Monitoring optimal salt iodization in Latin America

Recognizing that iodine deficiency was the principal etiology of goiter worldwide, in the 1940s several countries in Latin America began introducing the use of iodized salt in order to eliminate the goiter belts. In Argentina, Dr. Hector Perinetti together with the Health Minister Dr. Arturo Oñativia conducted a study of endemic goiter supported by Dr. John Stanbury in 1950. Dr. Mario Pisarev, Dr. Juan Pablo Salvanesci and Dr. Gerardo Sartorio carried on with this project, determining blood thyroid hormone levels, urinary iodine concentration (UIC) and thyroid size by palpation in school-age children (SAC).

Having recognized this disease as a public health problem, the World Health Organization (WHO) established a study group on endemic goiter with the collaboration of John Stanbury and other distinguished Latin American experts. In 1961, the Scientific Advisory Committee of the Pan-American Health Organization (PAHO) (1) established a panel of scientists to research endemic goiter which included Dr. Jorge Maisterrena from the Institute of Nutritional Diseases in Mexico City; Dr. Rodrigo Fierro from the University of Quito and the Technologic Institute of Quito, Ecuador; Dr. José Barzelatto of the Salvador Hospital and the University of Chile; Dr. Yaro Gandra of the University of Sao Paulo, Brazil; Dr. Luis Carlos Lobo of the University of Rio de Janeiro and University of Brasilia; and Drs. Marcel Roche and Karl Gaede of the Venezuelan Institute of Scientific Research in Caracas.

The group’s research was continued later on by several investigators in universities of Central and South America who were experts in thyroidology and already working in proximity to foci of endemic goiter in Argentina, Paraguay, Chile, Colombia, Brazil, Ecuador, Peru and México to ensure permanent surveillance of iodine nutrition and thyroid function. As a result, positive steps were taken to prevent the development of goiter, such as in Argentina, where the national law on salt iodization was finally passed in 1967 (2).
In 1980, all consequences of a lack of iodine, ranging from goiter to mental retardation, were gathered under the term “iodine deficiency disorders” (IDD), and the measurement of UIC became the best tool to monitor population iodine status (3). In 1994, in an attempt to reduce the prevalence of iodine deficiency worldwide, WHO recommended eliminating IDD by iodizing all salt for human consumption (3). The prevalence of goiter as it relates to iodine nutrition has been studied in SAC from 13 Latin American countries with the use of the ThyroMobil model.

Several partners, including the Iodine Global Network, cooperate in the global effort to eliminate IDD, and health agencies must provide sustained leadership to create and maintain long-term solutions by fortifying salt with iodine. It is essential to ensure government commitment to universal salt iodization (USI) and enforcement of mandatory legislation, solicit the support of the salt industry to ensure sustained household access to high-quality adequately iodized salt, and have regular surveillance and monitoring to identify programs that are not working and require remedial action. Awareness of the consequences of iodine deficiency among government, salt producers, and the general public is critical. Optimal iodine nutrition needs to be accepted as a fundamental right and USI as the most cost-effective tool to achieve it. There is also a need to accept that salt iodization and salt reduction (to prevent hypertension) are compatible and synergistic health policies.

IDD elimination programs across Latin America demonstrate the effectiveness of mandatory salt iodization in eliminating IDD in SAC. Their success also reinforces the importance of achieving equity in high coverage with adequately iodized salt. However, there are still questions about whether the currently proposed criteria for indicating optimal iodine status in SAC and pregnant women are correct (5) and whether median UIC levels between 100 and 150 g/L (i.e., reflecting insufficient iodine intake) are of concern in pregnant women when they are likely to have entered pregnancy with adequate iodine stores. It is also of crucial public health interest to confirm whether iodine supplementation improves maternal and child health outcomes in areas with mild to moderate iodine deficiency. It is currently unclear whether the available data on maternal thyroid indices from controlled intervention trials can serve as a surrogate for future children intellectual development. It is plausible that optimization of maternal thyroid status through iodine supplementation in marginally iodine-deficient areas might have benefits.

A major concern with iodine supplementation in pregnant women has been the risk of iodine-induced thyroid dysfunction. In Rio de Janeiro, Saraiva et al. (6) analyzed 629 urine samples of 244 first trimester pregnant women using inductively coupled plasma mass spectrometry, and reported a median UIC of 221.0 μg/L (in the adequate range). Importantly, UIC values in the excessive range in this study were associated negatively with subclinical hypothyroidism (OR = 5.6; 95% CI, 1.0–30.2). The studied population was considered iodine sufficient, and the recommendation was that supplementation should not be generally considered, based on the risk association between excessive UIC and subclinical hypothyroidism. Concern about iodine overexposure and potential increase of thyroiditis and subclinical hypothyroidism is also relevant for the general population. Special attention and dedicated scientific research has been motivated in Chile (7–9). Overall, there is evidence suggesting that iodine supplementation during pregnancy in Latin American countries must be investigated further in order to avoid risks.

We also require recent data on salt consumption in the Latin American population, and on the iodine content of salt used in food processing as well as in household salt, in order to ensure adequate iodine intakes.
Governments must continue monitoring the salt iodization levels to make sure they remain optimal as countries undergo epidemiologic transition. Population-wide mandatory iodization must be supported, but caution should be used to minimize both, iodine deficiency and overexposure. Iodine deficiency and excess will always coexist on a population level. To prevent excess, complementary “high risk strategies” directed to subgroups with a higher risk of deficiency may have to be introduced. Mathematical models and cost effectiveness studies may be used to establish the amount of iodine to be added to salt in each country in the Region. Local monitoring of population UIC is essential, as well as population salt consumption surveillance. Finally, it is important that the amount of iodine in salt should be compatible with the key healthy lifestyle messages to lower salt consumption, but always use iodized salt, and breastfeed children under 6 months old and eat dairy products regularly (as well as fish and seafood, eggs, milk, fruit and vegetables). Well-designed combined policies can be compatible and synergistic.

In 2016, Latin America celebrated the virtual elimination of iodine deficiency (10). Nevertheless, insufficient and excessive iodine intake remains a public health issue, and governments must continue monitoring the optimal salt iodization and its impact on population health in order to sustain progress. With an increasing number of campaigns recommending reduced salt consumption, efforts must be made to combine both policies effectively.

In conclusion, LATS strongly supports universal salt iodization and any effort necessary to assure an adequate iodine supply to the population.

References