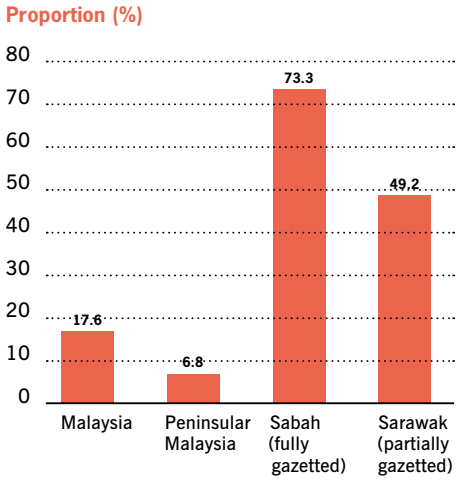
Figure 2: Proportion of adequately iodized household salt (iodine content ≥15ppm) in Malaysia and by region, in 2008



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Renewed stimulus for USI in Kyrgyzstan

Frits van der Haar Global Public Nutrition Solutions LLC, Atlanta, USA, and **Roza Sultanalieva** and **Aigul Musambetova** Kyrgyz-Russian Slavonic University, Bishkek, Kyrgyz Republic

Iodine deficiency is remembered by the people of Kyrgyzstan as a historical threat of goiter and cretinism that was overcome during the Soviet period by central prophylaxis that included iodized salt. Provincial surveys among school-age children during the 1980s showed that IDD had made a comeback already prior to Independence in 1991. The activities initiated under a 'National Program for Prevention of Conditions related to Iodine Deficiency, 1994-2000' consisted chiefly of technology development in local salt enterprises, educational campaigns to the public and in primary schools, improvements in salt quality inspections at production and retail, and training workshops for officials, scientists and salt producers. But despite some progress in increasing the national iodized salt supplies, only 27% of the households in Kyrgyzstan were found to use adequately iodized salt in 2000 (1).

In view of the limited improvement in the national iodine supply, the Kyrgyz Government enacted a Law on IDD Prevention in 2001 that prohibited the import and sale of non-iodized edible salt and stipulated the use of potassium iodate at 40±15 mg iodine/kg salt. Also in 2001, the State Committee on Standardization and Metrology issued a normative standard for iodized salt, which made it compulsory on producers and importers to have the product certified prior to selling it to their customers. At the Almaty Forum in October 2001, jointly supported by the Asian Development Bank (ADB) and UNICEF (2), a multi-sector delegation from Kyrgyzstan devised an action plan to further develop the national capacities in salt iodization, quality inspection and population status assessment, together with efforts to improve the public's acceptance and report publicly on progress. Upon adoption by Government, this plan was a foundation for the 'National Program for Decreasing IDD in Kyrgyz Republic, 2003-2007', launched in 2002. During early 2003, the local salt enterprises coalesced in the 'Kyrgyz Association of Salt Producers' (KASP), Government decided to abolish the import tariffs on the fortificant and equipment, and a National Fortification Alliance was formed to provide guidance on the USI strategy. Nevertheless, the ongoing illegal import by domestic traders of so-called 'industrial' salt continued posing an obstacle by the persistent presence of non-iodized salt in the Kyrgyz markets.

During 2003, concerned with the leniency in official enforcement practices, the Kyrgyz-Swiss Health Project started supporting the village-based health structures of Naryn province in using rapid salt test kits as a tool to persuade the traders and retailers to accept only iodized salt from the producers. In a 2y campaign in households and retail outlets, a quantum increase took place in the iodized salt supply in the province (3). Moreover, by using only the test kits specific for potassium iodate, the campaign also succeeded in shifting the share in the supply chain away from salt that was still iodized with potassium iodide, a less stable fortificant. This bottom-up activist approach has been extended to other provinces with similar success in

improving the iodized salt supply: In 2006, the Multiple Indicator Cluster Survey reported adequately iodized salt in 76% of the households (4). An important component in the campaign that helps to keep the success of the 'Power from Below' approach going is the ongoing provision of rapid test kits to salt retailers, asking them to use the kits when they purchase their salt supplies and check one packet in their shops each month to verify persistent quality (5). In fact, more than 90% of the salt tested during the MICS in 2006 already showed that some iodine had been added.

Two successive projects during 2001-2007, managed by ADB with grants from the Japan Fund for Poverty Reduction, have supported the improvements of production, quality assurance and control systems, and of monitoring the salt supply under the national IDD elimination policy (6). Equally important weight and attention in these projects was accorded to the needs for capacity development of the private and public sectors, such as iodization inputs and technology including product quality assurance, and regulatory inspection including iodized salt sampling, measurement and enforcement systems. Near the end of 2007, however, and despite continued readiness of ADB and UNICEF, the collaboration among partners at national level weakened appreciably after KASP went through a change of leadership and the Ministry of Health did not succeed in approval of new memberships for the National Fortification Alliance.

There are no viable deposits of salt 'fit for human consumption' in Kyrgyzstan. By 2000, three local companies had started processing of non-iodized salt imported from surface deposits in Kazakhstan. Imported salt, mostly from the AralTuz Company in Kazakhstan, supplied about 70% of the national salt needs at that time (7). Since then, the technical, material and training support by ADB, UNICEF and others has helped to stimulate the growth and extension of the local salt processing industries and by 2007, about 15 local salt enterprises were supplying 13,000 ton of iodized salt or ±65% of the national needs (8). During the same period, the Kyrgyz salt enterprises started self-reliant procurement of inputs and initiated modern quality assurance practices in their production (9). Since the producers of the fortificant do not commonly entertain purchase orders below 1,000kg, the reliable access to fairly-priced fortificant in small amounts has continuously been an obstacle for the salt enterprises in Kyrgyzstan. Among the services by KASP was to consolidate the purchases of the collective industry, but from 2006 onward this arrangement fell in dysfunction and the small enterprises were paying occasionally as much as US$30-35/kg for their fortificant purchases through intermediary traders. Trying to skimp on the amount of fortificant at production is an understandable practice under this scenario.

The vigorous price competition among salt brands in the markets of Kyrgyzstan at present is testimony of a vibrant salt industry. Twenty-five to 30% of the national edible salt needs of 16-18,000MT/y is imported as packed iodized salt from salt producers in Kazakhstan, Belarus, Tajikistan and Uzbekistan, and the remainder is imported as non-iodized edible salt from deposits in Kazakhstan (TarasTuz, Suzak and Balkash in Zhambyl Oblast) and Uzbekistan (Karakalpakstan and Sukhandarya) for local processing. An unknown share of the national salt supplies is purchased by the food industries which use salt in the manufacturing recipe. The bread bakeries are highly important among these food industries in view of the major role of bread in the common food consumption of the Kyrgyz population.

Figure 1: Iodine content in household salt, Kyrgyz Republic, 2007

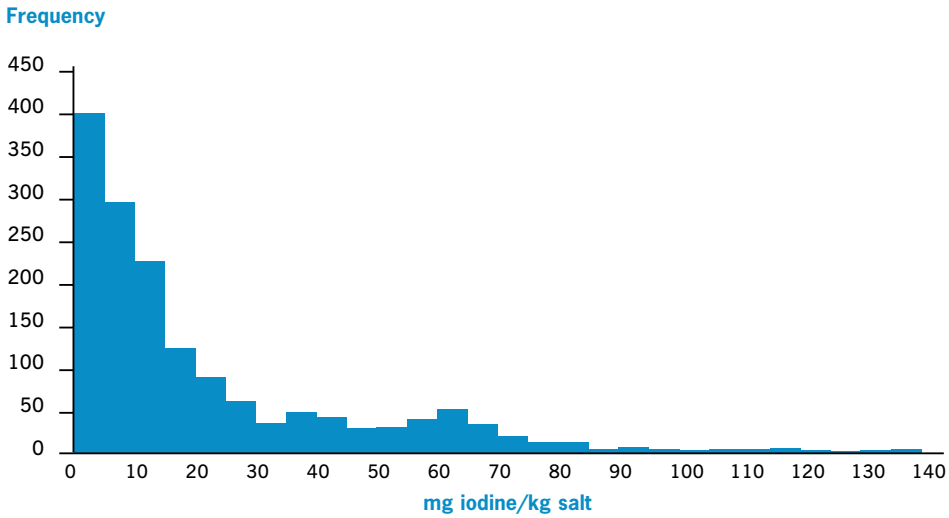
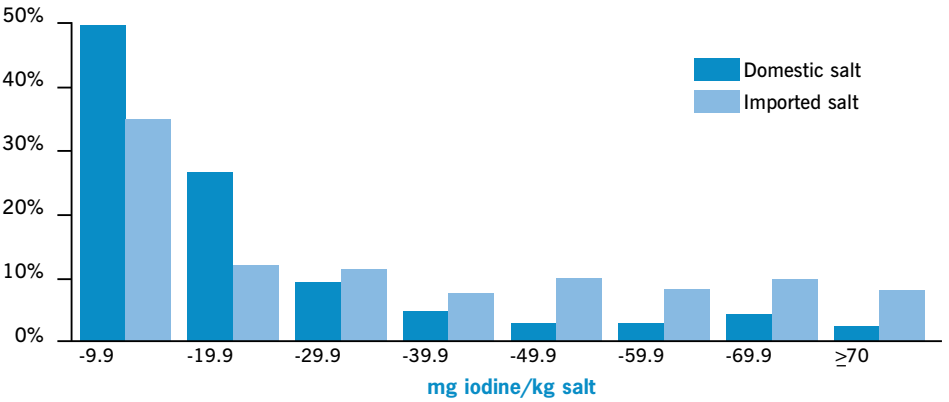


Figure 2: Salt iodine content by supply source



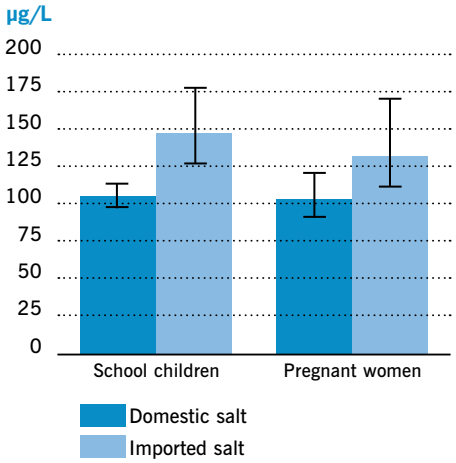
The completion of the 2nd National Program in 2007 was reason for conducting a national iodine survey with the standard 30x30 design, which collected population indicators of iodine supply, consumption and impact with a view to examine their interrelationships (9). The regular school-based sampling of 8-10y old children was extended by enrolling 20 pregnant women in prenatal clinics at close distance to each selected school. Casual urine samples were obtained of each participant, and their thyroid volume was measured by ultrasound. The survey participants were requested to bring the salt package used in the household to the examination site for recording the brand name and origin of the producer. Urinary iodine (UI) concentration was analyzed in the Endocrinology Dispensary of Bishkek, which participates successfully in the EQUIP program of CDC (10).

The survey yielded 27 different salt brands; 21 of domestic origin. No significant difference was found between the iodine content of salt samples brought by the children or the women. The median iodine content in salt (Figure 1) was 11.2mg/kg; 39.5% of the samples had ≥15mg iodine/kg and 15.0% fell in the compulsory range of 25-55mg/kg. Only 1.4% of the salt samples were not iodized, thus confirming the success of the ongoing salt testing campaigns in reminding the producers that they will suffer loss of market share if they do not iodize their product. Imported salt brands made up 26% of the samples with a discernable brand name. As illustrated in Figure 2, the iodine content in imported salt brands (median 22.7mg/kg) was two times higher ($p<0.001$) than in domestic brands (10.2mg/kg).

The UI concentrations of the children (median 114µg/L) and the women (111µg/L) did not differ significantly and analyzed by cluster, the UI levels of the women and the children were strongly correlated ($r=0.63$; $p<0.001$). The prevalence of elevated thyroid volume in children was 5.2%, based on the age reference. Pregnant women had significantly ($p<0.001$) larger thyroid volumes (median 7.9ml) than children (2.8ml) and an analysis by semester of pregnancy showed a significant ($p<0.001$) increase of the women's thyroid size with pregnancy duration. In view of the shortfall in status among pregnant women, the survey results indicated that the USI practice in Kyrgyzstan was failing to supply optimum nutrition in the population.

The usefulness of collecting information about the brand name and origin of household salt came out in various ways. For example, the UI concentration in the children as well as the women was significantly related to the supply source of the salt: Compared to the households with domestic salt brands, the UI in each group was higher by 30-40µg/L in households using imported salt (Figure 3). This finding would suggest that the check on the certificate of conformity at import may have been more instrumental in promoting adequate iodized salt supplies than the food inspections of the domestic salt enterprises. That the situation in reality was not so simple was borne out by an analysis by salt brands, which permitted insight into the degree to which the different salt manufacturers were supplying adequately iodized salt. As Figure 4 shows, only two domestic producers (coded H and J) and one foreign producer (code O) were supplying salt with generally adequate iodine levels.

Figure 3: Urinary iodine concentrations (Median, 95% CI) by source of salt in the household

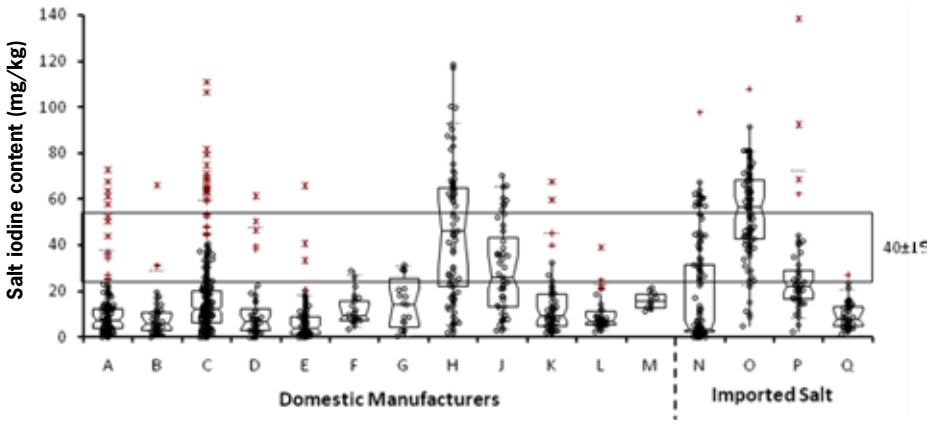


The two domestic producers encompassed about 10% of the total salt supplies and the single foreign producer 8%, and because imported salt constituted 25% of the total salt samples, the influence of the single foreign supplier was more pronounced in the end analysis than the two domestic producers.

The survey findings about brands and producer origin also played an important role in a multi-sector Round Table held in Bishkek in late 2009, which considered next steps. During the meeting, the time lapse since the 2007 survey mitigated any embarrassment that may have been perceived on behalf of the salt producers. A presentation using Figure 4 clearly articulated that the low iodization practice among producers was a key remaining issue. At the same time, the Figure also

offered the viewpoint that the practices in official enforcement were failing in their aim of assisting in the supply of only adequately iodized salt. A key Parliamentarian attended the meeting and later introduced the issue of national USI achievement in a Parliament session, while pressing to assist in reliable fortificant access for the producers. In the end, the Round Table created a renewed momentum for collaboration among partners: A local chemical import firm was accepted by the producers and officials the purchase and management of annual consolidated fortificant requirements, the salt producers elected a new and energetic KASP President, and the Chief Sanitary Doctor committed to more technical assistance and training to improve the quality assurance methods by industry technicians, along with full transparency of the inspections in the salt enterprises.

Figure 4: Salt iodine content by manufacturer



Through a combination of continued pressure 'from below' in the communities on the salt industry, along with revived collaboration at national level for improvements in fortificant access and quality iodized salt production, Kyrgyzstan has re-positioned for progress toward the goal of IDD elimination through USI.

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