

EDITORIAL

AN ATTEMPT TO HALT THE EVER-INCREASING PREVALENCE OF MORBIDITIES RESULTING FROM EXCESS DIETARY SODIUM INTAKE

The Lebanese Experience

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In the most recent report from the World Health Organization (WHO) on hypertension, one billion adults worldwide have been estimated to be affected, with an annual mortality of 9 million. Being the most common modifiable risk factor for cardiovascular disease and death, several worldwide initiatives are underway to prevent the fulfillment of the 2025 projections of 1.5 billion cases of hypertension [1,2]. A solid approach that has witnessed worldwide action and is still progressing with great momentum is the reduction of excess dietary sodium intake.

Countless studies and trials have shown a positive relation between high sodium intake and risk of cardiovascular and renal disease [3-5]. Moreover, direct, independent relation to stroke [6], left ventricular hypertrophy [7], and proteinuria [5] have been documented, in addition to indirect relation to stomach cancer [8], obesity [9], increased risk of renal stones and osteoporosis [10], and severity of asthma [11].

To that effect, several health authorities have set guidelines for the optimal level of dietary sodium intake. The WHO have set the target intake at less than 5 g of salt or 2 g of sodium [12] while the Institute of Medicine (IOM) recommends an intake of 1.5 to 2.3 g [13] and 1.5 to 2.4 g of sodium per day as per the American Heart Association (AHA) [14].

On a global scale, implementation of the above guidelines has been ongoing for decades now by countries such as Finland and the United Kingdom through mass-media health campaigns, food reformulation by the food industry, and implementation of clear food labeling strategies [15]. The outcome of reducing 33% of sodium intake of the entire population of Finland was a staggering 80% drop in mortality due to stroke and coronary heart disease, concomitant with a fall of over 10-mm Hg in the population's average blood pressure [16]. In the

UK, similar measures and outcomes were observed and several governmental and non-governmental bodies such as the Consensus Action on Salt and Health (CASH), UK Food Standards Agency (FSA), and World Action on Salt and Health (WASH) were founded to implement and maintain the developed strategies [17]. In the last decade, dozens of countries have followed the trend, such as Canada, Australia, the United States, a dozen European countries, and many developing countries in Asia and Africa. In the Middle East, Kuwait is currently at the forefront of this endeavor as it has already reduced the amount of sodium added to bread during production by 20% in the last year.

In Lebanon, the Lebanese Action on Sodium and Health (LASH) group was founded in 2012 as part of the Vascular Medicine Program (VMP) at the American University of Beirut (AUB). With the guidance of the WASH organization, LASH established its strategy to optimize sodium intake in the Lebanese population based on four pillars, namely, research, awareness raising, advocacy, and monitoring. The research was done in order to determine the current dietary sodium intake in the Lebanese population, estimated to be between 2.9 and 3.1 g, thus exceeding all set guidelines and upper limits [18].

On September 10-12, 2013, LASH participated in the workshop held by the World Health Organization Eastern Mediterranean Regional Office (WHO-EMRO) on salt and fat reduction and setting up protocols for measuring salt and fat intake and content in food, in Amman, Jordan. Research findings presented included the determination of the main contributors of salt in the Lebanese diet, which were found to be bread (26%), processed meat (12%). The average Lebanese intake of sodium was estimated to be between 2.9 and 3.1 g/day. Results of questionnaires about knowledge, attitudes, and behaviors (KAB) of Lebanese consumers regarding salt intake were also presented and reflected a poor knowledge of the effects of sodium on health and its sources in the diet and an unfavorable behavior of the consumers towards reducing their dietary intake. LASH also presented the obstacles Lebanon was facing at the time, primarily involving the government and the industry in planning a gradual reduction in salt levels in bread and other high-sodium processed foods that are widely consumed. This obstacle was starting to unfold when LASH held a press conference on March 11, 2014, on the occasion of World Salt Awareness Week, to announce the launch of the national campaign under the patronage of

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the Lebanese Ministry of Public Health (MoPH). The meeting was attended by representatives from MoPH, Ministry of Industry (MoI), American University of Beirut (AUB), American University of Beirut Medical Center (AUBMC), and Consumers International.

During the press conference, new research findings were presented by LASH, and included the annual mortality attributable to excess salt intake in Lebanon calculated at 680 deaths per year. Moreover, results of KAB and Food Frequency questionnaires on a representative sample of the general population revealed that 60% of individuals consumed more than the recommended 2000 mg, the average intake being 3130 mg of sodium/person/day. Results also showed that less than one quarter of the study population (21.5%) correctly identified the main contributors of salt in their diet, and that more than one third of the Lebanese population overlooks food content labels [19]. Dr. Michel Kfoury, representing MoPH, commended the efforts exerted by LASH to bring this issue to the surface and take it a step further into targeting policy makers in the industry. In fact, this was exactly what LASH did a few months later, on August 6, 2014, when a workshop was held in MoI under its patronage and in the presence of H.E. the minister of Industry, Dr. Hussain Elhadj Hassan, to discuss the urgency and technical aspect of reducing salt in processed food products, starting with bread, and targeting other food items including cured meats, pickles, olives, cheese, and nuts. LASH presented the current research findings and ways in which salt intake can be reduced, stressing on the role of food industries. His Excellence also commended the work done by LASH and pledged to make this issue a priority, urging all attendees from governmental and industrial sectors to assume their responsibilities and start working on the ground to have a tangible result in all mentioned food types by the next year. Throughout the year, the campaign received tremendous media attention; several interviews on TV and radio were held with LASH representatives to raise awareness on the dangers of excess salt intake and shed light on the efforts done by LASH to combat the eminent threat. The next step for LASH, in collaboration with MoI and MoPH, will be to start implementing the reductions with the food industry and enforce proper labeling on food products.

REFERENCES

- World Health Organization. A global brief on hypertension. WHO/DCO/WHO/2013.2. April 3, 2013 [http://apps.who.int/iris/bitstream/10665/79059/1/WHO_DCO_WHO_2013.2_eng.pdf]
- Lim SS, Vos T, Flaxman AD et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet* 2012; 380 (9859): 2224-60.
- Intersalt: an international study of electrolyte excretion and blood pressure. Results for 24-hour urinary sodium and potassium excretion. Intersalt Cooperative Research Group. *BMJ (Clinical research ed)* 1988; 297 (6644): 319-28.
- Cook NR, Cutler JA, Obarzanek E et al. Long-term effects of dietary sodium reduction on cardiovascular disease outcomes: observational follow-up of the trials of hypertension prevention (TOHP). *BMJ (Clinical research ed)* 2007; 334 (7599): 885-8.
- Cianciaruso B, Bellizzi V, Minutolo R et al. Salt intake and renal outcome in patients with progressive renal disease. *Mineral and Electrolyte Metabolism* 1998; 24 (4): 296-301.
- Perry IJ, Beevers DG. Salt intake and stroke: a possible direct effect. *Journal of Human Hypertension* 1992; 6 (1): 23-5.
- Kupari M, Koskinen P, Virolainen J. Correlates of left ventricular mass in a population sample aged 36 to 37 years. Focus on lifestyle and salt intake. *Circulation* 1994; 89 (3): 1041-50.
- Tsugane S, Sasazuki S, Kobayashi M, Sasaki S. Salt and salted food intake and subsequent risk of gastric cancer among middle-aged Japanese men and women. *British Journal of Cancer* 2004; 90 (1): 128-34.
- He FJ, Marrero NM, MacGregor GA. Salt intake is related to soft drink consumption in children and adolescents: a link to obesity? *Hypertension* 2008; 51 (3): 629-34.
- Cappuccio FP, Kalaitzidis R, Duneclift S, Eastwood JB. Unravelling the links between calcium excretion, salt intake, hypertension, kidney stones and bone metabolism. *Journal of Nephrology* 2000; 13 (3): 169-77.
- Burney P. A diet rich in sodium may potentiate asthma. Epidemiologic evidence for a new hypothesis. *Chest* 1987; 91 (6 Suppl): 143S-148S.
- Joint WHO/FAO expert consultation on diet, nutrition and the prevention of chronic diseases. 2002. Geneva. http://www.who.int/hpr/NPH/docs/who_fao_experts_report.pdf
- Sodium Intake in Populations: Assessment of Evidence. Washington, DC: The National Academies Press, 2013. http://books.nap.edu/openbook.php?record_id=18311
- Eckel RH, Jakicic JM, Ard JD et al. 2013 AHA/ACC guideline on lifestyle management to reduce cardiovascular risk: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *Journal American College of Cardiology* 2014; 63 (25 Pt B): 2960-84.
- Pietinen P, Valsta LM, Hirvonen T, Sinkko H. Labelling the salt content in foods: a useful tool in reducing sodium intake in Finland. *Public Health Nutrition* 2008; 11 (4): 335-40.
- Karppanen H, Mervaala E. Sodium intake and hypertension. *Prog Cardiovasc Dis* 2006; 49 (2): 59-75.
- MacGregor GA, Sever PS. Salt-overwhelming evidence but still no action: can a consensus be reached with the food industry? CASH (Consensus Action on Salt and Hypertension). *BMJ (Clinical research ed)* 1996; 312 (7041): 1287-9.
- Powles J, Fahimi S, Micha R et al. Global, regional and national sodium intakes in 1990 and 2010: a systematic analysis of 24 h urinary sodium excretion and dietary surveys worldwide. *BMJ open*. 2013; 3 (12): e003733.
- Nasreddine L, Akl C, Al-Shaar L, Almedawar M, Isma'eel H. Consumer knowledge, attitudes and salt-related behavior in the Middle-East: the case of Lebanon. *Nutrients* 2014 [Special Issue "Salt and Health: A Public Health Issue"]; 6 (11): 5079-102.