

Exploring the Status of Iodine Deficiency Disorders Control Program in Nagaland

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Summary

Globally, 1.9 billion individuals have inadequate iodine nutrition, of whom 285 million are school-aged children. Universal salt iodization is the favored preventive strategy for iodine deficiency disorders (IDD), the single largest cause of preventable mental retardation. Two thousand and twenty estimates show nearly 1 billion people do not consume iodized salt. When at least 90% of households consume adequately iodized salt (≥ 15 ppm), a country is said to have attained USI. Only 23 countries had household coverage of 90% or higher. India has a household coverage of 76.3%. One 67 million people are at risk of IDD, 54 million suffer from goiter, and 2 million from cretinism. Yearly, 9 million pregnant women and 8 million newborns are at risk. Nagaland, with the second highest coverage of iodized salt in India, the study aims to assess the state-specific approach, track various mitigating measures that effectively sustained the gains of the program.

Key words: Consumption, households, iodine deficiency disorders, iodized salt

Iodine, an important micronutrient is required for human life for proper mental and physical development beginning at conception. It is used by the thyroid to synthesize thyroid hormones which are critical throughout the first 2 and 3 years of life,^[1] when over 90% of brain development occurs. Iodine deficiency causes irreversible mental impairments that manifest after 2 years of age, bringing devastating impacts and a wide spectrum of health repercussions known as “iodine deficiency disorders” (IDD). It refers to a group of conditions that are invisible and irreversible but preventable by ensuring appropriate iodine consumption. Severe deficiency before or during pregnancy causes both maternal and fetal hypothyroidism, goiter, cretinism, psychomotor defects, hearing and speech impairment, decreased fertility to trophoblastic or embryonic damage and is associated with poor obstetric outcomes such as spontaneous abortion, prematurity, stillbirth or congenital anomalies, and cretinism.^[2] The IDDs less evident, yet pervasive mental impairment, which affects intellectual cognitive development leading to poor performance at school and work, is significantly more important. Adequate iodine consumption in pregnant women and young children is critical as estimates shows that there are 9 million pregnant women and 8 million newborns at risk in India.^[3] Children

born in areas with iodine-deficient soil have 13.5 IQ points less than those in iodine-sufficient areas.^[4]

India was among one of the first countries in the world to initiate a public health program on salt iodization to address IDD.^[5] As one of its most successful initiatives, the government of India established the National Goiter Control Programme in 1962 with the objective to supplement the intake of iodine to the entire population. This program was revised to the National Iodine Deficiency Disorder Control Programme (NIDDCP) in 1992.

The objectives of this study are to determine iodine knowledge, iodized salt consumption patterns, and estimate the coverage of adequately iodized salt at the household level in Nagaland, especially among all women of reproductive age, to analyze the existing status of the state's IDD control programs to improve

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their execution in accordance with the nation's needs. Finally, to look at metrics for tracking progress toward the long-term objective of eliminating IDD as a substantial public health issue.

The present study was based on a qualitative method that is widely used in human dimensions surveys to collect reliable data to better understand the study region, its nature, and degree of functionality. This information is necessary for a thorough grasp of the extant literature, which expresses opinions on historical, current pattern, and iodine knowledge conditions. Document analysis and excerpts from written documents are used to supplement the study data.

Nagaland state located in the sub-Himalayan belt falls under areas of severest iodine deficiency. Iodine deficiency remains one of the most neglected and most widespread of all nutritional deficiencies in the sub-Himalayan areas. Nagaland was declared as one of the IDD-endemic States in India through a baseline survey conducted by the Indian Council of Medical Research in the early 1960s where 34.3% of goiter prevalence was recorded.^[6] Since the establishment of the IDD Cell in Nagaland in the year 1987, control and preventive measures are being adopted through the program division. Information on IDD is disseminated to all sections of the population through various agencies and media. More crucially, the entire state is supplied with iodized salt for human consumption. All of these exercises and controls have resulted in a major shift in people's behaviors and attitudes about the purchase, storage, and use of iodized salt.

Under the banner of NIDDCP, a survey was conducted by the Department of Health and Family Welfare, Government (2009–2010) on random samples in rural population with the school-aged children group of 6–12 years in all 11 districts of Nagaland and the prevalence of total goiter rate recorded was 0.72%. In the rural areas, only 70% of the iodized salt was sold through the Public Distribution System. After more than five decades of the national program, only 83% of the population surveyed had knowledge about IDD despite consuming iodized salt. According to UNICEF CES, 2009, 97.1% of Nagaland households were using adequately iodized salt.

Nutrition International along with the Association for Indian Coalition for the Control of Iodine Deficiency Disorders commissioned the “India Iodine Survey 2018–19” across all 29 states and seven union territories (UTs) in India and their report only 13 states/UTs have achieved the USI target of >90% household iodized salt coverage and the front runner states with the highest household coverage of iodized salt with iodine content more than and equal to 15 ppm were Jammu and Kashmir (99.8%) and Nagaland (99.7%) which is very close to the National Family Health Survey-5 (NFHS-5) survey showing 98.9%. In Nagaland, about 78.2% of the respondents attributed to electronic mass media (TV and Radio) and 30.0% identified newspaper channels as major sources of information on iodized salt.^[7]

A massive 94.6% of the respondents mentioned the prevention of goiter as the primary benefit of consuming iodized salt while 53.9% said iodized salt prevents abortion and stillbirth. Only 2.0% had knowledge about cretinism. 39.5% of the respondents were willing to pay for better quality of cooking salt while a large number of respondents (31.8) were unwilling. Percentage distribution for perception that all packaged salts are iodized differed across Nagaland and stands at 13.9 for category that strongly disagrees. There is a perception among 0.4% of the respondent that refined iodized salt is unhealthy. Percentage for perception that availability of iodine in our normal diet is not sufficient and that iodized salt is required is quite low and stands at 12.8. However, there is no misconception among the respondents that the consumption of iodized salt leads to diseases and illness.^[7]

In the present findings from the NFHS-5 2019–20, the fifth in the NFHS Series, there is extensive data on population, health and nutrition for India and each state and union territory. NFHS-5 provides district-level estimates for many important indicators. NFHS-5 Survey for Nagaland was conducted in all 11 districts of the state from July 2019 to December 2019, by Research and Development Initiative Pvt. Ltd. New Delhi, under the stewardship of the Ministry of Health and Family Welfare (MoHFW), Government of India.^[8]

Overall, sample information was collected from 10,089 households out of which 98.9% of households surveyed consumed iodized salt with adequate iodine content. The districts of Dimapur, Kiphire, and Kohima showed the highest percentage at 99.7 each in consumption of iodized salt in the household surveyed [Table 1] and the lowest at 98.2 in Tuensang district. However, the highest percentage recorded was lower than in NFHS 4 by 0.6%.^[9] At the district level, all the 11 districts recorded a significantly high content of iodine in the sample tested. There was 0.5% differential point across urban and rural populations where the consumption of iodized salt was higher among urban dwellers at 99.3 while rural household recorded 98.8. Across the community background, there was 99.7% usage of iodized salt among the scheduled caste and 98.9% among the scheduled tribe population.

The survey indicates that 9695 women were in the age group of 15–49 years and 1300 were men in the age group of 15–49 years [Table 2]. Women had the highest IDD-related health issue compared to their male counterpart. The survey recorded older female (35–49 years) among the three age groups to have more thyroid-related health problems. Similarly, females in urban population were reported to have goiter or other thyroid disorders. No cases of goiter was reported in male in urban area however there was a significant number in the rural area. Out of the total number of women surveyed, the overall number of respondents with goiter or other thyroid disorders was 505, with a percentage of 5.2, whereas, the male counterpart recorded 3.3%.^[8]

Over the years, the State Government under the initiation of Nagaland IDD Cell has been consistently fighting the

Table 1: Percentage of household by district with salt tested for iodine content National Family Health Survey, Nagaland, 2019–2020

District/background characteristics	Among households with tested salt	
	Percentage with iodized salt	Number of households
Dimapur	99.7	2114
Kiphire	99.7	384
Kohima	99.7	1455
Longleng	98.6	345
Mokokchung	98.7	1035
Mon	99.5	1099
Peren	99.5	422
Phek	98.3	881
Tuensang	98.2	1114
Wokha	98.9	625
Zunheboto	99.1	614
Nagaland	98.9	10,089
Residence		
Urban	99.3	3258
Rural	98.8	6830
Caste/tribe of household head		
Scheduled caste	99.7	346
Scheduled tribe	98.9	9254
Other backward class	94.6	108
Other	100.0	341
Do not know	94.8	30
Total	98.9	10,089

elimination of IDD. Goiter prevalence has come down from 34.3% in the 1960s and today the IDD prevalence stands at about 1% recorded through random sample survey in the state.^[6] Various control programs under NIDDCP are conducted throughout the districts reaching out to the common people as well as different stakeholders.

The most recent achievements of NIDDCP during 2019–20 are: 115,296 salt sample tested with Spot Testing Kit (STK) by ASHAs; 1136 number of salt samples tested by laboratory method; and 1980 urine samples analyzed. Studies were conducted on local salt made at Hutsu and Metikhru villages under Phek district. Various awareness campaigns on IDD were organized in different parts of the state, “Global IDD Prevention Day” was observed in all 11 districts. The IDD cell converged with Rashtriya Bal Swasthya karyakram under social welfare department and with Swasth Bharat Yatra led by FSSAI to strengthen the awareness while demonstrations were held on testing salt samples through STK. The use of leaflets, posters, and stickers on school buses was ramped up for sensitization. One notable effort was the slogan printed on all school textbooks under the State Council of Educational Research and Training^[10] IDD cell of the state celebrated its first Food safety day on June 2019 in collaboration with FSSAI which is a notable step as the role of FSSAI is paramount in taking a more proactive role to consider amending the Food

Safety and Standards (Prohibition and Restrictions on Sales) Regulations, 2011 to remove salt used for preservation, from list of exception to mandatory iodization.

In many countries where iodine deficiency had been abolished, salt iodization programs fell apart and as a result iodine insufficiency resurfaced. In this light, the issue of sustainability has taken center stage. Governments must recognize the serious consequences of iodine shortage. Many people still associate iodine deficiency with goiter, which is mostly a cosmetic issue and thus a low priority as we have seen in the case of Nagaland where only 2% had associated consumption of iodized salt with cretinism.^[7] The public awareness of IDD and its serious consequences remains low despite high consumption of iodized salt.

Monitoring is sometimes overlooked, not only because it is the final step in the process, but because it is often times overshadowed by the implementation aspect of the program. As such, there is far less data on the impact of salt iodization programs than on their implementation.

In terms of tracking progress toward the elimination of IDD, India is one of the few countries that do not have regular national or subnational data on the population's iodine status. Furthermore, the majority of IDD prevalence data at the district level uses goiter as an indication, which is prone to inaccurate data. While national data on iodized salt coverage in households are being collected, the iodine content in salt is only being checked using rapid salt test kits. The Government of India should consider revision of the NIDDCP policy guidelines and allocate adequate and dedicated resources for effective program implementation. The MOHFW could consider including the estimation of median UIC as an indicator to report the iodine status of the population along with household coverage of adequately iodized salt in NFHS and also supplement STKs with laboratory-based iodometric titration to estimate the iodine content in salt to provide more precise estimates. Consumers are not equipped with the tools and skills necessary to assess the quality of the salt they purchase, making them unable to demand only adequately iodized salt.

To ensure better political commitment and prioritization of the USI program, sustained advocacy at the national, state, and district levels is essential. The implementation of an effective mechanism to ensure the enforcement of USI is just as crucial as maintaining the central prohibition on the sale of noniodized salt for culinary and preservation purposes.

IDD control program in Nagaland is one of the success stories of public health in the country. In Nagaland, 98.9% of households have access to adequate iodized salt, which is a significant step toward a healthy community. To achieve and sustain the IDD control mission, effective and efficient coordination among all stakeholders of IDD Control Programs in the State is required. Iodized salt consumption in Nagaland has increased significantly as a result of IDD promotion and

Table 2: Classification of person with iodine deficiency-related health problem according to background, National Family Health Survey, Nagaland, 2019–2020

Background characteristics	Number of women/100,000		Number of men/100,000	
	Goiter or any other thyroid disorder	Number of women	Goiter or any other thyroid disorder	Number of men
Age				
15–19	81	1347	0	158
20–34	426	4832	0	647
35–49	776	3516	113	495
Residence				
Urban	572	3384	0	480
Rural	469	6310	69	820
Schooling				
No schooling	463	851	0	74
<5 years	581	627	0	74
5–9 years complete	441	1443	0	156
8–9 years complete	488	2467	0	307
10–11 years complete	389	1557	0	220
12 or more years complete	614	2748	120	470

the benefits of using iodized salt through the use of electronic media, including TV, radio, and print media. This can be conceptualized and replicated in other states too. Despite the fact that IDD's difficulties are serious and irreversible, controlling and preventing it is quite straightforward and inexpensive.

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