INTERNATIONAL COUNCIL FOR CONTROL
OF IODINE DEFICIENCY DISORDERS

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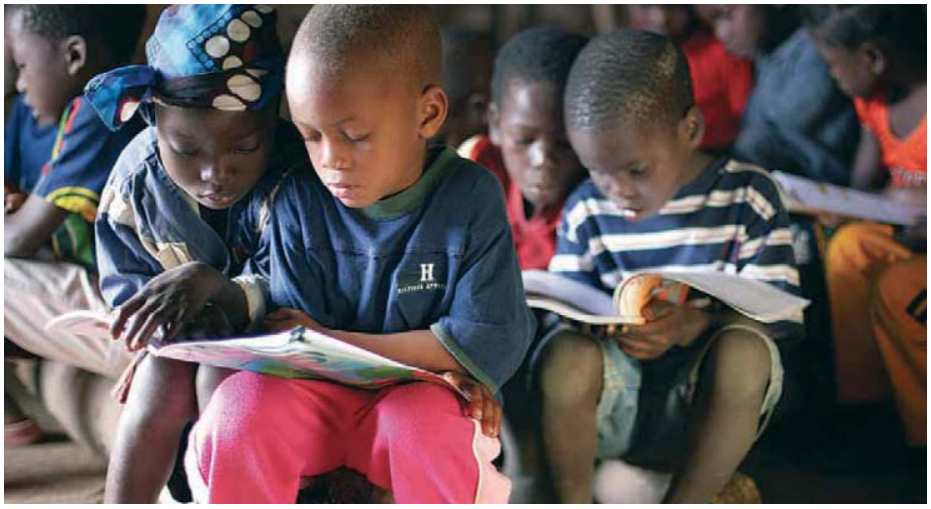
In this Issue:

Focus on Africa

From severe endemic cretinism to iodine sufficiency: an IDD success story in the Democratic Republic of the Congo

A decade of conflict has displaced millions and damaged health structures, schools and basic services. Four out of five people live on much less than $1 a day. Yet the Democratic Republic of the Congo (DRC), once among the countries most severely affected by iodine deficiency, has made enormous progress against IDD.



Théophile Ntambwe Kibambe ICCIDD Sub-regional Coordinator, Francophone West-Central Africa

Two decades ago the DRC was among the countries most severely affected by IDD in Africa. In 1990, a national survey conducted by the Ministry of Health found the goiter rate was as high as 80% in certain regions, and the prevalence of endemic cretinism in several provinces was as high as 12% (see photo next page). In October 1993, with publication of an inter-ministerial order regulating production, quality control and

THE INTERNATIONAL COUNCIL FOR CONTROL OF IODINE DEFICIENCY DISORDERS (ICCIDD) is a nonprofit, nongovernmental organization dedicated to sustained optimal iodine nutrition and the elimination of iodine deficiency throughout the world. Its activities have been supported by the international aid programs of Australia, Canada, Netherlands, USA, and also by funds from UNICEF, the World Bank and others.

trade of iodized salt, the DRC adopted a USI strategy to control IDD. This national regulation has been implemented since 1994, particularly the prohibition of the import of noniodized salt and the control of salt iodine levels at retail points in the country and in households.

In 1994, the sensitization of salt importers and a mass campaign were organized to create the demand for iodized salt. Promotion included a tax reduction for iodized salt for the importers. However, in 1995, a UNICEF MICS survey found only 12% of households had access to iodized salt. A monitoring system was introduced in 1996 and inter-sectorial follow-up committees in each province and sentinel zones at the peripheral level in certain health districts were established. Dramatic progress was reported: >90% of household salt was iodized by 1997. In January 1998, an evaluation of the program was done in the Province of Nord Kivu, and found the availability of iodized salt in households was 99% and the goiter rate was only 5%. This was in sharp contrast to a goiter rate of 48.7% in 1990.

In 2000, a national evaluation of the IDD situation was done. Because of the armed conflict, this study was conducted in only 8 of the 11 provinces of the country. The results of this study showed that 96.7% of household salt was iodized, the median UI was 495 µg/L, 10.1% of subjects had a UI <100 µg/L and the goiter rate was 5.7%. In 2003, a revision of the national regulation on iodized salt was issued, to adjust iodine salt levels to obtain a median UI of 100-200 µg/L. In 2005, the operators involved in the trade of salt were sensitized regarding the new recommended norm for salt iodine levels.

Over the past few years, the socioeconomic and political situation in DRC has continued to deteriorate due to armed conflicts in certain provinces. This situation could have allowed the entrance of noniodized salt into the country.

According to the recommendation of the World Health Assembly calling on all Member States to report on progress towards the elimination of IDD, in 2007 the Ministry of Health completed a representative national survey. This was done to evaluate the current IDD situation in the DRC, 13 years after the introduction of iodized salt. This study was conducted from July-August in 2007, in all 11 provinces of the DRC.

In August 2007, Dr. Ntambwe Kibambe was awarded a certificate of special merit from the government of the DRC for his exceptional service in the control of IDD.

Study Coordination

The survey was financed by the Ministry of Public Health. A Steering Committee assured its coordination; the Steering Committee is presided over by the General Secretary of Public Health and includes delegates from the Ministries of Health, Agriculture, Planning, Higher University Education, External Trade, and Finances, together with partners from UNICEF, WHO, the Micronutrient Initiative and Helen Keller International. The technical organization of the study was assigned to a national consultant, recruited by UNICEF.

An older cretin in the Wamba Luadi Health Zone, DRC

Objectives

Specific objectives were the following:

- to determine the availability of iodized salt in households
- to assess the adequacy of iodization of the salt consumed by the population
- to determine the extent of correction of iodine deficiency
- to determine goiter prevalence
- to determine the prevalence of cretinism
- to assess the knowledge of health workers and the population regarding IDD
- to assess the functioning of the tracking system for iodized salt in the households and on the market

Methods

This study was conducted in all provinces of the country. A cross-sectional design using cluster sampling (30 clusters) with random selection at 4 levels was done. Several target populations were sampled, including:

At the level of health areas:

■ Head of households to determine the availability of iodized salt
■ Children from 6 to 12 years (in their households) for the screening of goiter and cretinism, and the collection of urine samples, since this target population better reflects the current iodine status situation
■ Titular Nurses of the Health Centers, for the tracking of iodized salt in the households and the assessment of the knowledge of health workers on IDD
■ Salt vendors, for the tracking of iodized salt at the market and retail level
■ Adult population (women and men) as a focus group regarding IDD

At the level of the administrative seat of the Health Zone:

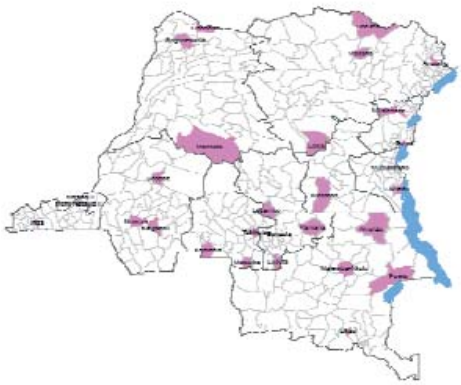
■ Management of the central office of the Health Zone (nutritionists, supervising nurses, workers in the hygienic service), for the tracking of iodized salt and the assessment of the knowledge of health workers regarding IDD

At the level of health inspections of provinces and districts:

■ Provincial coordinators of nutrition, for the functioning of the intersectorial follow-up committee of iodized salt at provincial and district level.

Different means of transportation (air planes, cars, motorbikes, pirogues, bicycles, feet) have been used by the investigators to reach the scattered survey sites. The administrative and health authorities supported the survey work. The information on knowledge, attitude and practice regarding IDD were collected through the organization of focus groups (1 focus group per health zone), respecting gender parity, by male groups and female groups, with a total of 15 focus groups with men and 15 with women. The supervisors reported good team spirit between the various co-workers who came from different levels of the national health pyramid.

Some difficulties were encountered, notably the resistance of the adherers of the church Bundu Dia Kongo, in the health zone of Inga (Bas-Congo), to accept the survey in their households. Also, some children fled when seeing the coolbox carried by the investigators, due to the fear of getting a vaccine or injection.



Health zones in IDD survey, DRC 2007, are shown in purple

Results (see tables 1 and 2)

■ The proportion of households using iodized salt was >90% for all provinces.
■ The goiter prevalence rate was <5% for all provinces.
■ The goiter prevalence was <5% at all ages and there was a similar goiter prevalence among girls and boys.
■ There was no cretinism found among 6-12 y-old children
■ In general, the population recognizes goiter, but does not know the causes. Dirty water from the river or rain is often blamed for goiter; microbial or parasitic contamination, enchantment and heredity are also among the cited causes.
■ The benefits of iodized salt are poorly known by the population; its advantages and its sources of supply were unrecognized by the majority of the population. Many did not know that iodized salt is available on the local market. The women did not have preferences for the purchase of salt. It appeared that men have a better knowledge regarding the IDD problem than women.
■ People with goiter are stigmatized, and may be given sympathy or mocked; some people stay away from goiter due to fear of being contaminated. The men generally had a better attitude towards people with goiter than women. The majority of the population is not aware of a local drug to treat goiter. Some indicated traditional medicine practices were beneficial, such as scarification or crushing of herbs on the goiter, or wearing of special necklaces.
■ Level of functioning of the control system for the iodization of salt at entry points into the country appears adequate. But in the surveyed Health Zones the tracking of iodized salt is not performed in households or at the market, usually because of lack of test kits. The local IDD committees are currently not operational in almost all provinces and districts.

Table 1: Proportion of households with access to iodized salt, DRC 2007

Provinces	Tested salt samples	Proportion of iodized salt
11	2927	97,5 %

Table 2: Prevalence of cretinism and goiter, DRC 2007

Provinces	Children 6-12 y-old	Prevalence of cretinism	Goiter prevalence
11	3240	0,0 %	1,0%

Tables 3 and 4 show the enormous progress made against IDD in the DRC since the early 1990s. The availability of iodized salt in households in DRC has increased from 12% to 97.5% from 1995-2007, while the goiter rate has normalized.

Conclusions

■ In 2927 salt samples, using rapid test kits in the field, the availability of iodized salt in households is 97.5% at the national level. The availability of iodized salt was >90% in all provinces and also in all surveyed Health Zones; the only exception being the Zone of Pweto where the availability of iodized salt is 75% due to consumption of rock salt produced in this area.

■ The goiter rate is <1% at the national level, reflecting the virtual absence of iodine deficiency in the country. There was a mild goiter endemia (5,6 %) in the Health Zone of Pweto.

■ The group discussions on the knowledge of IDD in the communities revealed that the majority of the population is not well informed on this health problem

Table 3: Availability of iodized salt in households in DRC, 1995-2007

Year	Survey	Availability of iodized salt in households
1995	MICS I	12 %
2000	Survey TDCI	96,0 %
2001	MICS II	93,0 %
2007	Survey TDCI	97,5 %

Table 4: Goiter prevalence in children 6 to 12 year-old in DRC, TDCI Surveys, 1990-2007

Year	Goiter prevalence rate
1990	42,0 %
2000	5,7 %
2007	1,0 %

■ There is a lack of the control of salt iodization at the retail level and a lack of regular tracking of iodized salt in households.

■ There is a lack of regular collaboration between the different public services in charge of IDD control, and little functioning of the local IDD committees.

Recommendations

For the Government:

■ to reinvigorate the functioning of the local IDD committees and to provide them with the required resources at the central, provincial and district level

■ to reinforce the control of iodized salt at import and on the retail market, with rigorous application of disciplinary measures in case of infraction

■ use appropriate media to arouse the awareness and the active participation of the population in IDD control

■ to study the feasibility of the iodization of rock salt produced in DRC (particularly case of the Health Zone of Pweto);

■ to assure follow-up of salt iodine content and iodine status in the sentinel zones each year

■ to assure evaluation of the IDD situation on the national level every 3 years

■ to encourage operational research on control of IDD

For the cooperation partners:

■ to support the activities of the annual plans to control IDD in DRC

■ to support the functioning of the IDD committees at central and decentralized level

At the salt importers:

■ to assure quality control prior to purchase from the factories or from artisanal production units

■ to organize themselves in decentralized associations

■ to make available only iodized salt

To the media, NGOs, consumer associations, opinion leaders:

■ to get involved in the promotion of iodized salt over the whole country, in collaboration with the health services

Reinvigorating the IDD control program in Mauritania

Théophile Ntambwe Kibambe ICCIDD Sub-regional Coordinator, Francophone West-Central Africa

Introduction

UNICEF estimates that only 2% of households in Mauritania have access to iodized salt. In May of 2007, Dr. Théophile Ntambwe Kibambe of ICCIDD visited Nouakchott, in conjunction with the national follow-up program on the control of IDD in Mauritania. The aim of this mission was to update information on IDD in Mauritania and to evaluate the commitment of the decision makers in order to accelerate development of the universal salt iodization strategy in the country. Dr. Ntambwe Kibambe was accompanied by the UNICEF Nutrition Officer, Youssouf Koita, who was the focal point of this mission.

Historical background

The first national survey in Mauritania was done in 1995 and reported a goiter prevalence of 31% in 6–12 y-old children, indicating severe IDD. In addition, 69.8% of children had a urinary iodine concentration (UI) <100 µg/L. Since 1995, no other epidemiological survey has been conducted to evaluate progress.

In 1998, UNICEF provided iodization machines to salt producers in Nouakchott, to demonstrate the feasibility and technique of salt iodization. After installation of the salt iodization lines, a multimedia communication campaign was organized. Over 6 months, 570 health personnel and more than 200 teachers were trained in communication messages on iodized salt in 5 regions, in order to create demand and promote iodized salt consumption. Also, a marketing network, built around stations of the General Secretariat to Women in 4 regions with 400 cooperatives, as well as in demonstration shops in Nouakchott, was installed to make available iodized salt on the Mauritanian market.

With the signature of decree no. 2004-034 of April 29, 2004, declaring the iodization of salt for human and animal consumption mandatory and with the publication in the official Journal on August 17, 2005, Mauritania has adopted the universal salt iodization strategy and at the same time asserted its commitment for the elimination of IDD as public health problem.

In 2005, a study mission to Algeria was organized, and analysis of the commercial circuit of salt in Mauritania was done, with support and input of the salt producers on necessary equipment for salt iodization. In 2006, a training course on salt

iodization techniques, control of iodization and the maintenance of equipment was provided for 160 employees of the 3 major salt producers. In January 2007, the association of salt producers of Mauritania signed a formal commitment letter for the iodization of all salt produced in the country.

The current situation

Strengths

- Existence of a legal framework regulating production, control and commercialization of iodized salt in Mauritania
- Willingness of the different public sectors to collaborate (Health, Industry, Trade, Agriculture, Women Condition, Communication) in an multi-sectored follow-up committee
- Existence of a Direction to protect consumers and repress fraud within the framework of the Ministry of Trade
- Favorable socioeconomic environment with new political authorities at different levels
- Adherence of the private sector to the salt iodization strategy
- Reinforcement of the capacities of the service employees in charge of the control of salt iodization

■ Existence of large potential for salt production, with the potential to cover the national market and to expand to other African countries
■ Presence of a number of available partners to support the efforts of the Mauritanian Government regarding salt iodization (UNICEF, ONUDI, World Bank)
■ Availability of support from ONUDI for upgrading the salt iodization infrastructure

Weaknesses

■ Absence of application orders of the decree regulating salt iodization
■ Absence of prescribed controls and of punishment of fraud
■ Salt iodization occurs away from the major sites of salt production
■ Authority for import of noniodized salt for use in industrial applications
■ Use of potassium iodide for salt iodization
■ Poor quality of locally produced salt: impurities, broad range of particle size
■ Existence of unhealthy salt production sites, situated in Nouakchott
■ Consumer adherence to rock salt (see photo), generally used in the form of pellets, and circulation of unfounded rumors regarding sea salt which is usually meant for livestock consumption
■ Control of the salt sector by a single economic interest group
■ Absence of centralization of the salt producers association
■ Irregular meetings of the national committee
■ Absence of an epidemiological surveillance system
■ Absence of a permanent sponsor for the coordination of the program

During discussions with the key players in Nouakchott, Dr. Ntambwe Kibambe emphasized the negative impact of IDD on key sectors of development (Health, Education, and Economy) and the severity of IDD in Mauritania originally found in the 1995 study. Also, he highlighted the commitments of the international community and Mauritania for the elimination of IDD, with IDD being a contributing factor to the exacerbation of poverty and a slowdown of the achievement of the Millenium Development Goals. He expressed concern over the slowdown in efforts to control IDD in Mauritania.

■ To adopt the application regulation of the governmental decree in order to implement the national legislation regarding salt iodization
■ To prohibit all circulation of noniodized salt outside of the production sites
■ To install regular controls at the production sites and markets
■ To apply disciplinary action in case of fraud

Dr Ntambwe inspects large blocks of noniodized rock salt at a market in Nouakchott

Recommendations

In Nouakchott on June 29, 2007, a multi-sectored meeting was organized to discuss these issues and reactivate the national program to control IDD. The meeting was chaired by the Secretary General for Trade, Mines and Industry. Participating delegates from UNICEF, WHO, and the Salt Producers Association, as well as government representatives from Health, Trade, Industry, Custom, Information, Education, Agriculture, and Women's Condition attended. Recommendations for the development of a salt iodization strategy in Mauritania based on the discussions were:

■ To speed up the salt iodization strategy of the government and make the program a priority
■ To start a national communication campaign
■ To organize regular meetings of the national committee for follow-up
■ To create a true national coalition for the development of the salt iodization strategy by reinforcing a partnership with the economic group which manages the salt industry
■ To support the salt producers with production equipment
■ To close the unhealthy salt production sites situated in the interior of the city of Nouakchott

The concerned parties adopted the presented recommendations and have committed to unite to eliminate IDD in Mauritania.

The fight against IDD in Gabon

Daniel N. Lantum ICCIDD Regional Coordinator, Anglophone West-Central Africa

Historical Background

Because only 36% of households in Gabon are using iodized salt, in September 2007, Dr. Lantum was invited by UNICEF Libreville to intervene to try and reinvigorate the Gabonese IDD control program. In 2001, supported by WHO, UNICEF and ICCIDD, national authorities organized an exhaustive national iodine survey. The results identified IDD as a national public health problem, and it was estimated that only 37.3% of households were using iodized salt. Subsequently, the USI strategy was adopted and an action plan was elaborated. Also, a program to ensure periodic monitoring of the IDD situation was proposed. In the mean time, the government authorities allowed the salt importers to use up their stocks of noniodized salt already on the market by a moratorium, and from then on only to import iodized salt.

A governmental decree, defining the conditions for production, importation and commercialization of iodized salt in Gabon, was made in Libreville in January of 2004, after consultations of the State Council and a hearing of the Council of Ministers. This was jointly signed by all interested government partners. Then, in November and December of 2004, follow-up decrees on creation of the National Committee for the follow-up of the Micronutrient Deficiency Program and on importation and commercialization of iodized salt, was signed.

The 2007 Mission

The general aim of the mission was to review progress of the Gabonese IDD/USI program since 2002, and to identify constraints and search for solutions to increase iodized salt consumption from 63% to >90%.

The ICCIDD team was warmly welcomed in Libreville by the UNICEF Interim Administrator, Sidi Mohamed Anouche. Meetings were arranged and ideas exchanged with the authorities of the Ministry of Public Health, as well as:

- Dr Eric Dodo Bounguendza – Director of the Cabinet of the State Ministry/Ministry of Public Health
- Dr Constant Roger Ayenengoye – Director General of Health
- Dr Renée Enombo – Deputy Director General, in charge of the national programs and services
- Ambonguilat Collette Lydie – Director of the National Nutrition Center
- Dr Christian Mba – Agro-Food Engineer in charge of studies in the Cabinet of the Ministry (focal point) Ministry of Trace and of Industrial Development
- Professor Edouard Ngou Millama – Dean of the Medical Faculty

In the field, Blandine Ondzaghé and Fabrice Menest Adande of the Nutrition Center, as well as Dr Christian Mba of the Ministry of Trade served as guides and collaborators for the studies.

The mission team visited the large popular market Mont Bouet and met with salt retailers and traders. The market salt was tested with the Rapid MBI Testing Kit, and the retailers were asked about iodized salt. A large crowd assembled to listen, observe the testing and the change of color of the iodized salt, and asked questions to better understand the importance of the program.

The manuals "Let's consume iodized salt for vitality, intelligence and to prevent goiter" and "IDD in Cameroon in 1990-91:25 Questions and answers" were distributed. To back up the results of the kits, salt samples were taken for analysis by titration at the Quality Control Laboratory of the General Direction of Competition and Consumption, Direction of Consumption in Libreville. Samples were also taken to the International Reference Laboratory for Iodine Analysis (IRLI) at the National Center for Food and Nutrition Research in Yaoundé, Cameroon.

The mission team visited five large salt importers and found that the imported salt was well-controlled by the Ministry of Agriculture at the entrance port. A certificate in accordance with law was available on demand. The team also visited the Quality Control Laboratory based at Port Ovendo where salt samples from two of the importers were left for verification of iodine levels.

A large public school, Akebe II, was visited in Libreville. In advance, the school director had asked all children to bring a cooking salt sample from their home. The children were told: "Children who regularly consume iodized salt are talented. They have vitality, intelligence, and they can't get goiter. Iodine is necessary for the development of the brain and the body of children …."

Each child's salt was tested for iodine content, and disappointingly, almost half did not change color indicating lack of iodine. But many of the rapid test kits performed poorly and were past their expiration date. Back up by titration indicated that all salt samples were well iodized with potassium iodate. Moreover, all brands of salt at the retailers as well as at the wholesaler (importers) were adequately iodized, indicating the program to control IDD is progressing well in Libreville, and, hopefully, in the rest of the country.

In 10-14 y-old children, 155 urine samples were collected and analyzed at the IRLI Yaoundé. The results showed clear iodine sufficiency among this small sample (Table 1). It was discussed how this method of school, family and community sensitization and monitoring can be applied in schools in the interior of the country to determine the coverage of iodized salt in the households and at the same time create an increased demand for iodized salt among the population.

Conclusions

Although the results of the UI and salt iodine tests suggest a well-functioning program, Libreville, which is well situated in the Estuaire region, may not be representative for the whole country. Other regions, particularly the Eastern and Southeastern provinces need to be studied to make a firm conclusion regarding the national IDD situation.

Table 1: Urinary iodine concentrations in 8-14 y-old school children in Libreville, Gabon

n	155
Median	196 µg/L
Range	14 – 400 µg/L
% <100 µg/L	15.5%
% <50 µg/L	3.1%
%>300 µg/L	9.7%

Since 2001, some progress has been realized. The political commitment is solidly in place thanks to the regulations signed in 2004. The importers in Gabon are well-sensitized and there is good evidence they comply with the regulations. The legislation is enforced by a quality control system, including the agents of the Ministry of Agriculture at production, agents of the Ministry of Trade and Industrial Development at the level of the wholesalers, and by the Direction of Competition and Consumption at the level of retailers.

A national committee (known as the Coalition) for the program to control micronutrient deficiencies is in place. All these elements promise sustainability of the Gabonese USI/IDD program.

Recommendations include:

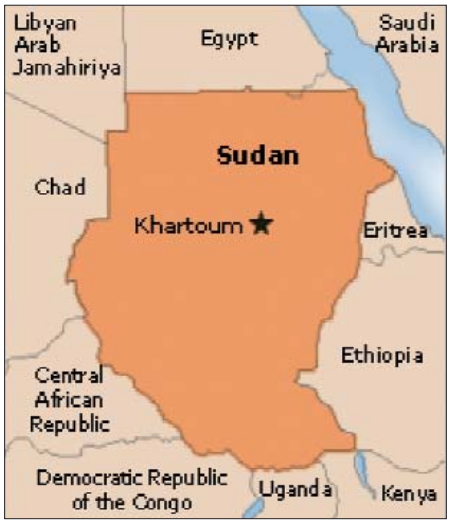
- WHO needs to publish the results of the 2001 baseline survey and a popular manual to help in the control campaign
- UNICEF in collaboration with the National Center of Nutrition needs to develop a monitoring system for schools, particularly in the provinces away from the coast
- To evaluate the impact of the IDD program, monitoring activities in the eastern provinces of Ogooue Ivindo, Ogooue Lolo and Haut Ogooue, which were hyperendemic for goiter in 2001, need to be sampled.
- The National Center of Nutrition should keep a permanent database to help authorities follow the progress of the program

(A complete version of this article can be found in: Disasters 2007;31 Suppl 1:S139-49.)

Accelerating progress on salt iodization in Sudan: time for action

In the almost 15 years since the World Summit for children, Sudan has made no progress in making iodized salt available to households. Currently, it is estimated that less than 1 per cent of Sudanese households have access to iodized salt. This means that every year over 1 million Sudanese infants are born unprotected from brain damage and learning disability from iodine deficiency.

Ibrahim Bani Technical Adviser, the Micronutrient Initiative, Jazan University, Saudi Arabia



Background

In Sudan iodine deficiency is a serious public health problem. The prevalence of goiter ranges from 5.4 per cent to 42 per cent, and the average rate nationally is 22 per cent (1). The IDD problem in Sudan is severe in the mountainous areas of Darfur and Blue Nile state where goiter rates are as high as 87 per cent and 75 per cent, respectively. Kordofan state is also known for its high prevalence of goiter, with rates of 59–79 per cent. Many of Sudan's 15 million children are malnourished and iodine deficient, and the situation for many women and children in the Darfur region is critical (2). In the Darfur region, a median urinary iodine concentration of 20 µg/L has been detected. Levels in southern Sudan – especially the Upper Nile region – are similarly low.

IDD control programs began in Sudan in the mid-1970s, with the targeted distribution of iodine capsules, and continue in some areas today.

A National IDD Program was launched in 1989. A technical committee for IDD control was set up in 1991 and given the tasks of distributing iodized oil and devising a long term strategy for iodizing salt. Sudan adopted USI as a National IDD prevention strategy in 1994 and Ministerial Decrees issued at the time require all edible salt to be iodized to a level of 50 ppm using potassium iodate. Several amendments to these decrees have been issued since but these have not been enforced. One declaration called on all salt producers to ensure that their salt was iodized, and allowed salt iodization using either potassium iodate or potassium iodide.

Noniodized rock salt is widely available in markets

Salt production, distribution and pricing

Almost all of Sudan's salt is produced along the Red Sea coast through solar evaporation of brine (4). In the Port Sudan area there are 11 salt producers, of which the Ba'boud Salt Company and the Sudan Salt Company are the largest. According to the Sudanese salt industry, the total quantity of raw salt produced in the country is 150,000–175,000 tons per year. For its estimated population of 34 million, Sudan would require about 140,000 tons of salt per year for edible use. The price in Khartoum for a 500gram bag is SD 50 (USD 1=SD 200). In the absence of government controls on the price of salt, market forces determine its availability and price to the consumer. A number of Government levies on salt seem to be one of the reasons for the high price of salt to the consumer in Sudan. Levies and taxes are equal to 100–137 per cent of the cost to produce the salt. Salt is mainly transported by road from Port Sudan to Khartoum and other urban centers. Distribution to rural and mountainous areas is a serious problem – particularly in terms of its cost. Sudan is a vast country and various approaches must be devised to ease transportation and distribution problems.

Salt iodization

Following a 1993 WHO feasibility study, UNICEF supplied the two major salt producers with 12 iodizing machines – six each for the Ba'aboud Company and the Sudan Salt Company. The Federal Ministry of Health (FMOH) received 150 tons of iodate for distribution. The equipment and materials were supplied to producers in 1995 through the FMOH.

Major challenges have stood in the way of universal salt iodization in Sudan in recent years. The poor quality of salt meant that the iodizing machines developed problems and that the producers were faced with production difficulties from the start. The two main problems were the high level of moisture in the coarse salt and the large size of the crystals, which slowed output capacity from 7.5 tons per hour to 4–5 tons per hour. As a result of these problems the Sudan Salt Company asked for the machines to be removed, while the Ba'boud Company adopted a different strategy and invested in a new salt refinery. Currently, only about 3000 tons of salt is iodized in Sudan, of which 2000 tons is supplied to WFP for food aid and only 1000 tons is sold on the open market. Only around 3 per cent of total salt production is iodized.

Getting iodized salt to displaced families is a priority

In July 2006 the Industry Ministry instructed all salt producers to fortify all salt with iodine. The governments in the states most affected by IDD, Darfur and Kordofan, are politically committed to enacting, and enforcing, the required legislative measures to ensure that only iodized salt is marketed in the areas under their jurisdiction. The tariffs, taxes and duties attached to this commodity are also being waived. In November 1997 iodization of salt started in Nyala, South Darfur state, using machines supplied by UNICEF. By January 1998 production of iodized salt reached 330 tons and a year later it doubled to 660 tons. In addition to the production of iodized salt, the local salt producer, Buscom, has implemented effective distribution and promotion methods. Iodized salt is sold to the public in the streets by means of trolleys similar to ice cream carts. Even so, use of iodized salt in the state is still low because of a lack of awareness and inefficient social marketing. No health communication strategies have been implemented to increase the awareness of the population of the importance and to promote the use of iodized salt.

Major challenges

■ Despite adopting a USI strategy over a decade ago, major challenges still stand in the way of universal salt iodization in Sudan. There is a lack of awareness at all levels from medical professionals to administrators to consumers about the importance of the iodization of salt, and a related

lack of an appropriate strategy for creating demand.

■ Salt producers and manufacturers face problems with salt iodization technology. There is limited knowledge about and training on proper techniques for the people involved in salt production and iodization. The limited production, distribution, and supply of iodized salt, and problems with access to markets because of poor infrastructure, increase the cost of salt substantially.

Heavy taxes and levies reduce profitability in the salt industry, and its ability to invest to improve quality and increase levels of salt iodization. This leads to an underreporting of production, thereby compounding the difficulty of monitoring and program planning.

■ There is no system in place to regularly monitor salt production and iodization. Although legislation exists it is not enforced and, therefore, there is no deterrent against the sale of noniodized salt.

■ There is a complete absence of any kind of media (radio, TV, newspaper, etc) activity to promote the use of iodized salt. The advocacy messages that are produced and used are not well targeted or adequately applied. There is a lack of appropriate information about IDD among key senior officials and in the public sector generally.

■ Coordination among stakeholders is weak. The main coordination is through the National Fortification Alliance, which meets irregularly and requires support. Resources provided by donors are not adequately used because there is a lack of support after handover. There is little ownership and commitment from the recipients of donated resources.

Areas for priority action:

■ Political commitment to the implementation of IDD: With the reality on the ground, outlined above, in mind, it is vital that the Government of Sudan renews and reiterates its political commitment to implementing the IDD control program by promoting universal access to iodized salt for its population.

■ Establish USI as a national strategy: USI must be established as a national strategy in order to achieve the virtual elimination of IDD. It must be a priority on the government's policy agenda with strong links to other national priorities such as child survival, universal primary education and poverty reduction.

■ Develop the national capacity to maintain USI policies: The national capacity to maintain USI policy should be continuously strengthened. Elements of national capacity include adequate resources for the salt industry to continue the production of iodized salt, training for salt producers in proper salt production techniques, the constant renewal of policy advocacy, and national monitoring of iodized salt deliveries to secure a continuous supply of iodized salt to vulnerable groups coping with emergencies.

■ Increase salt production and processing: There is a need, as a priority, to increase local production of a sufficient supply of adequately iodized salt. The commitment to USI needs to be translated into investment in a private sector that can produce, package, distribute, and market adequate quantities of good quality iodized salt.

■ Devise a national plan for safeguarding nutrition in emergency contexts: The Government of Sudan must ensure that the national policy framework makes provision to ensure the supply of iodized salt in emergency situations, including for displaced populations such as in Darfur. WFP and other agencies should ensure that all the salt distributed to displaced persons is iodized and, as far as is possible, locally purchased to support the local salt industry.

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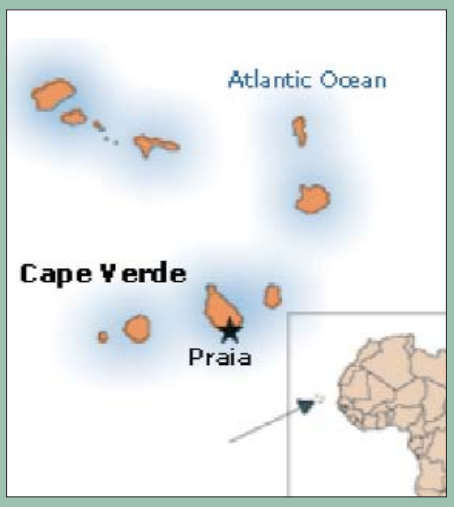
Renewing national efforts to control IDD in Cape Verde

Introduction

The republic of Cape Verde is an archipelago consisting of 9 islands situated in the Atlantic Ocean approximately 500 km from the Senegalese Coast. A 1996 survey found IDD was a public health problem in Cape Verde, with a goiter prevalence of 25.5%. Since then no IDD control activity has been reported. It is uncertain if Cape Verde has made progress to control IDD. Dr Ntambwe Kibambe traveled to Cape Verde in September 2007. His objective was to assess progress in the control of IDD and give recommendations to accelerate control activities.



Théophile Ntambwe Kibambe ICCIDD Sub-regional Coordinator, Francophone West-Central Africa

Historical background

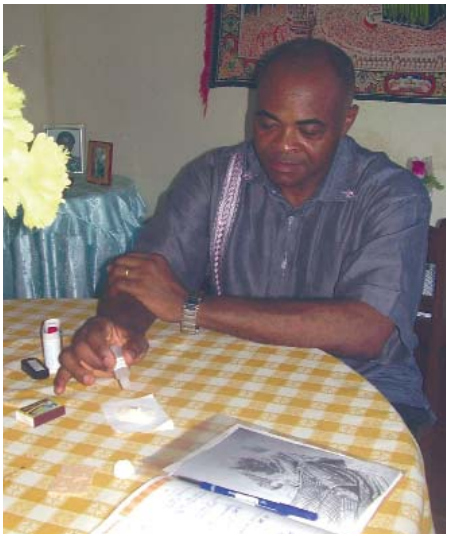
The 1996 survey, conducted with financial and technical support by WHO, found a national goiter prevalence of 25.5% in Cape Verde, with 74% of values for urinary iodine concentration (UI) <100 µg/L. The goiter prevalence was > 40% on Fogo Island, indicating severe iodine deficiency. Certain regions on the Islands of Santo Antao, Sao Nicolau, Santiago et Boa Vista also were severely iodine deficient, with a goiter prevalence of >30 %. At that time, iodized salt was not available in Cape Verde.

In 1997, a feasibility study regarding salt iodization, supported by UNICEF, was conducted in Cape Verde. Following these recommendations, the process of implementing salt iodization was started in 1998 and included the following activities:

- Organization of a salt producer cooperative in Maio
- Support and input regarding salt iodization equipment in Pedra de Lume on the Island of Sal, and at the cooperative of Maio
- Education of employees at the production sites regarding iodization technique and control of iodization of salt in Sal and Maio
- Education of employees at the level of control : Health, Agriculture, and Customs
- Extension of capacities (equipments and education) of the laboratories of the sanitary delegation and education iodine dosage in salt
- Sensitization of the salt producers regarding the combat of IDD
- Sensitization of the population for the consumption of iodized salt

Cape Verde adopted the strategy of universal salt iodization with the signature of an official decree in September of 2002. This decree regulates the production, importation, exportation, commercialization and utilization of iodized salt for human and animal consumption. The iodization levels prescribed in the legislative text were:

- 50-80 ppm at local production sites and at export site
- 30-50 ppm at distributor and retail levels, as well as at the point of entry for imported salt



Dr Ntambwe testing household salt in Praia (Santiago Island)

In 2004, an official decree revised the salt iodization levels downward, prescribing 20-40 ppm iodine at local production sites, for export, for sale at distribution or retail level and for import at the point of entry. In 2006, after two years of little progress, the coordination and resumption of IDD control activities was restarted by the National Nutrition Program of the Ministry of Health, which included visits at the production sites and multi-sectored meetings to discuss a salt quality control system.

Table 1: Proportion of households using iodized salt (Santiago Island)

Health district	Households using iodized salt
Praia	96.7 %
Sao Domingos	96.8 %
Sao Miguel	100 %
Santa Cruz	100 %
TOTAL	98.4 %

The 2007 mission

On arrival, Dr. Ntambwe Kibambe was warmly welcomed and received excellent cooperation from Dr. Irina Monteiro Spencer, Director of the National Nutrition Program, and Ana Paula Maximiano, Analyst for Reproduction Health and Nutrition at the United Nations Office for Funds and Programs. The tests of salt iodization in the households were conducted with the support of the Director of the National Nutrition Program, the Coordinator of the National Center for Health Development (CNDS), as well as designated physicians and nurses of the districts of Santa Cruz, Sao Domingos and Sao Miguel.

In order to assess the availability of iodized salt in Cape Verde, the sub-regional coordinator has tested salt samples of 126 households in 4 districts of Santiago Island using a rapid test kit. The results are shown in Table 1; 98.4% of household were using iodized salt.

The following observations on the Cape Verde IDD control program were made:

Strengths

■ Existence of a legislative text regulating the production and commercialization of iodized salt for human and animal consumption

■ Willingness of the involved public sectors to collaborate (Health, Trade, Industry, Agriculture, Customs) in a multi-sectored committee

■ Existence of a production capacity for iodized salt to cover the national market as well as to respond to potential export demands

■ Effective start of salt iodization at 3 production sites covering most of the national market

■ Existence of laboratory capacities in the health delegations for the control of salt iodine level

Weaknesses

■ Absence of prescribed controls and punishment of misuse

■ Weakness of multi-sectored coordination

■ Weak follow-up of the activities regarding the salt iodization strategy

■ Termination of the activities regarding social mobilization

■ Weak utilization of the national logo for iodized salt by the salt producers

■ Utilization of expired kits for the control of iodized salt

Opportunities

■ Interest of the Office of Funds and Programs of the United Nations in Cape Verde to support the governmental efforts for the permanent elimination of IDD

■ Availability of WHO to support reinforcement capacities in nutrition and epidemiological follow-up regarding the combat of IDD

■ Existence of school canteens utilizing iodized salt for food preparation which is distributed to the children at their schools

■ Support of national projects in the agro-nutritional field by volunteers of the United Nations, in collaboration with the Ministry of Industry

■ A project to install a national reference laboratory including quality control of food products

■ A women's association that could incorporate female salt producers

■ Activities regarding Information, Education and Communication (IEC) of reproductive health, which could include promotion of iodized salt consumption

Threats

■ Existence of isolated groups of women (heads of households) producing salt without iodization on Maio Island
■ Open door for imported salt containing potassium iodide
■ Absence of salt on the list of imported foods which are subjected to certification at customs

The results of the rapid tests of iodized salt in households on Santiago Island were presented and discussed. Recommendations and renewed commitment by all partners were made for progress toward the sustained elimination of IDD in Cape Verde. In his closing remarks, the Director General for Health thanked the participants for their renewed commitment to combat of IDD in Cape Verde. The local Coordinator of the United Nations Office for Funds and Programs promised support from her institute for the evaluation of IDD in 2008, as well as for the continuation of the activities regarding its permanent elimination in Cape Verde.

For the renewal of IDD control efforts in Cape Verde the following are recommended:
■ Assure a continuing campaign of communication to prevent IDD
■ Ensure that female salt producers in the cooperative on Maio Island, as well as other small salt producers, iodize their salt
■ Prohibit the circulation of noniodized salt outside the production sites
■ Add salt to the list of imported agro-nutritional products subjected to certification
■ Assure quality controls of iodized salt at production sites and throughout the cycle of commercialization
■ Apply the disciplinary measures in case of fraud
■ Assist producers to install production equipment in order to provide salt which meets quality standards
■ Reinforce multi-sectored collaboration and partnership
■ Integrate the promotion of consumption of iodized salt in households within the ongoing activities of the health districts
■ Plan an epidemiological survey in 2008 including all districts in order to evaluate the progress achieved

Dr Irina Monteiro Spencer, demonstrating the national logo for iodized salt to a family during the survey in Praia

On September 7, 2007, Dr. Ntambwe Kibambe presented the results of the mission at a multi-sectored meeting organized by the Director General for Health. Prior to this, the results of the mission were also presented to the representative of the Office for Funds and Programs of the United Nations and the Representation Office of WHO in Cape Verde. It took place at the Ministry of Health and was chaired by the Director General for Health. Delegates of the following organizations participated: Directorate General of Trade, Directorate General of Industry, Inspection Service of Agriculture, Office of United Nations Funds and Programs, Reproductive Health, and the Association of Salt Producers.

Conclusions

Cape Verde has made strong progress in the development of universal salt iodization strategy: a legal framework exists since 2002, iodized salt production is effective at 3 important sites covering most of the national market, and a variety of activities to promote consumption of iodized salt in all areas of the country has been done. Although the sampling was not representative for the whole country, the results of these preliminary tests indicate that almost all salt available in households is iodized.

IDD persists in regions of Tanzania

The IDD Control Program in mainland Tanzania was established in 1985 and in Zanzibar in 1996. USI was introduced in the early 1990s on mainland, and by 2003 on Zanzibar. There are 6,000 small scale and 12 medium-large scale salt producers in Tanzania, with salt mainly exported to Burundi, DRC, Rwanda, and Malawi. In a national survey conducted in 2003, it was found that goiter prevalence has dropped to 7%, with median urinary iodine levels at 204 μg/L (schoolchildren), and 83.6% of households consuming iodized salt. However, the following two reports suggest IDD may remain a public health problem in certain regions.

The Zanzibar Islands

V.D. Assey, T. Greiner, R.K. Mzee, H. Abuu, C. Mgoba, S. Kimboka and S. Peterson
Tanzania Food and Nutrition Centre, Dar es Salaam, Tanzania

(A complete version of this article can be found in: Food Nutr Bull. 2006;27(4):292-9).

The aim of this study was to establish the prevalence of iodine-deficiency disorders in the Zanzibar Islands, a community assumed to have ready access to iodine-rich sea foods. In a cross-sectional study, 11,967 schoolchildren were palpated for goiter prevalence, a sub-sample was evaluated for urinary iodine concentration, and the availability of iodated salt was assessed at the household and retail levels.

The mean total goiter prevalence was 21.3% for Unguja and 32.0% for Pemba. The overall median urinary iodine concentration was 128 μg/L. For Unguja the median was 185.7 μg/L, a higher value than the median of 53 μg/L for Pemba.

The household availability of iodated salt was 63.5% in Unguja and 1.0% in Pemba. The community was not aware of the iodine-deficiency problem and had never heard of iodated salt.

The inadequate intake of iodine documented in the Zanzibar Islands belies the common assumption that an island population with access to seafood is not at risk for iodine-deficiency disorders. We urge health planners to implement mandatory salt iodization and education efforts to alleviate the situation.

Arumeru District, Arusha Region

Kissa B. M. Kulwa, Gaudencia L. Donati, and Nyabasi Makori
Sokoine University of Agriculture, Morogoro, Tanzania

A cross-sectional study was conducted to assess iodine status of schoolchildren and associated factors in Arumeru District, Arusha Region, Tanzania. The district is among the goiter-endemic areas of Tanzania. Arumeru district has a population of 516,814 inhabitants. A pre-tested structured questionnaire was administered to 100 parents of the study children to seek information on socio-demographic and socio-economic characteristics of the parents, and knowledge and practices related to iodine nutrition. From a sub-sample of 50 households, 50 salt samples used in the homes were collected for iodine determination and 50 schoolchildren provided fasting morning urine samples for determination of urinary iodine concentration.

Results of the study showed that median urinary iodine concentration (UI) of the schoolchildren was 49 µg/L (range: 16 µg/L - 206 µg/L) (Table 1). Prevalence of mild iodine deficiency was 40%, moderate iodine deficiency, 42%, and severe deficiency, 8%. The low levels of UI found in this study increases the risk of impaired cognitive performance among schoolchildren. The median (49 µg/L) UI of the schoolchildren in this study was lower than 328 µg/L reported in the 1998 survey for Arumeru District (1).

The majority (74%) of the respondents had heard of IDD and iodine (76%), but few knew food sources of iodine (40%), and that goiter was caused by iodine deficiency (44%). Despite production and widespread distribution of simple communication materials and radio programs on iodine nutrition in this region, this observation could be explained by the participants' low level of education. A high proportion (77%) of household heads had not completed primary education, thus very few would have benefited from lessons on IDD in schools. Although radio was the most cited source of information, the ability of households to access radio programs and ensure systematic follow-up is limited.

A high proportion (96%) of household salt samples in the study area were found to be adequately iodated (15 ppm and above). This proportion is within range of the national levels reported by TFNC in the 1998 survey (62% - 98%) (1) and the 2004 survey (84%) (3). Moreover, the TFNC 1998 survey found that 92% of household salt samples in Arumeru were adequately iodated (1). A minimum concentration of 18.7 ppm at the household level has been recommended for the country (2) and in this study, 96% of the salt samples contained iodine levels ≥ 18.7 ppm.

The high prevalence of IDD among the school children in this study can be explained by several factors, namely, location of household farms in mountains with sharp slopes, low consumption of iodine-rich foods in relation to increased iodine requirements, and high consumption of goitrogen–containing foods (Table 2). It is important to note that household farms were located on higher grounds characterized by constant high rainfall. Constant rainfall and floodwater have been known to erode away the iodine-rich surface soils such that crops grown on would also lack iodine. Fertilizer, that could have added organic matter, is not usually used by the farmers during crop production.

Table 1: Classification of children iodine status by urinary iodine concentration (UIC) (n=50)

Iodine status (UIC)	Frequency	Proportion (%)
Severe deficiency (<20 µg/L)	4	8.0
Moderate deficiency (20–49 µg/L)	21	42.0
Mild deficiency (50–99 µg/L)	20	40.0
Optimal (100–199 µg/L)	4	8.0
More than adequate (≥200 µg/L)	1	2.0

Table 2: Frequency of consuming selected goitrogen–containing foods by the children (n=100)

Food item	Proportion (%) consuming the food item	Proportion (%) consuming the food item and frequency of consumption per week		
		Once	2-3 times	More than 3 times
Cassava	71	59	10	2
Millet	3	2	1	0
Sorghum	1	1	0	0
Kale	88	54	32	2
Cabbage	93	23	48	22

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Protecting children's brain development: a strategic review on sustained universal salt iodization in Eastern and Southern Africa

UNICEF Nutrition Section Eastern and Southern Africa Regional Office (ESARO)

The full report of this meeting was published in January 2007 by Unicef ESARO.

ESARO Region (Eastern & Southern Africa Region)

Background

The Eastern and Southern Africa Regional Strategic Review Meeting on Sustained Elimination of Iodine Deficiency Disorders was held from April 25 to 26, 2005 in Cape Town, South Africa. It was organized by UNICEF Eastern and Southern Africa Regional Office (ESARO) in collaboration with UNICEF New York, ICCIDD, MI, and Global Network for Sustained Iodine Nutrition, with funding from United States Fund for UNICEF. The meeting involved delegations from both the public and private sectors covering ten countries in the region - Angola, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Rwanda, South Africa, Tanzania, and Zimbabwe, as well as key representatives from ICCIDD, MI and UNICEF.

The aim was to discuss how to sustain the progress made and how to accelerate efforts toward sustainable elimination of IDD in countries of Eastern and Southern Africa. As shown in Table 1, WHO estimates that, in the Eastern Africa Region, 45% of school children have inadequate iodine nutrition, while in Southern Africa, 32% have inadequate intakes.

The agenda was framed into sessions to elicit analysis of national progress in each of the following four categories.

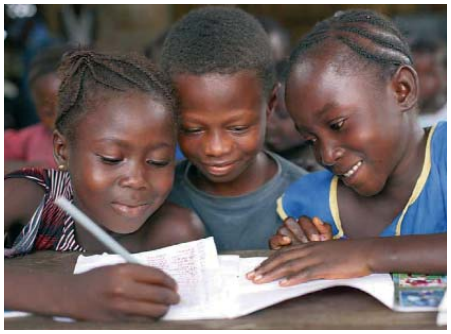
I. Successful Legislation and Regulatory Procedures

Key Lessons Learned:

- Often enacted following surveys which demonstrated gravity of IDD problem
- Successful program will rely more on consensus and buy-in, than policing.
- Regulations to waive tax / duties appreciated by industry to lower their costs
- Producing and importing countries have different situations – actually easier for importing countries as long as entry points can be controlled
- Used to draft and inform the development of legislation and to guide and monitor action
- Standards are the basis for monitoring/enforcement, while surveillance systems generate critical data for advocacy and planning
- Level expressed in regulations often require adjustment, based on program monitoring and following an accepted process (including Codex review)
- Need for a range of standards rather than a single point, need for cross validation of tests reflects need for clear guidelines

The Way Forward:

- Support the review national legislation / regulations in some countries where this is identified as a bottleneck (e.g. Tanzania) to ensure that they are clear and comprehensive
- Broaden approach to cover development of a sustainable business model(s) that recognize business imperatives of small-scale salt producers (South Africa, Tanzania)



- Encourage countries to use / move rapidly toward internationally agreed-upon levels of 45 ppm +/- 15, take necessary steps towards a common standard within regions (SADC, ECSA) and a common approach to enforcement (Mozambique, Malawi, South Africa, Lesotho, Kenya among others)
- Issue updated guidelines for program managers and producers on use of rapid tests and the interpretation of results and the need for validation / titration

Table 1: Proportion of population, and number of individuals with insufficient iodine intake in school-age children (6-12 years) and the general population by UN region, 2003.

Insufficient Iodine Intake (UI <100 µg/L)				
Region	School-age children		General population	
	Prevalence (%)	Total number (millions)	Prevalence (%)	Total number (millions)
Eastern Africa	45.1	19.4	45.2	98.2
Southern Africa	31.6	2.5	31.2	15.4
Africa	42.7	59.7	43.0	324.2

II. Improving Productive Capacity and Marketing Opportunities for Small Producers

Key Lessons Learned:

■ There are two approaches to small-scale producers: (1) looking at them from a business perspective; and (2) strengthening their capacity through education on benefits of iodized salt, legislation compliance, and standardized procedures of iodization, subsidized fortificants, and internal quality control.

■ It may be necessary to treat producers as commercial entities through an economy of scale approach, that is, support iodization for medium and large scale packers and distributors with small scale producers providing raw, semi-processed salt to these larger local or transnational commercial entities.

■ Recognize the poverty-related ramifications of putting thousands of small-scale poor producers out of business. Need to realize the importance of links with poverty reduction schemes such as micro-credit.

■ Appropriate technology – need to ensure consistent production of adequately iodized salt, as hand-spraying methods must be accompanied by adequate training.

■ Appropriate quality assurance – need to utilize tests kits with fewer cut offs on the scale as they are more reliable, and need to validate with titration by labs at zonal level.

The Way Forward:

■ Support development of a comprehensive strategy and standardized approach on how to tackle problem of small scale producers

■ Issue updated guidelines on quality assurance – to clarify on what tool to use at what level – e.g. test kits at the household level, but at the commercial and production point need to combine with quantitative methods: titration

■ Laboratory capacity building strategy – establishment of reference laboratory for ESAR, and requirements for specific indicators are different at each level – e.g. urinary iodine at higher level as opposed to salt at zonal level

III. Sustaining Significant Levels of Market Reached

Key Lessons Learned:

■ Political, social, and economic sustainability are important

■ Economic viability – the salt industry is a pivotal partner in ensuring IDD elimination through USI. Commercial interests and not only social responsibility however drive the salt industry.

■ Maintaining vigilance and sustaining efforts on the different aspects of the USI program is important- Kenya has achieved this through regular awareness campaigns, open and frank dialogue with all stakeholders.

■ Ensuring imports of iodized salt through strategic border control is important for salt importing countries – Zimbabwe and Rwanda have achieved high coverage of iodized salt through ensuring salt entering their borders is iodized.

The Way Forward:

■ Advocate for maintaining vigilance through regional bodies (ECSA, SADC) –importance of continued promotion of USI as the most effective strategy to eliminate IDD.

■ Ensure that social awareness and advocacy campaigns use consistent messages.

■ Direct support to the salt industry, this would include improving production efficiency, reducing operational costs and improving the business environment, combined with consumer demand creation initiatives within the country hence leading to iodization forming an integral part of salt production process.

■ Support importing countries to ensure that they source their salt from suppliers who adequately ensure iodization, with efficient border control. (e.g. Mozambique, Lesotho, Burundi, Rwanda)

IV. Where Achievement is Stalled

Key Lessons Learned:

■ It is important that salt for both human and animal consumption will be iodized.

■ Clear specifications on what type of salt can be imported will be necessary to ensure all in-coming salt by traders is iodized.

■ There is a need for a national iodization committee or coalition, which has been a key factor of many countries' success in achieving USI.

■ Training and capacity building are essential for sustainability of a program.

■ Awareness campaigns are crucial to create consumer demand for iodized salt.

■ There is a need for regular program reviews with contributions from all members involved, especially salt producers.

The Way Forward:

■ Once the causes of stalling are identified, provide technical and financial support (Ethiopia, Malawi, Mozambique, Angola).

■ If there is no salt in the household, provide support so that small packaging (small satchels) can be explored as buying in bulk may be too expensive for low income households.

■ Issue of regional mechanisms (involving key partners UNICEF, MI, ICCIDD, and in coordination with key regional bodies – SADC, ECSA, NEPAD) and networks to sustain USI and advocate support

■ Support external assessment for advocacy – external reviews if country program is stalling, and where USI goal has been reached, to advocate for sustained elimination (Kenya, Burundi, Rwanda, Eritrea, Uganda, Madagascar, Zimbabwe)

Meetings and Announcements

IDD Network Meetings in China

On the occasion of the Board of The Network for Sustained Elimination of Iodine Deficiency (IDD Network) meeting in China, a special meeting of experts was convened in Beijing on July 30, 2007 to discuss the remaining bottlenecks in eliminating iodine deficiency disorders in China. In recognition of China's achievement, the IDD Network Board presented plaques to the Ministry of Health and the NDRC, and thanked them and the China National Salt Industry Corporation for their contributions to promoting salt iodization within China and abroad.

Participants at the Beijing meeting on IDD control in China

Vice Minister of Health Wang Longde opened the meeting which brought together officials from the China Ministry of Health, the National Development and Reform Commission (NDRC), China National Salt Industry Corporation, academicians and, of course, members of the IDD Network Board. In his remarks, Alan Court, Chair of the IDD Network, noted," The Network Board decided to have its meeting in China for several reasons, the most important one being to learn how China is addressing the challenges of hard to reach areas. … The priorities of the Network are to ensure that (USI) achievement is sustained … and to ensure that population groups in hard to reach areas, even in countries that have achieved the target of universal salt iodization like China, are covered in one way or another."

Dr. Chen Zupei of the Institute of Endocrinology at Tianjin Medical University, noted in his presentation that in 1960, 700 million people were at risk of IDD and mild iodine deficiency was found in most cities. He also pointed out that over time China has made numerous adjustments in its work to eliminate IDD, including adjusting iodine concentration in iodized salt, as well as addressing cases of excess iodine and providing controlled iodine supplementation where there was urgent need. In his presentation on the National Salt Monitoring and Comprehensive Intervention Program, Prof. Li Sumei, of the National Technical Training and Support Team, noted that common features of the western and coastal provinces where IDD remains a problem were: scarcity of iodine in drinking water, low household consumption of iodized salt, inadequate knowledge of IDD and an abundance of natural salt resources. However, there were also differences among the provinces in the utilization of salt resources, in the influence of the salt price and in dietary customs and habits.

The IDD Network Board held their meeting the following day, on July 31, 2007. Among the issues for discussion in this meeting were: a review on the use of iodized salt in processed foods, Network guidance for a policy on excess iodine, sustainable support to small salt producers, and Network guidance for criteria on iodine interventions other than iodized salt. Thus a number of the issues raised at the consultative meeting the previous day which focused on China, were mirrored in broader application at the Board Meeting.

The China National Salt Industry Corporation will be hosting the World Salt Symposium in 2009 in China and plans to hold a special session on IDD and USI.

Round Table on IDD Prevention in the Ukraine

'If Nigeria defeated the iodine deficiency, Ukraine also can do it if there is a strong political will'. This was the key message of the impressive presentation of Prof. Dora Akuniyili, Director General of Food and Drug Administration in Nigeria, delivered at the Round table on the Ethical Aspects of the Prevention of Iodine Deficiency Disorders in the frame of Third National Congress of Bioethics in Kiev, Ukraine, 10 October 2007. The main objective of the round table organised by the Academy of Medical Sciences and supported by UNICEF was to create high level consensus on the strategy for the sustainable elimination of iodine deficiency disorders in Ukraine and to support adopting universal salt iodization.

Persisting iodine deficiency in Ukraine results in considerable adverse consequences for both the population and the economy.

Prof. Dora Akuniyili of Nigeria was the keynote speaker at the Kiev meeting

A cost benefit analysis conducted by UNICEF in conjunction with the Academy of Medical Sciences, the Ministry of health and salt producers in May 2006, indicates that some 320,000 children with impaired intellectual capacity - resulting in depressed school and work performance - will be born to iodine deficient women over the next 10 years. Based on national economic statistics, IDD will result in an estimated loss of nearly US$330 million to Ukraine's economy over the next decade, equivalent to 54 million workdays. Ukraine has all necessary conditions to implement universal salt iodisation (USI) as the country is the main salt producer in the CEE/CIS Regions and has a developed network of State Sanitary Stations for quality control of iodised salt.

What is still missing in Ukraine to be successful in IDD elimination was the main issue discussed during the round table chaired by the Deputy Minister of Family Youth and Sport Mrs. Svetlana Tolstouhova. Only the adoption of national legislation can ensure implementation of the strategy of USI that will contribute significantly to the good mental and physical health of all children in Ukraine. A final statement in support of universal salt iodisation will be provided to the new Cabinet of Ministers.

Abstracts

Iodine deficiency in urban slums of Bhubaneswar. Sethy PG et al. Indian J Pediatr. 2007;74(10):917-21

The aim of the study was to assess the prevalence of goiter and iodine deficiency in school children of 6-12 yr living in urban slums of Bhubaneswer, the capital city of Orissa. A cross-sectional study was performed using the 30-cluster sampling methodology and goiter (n=1248), urinary iodine concentration (UIC) (n=411) and iodine content of salt (n=368) were measured. The goiter prevalence was 23.6% (grade 1=18.9%, grade 2=4.7%) with no significant gender variation. Median urinary iodine concentration was 50 µg/L with 85.7% of children having values less than 100 µg/L. About 51% of children were consuming salt having stipulated iodine content of 15 ppm. The study indicates moderate iodine deficiency in the population, despite a mandatory salt iodization program in Orissa that has been in force since 1989.

Assessment of the sustainability of the iodine-deficiency disorders control program in Lesotho. Sebotsa ML et al. Food Nutr Bull. 2007;28(3):337-47

The aim of the study was to assess the sustainability of the salt iodization program in Lesotho, 2 years after promulgation of the universal salt iodization legislation. The proportion to population size method of sampling was used in 2002 to select 31 clusters in all ecological zones and districts of Lesotho. In each cluster, 30 women were selected to give urine and salt samples and 30 schoolchildren to give urine samples. The urinary iodine concentrations of very few children (10.1% and 21.5%) and women (9.8% and 17.9%) were lower than 50 µg/L and 100 µg/L, respectively. At the household level, 86.9% of the households used adequately iodized salt. Only four indicators of sustainability have been attained by the salt iodization program in Lesotho. Iodine-deficiency disorders have been eliminated as a public health problem in Lesotho, but this elimination may not be sustainable.

The adverse effects of mild-to-moderate iodine deficiency during pregnancy and childhood: a review. Zimmermann MB. Thyroid. 2007;17(9):829-35

New recommendations from World Health Organization suggest that a median urinary iodine concentration between 150-250 µg/L indicates adequate iodine intake in pregnancy. Based on this range, it appears that many pregnant women in Western Europe have inadequate intakes. A recent Swiss study has suggested that thyroid-stimulating hormone concentration in the newborn is a sensitive indicator of mild iodine deficiency in late pregnancy. The potential adverse effects of mild iodine deficiency during pregnancy are uncertain. Controlled trials of iodine supplementation in mildly iodine-deficient pregnant women suggest beneficial effects on maternal and newborn serum thyroglobulin and thyroid volume, but no effects on maternal and newborn total or free thyroid hormone concentrations. There are no long-term data on the effect of iodine supplementation on birth outcomes or infant development. New data from well-controlled studies indicate that iodine repletion in moderately iodine-deficient school-age children has clear benefits: it improves cognitive and motor function.

National trends in iodine nutrition: is everyone getting enough? Pearce EN. Thyroid. 2007;17(9):823-7.

Until the 1920s, endemic iodine deficiency disorders were prevalent in the Great Lakes, Appalachian, and Northwestern regions of the United States. Iodized salt was responsible for eliminating endemic goiter in the United States and remains the mainstay of iodine deficiency disorder eradication efforts worldwide. Although urinary iodine values have decreased by 50% since the early 1970s, the United States remains iodine sufficient. However, U.S. iodine nutrition, particularly among women of childbearing age, may remain an area worthy of public health concern. There is a wide amount of variation in the iodine content of some common foods, and the iodine content of foods is not well reflected by package labeling. There needs to be increased awareness of the importance of adequate iodine nutrition, particularly during pregnancy and lactation, among the U.S. public.

Dietary exposure and trends of exposure to nutrient elements iodine, iron, selenium and sodium from the 2003-4 New Zealand Total Diet Survey. Thomson BM et al. Br J Nutr. 2007 Oct 10;:1-12 [Epub ahead of print]

The mean dietary exposure to the nutrient elements iodine, Fe, Se and Na by eight age-sex groups of the New Zealand population was estimated from foods purchased and prepared as for consumption. Food concentrations and dietary exposures are reported and compared with nutrient reference values. Dietary iodine exposures for all age-sex groups were well below recommended levels for iodine intake. Intakes of iodine have steadily decreased since 1982, raising concern especially for the physical and mental development of infants and young children.

Vitamin A supplementation in iodine-deficient African children decreases thyrotropin stimulation of the thyroid and reduces the goiter rate. Zimmermann MB et al. Am J Clin Nutr. 2007;86(4):1040-4.

The study aim was to investigate the effects of supplementation with iodine or VA alone, and in combination, in children with concurrent VA deficiency (VAD) and ID. A 6-mo randomized, double-blind, 2 x 2 intervention trial was conducted in 5-14 y-old South African children (n = 404), who, on average, had mild-to-moderate VAD and ID. At baseline and after 3 mo, children received 1) iodine (191 mg I as oral iodized oil) + placebo (IS group), 2) VA (200000 IU VA as retinyl palmitate) + placebo (VAS group), 3) both iodine and VA (IS+VAS group), or 4) placebo. There was a clear effect of VAS without IS on TSH, thyroglobulin, and thyroid volume; all 3 variables decreased significantly ($P < 0.05$). VA supplements are effective in treating VAD in areas of mild ID and have an additional benefit-through suppression of the pituitary TSHbeta gene, VAS can decrease excess TSH stimulation of the thyroid and thereby reduce the risk of goiter and its sequelae.

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