

# Quest towards Eliminating Iodine Deficiency Disorders

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To eliminate iodine deficiency, India needs to adopt an alternative approach and use a different set of agents to achieve universal salt iodisation.

In south Asia, India is the second worst performer after Myanmar in consumption of adequately iodised salt, which has a well-known effect of preventing the population from mental and physical impairment, brain damage, and endemic goitre. Only 50% of Indians consume adequately iodised salt, which is far behind the leading countries – Bhutan (95%) and China (93%).

We often hear the following apology from companies and governments: “...but who has the money to reach out to everyone?” This excuse seems rather lame if we closely look at the officially estimated cost of iodine deficiency disorder (IDD) elimination. To date, salt iodination remains the most practicable and affordable method of iodine supplementation. As a commodity it is consumed in a fixed quantity on a daily basis by both the rich and the poor and on the consumer an additional cost of only Rs 2 per person per year in India (Sood et al 1997). In Switzerland, the elimination of IDD through the mandatory production and marketing of iodinated salt in the country, was completed in less than a decade and has been reported by Swiss scientific and medical authorities to have been the most cost effective public health measure in their history. The total cost was about US 20 cents per person for a decade! The Federal Republic of Germany in 1992 reported expenditure by insurance companies of 2 billion deutschmarks (about \$1 billion) to correct problems of iodine deficiency and thyroid, revealed only after unification of the country (Haxton 1993).

In order to understand what the historical facts behind these recommendations are, we sequenced the major milestones of the past 50 years of IDD combat in India. The third National Family and Health

Survey (NFHS) (2005-06) shows that only 51% of the households of India are using adequately iodised salt, which gives enough reasons to worry that something has gone seriously wrong at all levels of IDD elimination.

## Milestones in Quest for USI

Since its inception in 1962, the National Goiter Control Programme (NGCP) remained a low priority health programme for the government as “goiter” was mainly considered a “cosmetic” problem and goiter did not cause any pain. In addition India was struggling with control of communicable diseases (small pox, cholera, tuberculosis) that were responsible for large number of deaths. The turning point in the programme implementation in India came about after a meeting where the then Prime Minister Indira Gandhi who recognised the implication of IDD on brain development and that IDD was a public health problem in India. She took immediate action for the liberalisation of production of iodised salt. This marked the official ownership transfer from government to private sector. The Central Council of Health and the Technical Review Committee along with the government decided to launch the Universal Salt Iodisation (USI) Programme in 1983 with private sector participation.

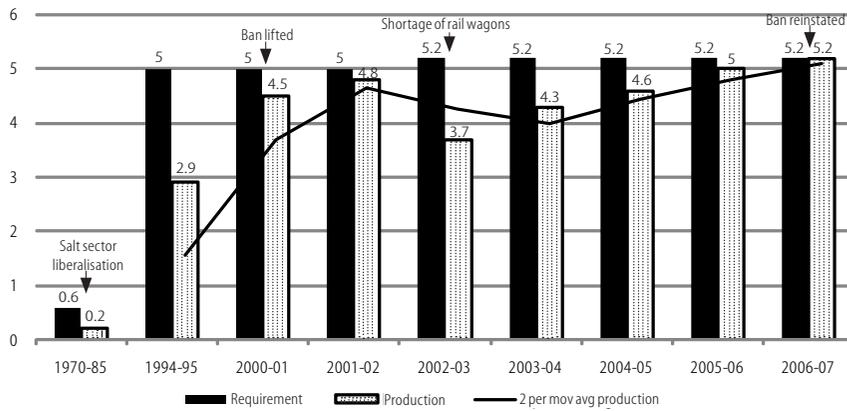
## Activity of Multilateral Agencies

In India, the International Council for Control of Iodine Deficiency Disorders (ICCID) works in collaboration with the All India Institute of Medical Sciences in New Delhi, The Micronutrient Initiative (MI), UNICEF and WHO. The activity of these multilateral organisations would ensure sustained advocacy, communication (awareness campaign), and tracking progress independently. UNICEF/MI/ICCID have even stepped beyond their normal capacity and set up iodisation units in several locations. In Rajasthan, the World Food Programme (WFP) in collaboration with the MI is using a new model of organising small-scale salt

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**Figure 1: Salt Iodisation – Real Progress?**

Production against requirement of iodised salt in India (million tonnes)



Source: ICCIDD booklet *Salt for Freedom and Iodised Salt for Freedom from Brain Damage*, October 2007.

producers into associations to help increase their capacity to iodise their product.

Besides India, private sector run iodisation plans (received from multilateral development agencies) have been tried in Bangladesh, Nepal, Myanmar, Indonesia and Pakistan. Though done with good intentions but in reality it is not to the scale so as to sustain IDD elimination (Hetzel 2002). The missing element of these initiatives is the market-based involvement of the private sector to cater to the demand generated by all the communication and the awareness building by the multilaterals. It is important to note that salt/iodised salt is a product of the market. In general, no government or NGO makes salt on a scale to meet the national demand and sustain it. However, there is no evidence of a business model that incorporates the pro-poor business approach, which ensures sustainability and long-term continuation of the projects. The next step therefore has to be the opening up of dialogue between the multilateral organisations, government and the private sector to transfer ownership.

Examining both the supply and demand angle of the salt market, the potential reasons why iodised salt consumption is insufficient, are twofold:

**Demand:** (1) People are unaware of the health benefits of iodised salt, and (2) People cannot afford to buy the product.

**Supply:** (1) The iodised salt is not available on the market, and (2) People are not aware that the salt which is claimed to be iodised contains insufficient amount of iodine.

To regulate the supply side, the government of India adopted a policy of usr in 1984, under which the entire population

of the country was to receive iodised edible salt containing minimum 15ppm (parts per million) iodine. To ensure the success of the usr, in 1998 the government implemented a central ban on the sale of non-iodised salt for human consumption. Two years later due to political and administrative compulsions, it withdrew this legislation. There was no comprehensive strategy to ensure the supply of iodised salt. While the production of iodised salt has increased in recent years (Figure 1), the hard facts point out that the available salt, is inadequately iodised. It is critical to differentiate between available total production and available adequately iodised salt production. This myth explains how the government of India has consistently showed progress in recent years, but in reality no progress has been realised in usr.

The quality of iodisation in the available salt is so poor that in certain states it exceeds 40% of the quality delivery gap (Table 1).

Given the size of the country, in India there is an immense market opportunity for producers. We logically expect thus that such interventions, as banning the sales of non-iodised salt, the extraordinary efforts by multilaterals to create a demand would have an immediate and stimulating effect on the private sector to produce more and sell more high quality salt.

Against all our expectations, in India, however, both the consumption and the production of iodised salt has dropped. Figure 1 shows Indian salt production in the first years of the policy, and the immediate decrease after the ban was lifted. From a social development perspective, the national average of claimed

consumption 76.1%, is not necessarily a bad result, because it shows that people are aware of the necessity of iodised salt consumption.

**NFHS-2 and 3 Results**

The following points emerge on comparing the NFHS-2 and 3 data:

- (1) The north-east states continue to have a high coverage of adequately iodised salt. Noteworthy is that these states receive salt which is transported by the railways solely and hence monitored. India does not have a system in place to monitor the salt that moves by road. Most of the states, which perform poorly, receive salt which moves by road.
- (2) Unless the individual state governments go on a mission mode to check the entry of non-iodised salt mostly transported by road, it will be difficult to achieve more than 90% coverage. Also once achieved it has to be sustained as evidenced by the case of Madhya

**Table 1: Short-changing the Customer**

State	% of Households Consuming Adequately Iodised Salt (Quality Tested)	% of Households Consuming Claimed Iodised Salt	Quality Delivery Gap (Claimed-Adequate)
Mizoram	85.9	98.8	12.9
Arunachal Pradesh	83.6	98.8	15.2
Manipur	93.8	98.8	5
Nagaland	83.3	97.8	14.5
Assam	71.8	97.2	25.4
Tripura	75.5	97.2	21.7
Sikkim	78.3	97.1	18.8
Meghalaya	81.9	97.1	15.2
Bihar	66.1	94.7	28.6
Himachal Pradesh	82.5	94.1	11.6
West Bengal	69.1	93.3	24.2
Jharkhand	53.6	92.7	39.1
Delhi	86	91.9	5.9
Jammu and Kashmir	75.8	90.5	14.7
Punjab	74.6	85.8	11.2
Kerala	73.9	82.6	8.7
Chhattisgarh	54.9	79	24.1
Goa	64.8	77.3	12.5
Uttar Pradesh	36.4	76.6	40.2
Orissa	39.6	76.1	36.5
Maharashtra	61	74.3	13.3
Gujarat	55.7	72.1	16.4
Haryana	55.3	71.8	16.5
Uttarakhand	45.9	71	25.1
Karnataka	43.3	66	22.7
Tamil Nadu	41.3	65.5	24.2
Rajasthan	40.8	63.3	22.5
Andhra Pradesh	31	60	29
Madhya Pradesh	36.3	58.7	22.4
India	51.1	76.1	25

Source: Columbia University Analysis 2007 based on NFHS-3, 2007.

Pradesh, where the coverage has slipped during these years as the mission mode could not be sustained. (3) The rural population and the people of low socio-economic status continue to be deprived of adequately iodised salt. Only 30% households in the lowest wealth quintile use adequately iodised salt. Most of the states that have iodised salt available in the public distribution system (PDS) ensure better availability to the vulnerable population at an affordable price. It also generates a market demand for the producer to produce adequately iodised salt. (4) The salt producing states have wider quality gap. This is because of the local movement of salt by road for internal use.

Sustained and effective information, education and communication (IEC) campaigns are expensive. For, e.g., an IEC campaign cost in the year 1999-2000 for the Pulse Polio Eradication Programme was Rs 145 crore out of a total budgetary allocation of Rs 545 crore (Ministry of Health and Family Welfare Annual Report 1999-2000). This is 26% of the total budget, whereas the total budgetary allocation for National Iodine Deficiency Disorders Control Programme (NIDDCP) in the same year was a meagre Rs 7 crore. Moreover the time taken for behaviour change is longer than project periods of multilateral organisations, which are usually of shorter duration requiring deliverables in that time frame. IEC campaigns thus should thus be built into the national programmes so as to be deliverable and sustainable. Thus, multilateral organisations have been slowly reducing the frequency of awareness campaigns. A campaign cost is way above the costs of building rural distribution channels or local iodisation plants. The problem is that the private sector has not fully recognised customer demand, which would be likely to be met by building new channels or ensuring the quality standards of iodisation. Awareness campaigns only lead to real impact if the salt is consistently supplied to the educated consumers.

As is the case of pulse polio, awareness campaigns should be done by all (government, private sector, national and international NGOs). The demand and supply is not an either or situation. It has to be a concerted and harmonic approach.

It is clear that the Indian salt industry is currently not recognising the demand for

good quality iodised salt, and does not seem to care on delivering the product to all segments of the society. Field research repeatedly highlights the myth of price sensitivity.

Research efforts clearly point to the fact that:

The low-income segment of the Indian population, despite all development efforts do not consume sufficiently iodised salt not because they cannot afford to buy the good quality product, but because either the product is not available in rural markets or the claimed iodised salt is of questionable quality.

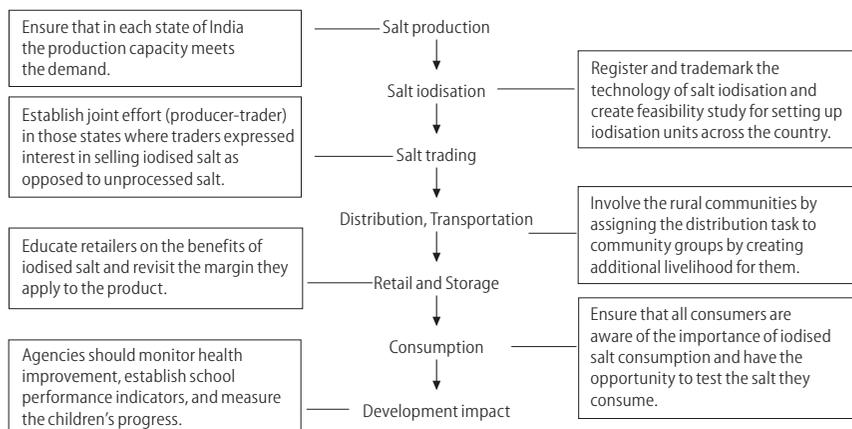
The following three reasons probably explain the reason for the gap in quality of iodisation and define our challenges.

(1) Many small-scale Indian salt manufacturers do not have a consistent, quality-controlled iodisation technology, (2) Quality conscious consumers need assistance to uncover the inconsistency of iodine level; for example with the wide spread availability of testing kits, and (3) There is a pivotal role for the branded players of the salt market to standardise quality and effectively deliver the product to the entire country.

### How to Make It Work?

This model assumes a private sector approach. The government's effort, taking into consideration the administrative and political environment, has been periodic, instead of being comprehensive and sustained.

The value chain of the iodised salt consists of many steps:



Each step has a crucial role and has an impact on the operational success of the entire iodised salt value chain. The current malfunctioning of the above process, which mainly originates from the lack of synergy of each step, results in IDD still being a

major public health concern, having an impact on the health of many millions of children and women.

(1) Salt Production – Estimate the capacity and quality requirements of iodised salt producing plants to fulfil demand: After a thorough demand-estimation in each state, the production capacity of the private sector should be increased. The current production of branded players should approach the real demand. The demand estimation should also entail the difference in consumer preferences regarding the use of free flowing or crystallised salt.

(2) Salt Iodisation – Empower and unite the current 819 iodisation units across the country under one quality control system: If the technology of salt iodisation is registered or trademarked, it becomes an intellectual property. This allows producers to claim certain standards of iodisation and preserve the quality of their product. It is essential that not only branded players but everyone is protected from infringement – which is often coupled with extremely poor quality – of salt production. Additionally, if any of the companies decide to franchise the iodised salt production to local plants, it is inevitable that the company owns the right of that process and controls the quality standards attached to it.

(3) Salt Trading – Approach all ration shop-dealers across India: Salt traders are key actors of the value chain of salt. They have a pivotal role in salt procurement in those states where the political lobby makes it difficult to regularly obtain large quantities

at a stable price. While salt traders have access to the raw material, they do not have the means for iodisation. If traders recognised the value of selling iodised salt versus raw material, then the private sector should fulfil this role and provide the means.

Furthermore, ration shops (government licensed and subsidised retail facilities to cater to the poor – the public distribution system, PDS) across India are one possible way to make sure that the low-income population gets the high quality iodised salt. This requires persistent discussion with the state governments. At present, except for a few states, there is no salt product available in the PDS.

(4) Distribution and Transportation: Distribution deficit is one of the key factors. The government of India has a policy in place to give priority to movement of iodised salt by rail (Currently in category “C”. Recommendations are on the table for upgrading to the pre-existing category “B”). However, on a more economically sustainable manner, local communities have to be involved in salt distribution. Branded players can channel the salt distribution through community groups (self-help groups). The compensation of this activity would provide additional livelihoods for the group members, as evidence shows already in many states of India. This requires a concerted effort of the NGOs and the private sector.

Schools and anganwadis should be other key centres of large quantity salt distribution. Mid-Day-Meal programmes, and the Integrated Child Development Services Scheme in many places are reported to be using branded salt. However, they procure it on the retail market at a much higher price. Targeting these institutions with a clear strategy means a significant penetration to the market.

(5) Retail and Storage – Engage and build relationship with all the retail units that sell branded salt: Evidence shows that it is often the retailer’s choice what type of salt gets into the consumers basket. Retailers should be aware of the health benefits of iodised salt and the price implications of it. A transparent monitoring system, where retailers are audited on the margin they apply to the product, would help to sell more of the high quality product. By strengthening the demand side, the low-income communities will make a conscious effort to buy the good quality product, which leaves no room for retailer manipulation, i.e., selling low quality salt brands.

(6) Consumption – Supply all consumers with an iodine testing kit attached to the salt package: This is the element of the

value chain that mainly drives the profit of branded iodised salt. Unless consumers are educated and assisted to make the “healthy choice” as opposed to the poor quality, the company will not make a headway in this market. Despite the myth that poor people are not concerned about quality, most poor women in the towns are willing to pay as much as Rs 10 for a packet of branded salt to ensure the health of their children.

Promoting iodine-testing kits attached to the salt package would not only sustain the “iodine consciousness” of the consumers but would also attach “quality delivery” as an attribute to any existing salt brand. On most occasions the smaller packages of salt are packed in larger bags of 25/50 kgs. A few salt testing kits can be attached to these bigger packs to help the retailer check the salt in front of the consumer. This will not only generate awareness, but also ensure that the retailer gets adequately iodised salt.

(7) Development Impact – Reach 0% IDD prevalence in India by 2015: It is absolutely critical that development professionals are also involved in the IDD elimination process. They have a key responsibility to educate people on the benefits of iodised salt in those areas where the salt is available. The current situation awareness campaigns are almost meaningless because of the quality delivery gap or the supply deficit of the iodised salt. Therefore solving the latter should be a key priority.

Development agencies should be more proactive in seeking the market-based solutions with the private sector players. They also should practise their role more proactively to facilitate the cooperation between the government, the communities, and the large salt producers. This means initiating action in the field, facilitating continuous discussions with all stakeholders. A good example of this is the Bavishya Alliance’s work in Maharashtra, which provides a platform for government, community groups, private sector and multilaterals to work on comprehensive solutions (e.g., cooking and hygiene practices).

## Conclusions

Health issues are social, political and economic issues. In the formulation of policy in a democratic environment we require identification and recognition of the health

problem/issue; information to know and critically filter evidence-based data and an effective and efficient intervention to eliminate the problem. Moreover, we also require formal networks, stakeholder alliances and informal networks and most importantly address the socio-cultural-political aspects related to public health problems as reflected in the values, beliefs and interests. Implementation of policy, if based only on one or two factors, will not only achieve less results, but also lead to a retrograde step as seen in the case study of NDDCP. According to the latest NFHS-3 – only close to 51% of the India’s population has access to adequately iodised salt.

It is also important to note that the rural population and the people living in the low socio-economic status continue to have poor access to adequately iodised salt. Also noteworthy is the fact that salt predominantly transported by rail has better levels of iodisation as compared to the ones that are transported by road. This is evidenced in the north-eastern states where the households have a high percentage of coverage.

It is also noteworthy that household coverage is better in those states that have iodised salt available in the PDS. Channelling the product from the small- and medium-scale producers to large-scale consumers like the state PDS and the ICDS scheme would generate a market for these producers.

Therefore, it is obvious that in order to build permanent and sustainable solutions, we should stop procrastinating and take action to start a form of multi-stakeholder alliance addressing the most urgent issues. Until we do so, we may lose the intellectual capital of 13 million newborn children every year.

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