Sudan breaks through against IDD

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IODINE GLOBAL NETWORK is a nongovernmental organization dedicated to sustained optimal iodine nutrition and the elimination of iodine deficiency throughout the world.
The 2018 national survey in Sudan reports women of reproductive age are overall iodine sufficient, but with strong regional disparities.
On February 7th 2018, Sudan commissioned three new salt iodization plants in Port Sudan, located in Red Sea Province, a major achievement for the country. IGN has worked closely with the Government of Sudan, the World Food Program, World Health Organization, and UNICEF to specify the technical requirements to upgrade the salt industry with modern iodization equipment, and facilitated the purchase of a new equipment from Spain and China.

**Current status**

The impact of the improved salt iodization program was first seen in an IGN rapid assessment in Khartoum done in late 2018 which found over 60% of HH’s surveyed had adequately iodized salt (range of 7.4 to 39.1 ppm), 56% of the salt from retail outlets was adequately iodized (range of 2.1 to 80.4 ppm) and perhaps most importantly, 89% of the salt was adequately iodized at the production sites in the three new factories (range of 8.2 to 43.4 ppm).

The Sudan Micronutrient Survey 2018 was planned and implemented by the Federal Ministry of Health of Sudan with support from UNICEF and other nutrition partners in the country. Within the survey, one aim was to estimate iodine status in non-pregnant women of reproductive age (npWRA; 15–49 years), pregnant women of reproductive age (pWRA; 15–49 years), and lactating women of reproductive age (lacWRA; 15–49 years). The study was household based, two-stage spatially stratified cluster survey of a randomly selected sample of 30 primary sampling units per state and provided statistically independent estimates for each of the 18 states of Sudan. Results for states were estimated using weighted estimators based on population and national level point estimates were made by combining the state point estimates using a weighted procedure.

The median urinary iodine concentration (UIC) of npWRA in Sudan was 108 µg/L which indicates that, as a whole, npWRA in Sudan have adequate iodine nutrition (Figure 1). However, this situation is heterogeneous across the 18 states:

- 8 states have mUICs in the adequate range (a mUIC between 100 and 199 µg/L)
- 5 states mildly iodine deficient (a mUIC between 50 and 99 µg/L)
- 5 states moderately-to-severely iodine deficient (mUIC< 50 µg/L).

The iodine status of pWRA in Sudan is also classified on the national level as insufficient (mUIC of 101 µg/L) while 16 of the 18 states have pWRA with insufficient iodine status (Figure 2). Nationally, the iodine status of lacWRA is insufficient (mUIC = 81.5 µg/L) and iodine intake is insufficient in 14 of 18 states (Figure 3).

Of real concern is the regional disparity in iodine status: while in the Northern and Eastern States women appear to have generally sufficient iodine status, in the Southwestern States women remain moderately-to-severely iodine deficient (Figure 4).

Children in Darfur regions need better access to iodized salt

This is an important study which demonstrates the value of presenting sub-national data to capture disparities as aggregate national figures mask what may be very critical situation in some areas of the country. While it highlights the achievements and progress in the Sudanese USI program, there remain major concerns in the southern regions of the country.
The future

Recent political turbulence has affected the flow and distribution of iodized salt, due to interruptions in transportation, fuel and security. The USI program has also been negatively impacted by the COVID-19 pandemic. The impact of the lockdown and quarantine on the Sudan iodized salt program was severe due to the interruption of proper monitoring, limitations on mobility and transportation, and implementation of social distancing measures, which collectively prohibited the labor force from reporting to workplaces.

There is great potential for provision of adequately iodized salt to the entire Sudanese population. Sudan has local salt resources to cover all anticipated national needs and also for export. However, currently the three modern factories in Port Sudan are able to produce only approximately 50% of the need to cover all population with adequately iodized salt. It is estimated there is a need to install at least two more modern salt plants with production capacity of at least 20 metric tons per hour to cover the local supply gap for iodized salt. IGN is now supporting feasibility studies to encourage the producers to invest.

As a next step, IGN, WFP, and UNICEF will work with the Government to strengthen the regulatory monitoring system, and expand communications efforts to increase awareness about the threat of IDD and the benefits of iodized salt. IGN is also planning to provide special support to the areas in Darfur and Kordofan where internal displaced people are at high risk of IDD. These efforts may include approaching donors to support short-term purchasing and supply of free iodized salt to these populations, followed by awareness campaign and encouraging improved iodized salt supply from local production.
FIGURE 3 The median urinary iodine concentration in lactating women in Sudan, by state. The horizontal red line shows the threshold for sufficiency.

FIGURE 4 There is regional disparity in iodine status in Sudan: in the Northern and Eastern States women appear to have sufficient iodine status, in the Southwestern States women remain moderately-to-severely iodine deficient.

References
India celebrates IDD Prevention Day

Firstpost, October 21, 2020

World Iodine Deficiency Day, also known as Global Iodine Deficiency Disorders (IDD) Prevention Day, is observed on 21 October every year to spread awareness about that essential micronutrient everyone needs for proper thyroid function, brain development and overall growth – iodine. WHO states that IDD is the world’s most prevalent cause of brain damage, even though it is highly preventable.

According to a recent survey by Nutrition International, the All India Institute of Medical Sciences (AIIMS) and the Indian Coalition for the Control of Iodine Deficiency Disorders (ICCIDD), the percentage of Indian households that consumed adequate amounts of iodized salt in 2018-2019 increased to 82.1 percent. The survey showed that the awareness about iodized salt was higher in urban areas (62.2 percent) than in rural areas (50.5 percent), and most respondents found electronic mass media campaigns useful in spreading awareness.

While this data is heartening, the need for greater awareness and use of iodized salt remains a critical goal for the Indian healthcare system. Along with highlighting the need for greater and more widespread consumption of iodized salt, campaigns should also focus on highlighting the many negative effects of IDD, especially among pregnant women and families.

World IDD Prevention Day observed in Lakhimpur

The Sentinel, 28 November 2020

World Iodine Deficiency Day was observed in Lakhimpur on Wednesday. On this occasion, an awareness meeting was organized by the District Health Society and the district establishment of National Health Mission (NHM) at the conference hall of the Joint Director office in the presence of health officials and public. The meeting was inaugurated by Dr. Mahendra Das, the Joint Director of the District Health Society, who highlighted the importance of iodine in human body.

“Iodine is stored in the thyroid gland of our body and is an essential dietary mineral. It is important for our body as it helps in the production of thyroid hormones thyroxine and triiodothyronine. These hormones of the thyroid gland affect mostly all the cells in the human body and are also important for the proper development of cells. It also helps in protein metabolism, increases the metabolic rate of the body, regulates the growth of bones and development of the brain,” said Dr. Mahendra Das in his brief speech.

On the other hand, NHM District Community Mobilizer Manjul Ali Hazarika and NHM District Media Expert Durlabh Barman underlined the health issues caused by the deficiency of iodine and measures to be taken to avoid the deficiency concerned.

“The deficiency of iodine in the body may lead to serious illness. It can start before birth, jeopardize children’s mental health and often their very survival. During pregnancy, a serious deficiency of iodine can result in stillbirth, spontaneous abortion, congenital abnormalities like cretinism and mental retardation. It is also essential for the normal growth and development of humans,” stated Durlabh Barman in the meeting. In connection with the event, an awareness rally was also taken out in North Lakhimpur town under the auspices of the District Health Society.
Maintaining awareness about the adverse health effects of IDD is paramount


The United News of India, from Kolkata, emphasized the importance of IDD Day and raising awareness on the importance of iodine in the daily diet. The iodine intake in the desired quantities is vital for healthy mental development of children up to the age of 5 years old. Children in this age group are known to be more curious, ask a lot of questions and are eager to discover newer things. So, it becomes important for parents to encourage this inquisitiveness and answer their questions in the right manner while also ensuring that the child gets adequate amount of iodine through their daily diet. A UNICEF report states that the first 1,000 days of life, or the time between conception and the age of two years is the period when the foundations of optimum health, growth, and development of brain and nervous system of the child’s life are laid.

Sharing tips on some iodine-rich dietary practices that one can follow to avoid the consequences, Kavita Devgan, Nutrition Expert, Tata Nutrikorner, explained, “Some of the sources of dietary iodine are seafood, eggs and dairy products. However, iodized table salt, is the easiest source of iodine and suitable to everyone. The adequate intake of iodine helps in proper mental development of children and keeps them sharp. The simplest way to ensure that every child, including picky eaters or those who are allergic to certain foods, consumes iodine is by adding iodized salt as an integral part of their diet.”

For Indians, how much iodine is enough? An interview with Dr Rupali Datta, Indian Dietetic Association

As reported on Ndtv.com/swasthindia ➔ https://swachhindia.ndtv.com/world-iodine-deficiency-day-2020-understanding-the-importance-of-iodine-for-the-body-52111/

Sharing the sources of Iodine and how one can make sure sufficient intake of this important nutrient, Dr Rupali Datta, Head of Clinical Nutrition Healthcare Executive Committee, Member Indian Dietetic Association said,

“One of the main sources of Iodine for us Indians is obviously the salt. In our country, sale of non-iodized salt is banned. The average salt intake in Indian homes range from 5-10g/day, of which, 30% is lost during cooking and 70% is absorbed, providing an average amount of 70µg/day. Apart from salt, milk is another source of iodine with 303µg/litre. Milk is also a great source of protein, vitamins and important minerals like calcium. Half a litre of milk is the minimum quantity needed by adults to obtain the 150µg recommended dietary allowance.”

“Seafood such as tuna, shrimps, cod and scallops, are also considered excellent sources of iodine. Yolks of eggs are another source of iodine, great for children as they provide another essential “brain nutrient” folate too. Don’t also ignore the intake of your vegetables and fruits – Sweet potato, onion, spinach, banana, and cantaloupe contain iodine.”

Highlighting precautions for people with iodine deficiency in terms of food choices, Dr Datta added that: “if someone is on supplements or prone to iodine deficiency then he/she should eliminate or reduce the intake of soy, bok choy, broccoli, cabbage, cauliflower, mustard greens, turnip as these foods contains thiocyanates, which interfere with the uptake of iodine by the thyroid gland, so, avoiding these foods is a good strategy to be safe and healthy.”

Dr Datta further talked about precautions one should take and said,

“Iodine supplementation should only be done under medical supervision. Eating a healthy and varied diet is adequate to meet iodine needs. Complete elimination of iodized salts or substitution with unfortified rock salt is not a good strategy. People with hypertension or heart diseases may reduce their salt intake but ensure that they take other good sources of iodine regularly.”
Low iodine intakes in Turkish pregnant women and their newborns


Background
Turkey is a country situated partly in Europe and Asia, with a population of 83 million and 1.25 million live births per year. A national household salt iodization program has been installed since 1998 and household coverage is high, but food industry salt is not iodized. The most recent national data from school aged children (2007) indicate sufficient iodine intakes, with a median urinary iodine concentration (mUIC) of 107 µg/L (1). It is estimated that 59.2% of households are using iodized salt (1). Small regional studies have suggested iodine deficiency in Turkish pregnant women.

Study design
A recent national cross-sectional survey aimed to assess the iodine status in pregnant women and their offspring by measuring the mUIC. For each mother-newborn pair, a questionnaire was completed for age, parity, and birth weight as well as additional information regarding thyroid diseases, use of iodized salt in the household, extra iodine supplementation during pregnancy, education level and income.

Results
The study population represented 1444 pregnant women who gave birth in 2018-2019, and their offspring. The median UIC in pregnant woman was 94 (52–153) µg/L. The median UIC in their offspring was 96 (41–191) µg/L. In the survey, 89 % of pregnant women reported using iodized salt.

Pregnant women with lower socioeconomic and education level, lower access to household iodized salt, lower rates of exposure to povidone-iodine containing skin disinfectant, higher parity and higher iodine deficiency had higher rates of iodine deficiency in their offspring. Regional differences were observed both in mothers and their offspring concerning their iodine status (Figure 1). The findings suggest that iodine deficiency is still an important public health problem in pregnant women in Turkey.

Context
The results of this study are supported by data from Turkey from the national neonatal TSH screening program; a study of 1.27 million newborns reported 7.2% elevated TSH values in 2014, suggesting maternal iodine deficiency (2).

Moreover, in a study from Turkey, 67% of physicians thought it was unnecessary to offer iodine supplementation to pregnant women (3). In the present study only 5% of the pregnant women declared to have received iodine supplementation during their pregnancy. The authors suggest that heightening the awareness of Turkish physicians on the importance of maternal iodine intake would be important. Although a national table salt iodization program has been established in Turkey, since 1998, industrial salt is not iodized. Universal salt iodization is effective, but it works best when it’s truly universal, that is, when sufficient iodine (20–40 mg/kg) is added to all salt for human consumption, including table salt and salt used in food production by manufacturers of processed foods and condiments. It is generally assumed that the iodine requirements of all population groups are covered in settings where Universal Salt Iodization has been successfully implemented for ≥2 years, and iodine intakes in school-age children are adequate.

In order to prevent the iodine deficiency in pregnant women, and most importantly, iodine deficiency in Turkish newborns, the authors of this study suggest Turkey needs to implement measures such as:
• iodization of industrial salt, bread
• iodine addition to vitamin/mineral supplements given during pregnancy
• changing diet habits to increase the seafood and fish consumption
• increase milk consumption together with optimizing its iodine concentration

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Christmas nativity scenes: shepherds with goiters!

Shepherds in Christmas Nativity scenes that were painted, carved or sculpted hundreds of years ago in Italy sometimes have goiter, an enlargement of the thyroid gland caused by iodine deficiency. The condition was common in those days in northern Italy, where the soil and water are depleted of iodine.

“Goiter is more often seen in poor people,” says retired surgeon Renzo Dionigi in Varese, Italy, who notes that the working classes in this region would historically not have a varied diet that might supply this vital nutrient. “That’s why, probably, the poor shepherds are depicted with goiters,” he says. In the northern Italian regions of Piedmont and Lombardy, in churches from the 16th and 17th centuries, “we have been able to observe representations of goiters very, very often,” says Dionigi. In one Nativity tableau from 1694, for example, a young horn player with a large goiter plays for the Holy Family (Figure 1). Dionigi recently reported on two wooden shepherds, both with visible goiters, that were once part of a 16th-century Nativity scene (Figure 2).

Massive goiters sometimes show up on artists’ portrayals of tormentors and executioners, apparently as a symbol of evil. But often, goiter just indicates that a person is poor or needy. In one 17th-century terra-cotta sculpture from northern Italy, a person with an enormous goiter begs St. Francis for healing. “That’s the hugest goiter I have ever seen in any sculpture,” says Dionigi. “The size of that goiter in that sculpture is something like half a meter.”


FIGURE 1 A horn player (left) in this 1694 altar carving by Francesco Antonio d’Alberto in Piedmont, Italy, clearly has a swollen neck that signifies goiter, medical historians say.

FIGURE 2 Two shepherds with goiter by a 16th century unknown artist(s), wood, Oratorio dell’Annunziata, Italy.
New mandatory salt iodization in Malaysia

September 26, 2020: Salt sold in Malaysia must be fortified with iodine under a new ruling to tackle iodine deficiency among children. Health director-general Tan Sri Dr Noor Hisham Abdullah said amendments to Regulation 285 regarding iodized salt under Food Regulations 1985 would be in force from Sept 30 onwards. This deadline was later extended to December 31 (see below).

“The amendments mandate that fine salt, or for salt which weighs 20kg or less, must be added with iodine before being sold in the whole of Malaysia,” he said in a statement on September 25.

“Surveys involving pregnant women and pupils show that iodine intake does not reach the optimal level. As such, the implementation of the Universal Salt Iodization (USI) in Malaysia will help increase iodine intake in society, seeing that salt is a basic ingredient that is needed by everyone regardless of income status. Previously, this regulation was implemented in Sabah and it has now been expanded to the whole country,” he said.

The Food Safety and Quality Division under the ministry, he said, would be monitoring and enforcing the new regulation. “Failure to adhere to the amendment of Regulation 285 is an offence and if found guilty, manufacturers and retailers will be compounded no more than RM10,000 or jailed for no more than two years,” he said.

Dr Noor Hisham said iodized salt would not adversely affect the taste of food, but he cautioned consumers against unduly increasing their intake of salt.

“Consumers are reminded that intake of salt does not need to be increased, because excessive salt in food can on the other hand lead to non-communicable diseases such as hypertension,” he said.

The deadline for iodine to be added to salt sold in Malaysia was extended to December 31 following appeals from importers and salt repackers. Health Minister Datuk Seri Dr Adham Baba said the original deadline of Sept 30 had been lengthened to allow more time for the existing stock of non-iodized salt to be cleared first, before iodized salt becomes mandatory.

The ministry’s Food Safety and Quality Division senior director Mohd Salim Dulatti said the deferment was decided based on many requests from industry players: “The ministry has agreed to delay the enforcement to Jan 1 due to the Covid-19 pandemic that has led to difficulty in clearing existing stock,” he said.
Federation of Malaysian Manufacturers (FMM) president Tan Sri Soh Thian Lai said the industry appreciated the ministry’s move. He said: “While FMM agrees with the need to address the iodine deficiency disorder in the country, small and medium enterprises, which are repackers, face problems as the movement control order had delayed the delivery of machines to iodize the salt,” he said. When new machinery arrives, Soh said repackers need to calibrate and integrate the machines into their production line and conduct trial runs to ensure consistent quality in compliance with the new regulations, which will take time.

Federation of Sundry Goods Merchants of Malaysia president Hong Chee Meng also lauded the deferment, and called on industry players to make the necessary preparations, saying: “The time that was given to comply earlier was only five days, and it was too short. Malaysia does not produce salt, which is mainly imported from China and India.”
Iodine deficiency in Australian sheep and goats

In an article in the Tablelands Telegraph (Queensland, Australia) in October 2020, Lucienne Downs, District Veterinarian, reported that District Vets had seen multiple cases of iodine deficiency causing goiter in kids and lambs this spring.

Goiter occurs in animals when there is iodine deficiency during pregnancy. The demand for iodine in the developing fetus is especially high in the final trimester of gestation. In many regions of Australia, the soils are marginal in iodine. In high rainfall areas, levels are likely to be lower. High autumn rainfall and resulting lush pasture growth will further reduce the availability of iodine in spring when it is most needed in pregnant does and ewes. For this reason, lambs and kids born September to October are most at risk.

Grazing brassica crops or white clover during pregnancy can cause goiter as they contain goitrogens. Goitrogens are substances that disrupt the production of thyroid hormones by interfering with iodine uptake in the thyroid gland.

Overt goiter may be seen in lambs and kids if the thyroids are many times larger than normal. In some cases of iodine deficiency, goiter may not be obvious, or present in few neonates. In addition to goiter, iodine deficiency can cause abortions, stillbirths and the birth of premature, small and weak lambs or kids. Kids may be born with a sparse hair coat and lambs may be born without wool or appear hairy. Affected neonates have a decreased metabolic rate, impaired lung development and impaired suckling behavior. They are especially susceptible to hypothermia.

The need for preventative measures will depend partly on the history of the property and herd/flock including a previous diagnosis or suspicion of iodine deficiency, timing of lambing/kidding and seasonal conditions.

As goats have a higher requirement for iodine it has become a standard recommendation that pregnant does grazing in high rainfall areas receive a drench of supplementary iodine once or, in some cases twice, during the last two months of their pregnancy. Iodine supplementation of ewes depends on the region and seasonal conditions. Iodized salt licks or iodized salt in the diet may prevent the development of iodine deficiency. Potassium iodide may be given as a drench. Lambs with goiter can be treated with thyroxine or iodine supplements, however, only slight reductions in the size of the goiter are likely. An overdose of iodine can result in iodine toxicity so correct diagnosis and supplementation is important.
Sustainable elimination of IDD in Eastern and Southern Africa

Dr. Festo P. Kavishe IGN Regional Coordinator for Eastern and Southern Africa

We are at the verge of celebrating the elimination of IDD as one of the greatest evidence-based public health successes of our time! A recent policy brief aims to advocate to policy makers in governments, the salt industry, development partners, non-governmental and civic society organizations in Eastern and Southern Africa to use their policy making power to accelerate and sustain this huge progress.

The 23 countries covered by the new brief in Eastern and Southern Africa are: (1) Angola; (2) Botswana; (3) Burundi; (4) Comoros; (5) Ethiopia; (6) Eritrea; (7) Eswatini (Swaziland); (8) Kenya; (9) Lesotho; (10) Madagascar; (11) Mauritius; (12) Malawi; (13) Mozambique; (14) Namibia; (15) Rwanda; (16) Seychelles; (17) Somalia; (18) Tanzania; (19) South Africa; (20) South Sudan; (21) Uganda; (22) Zambia; and (23) Zimbabwe.

Challenges in ensuring optimal iodine intake in the ESA region

Although all countries have made significant progress towards improving iodine nutrition through USI, there are inter-country variations and challenges with regard to sustainability. Stagnation or backsliding to access iodized salt experienced by several countries in the region is because of poor sustainability of previous program activities. To improve equitable and sustained access to iodized salt, there needs to be an effective regulatory monitoring system that encourages engagement with the salt industry and integrates salt iodization activities. Such integration should include consolidation of small-scale producers, coordination and oversight, regulatory monitoring, and incorporating surveillance and evaluation into routine food control systems and into the broader health and nutrition activities.

Regional harmonization of food fortification standards including for salt iodization, progressed well in 2020 with SADC developing “Minimum Food Fortification Standards” and ECSA-HC developing a

“Manual for Inspection of Fortified Foods at the Points of Entry and Market Surveillance” and “Guidelines for Internal and External Monitoring”.

Covid-19 as a unique challenge in Universal Salt Iodization

Evidence-informed policy making is particularly important at this moment in history when the COVID-19 pandemic has disrupted social-economic systems and programs including those for universal salt iodization. For example, the negative impact of COVID-19 on trade has exacerbated problems of availability of potassium iodate used for salt iodation and heightened the significance for overall nutritional well-being, especially for the most vulnerable. This is because malnourished people, including those with iodine deficiency, have weaker immune systems and may be at greater risk of severe illness due to the virus. Critically, populations most vulnerable to Covid-19 are those who already suffer as a consequence of inequities – the poor, women and children and those living in fragile situations, who are also more likely to be the ones most affected by iodine deficiency and highly impacted by public health containment measures. Ensuring optimal iodine intake together with other nutrition measures will build the immune system and help uptake of vaccines developed.
What are governments doing to address the challenges?
Governments in the region have held a series of consultations to gauge progress, accelerate their national IDD/USI programs and agree on regional approaches given the dependence of salt importing countries on those that produce salt. Though the regional production of iodized salt is estimated to be adequate, there are challenges in terms of its distribution and meeting regionally acceptable standards. Therefore, countries must continue to develop and implement mandatory country specific legislative policies and programs to ensure supply of optimal amounts of iodine in the diet.

From 5th to 7th November 2019 IGN, UNICEF, WHO, NI, GAIN and ECSA-HC, jointly convened a regional consultation in Mombasa, Kenya, as a follow up to a similar one held in Dar Es Salaam, Tanzania, in 2015. Hosted by the Ministry of Health–Kenya, the Mombasa consultation brought together 75 participants from 15 countries.

The aim of the Consultation was to review implementation of the recommendations from the 2015 consultation and reinforce capacity and commitment towards effective prevention and control of IDD. The consultation analyzed the status, challenges and opportunities of USI-IDD in the region with case studies on lessons learned by various stakeholders and countries and drafted National USI-IDD Plans of Action.

There were comprehensive reviews of new approaches and innovations in ensuring optimal iodine intake which included the consolidation of small and medium scale industries into centralized iodization facility systems, use of iodized salt in processed foods/condiments, complementary interventions as well as aligning salt intake reduction and adequate iodine intake as part of an overall healthy diet. Countries deliberated on robust monitoring and evaluation systems as well as dissemination of iodine status data while strengthening regional platforms to address IDD with harmonized standards on food fortification. Following three days of very fruitful deliberations, participants developed their Country Action Plans and adopted the Mombasa Declaration that committed to the recommendations that have policy implications. Implementation of these recommendations was incorporated into the National Action Plans. The key policy messages are shown in the text box below. To implement those recommendations, IGN in collaboration with partners developed an evidence-based five-year “Regional Multi-partner Strategic Action Plan for Eastern and Southern Africa” as a roadmap to ramp up efforts towards the elimination of iodine deficiency disorders in the region through universal salt iodization by 2025.

The strategic plan defines a common vision and goal for governments and partners; provides a framework for coordination and collaboration among governments and partners; facilitates sharing of programmatic and salt industry experiences, lessons, new innovations and evidence for USI policy making; and provides a harmonized mechanism for tracking progress in USI-IDD programs.

The regional strategic framework also identified seven thematic areas that need urgent collaborative implementation in order to achieve and sustain USI in all countries of the region. These areas are: (i) regional coordination; (ii) strengthening national programs; (iii) targeted action in high burden countries; (iv) regional harmonization through regional blocks (EAC, ECSAHC, SADC); (v) strategic engagement of the salt industry; (vi) alignment of salt fortification and salt reduction; and (vii) tracking program performance.

Partners have emphasized that the most important action to achieve USI and IDD elimination in the region is the implementation of the National IDD Programs of Action. National IDD Coordinators play a crucial role in catalyzing collaboration and coordination among the different partners and in facilitating provision of technical assistance, with the strategic regional roadmap providing support.

Priority outputs identified at the regional level to support National Action Plans include:
1) Strengthened coordination mechanism for USI/IDD programming in order to best leverage the proficiencies of different partners working on USI/IDD in the region.
2) Targeted technical support to high burden countries with insufficient iodine intake and those without recent data.
3) Strengthened advocacy for USI programs.
4) Strengthened monitoring and tracking of USI programs.

Key USI-IDD messages for policy makers

1. Given the high economic returns on investment, collaborate with the salt industry to ensure sustained USI.
2. Support and promote multi-partner collaboration, coordination and implementation of the USI/IDD National and Regional Multi-partner Action Plans.
3. Adopt strategies that ensure optimal intake of both iodine and salt as per WHO recommendation of less than 5 g of salt per day.
4. Allocate resources to address IDD within your broader health and nutrition agenda and programs.
5. Promote and support national adaptation and enforcement of the ECA, ECSA-HC and SADC food fortification standards and guidelines.
6. Support generation and sharing of evidence for policy-informed decision making on USI-IDD using effective monitoring and evaluation systems.
“COVID and its Onslaught on Progress”

In a time where every human attention has been drawn into a very sharp focus,  
Whatever progress that is made in any area might be discarded as if of no use;  
That is now the tragedy inflicted on humanity as this COVID tightens its noose,  
With waves of infections rising ever so higher that body counts we start to lose.

Many of us as professionals have chosen our own thrust, specialty and advocacy,  
We look keenly on the impact on our work that COVID has done as our adversary;  
We express our dismay, anguish, helplessness, frustration including our anxiety,  
That whatever gains we’ve made is dashed as caused by this minute viral entity.

Iodine Global Network’s advocacy is for improved nutrition through salt iodization,  
To add minute amounts of iodine to all salt that will be used for human consumption;  
Whether for home or restaurant use or for processing foods: iodized salt is the solution  
To reduce iodine deficiency with its ill- and adverse effects on vulnerable population.

During mother’s pregnancy and lactation when there is critical child brain development,  
Iodine has to be supplied adequately lest the child is born already with a big impediment;  
Child’s mental faculties are forever impaired with significant drop in Intelligence Quotient,  
With a good 10 – 15 IQ points lost already with disastrous results for any mental event.

COVID has slowed down salt production and distribution by disrupting labor availability,  
Costs would surely rise along the supply chain and adversely affect buyers’ financial ability;  
Food monitoring for iodine levels at the point of manufacture would suffer from low quality,  
Precious progress washed away in the struggle against a very preventable mental deficiency.
New metrics on salt iodization programs

The Global Fortification Data Exchange (GFDx) has launched new visualizations and features. You can now visualize the population coverage with iodized salt, salt iodization’s contribution to dietary iodine intakes, and iodine levels in iodized salt. Several of these metrics are illustrated in the figures below. Please explore this rich data trove at ➔ https://fortificationdata.org

**FIGURE 1 Salt iodine level.** For 136 countries with mandatory or voluntary standards for iodine in salt, the iodine fortification level that is specified at the point of production/import.

**FIGURE 2 Program coverage.** For 89 countries, population coverage of iodized salt (%).
**Figure 3** Number of countries. Between 1942 and 2020, 123 countries established mandatory salt iodization.

**Figure 4** Before and after data. 79 countries with mandatory fortification of salt have data comparing median urinary iodine concentrations before and after mandatory fortification was enacted.

**Figure 5** Potential impact on intake. Potential iodine intake (in mg/day) under the ideal scenario where 100% of salt is industrially processed and 100% is fortified.
Simple goiter: “seek and you shall find”

Gregory Gerasimov  IGN Regional Coordinator for Eastern Europe and Central Asia

Goiter is a typical feature of iodine deficiency but can also occur in other thyroid disorders. International Statistical Classification of Diseases and Related Health Problems (ICD-10) has a special chapter (E01) for iodine-deficiency related thyroid disorders (Table). Goiters diagnosed outside of iodine deficiency areas are coded as “E.04.0 – Nontoxic diffuse goiter”.

A recent publication from Russia (2) provides information on incidence of endemic and other forms of non-toxic goiter (E.01.0; E01.1; E01.2 and E.04.0 combined) based on official heath statistics collected by Ministry of Health for the period from 2009 to 2015. Using regression analysis, the authors of the article found no changes in goiter incidence (hereinafter, per 100,000 population) in children under 14 years of age. In adolescents 15-18 years old, there was a statistically significant, albeit small, decrease in the incidence of goiter (Figure 1).

These results are hardly surprising given very slow progress in adopting of comprehensive strategies for reaching optimum iodine nutrition in Russia and that legislation on mandatory salt iodization has not been adopted over the previous 20 years. Thus, many regions of Russia are still iodine deficient.

Neighboring Belarus (with tight political and economic ties with Russia) has another dynamic of goiter incidence. Following successful implementation of government resolution on mandatory use of iodized salt in food industry (adopted in 2001), the goiter incidence (combined data for E.01.0 and E.04.0) from 1998 to 2017 decreased almost 4 times (Figure 2) while median UIC over the same period increased from 68 to 191 mcg/l [3]. However, in 2017, the absolute goiter incidence in children (154 cases per 100,000) in Belarus remained 3.5 times higher than in Russia (44 cases). This phenomenon can be explained by the fact that thyroid examinations are more often carried out in Belarus, hence – “seek, and you will find”. Mass screening of thyroid gland pathology in children in Belarus began in the early 1990s after a sharp increase in the incidence of thyroid cancer, and this concern apparently persists to this day.

And what about other countries outside of the former Soviet Union? According to Dr. Maria Andersson of ETH, Zurich, similar systems are available in the Scandinavian countries. These countries have the most systematic and complete medical records in Europe as the health system is public and all medical visits/diagnosis/treatments are associated with personal ID numbers. Information on thyroid diseases (and goiter when diagnosed) is available but not used for regular surveillance. Dr. Andersson also doubted that similar systematic and complete information is available elsewhere except former USSR and Scandinavia and recommended a website [4] to search for summary statistics on goiter incidence in Sweden for 1998-2018.

Data on incidence and prevalence (1) of goiter are routinely collected by ministries of health and national statistical agencies in several countries of Eastern Europe and Central Asia (Russia, Belarus, Armenia, Azerbaijan, Kyrgyzstan and others) and used as indicator of iodine status of population and effectiveness (or lack thereof) of salt iodization strategies.

Simple goiter is the classic sign of iodine deficiency

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**Table**

<table>
<thead>
<tr>
<th>Iodine-deficiency related thyroid disorders and allied conditions (ICD-10) [1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.01.0 Iodine-deficiency related diffuse (endemic) goiter</td>
</tr>
<tr>
<td>E.01.1 Iodine-deficiency related multinodular (endemic) goiter</td>
</tr>
<tr>
<td>E.01.2 Iodine-deficiency related (endemic) goiter, unspecified</td>
</tr>
<tr>
<td>E.01.8 Other iodine-deficiency related thyroid disorders and allied conditions</td>
</tr>
</tbody>
</table>

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**Figure 1** Dynamics of the prevalence of goiter in children (left graph) and adolescents (right graph) in the Russian Federation from 2009 to 2015. [2].

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[1] Data on incidence and prevalence of goiter are routinely collected by ministries of health and national statistical agencies in several countries of Eastern Europe and Central Asia (Russia, Belarus, Armenia, Azerbaijan, Kyrgyzstan and others) and used as indicator of iodine status of population and effectiveness (or lack thereof) of salt iodization strategies.

[2] A recent publication from Russia (2) provides information on incidence of endemic and other forms of non-toxic goiter (E.01.0; E01.1; E01.2 and E.04.0 combined) based on official heath statistics collected by Ministry of Health for the period from 2009 to 2015. Using regression analysis, the authors of the article found no changes in goiter incidence (hereinafter, per 100,000 population) in children under 14 years of age. In adolescents 15-18 years old, there was a statistically significant, albeit small, decrease in the incidence of goiter (Figure 1).

[3] However, in 2017, the absolute goiter incidence in children (154 cases per 100,000) in Belarus remained 3.5 times higher than in Russia (44 cases). This phenomenon can be explained by the fact that thyroid examinations are more often carried out in Belarus, hence – “seek, and you will find”.

[4] Dr. Andersson also doubted that similar systematic and complete information is available elsewhere except former USSR and Scandinavia and recommended a website to search for summary statistics on goiter incidence in Sweden for 1998-2018.
This made it possible to compare the incidence of goiter in Belarus and Sweden, especially since the population in both countries is approximately the same (about 10 million) and both have adequate iodine status [3,5].

No single case of iodine-deficiency goiter (E01) in children and adolescents have been reported in Sweden over the past 20 years: according to Global Scorecard of iodine nutrition Sweden has optimum iodine nutrition with median UIC of 125 mcg/l [6]. For the age group from 0 to 19 years, over the past 20 years, the incidence of sporadic non-toxic goiter (E04) did not exceed 0.8 cases per 100,000, but mostly ranged from 0.4 to 0.6 cases (Figure 3). This is one hundred times less than the incidence of goiter in children and adolescents in Belarus with the lowest incidence rate of 154 cases per 100,000 recorded in 2017 (Figure 2). In 2016 only 8 goiters were registered in Sweden compared to about 2,900 goiter cases in Belarus.

The difference in goiter incidence between these iodine sufficient European countries is staggering. However, history could explain this paradox. Sweden started salt iodization in 1936 and, although currently the main source of iodine in the diet is milk and dairy products, goiter has not only disappeared, but seems was almost completely forgotten over past decades. In Belarus salt iodization started in 1956 and by 1972 endemic goiter was officially considered as being eliminated. Soon thereafter, a special statistical form used for registration of new cases of goiter had been abolished. However, in reality, mild iodine deficiency persisted and contributed to a huge increase of thyroid cancer incidence in children due to high uptake of radioactive iodine following the accident at the Chernobyl nuclear power station in 1986. Thyroid cancer morbidity jumped from 0.3 cases per one million in 1981-85 to 30.6 cases in 1991-1994 [7]. The Chernobyl accident also resulted in high awareness of Belarus population in thyroid disorders (and goiter particularly) and their extensive screening in children and adults had been launched. Although the wave of radiation induced thyroid cancer has subsided by late 1990s, health care providers continued active surveillance of thyroid disorders by palpation and thyroid ultrasonography in the following decades resulting in extremely high incidence of questionable cases of goiter, especially in children and adolescents. Nothing like that happened in Sweden, despite the fact that it was the first country in Europe that discovered and reported the spike of atmospheric radioactivity a few days after Chernobyl accident.

Routine use of medical records on goiter incidence in several countries of Eastern Europe and Central Asia has one serious advantage: it is well built into existing system for monitoring of health indicators by public health authorities and does not require additional financial resources and organizational efforts.

At the same time, this system could only provide information on trends in goiter morbidity that may be indicative of changes in iodine nutrition: just compare trends in goiter incidence in Russia and Belarus over the past 2 decades!

References

FIGURE 2 Prevalence of diffuse goiter in children and adolescents (0-18 years-old) in Belarus (per 100,000) for the period from 1998 to 2017 [3].

FIGURE 3 Prevalence (per 100,000) of non-toxic goiter (E04) in children and adolescents (0-19 years old) in Sweden from 1998 to 2018 [4].
Abstracts

Vegans, Vegetarians and Pescatarians Are at Risk of Iodine Deficiency in Norway
This study included vegans, vegetarians and pescatarians from the Oslo region of Norway, aged 18–60 years. A spot urine sample was collected along with a dietary assessment of iodine and supplement intake. The median urinary iodine concentration in vegans was 43 µg/L (moderate iodine deficiency), in vegetarians 67 µg/L and in pescatarians 96 µg/L (mild iodine deficiency). Use of iodine supplements was one of the strongest predictors of UIIC. Vegans and vegetarians in Norway are unable to reach the recommended iodine intake merely from food and are dependent on iodine supplements.

Iodine Status of Women and Infants in Russia: A Systematic Review
This paper presents data on median urinary iodine concentration (UIIC) in women and infants from 25 Russian regions. A substantial variability in UIIC across the country with no clear geographical pattern was observed. The results suggest that iodine status among pregnant women and infants in Russia may be below the recommended levels.

An evaluation of urine and serum iodine status in the population of Tibet, China: No longer an iodine-deficient region
This multicenter cross-sectional study aimed to evaluate the iodine status of adults (n=1499) from three areas of varying altitudes in Tibet. The median UIIC was 137.9 µg/L. Of the participants, 30.4% had UIICs <100 µg/L, 63.0% had UIICs ranging from 100 to 300 µg/L, and 6.6% had UIICs >300 µg/L. This study found that iodine status of adults in Tibet is adequate.

Determinants of placental iodine concentrations in a mild-to-moderate iodine-deficient population: an ENVIRONAGE cohort study
The placenta can store iodine in a concentration-dependent manner and may serve as a long-term storage supply. Placental iodine concentrations were determined for 462 mother-neonate pairs in Belgium. A higher pre-pregnancy BMI, higher gestational weight gain, and alcohol consumption during pregnancy were linked with lower placental iodine storage. Multi-vitamin supplementation during pregnancy were associated with higher levels of placental iodine. Lastly, the authors observed positive associations of both the maternal and cord plasma thyroxine concentrations with placental iodine load.

Use of Iodine Supplements by Breastfeeding Mothers Is Associated with Better Maternal and Infant Iodine Status
This study aimed to investigate the iodine intake and status of New Zealand lactating mother-infant pairs at 3 months postpartum by assessing maternal urinary iodine concentrations (UIIC) in spot urine, breast milk iodine concentrations (BMIC) and infant UIIC. In 87 breastfeeding mother-infant pairs, maternal iodine intake was 151 µg/day. Maternal median UIIC (MUIC) was 82 µg/L indicating iodine deficiency. Women who used iodine-containing supplements had a significantly higher MUIC (111 vs 68 µg/L, P = 0.023) and BMIC (84 vs 62 µg/L, P < 0.001) than non-users. Iodine intake and status of these lactating women were suboptimal, but women who used iodine-containing supplement were more likely to achieve adequate status.

Maternal iodine status in a multi-ethnic UK birth cohort: Associations with child cognitive and educational development
Urinary iodine concentrations (UIIC) were measured in 6971 mothers in the United Kingdom at 26–28 weeks’ gestation. Maternal iodine status was examined in relation to child school achievement, other learning outcomes, social and behavioural difficulties, and sensorimotor control in 5745 children aged 4–7 years. Median (IQR) UIIC was 76 µg/L (46, 120). Overall, there was no strong or consistent evidence to support associations between UIIC and neurodevelopmental outcomes. In the largest single study of its kind, there was little evidence of detrimental neurodevelopmental outcomes in children born to pregnant women with mild iodine insufficiency.

Urinary sodium and iodine concentrations among Belgian adults: results from the first national Health Examination Survey
Spot urine samples were collected in 2018 from participants of the Belgian Health Examination Survey. Median urinary iodine concentration (UIIC) among adults (n = 1092) was 93.6 µg/L, indicating mild iodine deficiency. There were no significant differences in median UIIC between sexes, age groups, and regions. Thus, iodine nutrition in the Belgian adult population is borderline insufficient.