

Guest Editorial

'Mission Approach' to achieve Sustainable Elimination of Iodine Deficiency Disorders (IDD) in India

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Iodine deficiency disorders (IDDs) constitute the single largest cause of preventable brain damage worldwide.¹ IDD is a major challenge to the health of population the world over particularly among preschool children and pregnant women in low-income countries. IDD comprises of a spectrum of diseases, including goiter, cretinism, hypothyroidism, abortion, still birth, brain damage, learning disabilities, mental retardation, psychomotor defects and hearing and speech impairment.² Majority of consequences of IDD are invisible and irreversible but, at the same time, they are totally preventable. Children living in iodine-deficient areas on an average have lower intelligence quotient (IQ), by as much as 13.5 IQ points as compared with children living in iodine-sufficient areas.³ IDD with their effect on cognition, learning abilities and brain development, have a major impact on human resource development and national development and progress.

Globally, two billion people are at risk of iodine deficiency disorders due to insufficient iodine intake.⁴ In India, the entire population is prone to IDD due to deficiency of iodine in the soil of the subcontinent and consequently the food derived from it. Of these, an estimated 350 million people are at risk of IDD as they consume salt with inadequate iodine (Table 1).⁵ Every year nine million pregnant women and eight million newborns are at risk of IDD in India. These estimates are based on the household-level coverage of adequately iodized salt as reported in Coverage Evaluation Survey (CES) 2009 and extrapolated to total population estimates from census 2011 (provisional figures).^{6,7} Globally, India has the largest number of children born vulnerable to iodine deficiency.⁸

Surveys conducted by the Central and State Health Directorates, Indian Council of Medical Research (ICMR) and medical institutes since 1950s have clearly demonstrated that IDD is a public health problem in all states and union territories in India. Out of 325 districts surveyed in India so far, 263 districts are IDD-endemic, i.e. the prevalence of IDD is above 10% in the population.⁹ State level IDD surveys were carried out in seven states (Kerala, Tamil Nadu, Odisha, Rajasthan, Bihar, Goa and Jharkhand) from 2000 to 2006 by International Council for Control of Iodine Deficiency Disorders (ICCIDD) in collaboration with state medical colleges micronutrient initiative (MI) and UNICEF.¹⁰ The household level consumption of adequately iodized salt (≥ 15 ppm) ranged from 18.2% in Tamil Nadu to 91.9% in Goa. The median urinary iodine excretion ranged from 76 $\mu\text{g}/\text{l}$ in Goa to 173.2 $\mu\text{g}/\text{l}$ in Jharkhand. TGR ranged from 0.9% in Jharkhand to 14.7% in Goa.

In India, as per the Coverage Evaluation Survey 2009, 91% of households have access to iodized salt out of which 71% consume adequately iodized salt. Another 9% consume salt with no iodine. There are wide rural and urban variations in household coverage of adequately iodized salt (83.2% in urban areas vs 66.1% in rural areas). Wide variation is also seen across different states/UTs; with 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.

IDD control program in India is a public health success story. Nearly, 91% of households in the country have access to iodized salt with 71% consuming adequately iodized salt. The results of the CES 2009 show the tremendous progress made toward achieving universal salt iodization (USI) in India in recent years. In the last national level, survey conducted in 2005-06 (National Family Health Survey 3), the consumption of adequately iodized salt at household level was only 51%.¹¹ Iodized salt production in India was less than 2,00,000 metric tons (MT) per year in 1980s of which 50% was exported to Nepal. Currently, the total iodized salt production is 5.82 million MT per year (2010), well in excess of the national requirement of 5.2 million MT per year.¹² The results of the CES 2009 survey are extremely encouraging and with further acceleration of the efforts to eliminate IDD in India, the country should achieve USI soon.

India, as one of the participants of the UNGASS on children, had committed to the goal of IDD elimination by year 2005. However, India subsequently revised the IDD control goal in year 2006. The current IDD control goal in India is

to reduce the prevalence of IDD (i.e. total goiter rate) below 10% in the entire country by 2012 AD.¹³ Based on currently available information achieving this goal would require unprecedented coordinated efforts.

Achieving IDD control goal in India requires a 'mission approach' with greater coordination among all stakeholders of IDD control. The 'mission approach' has to be adopted by the government at the highest political level and should have clearly defined objectives and strategies. The plan of action has to be executed within a defined time frame by a committed team. Fast-track procedures and collective action by an intersectoral effort are integral components of this approach. Close monitoring and transparent evaluation should be developed in line with the goal, objectives and strategies of the mission approach. The potential of 'mission approach' in making significant progress toward USI and IDD control has been demonstrated by the successful case study of Madhya Pradesh in India from year 1994 to 1995.¹⁴ The Government of Madhya Pradesh launched the Rajiv Gandhi Mission for elimination of IDD in year 1994 with to ensure availability of adequately iodized salt, in all villages and towns of Madhya Pradesh, by the end of 1997. Within a year of inception of the mission, the state of Madhya Pradesh achieved universal availability of iodized salt. A total of 98.4% of the salt samples were iodized at the household level (urban—98.9%; rural—98.3%). However, it is imperative that 'mission approach' is designed concurrent to a 'system approach' as sustaining the success achieved during 'mission approach' is equally important.

The focus of future effort should be ensuring adequately iodized salt to rural population and marginalized population, addressing wide interstate variation in the adequately iodized salt coverage, distribution of iodized salt through the public distribution system (PDS), strengthening of quality assurance of laboratories of private salt producers, improved monitoring of road movement of adequately iodized salt, supporting small and medium scale salt producers for upgradation of quality of raw salt being produced and strengthening community monitoring of salt iodization, strict implementation of Food Safety and Standards (FSS) Act 2006, Prevention of Food Adulteration (PFA) Act 1955. Mainstreaming of IDD control in policy making, devising state-specific action plans to control IDDs, strengthening, monitoring and evaluation of IDDs program and ensuring sustainability of IDDs control activities are essential to achieve sustainable elimination of IDDs in India. With accelerated efforts, we can achieve the IDDs control goal in the very near future and most importantly sustain it thereafter.

Achieving the USI and thus ensuring adequate iodine intake is only the first step toward the goal of elimination of IDDs. Sustaining USI efforts and tracking progress of IDDs elimination is of utmost importance to prevent recurrence of IDDs. Elimination of IDDs from a population should always be coupled with mechanism to ensure the sustainability of the program. As it has been borne out by numerous case studies across the globe, one time elimination of IDDs is not the answer. By virtue of iodine deficiency being the inherent nature of the soil, IDDs do recur when the IDDs elimination efforts slacken. In several countries, where IDDs had been eliminated by IS programs—including Colombia, Guatemala, Azerbaijan and other countries of the former Soviet Union—control programs faltered, and IDDs recurred.¹⁵ Thus, regular monitoring of Iodine Deficiency Disorders Control Programme is absolutely critical.

The famous aphorist philosopher said George Santayana (1863-1952) 'Those who cannot learn from history are doomed to repeat it'. History teaches us that the sustained elimination of IDDs requires constant vigilance of a range of

Table 1: Estimated burden of Indian population at risk of IDD

S. no.		Source of information	Urban	Rural	Total	Unit
1	Birth rate	SRS bulletin October 2009	18.5	24.4	22.8	Per thousand
2	Total population*	Census 2011 (provisional)	363.1	847.1	1210.2	Millions
3	Total number of live births	(1) & (2)	6.7	20.7	27.6	Millions
4	Infant mortality rate	SRS bulletin October 2009	36.0	58.0	53.0	Per thousand live births
5	Infant mortality	(3) & (4)	0.2	1.2	1.5	Millions
6	Infant population	(3) & (5)	6.5	19.5	26.1	Millions
7	Under 5 population*	UNICEF 2009 & (2)	37.8	88.3	126.1	Millions
8	Adequately iodized salt	CES 2009	83.2	66.1	71.1	Percentage
9	Inadequately + noniodized salt	100-(10)	16.8	33.9	28.9	Percentage
10	No. of pregnant females	Live births and 10% wastage	7.4	22.7	30.4	Millions
11	No. of newborn at risk of IDD	(3) & (9)	1.1	7.0	8.0	Millions
12	No. of infants at risk of IDD	(6) & (9)	1.1	6.6	7.6	Millions
13	No. of under 5 children at risk of IDD	(7) & (9)	6.4	29.9	36.5	Millions
14	No. of pregnant females at risk of IDD	(10) & (9)	1.2	7.7	8.8	Millions
15	Total population at risk of IDD	(2) & (8)	61.0	287.2	348.8	Millions

*UNICEF 2009 estimates: 30% of total population of India is urbanized

professional and public interests. It is particularly important to understand this even when we have crossed the target of USI. Too many of us may diminish our efforts when we reach the first plateau. The long climb to eliminate the stealthy scourge of IDD from the globe begins with the achievement of USI. Thus, to be salvaged or to be doomed, the choice is ours to make.

CONCLUSION

The elimination of IDDs is eminently possible. There are few moments in history when there is a clear fork in the path of major human endeavor. We are at a turning point in our battle against the ancient and pervasive scourge of iodine deficiency in India. Never before has the way to our goal been so clear or so near; never before have we been able to see so clearly or so far.

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