Conversations with Dr. Rajan Sankar and Dr. Arijit Chakrabarty, March 12 and 31, 2015

Participants

- Dr. Rajan Sankar – Regional Representative for South Asia, Global Alliance for Improved Nutrition (GAIN)
- Dr. Arijit Chakrabarty – Regional Associate, GAIN
- Ben Rachbach – Research Analyst, GiveWell
- Timothy Telleen-Lawton – Research Analyst, GiveWell

Note: These notes were compiled by GiveWell and give an overview of the major points made by Drs. Sankar and Chakrabarty.

Summary

GiveWell spoke with Drs. Sankar and Chakrabarty of GAIN to learn more about the organization's universal salt iodization (USI) activities in India, as part of an investigation of GAIN USI program as a potential top charity. Conversation topics included current progress toward USI in India, GAIN's past and present efforts to encourage iodization, major funding gaps and priorities, and likely outcomes for iodization efforts if GAIN stopped or reduced its USI activities.

GAIN's USI work in India

GAIN identified 13 countries where it believed intensive efforts at iodization could help increase the global coverage of adequately iodized salt (AIS) to at least 85%. Through the activities of this project, it was anticipated that there would be significant increases in coverage in each country to at least 90% of the population with adequately iodized salt. With increased availability of iodized salt, it was expected that approximately 790 million additional people would have adequate iodine intake. The countries which would see the greatest increase in numbers of individuals with adequate intake from baseline levels would be India (364 million), Pakistan (115 million) Russia (79 million) and Ethiopia (54 million).

One of the original countries selected was India, where GAIN began its USI program in 2008. Dr. Chakrabarty, who previously worked for the International Council for Control of Iodine Deficiency Disorders (ICCIDD), now the Iodine Global Network (IGN), has been working with GAIN since the program's inception and leads USI activities for India. Dr. Sankar, as Regional Representative for South Asia, is responsible for India, Pakistan, and Bangladesh.

Distribution of responsibilities between GAIN and UNICEF

GAIN and UNICEF divide the components of their partnership on USI into four areas: communication, advocacy, supply, and delivery. UNICEF is responsible for communication and advocacy (i.e., efforts focused on increasing demand for iodized salt), while GAIN focuses on supply and delivery (i.e., efforts to improve access to iodized salt). These divisions largely relate only to management and funding, as both partners have generally been involved in all USI activities.

USI personnel

Dr. Chakrabarty is the only full-time employee on GAIN's USI project in India. Due to lack of funding, his position is to be terminated at the end of April 2015. Between 2009 and 2012, Dr. Chakrabarty's work focused mainly on developing the management information system (MIS) used to log information about the production of iodized salt in India and strengthening quality control at the production sites for AIS. Since 2012, when the MIS was completed, Dr. Chakrabarty has spent more of his time on advocacy work through the national USI coalition, as well as on a potential investment in the Tamil Nadu Salt Corporation (TNSC) to increase the supply of affordably priced AIS targeted at Below Poverty Line consumers in Tamil Nadu and the adjoining South Indian states. He also implemented a plan to help salt producers upgrade their technology, and piloted the formation of a salt trading cooperative.

Dr. Sankar is a full-time GAIN employee who spends 7–10% of his time on USI activities, and an operations manager working under him devotes 3–5% of his time.

Consultants

Because GAIN has a small permanent staff for USI work in India, it relies heavily on a network of consultants. In the first three years of the program, GAIN enlisted several consultants with backgrounds in USI activities, at UNICEF, and in economics. It is using fewer consultants today due to funding constraints. GAIN also works with IGN's regional office in India, the Indian Coalition for Control of Iodine Deficiency Disorders, which has funded technical support positions using grants from GAIN.

GAIN uses three to four full-time consultant salt extenders, who serve as liaisons with salt producers. However, the salt extenders' contracts are scheduled to be terminated in April 2015 due to lack of funding.

Challenges to progress in iodization

GAIN initially focused on determining why progress in AIS coverage seemed to have stalled at 70% of households. It found two reasons for this:

- The existence of many small-scale salt producers who lack the financial and technical resources to iodize their product

- The presence of salt that has been inadequately iodized, either because not enough iodine is added or because the producer experiences some sort of technical challenge

Additionally, in India, an initial wave of consolidation among salt producers, which resulted in more consistent iodization, seems to have slowed. The larger producers now have enough of a market among urban consumers and are not interested in reaching consumers outside their geographic or economic range. GAIN believes that government support is required for the salt industry to begin reaching that segment of the population.

India has had a national IDD control program in place since 1962, and it adopted a USI strategy to combat IDD in 1983. The National IDD Control Program (NIDDCP) is a fully centrally (federal government) funded program that identifies USI as the primary strategy to eliminate IDD as a public health problem in the country. The USI program has been one of the few public health success stories in India with 71 percent of the population consuming adequately iodized salt.

However, significant differentials occur in household level coverage across different regions of India (83.2 percent in urban areas and 66.1 percent in rural areas, Chhattisgarh (31.6%), Karnataka (35.5%), and Jharkhand (41.4%) being the low coverage states and Manipur (98.3%), Meghalaya (98%), and Nagaland (97.1%) being high coverage states) and across socioeconomic strata. Marginalized populations and vulnerable age groups (children less than 2 years and pregnant women) most at risk of iodine deficiency are yet to be universally covered with adequately iodized salt.

The IDD program in India has faced many a serious challenge since its inception. The changing laws pertaining to mandatory salt iodization, weak implementation of existing legislation, inadequate or no iodization by the small scale producers, natural disasters in the form of a cyclone destroying salt pans in June 1998 and an earthquake in 2001 destroying the salt iodization facilities in Gujarat, and continued inequitable iodized salt coverage amongst rural/urban and different socioeconomic strata are a few of the important challenges that USI has faced in India. Mental impairment and other disabilities are not as visible as those of other diseases, such as polio. This requires high level advocacy to advocate to the government for reprioritization of the IDD control program. .

Progress toward USI in India

Consumption trends

Consumption of iodized salt has generally been increasing in India. When GAIN began its USI work there, the most recent data indicated that about 50% of the population was consuming AIS, 25% consumed inadequately iodized salt, and the

remaining 25% consumed noniodized salt. A later survey, in 2009, indicated that the percentage of households consuming AIS had gone up to about 71%, with about 15–20% using inadequately iodized salt.

In 2012, a coverage evaluation survey, carried out by UNICEF for the government of India, found that the proportion of salt in India that was adequately iodized had jumped from 51% to 71%, and that the proportion of salt that was not iodized had dropped from 25% to 9%. However, this obscures differences between urban and rural populations, as more and more urban Indians have access to AIS while rural coverage is still low.

A recent report from India's National Health Mission indicates that over 90% of households now have access to AIS, but it is unclear what method was used for sampling, and the results may not be representative of the entire country. GAIN is currently leading a detailed nationwide survey to determine household coverage for iodized salt, as well as measure urinary iodine concentration.

In late 2014/early 2015, GAIN conducted a study, similar to the national survey now under way, in Andhra Pradesh, where GAIN runs a large-scale fortification program. The study found that 98% of households were using iodized salt and almost 80% were using AIS. This represents a significant increase from 10 years ago, when a survey found that Andhra Pradesh had one of the lowest rates of AIS coverage, at 40–44% of households.

Based on data from the MIS and reports from salt extenders, Dr. Chakrabarty estimates that about 80% of salt in India is adequately iodized today, and the majority of the remaining 20% is inadequately iodized. Noniodized salt cannot legally be sold in India.

Production trends

India produces about 24 to 25 million metric tons (MT) of salt each year. There are three major salt-producing regions in the country: Gujarat (producing 70% of India's salt), Rajasthan (15%), and Tamil Nadu (15%). India has about 800 registered iodized salt producers, although usually only 500 or 600 are operating each year. About 80 out of the 800 producers also refine salt.

The food industry in India, including the salt industry, has undergone a broad structural change in the last few decades, characterized by rapid consolidation. Of the roughly 10,000 salt producers in India, about 70 large operations are now producing more than 65% of all edible salt in the country. Out of 800 registered iodized salt producers, about 50 or 60 produce 50% of all iodized salt. The salt industry has also increasingly moved toward production of refined salt (as opposed to crystal salt) and packaged salt. In 1980, less than 3% of available salt in India was refined and sold in packages. Today, 90% of available salt is sold in packages, and nearly 65% is processed, refined, and iodized before being sold.

However, putting the 70 largest producers to one side, only 25% of the remaining producers are medium-sized producers. The vast majority are small producers, with limited resources for activities like iodization, refining, and packaging. As in many developing countries, salt production in India is still largely a cottage industry, in which farmers collect salt by soil evaporation and sell it to traders, who aggregate the product and resell it in markets. Iodization, a minor additional step for large producers, is a substantial challenge for small ones. Most inadequately iodized salt (about 750,000 MT annually) comes from small or medium-sized producers.

GAIN's USI strategy

Based on its initial research, GAIN decided to target the 15–20% of the population who were using inadequately iodized salt at the program's inception by increasing the availability of AIS. It believed that helping producers who were struggling with iodization to improve their methods, while encouraging producers who were already iodizing adequately to maintain their success, would be the quickest path toward greater iodization coverage. To do this, GAIN concentrated on production-level quality control, including:

- Providing salt producers with technical support and organizing a network of quality testing labs that could serve multiple producers
- Strengthening regulatory monitoring through the Government's Salt Department.
- Developing a salt MIS for the salt department to monitor quality of salt.

More recently, recognizing the diversity of India's states, GAIN has decided to prioritize programs in a few states based on factors such as population size and current iodization coverage.

Proof of effectiveness

Because India's USI program is already well developed, it is difficult to clearly attribute progress to GAIN's interventions. GAIN's impact is more obvious in countries where iodization technology has been introduced only recently. GAIN sees its interventions mainly as a trigger for further investment and action by government. Though GAIN considers its salt extenders' work very important, it is difficult to attribute progress in USI to them alone because the Micronutrient Initiative (MI) and other organizations do similar work in India. It is also unclear whether GAIN's training of lab technicians has improved the labs' effectiveness, but measuring the quality of salt samples at production level over time might be one way to assess this.

Key projects

Organization, protocol development, and training for salt testing labs

India has a Department of Salt, headquartered in Rajasthan and led by a salt commissioner with a staff of 900. The commissioner oversees 32 labs (26 stationary and 8 mobile labs) that are responsible for providing quality support to the industry and serving as a third-party regulator. Through results from the labs, the commissioner can identify the geographic area where quality issues originate.

Quality control protocols and training

Historically, these labs have carried out salt testing, but their processes for quality control were not standardized. GAIN worked with the labs to create standardized internal protocols and external protocols for testing and provide all labs personnel with refresher training. The labs now regularly exchange samples and test each other's work in order to ensure consistent quality. GAIN has also organized large salt producers, which have their own labs, to exchange samples with each other to verify quality. GAIN held an initial round of training for lab technicians in 2009, and two refresher trainings have been held since then.

Networking of labs

GAIN also helped to network labs in different parts of the country by creating clusters of three or four labs, with one central lab in each cluster. The central, or nodal, lab reports to a lab run by IGN at the All India Institutes of Medical Sciences (AIIMS).

Information management

The salt commissioner releases an annual report on salt production in the country, but the information in it tends to be out of date by the time it is released. GAIN worked with the government, MI, and UNICEF to bring in a software developer, which performed a system analysis and created an MIS to record data about salt production, quality, and distribution in India. The MIS provides real-time data to the salt commissioner on the following metrics:

- Total quantity of salt produced in the country
- The proportion of salt that is iodized, measured against the government's yearly target
- Quantity produced by each state
- Transport of salt by rail throughout the country
- Results of quality testing from the labs
- Names of salt producers registered with the department

Creating the MIS was a significant undertaking and required training Department of Salt officials to use it. Today about 90% of the salt inspectors are using the MIS, and

the final 10% are in training. GAIN hopes that within the next few months, all salt inspectors will be using the system, eliminating the need for paper documents.

The MIS also maintains records of specific salt producers' performance, including the results of lab tests and any subsequent interventions, and which ones have improved. The salt department makes this data available to GAIN upon request.

National USI coalition

GAIN provided the funding to form a coalition with the government of India and the numerous other groups working on salt iodization in the country. The coalition allows the partners to coordinate their USI efforts, helping them avoid duplication of efforts and share work plans with each other. It has also led to the formation of state-level coalitions in five key states.

Providing iodized salt through India's public distribution system (PDS)

GAIN is working with some state governments to begin making iodized salt available through the PDS, a network of 700,000 small shops throughout India that sell subsidized grains, sugar, kerosene, and other staple items, mostly to those living below the poverty line. Because the government can sell items without a retail markup, it can make quality iodized salt available to poor people without using subsidies. However, the government does not currently consider salt an essential item.

Today there are 14 states in India that offer salt through the PDS, though not all of this progress can be attributed to GAIN, as the salt commissioner has also led this effort. These states include Rajasthan, Tamil Nadu, Chhattisgarh, Uttar Pradesh, and one division of Bihar, equivalent to about one-quarter of that state. However, not enough quality iodized salt is available to supply the PDS, so only 5% of PDS beneficiaries have access to iodized salt.

In Tamil Nadu, GAIN has augmented the capacity of the Tamil Nadu Salt Corporation to double its production of ordinary iodized salt. This salt is marketed through the government ration shops. The salt is quality assured and the beneficiaries are mostly part of the Below Poverty Line population. As a result of this intervention, the production capacity at TNSC has doubled from 30,000 MT per annum to 60,000.

Technology upgrade funding (TUF) scheme and marketing assistance

Small-scale salt producers need support to upgrade their technology and improve their production and iodization capacity. The Indian government offers financial and technical assistance to certain industries, known as technology upgrade funding (TUF). GAIN and an external agency have devised a plan to introduce a TUF scheme for small and medium-sized salt producers, which it intends to submit to the government.

Small producers of iodized salt also need assistance with marketing their products, so GAIN is working alongside a few producers' cooperatives to create a national salt marketing federation. The federation would link up regional salt marketing cooperatives, which would procure quality iodized salt and sell it to low-income consumers at a minimal profit margin.

GAIN is planning its third national "salt summit" among industry actors for the end of March 2015 in Delhi. At this summit, GAIN hopes to present to the government its ideas for a TUF scheme and national marketing federation.

Future plans

Funding the TNSC refinery

TNSC is a salt company in Tamil Nadu, owned by the government but run as a for-profit business, with the company retaining the profits. TNSC produces crystal iodized salt exclusively for distribution through the PDS, primarily in rural areas. The salt is sold at about one-third the regular market price.

TNSC has historically not had the capacity to provide a steady supply of salt to the PDS, leading buyers to seek out salt in external markets, which was sometimes not adequately iodized. However, several NGOs, including MI and UNICEF, have helped TNSC build its capacity over the years, and the market for its products has grown as the quality has increased. About a year ago, GAIN provided about $120,000 in funding to TNSC, and TNSC was able to leverage that money in order to get three to four times that amount in cash from the government. The funds were used to establish two production lines with semiautomatic packaging machines. These lines were completed in five months, and each has a capacity of 10,000 MT of iodized salt. This raised TNSC's production capacity from 25,000 MT to about 60,000–65,000 MT of iodized salt each year. Recently TNSC has received an allotment of 5,000 acres of land, which it will use for further salt production.

TNSC now wants to set up a refinery so it can begin to refine its own salt, in response to increased market demand. TNSC is already producing some refined salt products, including refined iodized salt, low-sodium salt, and double-fortified salt, but it currently outsources the refining process. The refinery would cost about $1–1.2 million, and TNSC has asked GAIN to contribute about $100–$200,000. Production costs would be low once the refinery is set up, and TNSC would be able to distribute enough salt for 28 million people below the poverty line, or 15% of the population in Tamil Nadu. Both the chief executive of the state of Tamil Nadu and the company's leadership are supportive of the refinery project.

As of 2009, about 60–70% of the population in Tamil Nadu was consuming AIS, though the number is probably higher now. GAIN believes that by providing

financial assistance to TNSC for its expansion into refining, it could help TNSC provide quality iodized salt to more people in Tamil Nadu and neighboring states. Funding the refinery in full would mean the operation could be established very quickly, while partial funding would help stimulate additional investment from the government and other funders. Without investment from GAIN, TNSC will likely produce less salt, and the PDS shops will remain inadequately supplied. GAIN considers funding the TNSC expansion one of its top priorities.

Funding salt extenders' work

GAIN is currently using three to four consultant salt extenders, two in Gujarat and one each in Tamil Nadu and Rajasthan. Each salt extender is from his or her assigned state, knows the culture and language, and usually has some background in the salt industry. The extenders' role is to meet regularly with mostly large and medium-to-large salt producers in their respective regions, help train them on iodization, identify any problems they are experiencing with production or distribution, and arrange corrective interventions from GAIN or the government if needed. The extenders also engage with the salt commissioner and local government. Extenders spend about 12 to 15 days each month traveling around their assigned states and are paid approximately 40,000–50,000 rupees per month.

Because salt production takes place in only two areas of Tamil Nadu and three areas of Rajasthan, the current small number of extenders can reach many, but not all, of the producers. The extenders are able to cover about 300 producers nationwide (150–200 in Gujarat, 60–70 in Rajasthan, and 20–30 in Tamil Nadu and nearby states), all of whom are either already iodizing or interested in iodizing. About 250–300 producers are not currently reached.

Areas in which salt extenders might assist or advise producers include sourcing potassium iodate, which can be scarce; allocation of rail cars for salt transport; upgrading technology; training on salt testing; and proper maintenance of equipment, such as cleaning nozzles on iodization machines. Salt extenders serve as a "familiar face" for the producers, who appreciate having a consistent point of contact. Extenders also help organize producers for technical trainings when GAIN representatives visit.

The extenders report to Dr. Chakrabarty in fortnightly and monthly calls and submit monthly reports to Dr. Sankar. These reports and information from the salt testing labs are the two ways GAIN learns about salt quality trends. However, producers are not compelled to give extenders access to their records, so extenders do not necessarily have complete information about industry trends.

GAIN believes that losing the salt extenders would weaken its engagement with industry and reduce its access to knowledge of production trends. It might also reduce producers' access to technical assistance, meaning that more inadequately iodized salt could begin to appear on the market. Although government salt

inspectors are supposed to provide technical assistance as well as monitoring, they are too few in number to reach all producers, so the salt extenders fill an important gap. For these reasons, GAIN considers the continuation of the salt extenders' work another top priority. GAIN would like to fund the work of its current extenders and add two or three more, for a total of six (two to three in Gujarat, one in Rajasthan, and two in southern India, including Tamil Nadu).

Maintaining network of salt labs

GAIN receives further information about salt quality in India through the labs responsible for testing. Samples arrive at the labs by one of two routes:

- An inspector from the Department of Salt picks up samples from each production level and deposits them at the labs.
- Salt producers voluntarily deposit samples with the lab so they can receive a certificate of quality, which entitles them to subsidized railway transport for their product and also provides external validation of quality, which may appeal to consumers.

GAIN receives monthly reports from the labs on how much salt is produced, how much of that is iodized, how many samples are tested, and how many samples meet the standard being tested (which could be iodization, sodium chlorate content, moisture content, or presence of impurities, depending on the lab). If results show that a producer's output is poor, GAIN may send salt extenders or technical advisers to assist them. GAIN has produced a manual of do's and don'ts to help advise producers on how to improve. A producer that consistently fails quality tests may be officially warned by the government and eventually lose its registration.

GAIN USI believes that its involvement in networking the labs, organizing them to exchange and test each other's samples, and training lab technicians has helped improve the quality and quantity of the labs' output. In the first year of GAIN's USI program in India, the number of salt samples tested by the labs increased from 26,000 to over 100,000. Lab technicians feel validated when another lab confirms their findings, as producers frequently blame labs—particularly smaller ones with more limited facilities—when their products test poorly. Being closely linked to the salt producers, the labs are also able to advise the producers on how to improve the quality of their salt. Thus, GAIN considers it a top priority to maintain the lab network and the current system of internal quality control. GAIN believes that if it were no longer involved in the labs, the labs would continue operating as usual, although they likely need some form of external support to maintain their standards.

Other priority projects

GAIN considers the introduction of the TUF scheme and marketing federation for salt producers, as well as the maintenance of the national USI coalition. Financial

support is required in order to strengthen the marketing federation as a nodal organization, which would improve the reach of the iodization program and help meet the goal of Universal Salt Iodization. This financial support is required to achieve the Handholding, Scale up, Monitoring and Reinforcement milestones within one of the underlying objectives of GAIN's program, "Catalyze markets to increase penetration of adequately iodized salt."

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