Management Information System for Monitoring of Universal Salt Iodisation Programme A Case Study from Sikkim – India

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1. INTRODUCTION

Sikkim is a small hilly state (Province) in India. The entire state is mountainous and iodine deficiency disorders are highly endemic in the state. A survey conducted in 1989 revealed the existence of severe iodine deficiency in the entire state with an overall goitre prevalence of 54.5% and cretinism prevalence of 3.5%. Iodised salt was introduced in the state in 1983 but there was no systematic monitoring system to ensure quality of iodised salt. Salt for the state comes from Gujarat, some 2500 kilometers away. A monitoring information system for monitoring the quality of iodised salt was established with effect from April 1994. Salient features of this monitoring system are described in this article.

2. METHODS

In the management information system for monitoring iodised salt in Sikkim, the existing infrastructure and staff of the primary health care system are used. The state is divided into four districts. There are 29 Primary Health Centres (PHC) and 145 Primary Health Sub Centres (PHSC) in the state. Doctors are posted in all the PHCs and only Health Workers (HWs) are posted in the PHSCs. The HWs were trained in using spot testing kits (STK) to measure iodine content in salt samples at households.

Each health worker makes a home visit to all the houses under his jurisdiction at least once in a quarter. They were asked to test salt samples during these visits. The testing was done at individual houses. Each health worker tests a minimum of 10 salt samples from 10 households every month from his area. The HWs also send one household salt sample to the central reference laboratory for measurement of iodine content by titration. The results for the household salt testing by STKs is compiled by the HWs and they forward the same to their respective PHCs. They are then forward to the Chief Medical Officer (CMO) of the district. The CMOs compile the report for the entire district and forward the same to the central reference laboratory. The results of the salt testing are forwarded every month through the channel along with the Child Survival and Safe Motherhood (CSSM) programme, which is a high priority programme of the Government of India.

The IDD Cell in the department of health at the state capital is responsible for monitoring the quality of iodised salt at retail level. The IDD cell collects salt sample from at least 5 retail outlets in each district in the state. The samples are analysed by iodometric titration at the central reference laboratory. The IDD cell also monitors the quality of iodised salt at the whole sale level. In addition the IDD cell coordinated with the Food and Civil Supplies department to monitor the quantity of iodised salt entering the state and their distribution within the state.

3. RESULT

A total of 32,041 salt samples from households were tested using the STK from 01 April 1994 till 31 December 1997. Of these 22, 884 (71.4%) samples had 15 parts per million (ppm) or more iodine; in 9157 (28.6%) salt samples, the iodine content was less than 15 ppm. Of the salt samples with inadequate iodine content, 1498 (4.7%) samples had no iodine. During the same period 2440 household salt samples were tested by iodometric titration at the central laboratory. Of these 1555 (63.7%) samples were found to be having 15 ppm and the remaining 885 (36.3%) samples had inadequate iodine content. Of the samples

with inadequate iodine content, in 96 (3.9%) there was no iodine. From the retail shops, 920 samples were tested; 663 (72.1% had 15 ppm or more iodine by STK and 618 (67.2%) had adequate iodine by titration.

4. DISCUSSION

Iodine deficiency is the most common preventable cause of mental deficiency in the world today. Iodine deficiency disorders constitute a major public health problem in India. Salt iodisation is the approach adopted by the government of India as the preferred method for elimination of iodine deficiency. The country has adopted universal iodisation since 1996 and the same has been successful to a large extent.

Consistent monitoring of the iodine content of salt at the production, storage, sale and consumption levels is a vital for the success of any iodised salt programme. The monitoring programme should be organised in such a way that it is sustainable and the information gathered provides a feed back for corrective measures.

The study clearly shows that nearly 96% of the salt samples tested had some iodine, although only 71.4% of the samples had adequate iodine (15 ppm iodine or more). Only 4.7% of the salt samples had no iodine. This pattern has been more or less consistent over the period of 4 years. This pattern was also consistently seen at the monitoring at retail outlets as well as wholesale level, suggesting that this was largely due to poor monitoring at the manufacturing level.

The management information system in Sikkim has been functioning successfully because of its integration into the existing primary health care delivery system. The only additional input required has been the training imparted to the health workers and the cost of spot testing kits.

The reasons for the large number of samples with inadequate iodine content also need to be addressed. This could be because of probable losses during transportation, storage as well as poor manufacturing practices.

Testing of samples at households has helped enormously in increasing the awareness about iodine deficiency disorders and iodised salt (from 43.5% before the inception of MIS to 77.9% in May 98). The other major advantage of this management information system is that it covers a wide geographical scatter. The information generated is linked to possible corrective measures that can be taken.

It is concluded that the management information system for the monitoring of iodised salt that has been going on in Sikkim for the past five years is simple, cost-effective and sustainable.

Table 1.
Household Salt Samples – Iodine Content by Spot Testing Kits

Year	Total	Iodine adequate	Ioidne inadequate
1994	8995	6432 (71.5%)	2563 (28.5%)
1995	9892	7221 (73.0%)	2671 (27.0%)
1996	7182	5051 (69.8%)	2167 (30.2%)
1997	5972	4216 (70.6%)	1756 (29.4%)
	32041	22884 (71.4%)	9157 (28.6%)