Lebanon rallies to fight IDD

Mr Ayman Kobaite Ing (Director of Production) and Omar Obeid (IGN) at SORASEL (Societe de Raffinage du Sel Libanais S.A.L.) in Kalamoun, North Lebanon
Background
Historically, iodine deficiency has been a pressing problem in Lebanon. For decades, studies reported a high prevalence of inadequate iodine intakes across all age groups. In the early 1960s, a study showed that goiter was widespread among children from different socio-economic backgrounds in the capital city of Beirut (1). A few years later, several studies reported a similarly high prevalence of goiter and suboptimal iodine nutrition in several villages across the country (2,3). Although Lebanon is located on the Mediterranean Sea, the Lebanese diet, especially in mountain areas, is poor in fish and seaweed, two common sources of iodine. A traditional diet in Lebanon is also rich in goitrogens (found in vegetables such as cabbage, turnips, or rutabagas), which may inhibit absorption and uptake of iodine when consumed in high amounts.

National surveys show that initial progress has stalled
In response to reports about endemic goiter, a law requiring the addition of 10–200 mg of iodine per kg of all table and cooking salt was adopted in 1971. However, due to conflicts and political unrest, the law did not come into effect until 1995 when implementation first began with the help of UNICEF. Two subsequent studies, in 1996 and 2004, reported that 90% of Lebanese households were consuming adequately iodized salt, but more recent data suggests that the coverage has been in decline.

This trend has been corroborated by three national surveys conducted over the same period to assess iodine nutrition among Lebanese school-age children. In 1993, the prevalence of goiter among children aged 7–16 years was 25%, and the median urinary iodine concentration (mUIC) was 60 μg/L, which confirmed the presence of iodine deficiency as a public health problem (4). In 1997, it seemed that success was finally on the horizon: two years after salt iodization was first implemented, the median UIC had increased to 95 μg/L (5). But the third study, conducted in 2013–2014 by the American University of Beirut and the IGN, showed that the median UIC had declined to 66 μg/L, almost as low as it had been pre-iodization. A subsequent analysis of 25 samples of salt available on the market revealed that more than a half (56%) contained less than 15 ppm of iodine, and 68% contained less than 35.6 ppm, the minimum required by the Lebanese law. To corroborate this data, the Ministry of Public Health conducted a parallel study, which confirmed that only 1 out of 38 samples of retail salt was adequately iodized. These findings serve to highlight gaps in the salt iodization program that are likely due to the weak implementation of the law by salt producers as well as the frail monitoring and evaluation systems.

In 2007, the Lebanese Standards Institution (LIBNOR), a public institution attached to the Ministry of Industry, published a standard on food-grade salt. In 2011, the government passed a revised legislation modifying the amount of iodine added to salt, which narrowed the range to 60–80 mg of KIO3 per kilogram of salt.

Policy dialogue
In May 2016, Prof. Omar Obeid, IGN National Coordinator for Lebanon and Professor of Nutrition at the American University of Beirut (AUB), convened a national policy meeting to discuss the current situation and inform changes in the iodization law. The meeting was organized in collaboration with the Knowledge to Policy (K2P) Center and the Center for Research on Population Health (CRPH) at the Faculty of Health Sciences, with financial support from the IGN. Attended by the Director General of the Ministry of Public Health, the policy meeting brought together different stakeholders and representatives

The history of salt iodization in Lebanon

1963–1966
- High prevalence of goiter in children across all socio-economic strata in Beirut (1).
- High goiter rates and low urinary iodine among schoolchildren in a coastal mountain village (2).
- Very low iodine intake reported in a local study (3).

1971
- Law 178/1971 was adopted, requiring the addition of 10–200 mg or iodine per kg of table and cooking salt.

1995–1997
- Full implementation of salt iodization by the MoPH in cooperation with UNICEF.
- 85% of Lebanese households consumed adequately iodized salt in 1995, and 91% in 1996.
- A post-implementation survey showed marginal iodine deficiency in children (median UIC of 95 μg/L).

2004
- 82% of salt in the market contained more than 15 ppm of iodine.
- 92% of households consumed adequately iodized salt.

2011
- Law 178/2011 permitted the use of potassium iodide or potassium iodate as a fortificant.

2014
- Implementation decrees of law 178/2011 were published.
- National assessment of iodine status in children showed iodine deficiency (66 μg/L).
from the Ministry of Industry, the Ministry of Economy and Trade, the Ministry of Education and Higher Education, LIBNOR, the Consumers Lebanon, the four largest salt producers in Lebanon, international non-governmental organizations, as well as physicians, experts, and academics. The meeting was an opportunity to discuss a Policy Brief on salt iodization to ensure optimal iodine nutrition, formulated in collaboration with the K2P Center, a designated WHO Collaborating Center for evidence-informed policy and practice, the first of its kind in Lebanon and the region.

The key barriers to successful implementation of USI identified in the Brief include gaps in the iodization law and a lack of clarity among salt producers as to whether the law is in effect. In addition, the existing infrastructure and iodization capacity of salt producers is limited.

The Brief identified three policy aspects that need to be addressed in order to achieve the goal of optimal nutrition across Lebanon:

1. **Amend or replace law 178/2011 to close the loopholes**

   Suggested clarifications include: (i) extending the fortification of salt to all edible food-grade salt, including that used in processed foods, coarse salt, and salt in large packaging; (ii) clarifying the form and amount of iodine used in fortification; and (iii) establishing a multi-sectoral national committee of iodization stakeholders with defined duties and responsibilities.

2. **Strengthen the implementation of the existing universal salt iodization law by ensuring adequate standards, infrastructure, and capacity**

   This can be achieved by (i) aligning the LIBNOR standard on salt with international and local evidence, making it mandatory and requisite in implementation decrees; (ii) supporting the salt industry to ensure adequate infrastructure and suitable equipment for salt iodization and packaging; (iii) training of salt industry managers and employers; and (iv) implementing a communication strategy with the industry.

3. **Monitor and evaluate the implementation of the law**

   This could be achieved by (i) conducting a salt situation analysis to understand the structure of the overall salt industry and areas where monitoring may be needed, and (ii) monitoring salt iodine content at the production, retail, and consumer levels by building an efficient system for routine data collection.
Dialogue participants discussed the three elements and implementation considerations before collectively developing next steps that would address iodine deficiency in the Lebanese population.

Representing the IGN was Prof. Michael Zimmermann, Chair of the Iodine Global Network, who also visited, together with Prof. Obeid, Lebanon’s four largest salt producers, who contribute 90% of the salt consumed in the country. The salt producers’ main concern was the lack of their ability to quantitatively assess the iodine content of the salt they are producing. Over the next weeks, the IGN will provide financial and technical assistance to the factories to improve their internal monitoring systems, and allow them to perform systematic, quantitative quality control of salt iodine concentration.

References

Salt producers in Lebanon are ready to iodize salt

Ever since he came to the American University of Beirut (AUB) in Lebanon in 2001, Prof. Omar Obeid has been keen to tackle iodine deficiency in the Lebanese population. “Although iodization of all refined salt was mandatory, there was insufficient evidence that this was being done in practice,” he recalls. Data collected by his students consistently showed that salt purchased on the market contained little or no iodine, which meant that the country was at risk of iodine deficiency. “To attract attention to this issue, I decided that the best way forward was to generate evidence that would convince the government to act.”

In 2014, with his team at the AUB, he raised funds to implement a national survey of school-age children, which assessed the iodine status using urinary iodine concentrations. “In Lebanon, almost 96% of children go to school, and most children attend public schools. This means that the data we were able to collect was highly representative,” he explains.

The survey results demonstrated that more than a decade of efforts to implement salt iodization has not led to the expected improvement. With a median urinary iodine concentration of only 66 µg/L, the population was iodine deficient, which Obeid admits came as a surprise. To him it was a sign that, in the absence of regulatory monitoring from the government, the salt producers were falling behind. “Even though the urinary iodine levels are slightly higher than they were before salt iodization, this increase could be put down to a general improvement in the diet, rather than to iodized salt,” he explains.

But the survey generated the interest Obeid was hoping for, and the recent Policy Dialogue meeting has opened the door to more discussions and action from both the government and the salt producers.

One of the areas to address will be the legislation itself, which according to the producers, has been unclear. As a result of the meeting, the Ministry will issue an amendment to clarify that the iodization range of 60–80 ppm refers not to iodine but to potassium iodate (KIO3). In turn, the salt producers will formally apply for a licence to import iodine for the purpose of iodizing salt and will conduct internal quality checks to ensure a consistent high-quality output. The internal monitoring will be conducted using portable iCheck photometers donated by the IGN, and Prof. Obeid will oversee the training.

The impact of correctly implemented iodization could be enormous not just for Lebanon, but also for its neighbor Syria, which relies heavily on salt imports from Lebanon to meet its domestic demand. This has not escaped the attention of several international development agencies. UNICEF Lebanon is willing to supply KIO3 to the Lebanese salt producers free of charge, on condition that they will take over the responsibility after one year. In addition, 1.5 million Syrians who are already living in Lebanon will benefit from adequately iodized salt.

To ensure that iodized salt is reaching the consumers, the Ministry of Public Health will need to invest more resources to support external monitoring at the production, market, and household level. Prof. Obeid hopes that the government and the salt producers will formalize their mutual responsibilities, and iodization can soon begin. “Now that the salt producers are aware of the important role they can play in preventing iodine deficiency in Lebanon, all stakeholders are on board and ready to iodize. In a year’s time, we hope to report that iodine deficiency in Lebanon is under control.”