intake per capita c) the extent to which prepared food are used d) prevalence of taking salty snacks e) Consuming fast foods f) using discretionary salt at table
<b>Outcomes</b>	a) Prevalence of hypertension b) Prevalence of controlled hypertension c) Average blood pressure level d) Incidence of cardiovascular disease e) Incidence of gastric cancer f) All-cause mortality rate g) Prevalence of obesity

**Defining the key messages**

A set of key messages were chosen, by trying to put in an Iranian dietary pattern, the scientific facts on the harmful effects of excessive salt intake and the experience from other countries’ successful salt reduction programs. Accordingly, the messages were divided into those considered as “core key messages” and those regarded as “secondary key messages”. Table 3 presents the core key messages and some of the secondary key messages.

**Defining the methods for the communication of the national salt reduction plan**

Various methods for communication of the salt reduction plan were reviewed; Table 4 summarizes the different approaches proposed.

**Choosing the most appropriate key messages and their communication tools for different target groups**

The next task was to select and match those key messages (presented in Table 3) depending on the specific target groups (summarized in Table 2) by choosing the most effective communication tools (listed in Table 4). For instance, the main key message in communications with the general public was chosen to be through communication of the health effects of salt through various media; the cost-effectiveness of salt reduction planning could be discussed in the meetings to be held with the authorities engaged in budget and health policy planning.

**Surveillance and monitoring**

Proper surveillance and monitoring is a vital element of any successful intervention program. Therefore, various steps were con-

sidered in order to evaluate and assess the “processes”, their “impacts”, and “outcomes” in each of the target groups; according to which the plan would be reviewed and revised. Multiple indicators were defined for each type of evaluation and its target population, place, time and frequency were explained in the full report. For instance, the success of interventions at the general population level will be assessed by:

a) Assessing and evaluating the “processes” through which the intervention is communicated with the public (e.g. by assessing the existence and quality of education and training provided to the population on harmful effects of salt)

b) Assessing and evaluating their “impacts” on general population by measures such as monitoring the trend in population’s salt intake

c) Assessment and evaluation of the “outcomes”, for instance by monitoring the reductions in the level of blood pressure at the population level.

Table 5 provides the details of the surveillance and monitoring plan for assessment of the success of the national salt reduction program in the general population.

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