IDD NEWS

# IQ+Jagriti

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## Sixty-Third World Health Assembly
## 17–21 May 2010
## Geneva, Switzerland


*Top: World Health Assembly Session in Progress.....*
*Bottom (L):WHO's Director-General Dr Margaret Chan at the Sixty-third World Health Assembly,*
*Bottom (R)President of the Sixty-third World Health Assembly and the Minister of Health of Tunisia, Mr Mondher Zenaidi, addresses the World Health Assembly session*

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O God Almightly! Protect us both, nourish us both, and let us be strong together in unity, let our knowledge shine and let us not be defeated in intellectual exercises; let us be joined together in friendship for ever, and let no enmity ever come between us.




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# ICCIDD Vision, Mission & Dedication

Vision: The vision of ICCIDD is a world virtually free from Iodine Deficiency Disorders with national endeavors to maintain optimal iodine nutrition primarily through consumption of iodized salt, which should be made easily available and affordable for all people for all times.

Mission: The mission of ICCIDD is to provide a focused advocacy to governments and development agencies, of a continued priority for iodine nutrition, providing technical expertise in a multi disciplinary approach.

Dedication: ICCIDD dedicates itself to programs fully supported at the national level for permanent, sustained success and will work with all partners and national entities towards that end.

# Editorial

Dear Colleagues,

Greetings from ICCIDD, New Delhi.

Iodine Deficiency Disorders control activities and Universal Salt Iodization has reached a critical threshold globally. Today nearly 70 percent of the world population has access to iodised salt thanks to the untiring efforts of the iodised salt producers, national governments, donor agencies and non-governmental agencies over last two decades.

But we still have the critical 30 percent population to reach. Ensuring access to adequately iodized salt for this last 30 percent will be extremely challenging to say the least. There is no scope for complacency. Rather, there is need for a re-invigorating our efforts to conquer the last hurdle in achieving USI and sustainable global IDD elimination.

The 63rd World Health Assembly (WHA) was held in month of May in Geneva, Switzerland. Dr Gerrard D Burrow, Chairman ICCIDD read out a statement by International Council for Control of Iodine Deficiency Disorders (ICCIDD) during the WHA. The World Health Organization (WHO) Secretariat presented the 3 yearly progress on global IDD control activities to the World Health Assembly as per the requirements of the WHA58.24 passed in 2005.

In this issue we cover the second meeting of the Salt Commissioner, Government of India's Committee which discussed the progress of Universal Salt Iodization (USI) in India. The protocol of the proposed 8 state IDD survey was discussed and survey methodology was finalized during the fourth meeting of the National Coalition for Sustained Iodine Intake (NCSII) held in ICCIDD, New Delhi in May, 2010.

Over a period of time food habits have changed which may also lead to change in the salt consumption pattern. The last salt consumption pattern survey in India was carried out in 1986-88. There is a need to conduct a nationally representative survey to assess the per capita consumption of salt in India. Also covered in this issue are the abstracts related to IDD and USI published in South Asia from Januray 2009 to December 2009.

Dr. Chandrakant S. Pandav

Regional Coordinator - South Asia Region

## Statement by ICCIDD to the 63rd World Health Assembly by Dr. Gerard R Burrow, Chair of ICCIDD, 21 May 2010, Geneva, Switzerland

Iodine deficiency disorders are the leading cause of preventable mental retardation. Aware of IDD as a public health problem, the World Health Assembly affirmed the issue in 1990, and in 2007 and 2008 resolved that member states report on their progress on iodine status on a triennial basis. The member states are to be commended for their actions in this area.

Global estimates of households with access to iodized salt have risen from 20% to 70% during this period. However, that still leaves almost two billion people uncovered. The goal is sustainable elimination of iodine deficiency disorders, which requires ongoing advocacy at the country level. Therefore, monitoring and evaluation of the impact of programs to eliminate IDD are critical to ensure that the interventions are both effective and safe in protecting the developing fetal brain.

My organization, the International Council for the Control of Iodine Deficiency Disorders, along with WHO as members of the Global Network for Sustained Elimination of Iodine Deficiency Disorders strongly support national efforts to accelerate the goal of elimination of IDD by promoting collaboration among public and private sectors, scientific and civic organizations.

*Dr Gerard Burrow, Chairman, ICCIDD*

I

One of the Committee in session during the 63rd World Health Assembly, May 2010, Geneva

## Progress report by the Secretariat to the Sixty-Third World Health Assembly on "Sustaining the Elimination of Iodine Deficiency Disorders (Resolution WHA 60.21)"

1. Iodine deficiency disorders are an important cause of preventable cognitive impairment. In resolution WHA43.2 the Health Assembly decided that WHO should aim at eliminating them as a public health problem and reaffirmed that goal in resolution WHA49.13. In subsequent resolutions it has urged greater efforts towards strengthening commitments to sustained elimination of these disorders and increasing efforts in reaching those not yet protected from them. An earlier version of this report, which describes progress over the past three years towards their elimination, was noted by the Executive Board at its 126th session in January 2010.

2. Population iodine status has been mapped through the measurement of iodine excretion in school-aged children. Within the five-year period 2004 to 2008, only 37 of WHO's 193 Member States reported national data on urinary iodine concentrations for school-aged children, covering 36.3% of the world's school-age population. These data show that nine countries had a prevalence of low iodine status that was considered to be of public health significance,17 countries had iodine intakes that were adequate, and eight had iodine intakes that were excessive. Three countries had a documented increased risk of thyroid disorders in susceptible groups of people. With only 37 Member States reporting national urinary iodine data for school-aged children between 2004 and 2008, it is difficult to generate a global estimate of iodine deficiency based on national

*A view of delegates attending the 63rd World Health Assembly*

Data alone. When all reports from various administrative levels between 1993 and 2007 are considered, the number of countries having a public health problem of iodine deficiency disorders fell by more than half, from 110 to 47. This year, the Secretariat will launch a global analysis on progress towards eliminating these disorders.

3. The number of countries that provided data on the population iodine status for input into WHO's Vitamin and Mineral Nutrition Information System declined from 47 in 1993 to 2003 to 37 in 2004 to 2008. More data on women of reproductive age need to be generated, as they are an important target of public health programs.

*Strategy for control of iodine deficiency disorders*

4. The preferred strategy for control of iodine deficiency disorders remains universal salt iodization. Salt has been chosen as a vehicle for fortification because its consumption is fairly stable throughout the year; iodization technology is inexpensive and the procedure is easy to implement. Additionally, the concentration of iodine in salt can easily be adjusted to meet policies aimed at reducing human consumption of salt in order to prevent chronic diseases. Salt iodization is more effective when established by law.

5. Iodine supplementation is also recommended, especially for susceptible groups such as pregnant women and young children living in high-risk communities that are unlikely to have access to iodized salt or as a temporary strategy when salt iodization is not successfully implemented. The number of countries with at least


*A visitor at a stand exhibiting WHO programmes and projects at the 63rd World Health Assembly, May, 2010, Geneva*

90% of households consuming adequately iodized salt is now 36 compared to 33 in 2006 and 28 in 2004. Worldwide, 70% of households are still estimated to have access to iodized salt.

6. An Expert Consultation in 2007 on salt as a vehicle for fortification concluded that policies for salt iodization are compatible with those for reduction of salt consumption aimed at preventing cardiovascular diseases. The current recommendation that salt be fortified with iodine at 20 to 40 ppm needs to be adjusted by national authorities in light of their own data on dietary salt intake and the median level of urinary iodine of the population. The Secretariat is currently reviewing its guidelines on the use of salt as a vehicle for iodine fortification and is aiming to produce recommendations for the adjustment of the concentration of iodine in fortified salt according to the dietary salt intake of the population.

*Monitoring and evaluation*

7. Monitoring and evaluation of the impact of programmes to control iodine deficiency disorders are crucial in order to ensure that interventions are both effective and safe. It is currently recommended that countries conduct a national survey on the iodine status of the population every three to five years. Revised guidelines on indicators to assess and monitor these control programmes were published in 2007 by WHO, UNICEF and the International Council for the Control of Iodine Deficiency Disorders. A joint statement by WHO and UNICEF on reaching optimal levels of iodine nutrition in pregnant and lactating women and young children was issued in 2007.

*An NGO representative speaking during the 63rd World Health Assembly, May, 2010, Geneva*

8. WHO will convene a technical consultation in 2010 in collaboration with the Centers for Disease Control and Prevention (Georgia, Atlanta, United States of America) in order to discuss possible methods for generating regional and global estimates of iodine deficiency and of other vitamin and mineral deficiencies, especially in situations where country data are lacking.

*Advocacy*

9. The Network for Sustainable Elimination of Iodine Deficiency supports national efforts to accelerate elimination of iodine deficiency disorders by promoting collaboration among public and private sectors and among scientific and civic organizations. The Network has drawn up a communication plan in order to mobilize decision-makers and public health authorities on the importance of iodine deficiency.

World Health Organization

SIXTY-THIRD WORLD HEALTH ASSEMBLY
Provisional agenda item 11.24

A63/27
15 April 2010

**Progress reports**

**Report by the Secretariat**

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*Progress Report presented by the Secretariat, WHO to the 63rd World Health Assembly, May, 2010, Geneva*

## World Health Assembly Resolution WHA60.21

### Sustaining the elimination of iodine deficiency disorders

The Sixtieth World Health Assembly,

Having noted with appreciation the report on sustaining the elimination of iodine deficiency disorders;

Noting that, although progress has been made by some Member States in the sustained elimination of iodine deficiency disorders in the past two years, between one fourth and one third of the world's population still suffers from this micronutrient deficiency, most of them in impoverished areas of the world;

Concerned that iodine deficiency can prevent the optimal development of children's brains, with possible consequent learning impairment and subsequent social and economic consequences;

Recognizing that the fight against iodine deficiency contributes directly to many of the internationally agreed health-related goals, including those contained in the Millennium Declaration, such as eradicating extreme poverty, reducing child mortality, improving maternal health, achieving universal primary education, and promoting gender equality;

Applauding the support of international organizations, especially WHO, UNICEF, WFP, bilateral development agencies and nongovernmental and private partners, including Kiwanis International, the International Council for the Control of Iodine Deficiency Disorders and the global Network for Sustained Elimination of Iodine Deficiency,

1. URGES Member States:

(1) to redouble their efforts to reach those people not yet protected from iodine deficiency disorders, and to sustain successful programmes on a continuous basis;

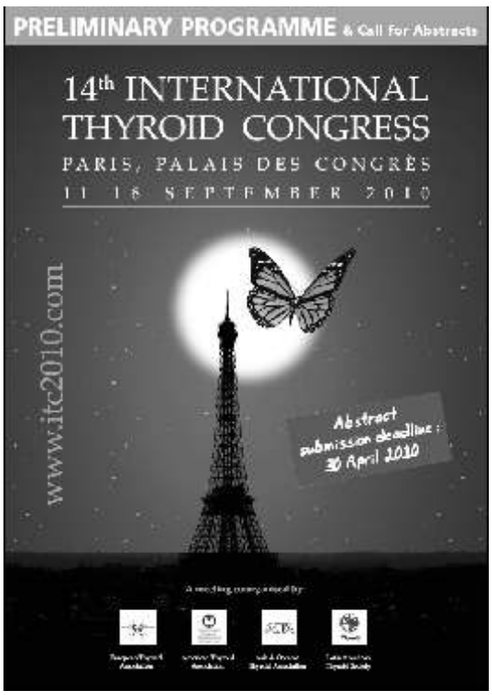
(2) to implement the recommendation in resolution WHA58.24 to establish multidisciplinary national coalitions in order to monitor the state of iodine nutrition every three years;

2. REQUESTS the Director-General to continue to strengthen WHO's cooperation with other organizations in the United Nations system for supporting Member States in fighting iodine deficiency, and to report on iodine status every three years in compliance with resolution WHA58.24.

(Eleventh plenary meeting, 23 May 2007

Committee B, third report)

## Conference Announcement- 14th International Thyroid Congress




This programme is available on the web and will be regularly updated :

www.itc2010.com

KEY DATES TO REMEMBER

- Deadline for abstract submission: 30 April 2010
- Deadline for early bird registration: 30 June 2010
- Deadline for hotel reservation: 10 July 2010

# Fourth meeting of National Coalition for Sustained Iodine Intake (NCSII),
## 17th May, 2010, Centre for Community Medicine (CCM), All India Institute of Medical Sciences(AIIMS), New Delhi

The agenda of the fourth meeting of National Coalition for Sustained Iodine Intake (NCSII) held on 17th May, 2010 at New Delhi, was to plan and discuss the protocol of proposed study on the consumption of adequately iodized salt in the rural areas of eight states of India.

The meeting was chaired by Mr Sundaresan, Salt Commissioner, Government of India and Dr B K Tiwari, Advisor (Nutrition), Government of India. The meeting was attended by the representatives from WHO, UNICEF, WFP, GAIN, MI, ICCIDD and ACNielsen ORG MARG. The meeting was hosted by the Secretariat, NCSII, c/o Centre for Community Medicine, All India Institute of Medical Sciences, New Delhi. Dr Chandrakant S Pandav welcomed all the participants on behalf of ICCIDD, AIIMS and National Coalition for Sustained Iodine Intake (NCSII).

Dr. B. K. Tiwari, Advisor Nutrition, Ministry of Health & Family Welfare in his opening remarks welcomed the initiative of joint discussion by the partner agencies and Government of India. He informed the group that Govt. of India has started annual assessment of household level salt iodization at 261 districts of 8 Empowered Action Group (Uttar Pradesh, Madhya Pradesh, Bihar, Jharkhand, Rajasthan, Uttarakhand, Orissa & Chattisgarh) of states which will be conducted using Salt Testing Kits (STKs).

Mr. S. Sundaresan, Salt Commissioner, Govt. of India opined that at the time when NFHS III study was conducted (i.e 2005-06) the Govt. of India had lifted the ban on sale of non-iodized salt for edible purpose and also there was a stiff rise of railway tariff coming into effect. These two reasons had adversely affected the availability of adequately iodized salt in India. Since then India has made tremendous progress in the production of iodized salt. During 2008-09, India produced more than 5.4million ton iodized salt out of which more than 2.6 million ton was iodized refined salt. The production level information generated through Salt Commissioner's Office indicates that the level of adequate iodization at household level should hover around 70% during 2009-10. NFHS next round is scheduled for 20011-12. Hence, there is a need for a national level or equivalent study which is conducted through the reputed research agency following a statistically valid research protocol.

Mr. Pramod Padhy from AC Nielsen ORG MARG presented the study protocol to the participants. A detailed discussion was held on the methodology of the study and the following observations/ comments / suggestions emerged during the discussion of the study protocol-

1. The salt samples are being collected from 960 villages from 8 states i.e. 120 villages per state. Ten samples from each of the villages will be collected. Sample number will be proportionate to the size of the village.
2. How the study is going to help organizations to address programmatic concerns, should be considered.
3. Suggestions were provided on how to increase the scope of the study and collect salt samples from Public Distribution System (PDS), Integrated Child Development Services( ICDS) and mid-day meal schemes also.
4. Concerns were raised on why Urinary Iodine (UI) concentration was not included in the study protocol and suggestions were made how the same could be included.
5. Suggestions were given on collecting information on brand of salt and type of salt being consumed by the respondents of the study
6. Discussion took place on as to how the study could include at least one better performing state according to NFHS III.

*The National Coalition for Sustained Iodine Intake (NCSII) meeting in progress...*

7. Discussions also took place on how to map the wholesalers of salt in the districts that are being covered through the study and if the salt samples could be collected from the retailers and wholesalers as well

8. It was also suggested if study could also cover quantity of salt consumed by individuals

9. It was proposed that the authorship of the study could be jointly owned amongst all the major stakeholders like MI, WFP, GAIN, Unicef, ICCIDD, Government of India, WHO and ORG MARG.

10. Discussions took place on how the scope of the study could incorporate the cost structure of the salt at production, processing, traders, wholesaler, retailer and individual customer level.

11. The representatives from the MI explained to the group their resource constraints in incorporating all the suggestions put forward and requested other agencies to become partners in the study.

The Chairperson, Mr. S. Sundaresan advised MI to share with all stakeholders the current study design and the questionnaires for comments. He also suggested to share two scenarios which are given below for other stakeholders to decide whether they could be interested in joining hands in the study-

- Scenario Number I: In case the same study needs to be conducted at the national level what would the tentative protocol and cost of the study be. The study would not include UIE.

- Scenario Number II: In case the same study needs to be conducted at the national level, which will also include UIE what would the protocol and tentative cost of the study be.

MI agreed to share the two scenarios with all the stakeholders by May 19, 2010 and also requested stakeholders to revert within a week's time. Other partner agencies including WHO, GAIN and UNICEF assured the group that they would explore the feasibility of mobilizing resources within their organization to support the expansion of the survey to all states of India and also the incorporation of Urinary Iodine (UI) estimation. The partner agencies would report to the larger group by early next week regarding the same.

## Protocol of study on the Consumption of adequately iodized salt in the rural areas of eight states of India

*Background of the study:* The National Goiter Control Program (NGCP) was launched in India in 1962 and the scope of this program was enlarged and the name was also changed to National Iodine Deficiency Disorders Control Program (NIDDCP) in 1992. The Government of India in 1997 introduced a promulgation banning the sale and storage of non-iodized edible salt in the country. The installed capacity of iodized salt production increased from 1.6 million tons in 1986 to 14 million tons in 2000, an almost nine-fold increase.

Although the progress in production and distribution of iodized salt in India is impressive, it falls far short of the target. According to the recent NFHS III (2005-06), only 51% consume iodized salt that is adequately iodized i.e. containing 15 parts per million of iodine at the household level. The use of iodized salt is much higher in urban areas (72%) than in rural areas (41%). Analysis of data to highlight socioeconomic trends indicates that a disproportionately large percentage of the rural poor do not have access to adequately iodized salt. Increases in iodized salt production have asymmetrically benefited India's population, leaving the most vulnerable and socio-economically disadvantaged segment of the population at the greatest risk.

*Hypothesis:* Since the ban on non-iodized salt was reimposed only in November, 2005 after most of the NFHS-3 fieldwork had been completed, there is a general assumption that NFHS III underestimates the level of iodized salt availability in the country. The supply side interventions supported by the MI are likely to increase the availability of iodized salt among those households who use non-refined salt for their every day consumption. As non-refined edible salt is consumed more in rural areas rather than urban areas, which have higher penetration of refined salt, it is assumed that the increase in the household coverage of adequately iodized salt will be more marked in rural households. Further the proportion of rural households consuming adequately iodized salt in these eight states is as follows:

*Table - 1 : Proportion of rural households and all households consuming adequately iodised salt in 8 states of India.*

| Sl.No. | State | Proportion of rural households Consuming adequately iodized Salt | | Proportion of all households consuming adequately iodized salt | |
|---|---|---|---|---|---|
| | | NFHS III (2005-2006) | NFHS III (1998-1999) | NFHS III (2005-2006) | NFHS III (1998-1999) |
| 1. | Andhra Pradesh | 20.3% | 20.6% | 31.0% | 27.4% |
| 2. | Karnataka | 27.6% | 29.9% | 43.3% | 43.5% |
| 3. | Tamil Nadu | 30.6% | 12.4% | 41.3% | 21.3% |
| 4. | Orissa | 32.4% | 30.9% | 39.6% | 35.1% |
| 5. | Rajasthan | 29.2% | 37.7% | 40.8% | 46.9% |
| 6. | Madhya Pradesh | 25.5% | 49% | 36.3% | 56.6% |
| 7. | Uttar Pradesh | 27% | 41.5% | 36.4% | 48.9% |
| 8. | Uttara Khand or Chal | 32.8% | 44.5% | 45.9% | 56.8% |
| 9. | India | 41.2% | 41.5% | 51.1% | 49.4% |

*Objective of the study:* To assess proportions of households in rural areas of 8 states in India that are consuming adequately iodized salt (where the level of consumption of iodized salt at state level was lower than the all India NFHS III average of 51.1%) (Table - 1). The 8 states are- Andhra Pradesh, Karnataka, Madhya Pradesh, Orissa,Rajasthan, Tamil Nadu, Uttarakhand and Uttar Pradesh.

*Survey plan:* Cross sectional surveys would be carried out in representative samples of the rural areas in each of the 8 states listed above. The chief outcome being studied would be the proportion of the households consuming adequately iodized salt in rural areas of 8 states in India.

The required sample size for each state has been estimated as follows:

- The sample size has been calculated for + /- 5% precision levels
- The sample size required for the study was based on assumption that 50% of households consume adequately Iodized salt in the study population.
- As the design effect varies from 1.973 for Uttar Prabesh 3.141 for Madhya Pradesh, the design effect has been chosen as 3.
- Therefore using the formulae N = D.E* 2 * (p*(100-p)/d2) and rounding off to nearest round figure in hundreds, it has been estimated that a sample size of 1200 households will be surveyed in each state to collect and test salt samples Which are consumed by these households.

WHO recommended 30 clusters sampling methodology will be adapted for the study. 120 clusters will be selected using probability proportionate to size sampling using Census 2001 rural population of each state as reference. In each cluster, 10 households will be randomly selected using a pre defined protocol for collection of salt that was used for cooking the last meal before the investigator reached the household selected.

Methodology of salt sample collection: at least 50 grams of salt should be collected in each sample. For this purpose a pre designed scoop will be provided along with the packaging to enclose the salt and ship safely. While collecting the sample, the collector should identify the head of the household and administer the basic questionnaire.

## Second meeting of the Committee to monitor and facilitate the pace of the activities related to Universal Salt Iodisation (USI) in India, 4th June, 2010, New Delhi

The second meeting of the Committee to monitor and facilitate the pace of the activities related to Universal Salt Iodization (USI) was held in New Delhi on 4th June, 2010. The meeting was chaired by Shri Sundaresan, Salt Commissioner, Government of India. The meeting was attended by Dr M A Ansari, Deputy Salt Commissioner, Shri K R Vadheeswaran, Deputy Secretary, Ministry of Commerce and Industry, Dr B K Tiwari, Advisor (Nutrition), Ministry of Health and Family Welfare, Dr Sheila Vir, Consultant, UNICEF, Dr Pankaj Jain, Micronutrient Initiative, Shri Suvabrata Dey, Micronutrient Initiative, Dr Arijit Chakrabarty, Global Alliance for Improved Nutrition, Dr Kapil Yadav, Indian Coalition for Control of Iodine Deficiency Disorders, Dr Nidhi Chaudhary, WHO, Dr Shariqua Yunus, World Food Program, Shri R M Bunkar, Superintendent of Salt, Salt Commissioners Office and Shri Ram Singh, Inspector of Salt, Salt Commissioner's Office.

The Chairman, Shri Sundaresan, in his opening remarks, extended a warm welcome to all the members of the committee. He stated that India is self sufficient in production of both salt and iodzed salt. We have produced about 23.8 million tonnes of common salt during 2009-10. Our overall requirement of salt for edible and industrial consumption is around 20 million tonnes including export to several countries. The iodized salt production in the country has also increased to 5.83 million tonnes against the target of 5.4 million tonnes for the year 2009-10. The prices of salt at production sources have come down significantly in the previous year due to the highest ever production during year 2009-10. Significant progress has also been made in increasing the production and supply of iodized salt to the population. At present about 70 per cent of household are estimated to have access to iodized salt in India. This estimate is based on the production end and quality assurance laboratory data as well as on feedback received from the State governments. It is a cause of concern that about 30 percent of population is still consuming inadequately/non iodised salt, particularly the segment of the population belonging to socially and economically disadvantaged sections of the society.

Delivering his address, Dr B K Tiwari, Advisor (Nutrition), Directorate General of Health Services, Ministry of Health and Family welfare, explained the importance of micronutrients like iodine and iron besides Vitamin B6 and B12. Dr Tiwari informed that the Ministry of Health and Family Welfare is going to conduct Annual Health Survey in 284 districts (Phase 1) in the country to assess the impact and outcome of various health and welfare program. The survey will be conducted by Directorate General of Health Services. The six parameters to be included in first phase of the survey will be the a) Blood and Urine Sugar, b) Blood Pressure, c) Hemoglobin, d) Height, e) Weight, f) Iodized Salt Consumption. The survey will be conducted by using population proportionate to size and 10% of the population/households of each district will be covered during the survey. He also discussed operational guidelines for District IDD survey, study design and methodology, IDD prevalence indicators and criteria for classifying IDD as a significant public health problem and intensive training of medical/paramedical personnel as per the Revised Policy Guideline of NIDDCP document. He requested the stakeholder organizations to assist to make Information, Education and Communication (IEC) spots (around 9-10) for advertisement through print and electronic media. He urged all the stakeholders to organize a joint action plan for celebration of Global IDD Day. Ministry of Health and Family Welfare, New Delhi is procuring Salt Test Kits and providing it to the Chief Medical Officers of each district in the country. If any agency requires these STKs, they can procure the same, free of cost, by putting a request to National IDD Cell through the concerned State Government.

Dr. R. Sankar, GAIN, suggested that an urgent preliminary meeting of all stakeholder organizations may be called to prepare an agenda for organizing the Global IDD Day. An event manager may also be contracted for conducting the Global IDD Day celebration.

Dr Tiwari also stated that so far he has not received any proposal for conducting the sensitization workshops for awareness of consumption of iodised salt and consequences of IDD from any of the agencies. All the partner agencies assured that they will actively pursue the above request.

After confirmation of the minutes of the first meeting held on 18th November, 2009, the agenda was taken up to review the progress of the work plan of activities being undertaken by the various stakeholder organizations. Discussion was held on several points, such as recent iodine nutritional status, effective monitoring system and feedback mechanism, packing and labeling of iodized salt etc.

## Global Iodine Deficiency Day (IDD) celebration in Nagpur, 21st October, 2010

Global IDD Day celebrations were organized at Nagpur by the State Health and Family Welfare Department, Government of Maharashtra State. The program was held over two days. The celebration started with a "Prabhat Pheri", a march by the school students. The function was inaugurated by Dr. Ganesh Ramteke, Assistant Director (Leprosy) at Phutala Slum, Nagpur. Also present were Dr. Kannamwar, Administrative Director, Smt. Kannaka, Health Education Officer, Shri R. P. Rokade, Scientific Officer, State Health and Family Welfare, Government of Maharashtra. Over 49 Multi Purpose workers (MPW), Family Welfare Department along with Supervisors & workers from Nutrition Department participated in the program. Salt iodine testing using Rapid Test Kits (RTKs) was demonstrated by Smt. Vinita Kshirsagar, Nutrition Department. Over 50 salt samples obtained from households & retailers of the Phutala Slum were tested for iodine content using RTKs. All the samples were found to be adequately iodised (> 15 ppm of iodine). Smt. Kannaka, Health Education Officer, gave a health talk regarding benefits of adequately iodised salt to the pregnant mothers in the slum community of Phutala.

On the second day the program focussed on the role of MPWs in promoting use of adequately iodized salt consumption in the community. The program was held at the Auditorium of Health and Family Welfare Training Centre, Nagpur. The educational feature film on Iodine Deficiency Disorders and its elimination, titled "Trishna" produced by ICCIDD was screened. A question answers interactive session moderated by Shri. R. P. Rokade, Scientific Officer and his team from the Nutrition Department was held. A competitive quiz on Iodine Deficiency Disorders was organized and the winners of the quiz were felicitated and the celebrations concluded.

The Global IDD day celebrations received wide coverage in the local and national print and electronic media. The two day program was covered by five Marathi language newspapers (Sakal, PunyaNagari, Lokmat, Tarun Bharat & Loksatta) and one Hindi Newspaper (Nav Bharat).


*Shri R. P. Rokade making a presentation on IDD during the Global IDD day celebrations in Nagpur, Maharashtra, INDIA*

# Under new law, life imprisonment for food adulteration
## 20th April, 2010, The Indian Express, New Delhi

The new anti-adulteration law makes food adulteration an offence punishable with life imprisonment and manufacturers can be fined up to Rs 10 lakh, Health and Family Welfare Minister Ghulam Nabi Azad said.

Replying to supplementaries during Question Hour in Rajya Sabha, he said the Food Safety and Standards Act passed by the Parliament in 2006 will come into force in next 3-4 months.
The Act integrates multiplicity of provisions under various food related laws. It will among other things regulate food safety standards and uniform licensing in the country.

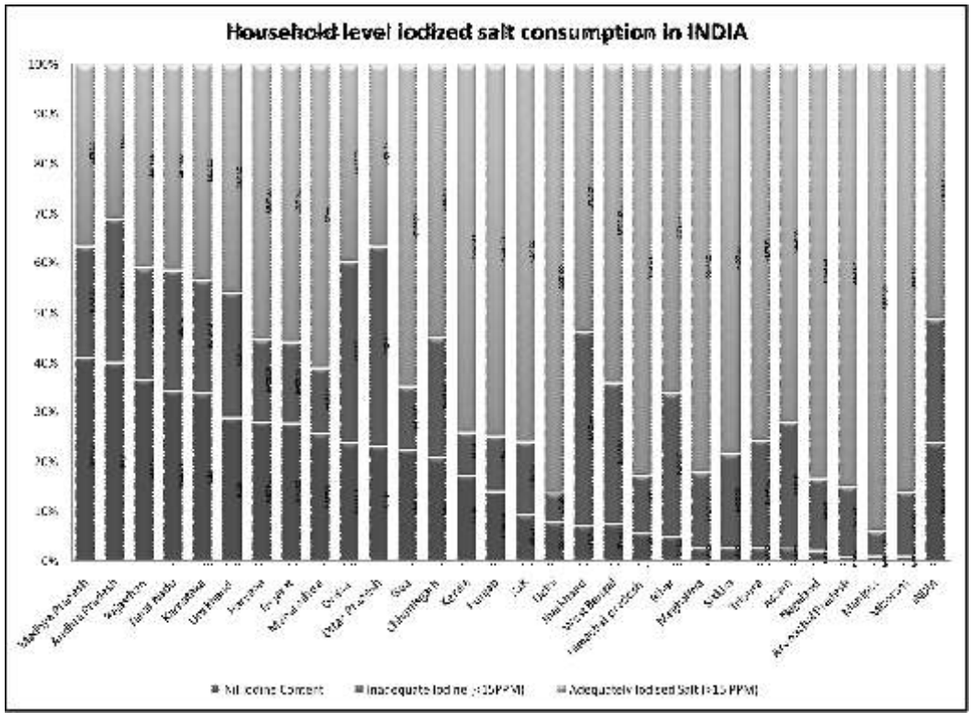
Of the 101 sections in the Act, so far 43 have been notified and the rest will be notified shortly, he said.
The delay, he said, was mainly because several subjects were not under the Health Ministry and had to be brought under a common ambit.

Employees under various departments had to be transferred to the Food Safety and Standard Authority of India that has been established under the Act.

"In 3-4 months, this (Act) will become law," he said.
The new Act provides for penalty on manufacturers of adulterated food items including fine of Rs 1 lakh to Rs 10 lakh to be adjudicated by an officer of the rank of Sub-Divisional Magistrate. Earlier, the fine was to be decided by the court, which will now decide on imprisonment.

Adulterers face 6-month to life imprisonment, he said.
"The new Act aims to ensure safe, hygienic and wholesome food for the citizens of the country. It also bestows responsibility on the food manufacturers and traders to manufacture and supply safe, hygienic and wholesome food," he said.
It also provides provisions regarding food recall procedures and improvement notices. Adjudication processes have also been introduced for speedy disposal of cases under the new Act, he added.

"I agree that the speed at which state governments should have been taking lead (in controlling adulteration) is not happening," he said, adding only 7.21 per cent of samples collected by states during last three years have been found adulterated.



# Salt Consumption Pattern in India- ICMR Task Force Study (1986-88)

*Introduction:* Salt is an essential food commodity consumed by rich and poor. Due to its unique characteristics (consumed in fix amount, low cost, no change in taste and color) salt has been identified as ideal vehicle for micronutrient fortification like iodine and iron. Salt has been successfully used as vehicle for iodine fortification globally and in India since 1950s. Government of India in year 1997 made iodization of edible salt meant for human consumption mandatory under Prevention of Food Adulteration (PFA) Act, 1954. The level of iodization of salt is determined not only by the Recommended Daily Allowance (RDA) of iodine but also the per capita salt consumption and estimated loss of iodine (added to salt) from production end to consumer end.

The salt consumption pattern is expected to have changed over last two decades due to change in dietary practices and also because of rising concern over association of salt consumption and hypertension and cardiovascular diseases. Agencies like World Health organization (WHO) have recommended restriction of the salt consumption to less than 5 gm per day. The change in salt consumption pattern (decrease) would translate into inappropriate amount of micronutrient (iodine) being delivered to target population.

Any change in per capita salt consumption would require a commensurate change in prescribed norms of salt iodization in the country. Also there has been improvement in packaging of edible salt and improvement in quality of salt (both of which leads to decreased losses in iodine content from production level to consumer level). This again warrants a change in prescribed norms of salt iodization.

There have been no nationally representative studies over last two decades estimating the per capita salt consumption in India. The last nationally representative study estimating the per capita salt consumption was conducted in year 1986-88 by the Indian Council for Medical Research. The salient features of the study are highlighted below.

It is imperative that nationally representative study is carried out in the country to address this knowledge gap. The information generated by the study would be helpful in revising the iodine fortification levels in the country. Thus, ensuring optimal iodine nutrition of children and pregnant women in India.

*Objectives:* The objectives of the project were to study:

1. The salt consumption pattern in different parts of the country.
2. The per head daily consumption of common salt in different seasons of the year in cooking and on plate.
3. What type of salt is preferred and why for cooking and other purposes.
4. The cost and source of procurement of salt.
5. The time interval between salt procurement and its use.

*Methodology and Study Design:* A total of 13 states had been selected from where districts representing plains (12), coastal (6) and hill or tribal (7), the three defined strata as existing in the states could be selected. One district each of desert and mountain desert were also included in the study. The selected states were Andhra Pradesh, Bihar, Assam, Gujarat, Haryana, Jammu & Kashmir, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Uttar Pradesh and West Bengal.

*Sampling Design:* In each selected state, 2 districts were selected. In the second stage 12 primary health centres (PHCs) were randomly selected from each district. Villages in selected PHCs were then classified on the basis of population size as below:

1. Villages having population less than 1000.
2. Villages having population 1000-3000.
3. Villages having population >3000.

From each selected PHC, 9 villages from group 1 and 3 villages each from group 2 and 3 were randomly selected. Survey was conducted in three seasons viz. winter, summer and rainy ; each season comprising of four months of the year as follows: Winter: November to February, Summer: March to June, Rainy: July to October. Whenever needed slight adjustments were made.

In each season, three villages from selected villages of group 1 and 1 each from groups 2 and 3 were surveyed. Thus, in each season and in each selected PHC, 5 villages were surveyed. From these 5 villages a total of 100 households were surveyed, the number of households in each village being determined by proportional allocation of total households. Households were selected randomly, which was the primary units of sampling.
In these households detailed information was collected in pre coded proforma on:

a) Amount of salt consumed per month by the households for human, animal, plant and other purposes,
b) Per month cost of salt per kg,
c) Type of salt consumed,
d) Distance and place of procurement,
e) Frequency of procurement, storage arrangement,
f) Preference for salt type in household

Detailed account on food consumption pattern of special use of salt in food if observed was also collected in 20% of household proforma. However, most of the centres had collected this information in all the households.

Considering the problem of classifying different types of salt in the field, it was decided to classify salt into crystal and powder only. And, if possible, to classify both the types into coloured and white.

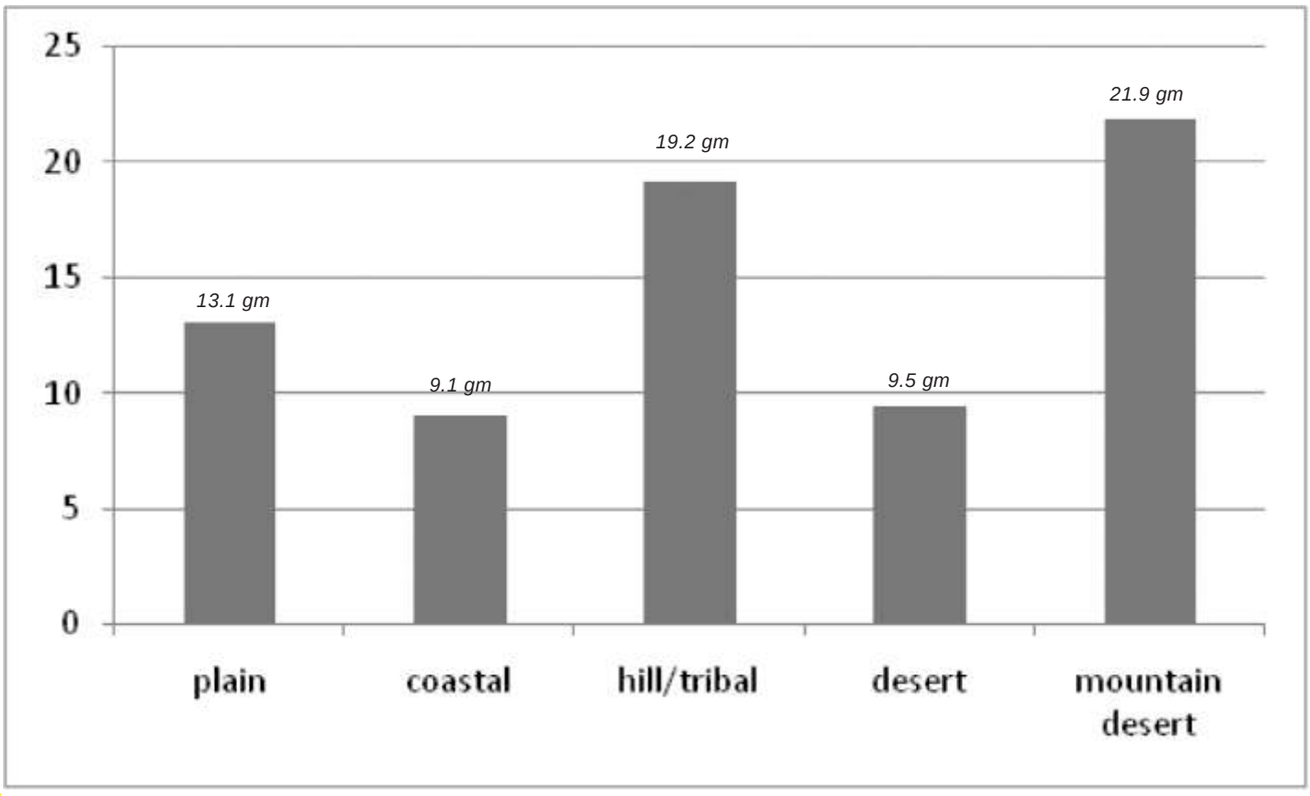
In the selected villages, all the shopkeepers selling salt were also interviewed and details of procurement of various types of salt, storage arrangement, frequency and amount procured, source of procurement were collected in precoded proformae, that is, shopkeepers proformae.

These 3 proformae were administered in each of the 3 seasons, viz, winter, summer and rainy representing the 3 seasons.

*Results:* In the 13 states- 27 districts representing plains, coastal, hill/tribal, desert and mountain desert areas were selected for the study. In the second stage 16583 households with a population of 112742 were selected in the 3 seasons viz. winter, summer and rainy. Except for Gujarat state, the households selected in each district in a season were around 200. In Gujarat state, the district representing coastal area covered 80, 37 and 78 households in the 3 seasons. The average household size in the plains was 7.0, in coastal 6.5, in hill or tribal 6.3, in desert 8.1 and in mountain desert 7.4.

Type of Salt in Use: Use of crystal salt was found to be more prevalent than powder salt. Out of a total 16553 households (non response 30) 15154 (91.5%) used crystal salt of which 11270 (68.1%) were using white crystal and 3884 (23.5%) coloured crystal salt. Powdered salt was used by only 1399 (8.5%) households of which 1355 (8.2%) used white powder and 94 (0.3%) used coloured powder salt.

*Figure - 1: Mean Per capita salt consumption in different geographical areas of India*

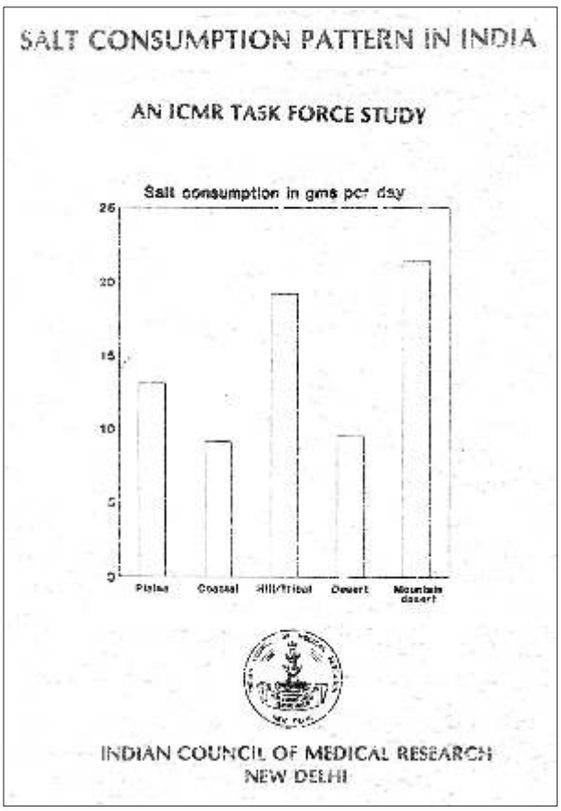


*Use of Salt:* Total quantity of salt used for human consumption in a month was 44799.0 kg for 107864 persons, on the average 1 person consuming 13.8 gms per day in the study area. In plains, the average per capita per day consumption was 13.1gms and in coastal areas 9.1 gms (Figure - 1). In hill or tribal area average per capita per day consumption was 19.2, higher than in plains or coastal areas. In desert area of Rajasthan the average per capita per day consumption was 9.5gm. In mountain desert area of Jammu and Kashmir state average per capita per day consumption of 2 seasons was 21.9gm. Seasonal variation was not observed between winter and summer in plains while in rainy season it was almost 1gm more.

*Frequency of Purchase of Salt :* Out of a total 16511 households who had responded for frequency of purchase of salt, 12942 (78.4 %) households purchased either monthly or at shorter intervals. Another 793 (4.8%) and 781 (4.7%) households purchased at quarterly and 4-6 monthly interval and 1995 (12.1%) households at more than 6 months interval.

*Reasons for Use of Different Types of Salt:* It was found that 31.5% of the total households who responded for this information, used crystal salt as it was the only available salt to them and 18.5% of them used it because it was cheap. Another 16.9% used crystal salt because it was used customarily since long time.

*Mode of Use of Salt:* Salt was used directly by almost all the households for cooking and on plate. Crystal salt was found to be used after washing by 7.8, 31.0, 31.5, 16.5 and 20.7 percent of households in Gujarat, Jammu and Kashmir, Madhya Pradesh, Maharashtra and Uttar Pradesh and as solution mainly in Kerala (50.5%). Powder salt was used mainly directly. In the overall 8.5% of households used salt after washing and 3.7% as solution.




## Micronutrient Status of Women (18-30 years) in Ramtek Block, Nagpur, INDIA

*Authors:* Menon K, Skeaff SA, Thomson CD, Otago University, Dunedin, New Zealand; Ferguson EL, London School of Hygiene and Tropical Medicine, London, England; Zodpey S, Public Health Foundation of India, New Delhi; Pandav CS, All India Institute of Medical Sciences, New Delhi, India

The existence of concurrent micronutrient deficiencies in Indian women of reproductive age has received little attention. This study aimed to assess the iodine, zinc, iron, vitamin B12, folate and vitamin A status of women of 18-30 years. Participants (n=109) were randomly selected using a proportion-to-population sampling method from 12 subcenters in Ramtek Block, Nagpur. Anthropometric and biochemical data, including blood and urine samples, was obtained. Mean(SD) weight, height and BMI of the women was 41.6(7.4) kg, 151.6(10.0) cm and 18.5(6.2) kg/m2, respectively; 66% of women had a BMI<18.5. The median urinary iodine concentration was 215µg/L (Inter Quartile Range: 126,373). The percentage (95% Confidence Interval) of women with low values for serum zinc (<74µg/dL), haemoglobin (<120g/L), vitamin B12 (<200pg/mL), folate (<3ng/mL) and retinol (<20µg/dL) was 64%(61,67), 64%(54,73), 36%(27,46), 3%(1,8) and 6%(2,12), respectively. Zinc, iron and vitamin B12 constitute the principal micronutrient deficiencies in Ramtek women of childbearing age.

# Abstracts related to Iodine Deficiency Disorders in South Asia, January 2009 to December 2009

1. Panigrahi A, Mishra K, Mohapatra B. Iodine status of women in reproductive age group in urban slums of Cuttack City, Orissa. *Indian J Public Health. 2009 Jan-Mar;53(1):34-6.*

*Abstract*- A community based cross-sectional study involving 168 women of reproductive age was carried out in urban slums of Cuttack city in 2005 to assess the iodine status. Pre-designed, pre-tested schedule was used to collect relevant information & urine samples collected from the study subjects were analyzed by ammonium persulfate digestion method to estimate the iodine level. The median urinary iodine concentration of the study subjects was 64.5 microg/L, 62.5% of study population had iodine deficiency i.e. < 100 microg/L & among them, 74.3% had moderate to severe iodine deficiency i.e. <50 microg/L. Iodine deficiency was significantly higher among women of Muslim religion & Hindu Scheduled Caste & those coming from joint families.

2. Pandav CS, Somos-Krishnan A, Chakrabarty A, Karmarkar MG. Micronutrients towards India's GDP growth--snapshot on India's quest towards sustainable and permanent solutions to eliminate iodine deficiency disorders.*Indian J Pediatr. 2009 Jan; 76(1):110-1.*

*Abstract not available*

3. Kapil U. Urinary iodine excretion levels amongst schoolchildren in Haryana. *Indian Pediatr. 2009 Jan;46(1):57-9.*

*Abstract*- This study was conducted in 2006 to assess the current iodine nutriure of the population in Haryana by assessing the urinary iodine excretion levels amongst the school age children between 6-12 years. Altogether 3,019 urine samples were collected from all the 19 districts in Haryana. The urinary iodine was analyzed by using wet digestion method. Less than 1 % of children had urinary iodine excretion levels below 20 mcg/L. Percentage of children with urinary iodine concentration 21-50 mcg/L, 51-99 mcg/L, and 100 mcg/L were 0.8%, 6.2% and 92.6% respectively. We conclude that the Universal Salt Iodization program is being successfully implemented in the state as the population has adequate iodine status at the time of the survey.

4. Usha Menon V, Sundaram KR, Unnikrishnan AG, Jayakumar RV, Nair V, Kumar H. High prevalence of undetected thyroid disorders in an iodine sufficient adult south Indian population. *J Indian Med Assoc. 2009 Feb;107(2):72-7.*

*Abstract*-India is in the transition phase from iodine deficiency to iodine sufficiency, and this is expected to change the thyroid status of the population. The thyroid status and auto-immune status of adult Indian population in the postiodisation phase is largelyunknown, and this study was conducted to answer this question. A cross-sectional population survey was conducted in two phases among the residents of urban coastal area of central Kerala. The initial phase included a house-to-house survey of 3069 adults (>18 years of age), selected by cluster sampling method. From the surveyed population, 986 subjects underwent further physical examination and biochemical evaluation for thyroid function, thyroid autoimmunity status and iodine status. The total prevalence of goitre was 12.2% and median urine iodine excretion was 211.4 mcg/l (mean 220.3 +/- 99.5 mcg/l) indicating iodine sufficiency. Thyroid function abnormalities were present in 19.6% of subjects. Subclinical hypothyroidism was present in 9.4%. Among the population with normal thyroid function, 9.5% and 8.5% respectively had positive anti-TPO and anti-TG antibodies. Among those with thyroid dysfunction, 46.3% had positive anti-TPO and 26.8% were anti-TG positive. A significant proportion of this iodine-sufficient adult population had thyroid disorders. Further studies are required to characterise the reasons for this high prevalence. Iodine deficiency as well as thyroid dysfunction should both be the focus of public health strategies in susceptible populations.

5. Vinodkumar M, Rajagopalan S. Multiple micronutrient fortification of salt. *Eur J Clin Nutr. 2009 Mar;63(3):437-45.*

*Abstract- Background/Objective:* To develop a salt fortified with multiple micronutrients, to test its stability during storage and cooking, and to assess its efficacy in improving the micronutrient status and the health of schoolchildren. *Subject/Methods:* A salt fortified with multiple micronutrients was developed containing chelated ferrous sulfate and microencapsulated vitamins A, B1, B2, B6, B12, folic acid, niacin, calcium pantothenate and iodine. Its stability during 20 min of cooking and 6 months of storage was determined. Thereafter, the efficacy of the salt was assessed in 5- to 15-year-old schoolchildren in Chennai, India. For the experimental group (N = 119), the food in the school kitchen was cooked with fortified salt for a period of 1 year. The control group (N = 126) consisted of day scholars who did not eat at the school. Hemoglobin, red blood cell count, hematocrit, serum vitamin A and urinary iodine were measured at baseline and at the end of the study after 1 year. *Results:* All micronutrients were stable during cooking and storage. Over the study period, there was a

significant improvement (P<0.05) in hemoglobin, red cell count, urinary iodine and serum vitamin A in the experimental group, while there was a significant drop (P<0.05) in hemoglobin, hematocrit, red cell count and urinary iodine in the control group. In the experimental group, there was a mean increase of 0.55 g/dl in hemoglobin, 0.001 l/l in hematocrit, 0.470 million/mm(3) in red cell count, 212 microg/l in urinary iodine and 5.6 microg/dl in serum vitamin A. *Conclusion:* The study shows that the salt fortified with multiple micronutrients is stable during cooking and storage and effective in combating multiple micronutrient deficiencies.

⑥ Priya R, Kotwal A, Qadeer I. Toward an ecosocial epidemiological approach to goiter and other iodine deficiency disorders: a case study of India's technocratic program for universal iodization of salt. *Int J Health Serv. 2009 April-June;39(2):343-62.*

*Abstract-* The program of universal salt iodization (USI) was intensified in the 1990s. Unfortunately, a recent World Health Organization review finds that there was a global increase of 31.7 percent in total goiter rate from 1993 to 2003. However, the WHO review places only 1 country as severely, 13 as moderately, and 40 as mildly deficient in populations' iodine nutrition, and places 43 countries at optimal, 24 at high, and 5 at excessive levels of iodine nutrition. Thus, it is imperative to weigh the benefits and risks of intensifying USI further. The WHO review places India in the category of "adequate" iodine nutrition, but in 2005 the Government of India promulgated a universal ban on sale of non-iodized salt, calling iodine deficiency disorders (IDDs) a major public health problem. This article attempts to understand these contradictions and weigh the benefits and costs of USI. Based on a review of studies since the 1920s, the authors reconstruct the evolution of IDD control in India. Conceptual and methodological limitations challenge the evidence base and rationale of stricter implementation of USI now. Finding evidence for its negative impact, the authors recommend a reexamination of the USI strategy and propose a safer, people-centered, ecosocial epidemiological approach rather than a universal legal ban.

⑦ Chandra AK, Bhattacharjee A, Malik T, Ghosh S. Etiological factors for the persistence of endemic goiter in selected areas of Siddharthnagar district in Eastern Uttar Pradesh. *India.J Pediatr Endocrinol Metab. 2009 Apr;22(4):317-25.*

*Abstract- Aim*: To assess the prevalence of goiter, state of iodine nutrition of the population, consumption pattern of common goitrogenic food, and distribution of iodine through edible salt in selected CD Blocks of Siddharthnagar district in Eastern Uttar Pradesh. *Methods:* Goiter survey among 1,862 school children, aged 6-12 years, of both sexes, and analysis of iodine (I) and thiocyanate (SCN) in 240 urine samples, and iodine content in 210 edible salt samples collected from the selected study areas. *Results:* The prevalence of goiter was 26.3% (grade 1: 23.2%; grade 2: 3.1%). Median urinary iodine level was 6.0 microg/dl, and 42% had concentration < 5 microg/dl. Mean (SD) urinary SCN was 0.75 (0.4) mg/dl. Only17.1% of salt samples had iodine level > 15 ppm; 82.9% had < 15 ppm. *Conclusion:* Consumption of inadequately iodized salt and cyanogenic plant foods containing goitrogenic/anti-thyroidal substances by the people of the studied region are possible reasons for the persistence of goiter during the post salt iodination phase.

⑧ Panigrahi A, Mishra K, Mohapatra B. Status of iodized salt coverage in urban slums of Cuttack city, Orissa *Indian J Community Med. 2009 Apr;34(2):145-7.*

*Abstract- Background:* For sustainable elimination of iodine deficiency disorders (IDD), it is necessary to consume adequately iodized salt on a regular basis and optimal iodine nutrition can be achieved through universal salt iodization. *Objective:* To assess the extent of use of adequately iodized salt in the urban slums of Cuttack. *Material and Methods:* Using a stratified random multi-stage cluster sampling design, a cross-sectional study involving 336 households and 33 retail shops selected randomly from 11 slums of Cuttack was conducted in 2005. A predesigned pretested schedule was used to obtain relevant information and salt iodine was estimated qualitatively by using a spot testing kit and quantitatively using the iodometric titration method. *Statistical Analysis*: Proportion, Chi-square test. *Results:* Only 60.1% of the households in urban slums of Cuttack were using adequately iodized salt i.e., the iodine level in the salt was > / = 15 ppm. Iodine deficiency was significantly marked in sample salts collected from katcha houses as compared with salts collected from pucca houses. Households with low financial status were using noniodized/inadequately-iodized salt. Both crystalline and refined salts were sold at all retail shops. Crystalline salts collected from all retailers had an iodine content < 15 ppm and refined salts collected from one retailer had iodine content < 15 ppm. About 48.5% of salt samples collected from retail shops were adequately iodized. *Conclusion:* In the urban slums of Cuttack, retailers were selling crystalline salts, which were inadequately iodized- this would be a setback in the progress towards eliminating IDD.

9. Singh MB, Fotedar R, Lakshminarayana J. Micronutrient deficiency status among women of desert areas of western Rajasthan, India. *Public Health Nutr. 2009 May;12(5):624-9.*
*Abstract- Objective:* To assess the magnitude of three micronutrient deficiency disorders (iron, vitamin A and iodine), nutritional deficiencies and their association with related factors. *Material and Methods:* Using the three-stage sampling technique, a study was conducted in twenty-eight villages of Jodhpur district. A total of 1193 women, 384 pregnant, 400 lactating and 409 non-pregnant non-lactating controls (15 years and above, women who have not attained their family status) were examined for three micronutrient deficiency disorders, nutritional deficiencies, dietary and associated factors. *Results:* Majority of the women were anaemic. Anaemia was higher among pregnant and lactating women (80.7 %). Severe anaemia was three-fold higher among pregnant and lactating women in comparison to controls (4.1 %). Vitamin A deficiency was observed to be higher among pregnant women (8.8 %). A high proportion of women (80.8 %) consumed salt, having inadequate iodine content. Median urinary iodine values were less in pregnant and lactating women than the WHO cut-off points. Consumption of pulses and legumes was low besides leafy vegetables. Average intake of nutrients showed deficiency of protein and energy, iron and folic acid and vitamin A deficiency. Anaemia and iodine deficiency disorder were found to be inversely proportional to education and income. *Conclusions:* The proportion of anaemia in this study was higher in comparison to national-level studies besides the low consumption of normal iodised salt. Only 19 % of salt samples had adequate iodine content, which calls for caution. In addition to iodisation of salt, the study suggests the development of nutritional packages utilising local dietary aspects.

10. Gelal B, Aryal M, Das BK, Bhatta B, Lamsal M, Baral N. Assessment of iodine nutrition status among school age children of Nepal by urinary iodine assay. *Southeast Asian J Trop Med Public Health. 2009 May;40(3):538-43.*
*Abstract-* The present study was undertaken to evaluate the iodine status of Nepalese school age children by measuring urinary iodine excretion (UIE). A population based cross-sectional study was conducted during November-December 2006 among 1,094 school age children. Spot urine samples were collected from all children and UIE was measured during February to March 2007 by an ammonium persulfate digestion microplate (APDM) method. The median UIE at the national level was 193.10 microg/l, indicating adequate iodine intake in Nepalese schoolchildren. The proportion of the population having UIE below 50 microg/l and below 100 microg/l were 4.5% and 22.0%, respectively. Determination of precision of the method Was done following calculation of the inter- and intra-assay coefficient of variation (CV). At low, medium and high concentrations of urinary iodine the intra-assay CVs were 6.3, 1.8 and 1.9%, respectively. The inter-assay CVs for low, medium and high concentrations of urinary iodine were 11.9, 4.9 and 6.2%, respectively. Therefore, current iodine nutrition status is at satisfactory levels in Nepal. An effective monitoring program must be continued to ensure optimal iodine status and prevent the population from developing iodine deficiency disorder (IDD).

11. Marwaha RK, Tandon N, Desai A, Kanwar R, Mani K. Iodine Nutrition in Upper Socioeconomic School Children of Delhi. *Indian Pediatr. 2009 Jul 1. [Epub ahead of print]*
*Abstract-* We assessed the iodine nutrition of upper socioeconomic strata school children from Delhi to identify its association with goiter, thyroid autoimmunity or thyroid function. After informed consent of parents, all assenting students (n = 997) from one randomly selected section of each class from five private schools representing all the zones of Delhi) were evaluated for goiter, urinary iodine excretion, thyroid function and antibody status. Median urinary iodine was 35.28micrograms/dL. Goiter was present in 123 (12.3%) and positive anti-TPO antibodies in 17 (2.6%). Increased urinary iodine was associated with thyroid dysfunction, though not with goiter.

12. Kamath R, Bhat V, Rao RS, Acharya D, Kapil U, Kotian MS, Nayak DS. Prevalence of goitre among school children in Belgaum district. *Indian J Pediatr. 2009 Aug;76(8):825-8.*
*Abstract- Objective:* A school survey was conducted to estimate the prevalence of goitre among schoolchildren in Belgaum district. *Methods:* A cross-sectional study was conducted in primary, middle and high schools of villages selected. All the children of the selected schools were examined for the presence of goitre and the salt samples obtained from their homes were tested for iodine content. *Results:* Overall prevalence of goitre was 16.7%. Prevalence of palpable goitre was 16.4 % and visible goitre was very low (0.3%). Higher prevalence was found among females (21.1%) when compared to that of male children (12.8 %). Prevalence of goitre increased significantly with advancement of age until 16-yr. 72.1 % children were consuming rock salt and only 27.9 % were consuming powdered salt at their homes. Estimation of Iodine content in the salt samples showed that 68.7 % of the sample had inadequate iodine content. Prevalence of goitre was significantly high among children who consumed rock salt (16.2%) as compared to those who used powdered salt (11%) *Conclusion:* Strict implementation of salt codization and marketing in rural area is desired. Also health education programme be showed.

13. Parveen S, Latif SA, Kamal MM, Asaduzzaman M, Akther A, Laila ZH. Iodized salt induced thyrotoxicosis: Bangladesh perspective. *Mymensingh Med J. 2009 Jul;18(2):165-8.*

*Abstract*- The effects of iodized and non-iodized salt on the thyroid gland and its hormones T3, T4 and thyroid stimulating hormone (TSH) were studied in 200 individuals who were the residents of plain areas of greater Mymensingh district. The subjects were collected from the Center for Nuclear Medicine and Ultrasound, Mymensingh. Out of 200 individuals 150 were using iodized salt and 50 were using non-iodized salt. The iodized and non-iodized salt users were marked as study and control groups respectively. Blood samples were taken from both the groups and T3 and T4 in blood serum were determined by radioimmunoassay (RIA) while TSH was determined by immunoradiometricassay (IRMA). The mean concentration of T3 were 2.633 nmol/L and 2.223 nmol/L and T4 concentration were 122.444 nmol/L and 110.355 nmol/L in study and control group respectively. The mean TSH concentration was 5.044 mIU/L and 9.622 mIU/L in study and control group respectively. The data indicated that continuous and long term use of iodized salt increased both T3 and T4 and decreased TSH in study group. The results were significant ($p < 0.05$) when compared to that of the control. The results suggested that mandatory mass consumption of iodized table salt without T3, T4 and TSH screening of blood may produce iodinated salt induced thyrotoxicosis (ISIT) in peoples living in plain areas of Bangladesh. We suggest close regular monitoring of T3, T4 and TSH and urinary excretion of iodine of individuals who are using iodized salt for better management of iodinated salt program in our setting.

14. Heydon EE, Thomson CD, Mann J, Williams SM, Skeaff SA, Sherpa KT, Heydon JL. Iodine status in a Sherpa community in a village of the Khumbu region of Nepal. *Public Health Nutr. 2009 Sep;12(9):1431-6.*

*Abstract:* To assess the iodine status of Sherpa residents living in Kunde village, Khumbu region, Nepal. *Design:* Prevalence of goitre was determined by palpation. Urinary iodine concentrations (UIC) were determined in casual morning samples, and thyroid-stimulating hormone (TSH) in finger-prick blood samples on filter paper. Dietary and demographic data were obtained via questionnaire, and selected foods analysed for iodine. *Setting:* Khumbu region is an area of low soil iodine in Nepal, where the prevalence of goitre was greater than 90% in the 1960s prior to iodine intervention. *Subjects:* Two hundred and fifteen of 219 permanent residents of Kunde were studied. *Results:* Overall prevalence of goitre was 31% (Grade 1 goitre, 27.0%; Grade 2, 4.2%). When adjusted to a world population, goitre prevalence was 2.8% (95% CI 1.0, 4.6%). Median UIC was 97 microg/l, but only 75 microg/l in women of childbearing age. Thirty per cent had UIC < 50 microg/l and 52% had UIC < 100 microg/l, while 31% of children aged <14 years had UIC > 300 microg/l. Ten per cent of participants had TSH concentrations >5 microU/ml. *Conclusion:* The prevalence of severe iodine deficiency has decreased since the 1960s, but mild iodine deficiency persists, particularly in women of childbearing age. The consumption of high-iodine uncooked instant noodles and flavour sachets by school-aged children contributed to their low prevalence of goitre and excessive UIC values. This finding may obscure a more severe iodine deficiency in the population, while increasing the risk of iodine-induced hyperthyroidism in children. Ongoing monitoring is essential.

15. Subhash Yadav, Sushil Kumar Gupta, Madan M Godbole, Manoj Jain, Uttam Singh, Praveen V Pavithran et al. Persistence of severe iodine-deficiency disorders despite universal salt iodization in an iodine-deficient area in northern India. *Public Health Nutrition. 2010 Mar;13(3):424-9.*

*Abstract-Objective:* The aim of the present study was to determine the impact of universal salt iodization (USI) on the prevalence of iodine deficiency in the population of an area previously known to have severe iodine deficiency in India. *Design:* In a cross-sectional survey, a total of 2860 subjects residing in fifty-three villages of four sub-districts of Gonda District were examined for goitre and urinary iodine concentration. Free thyroxine and thyroid-stimulating hormone levels were also measured. Salt samples from households were collected for estimation of iodine content. *Results:* A reduction in goitre prevalence was observed from 69% reported in 1982 to 27?7% assessed in 2007. However, 34% of villages still had very high endemicity of goitre (goitre prevalence .30 %). Twenty-three per cent of households consumed a negligible amount (,5 ppm) and 56% of households consumed an insufficient amount (515 ppm) of iodine from salt. *Conclusions:* Although there was an overall improvement in iodine nutrition as revealed by decreased goitre prevalence and increased median urinary iodine levels, there were several pockets of severe deficiency that require a more targeted approach. Poor coverage, the use of unpackaged crystal salt with inadequate iodine and the washing of salt before use by 90% of rural households are the major causes of persisting iodine-deficiency disorders. This demonstrates lapses in USI implementation, lack of monitoring and the need to identify hot spots. We advocate strengthening the USI programme with a mass education component, the supply of adequately iodized salt and the implementation of complementary strategies for vulnerable groups, particularly neonates and lactating mothers.

PEARLS OF WISDOM

*"As we enter a new phase of technology application in respect to micronutrient malnutrition, an understanding of the reasons for our failure to utilize optimally some of the commonplace contributions of science and technology would be useful".*

*- Prof. V Ramalingaswami, at the Policy Conference on Micronutrient Malnutrition, Canada, October 1991*

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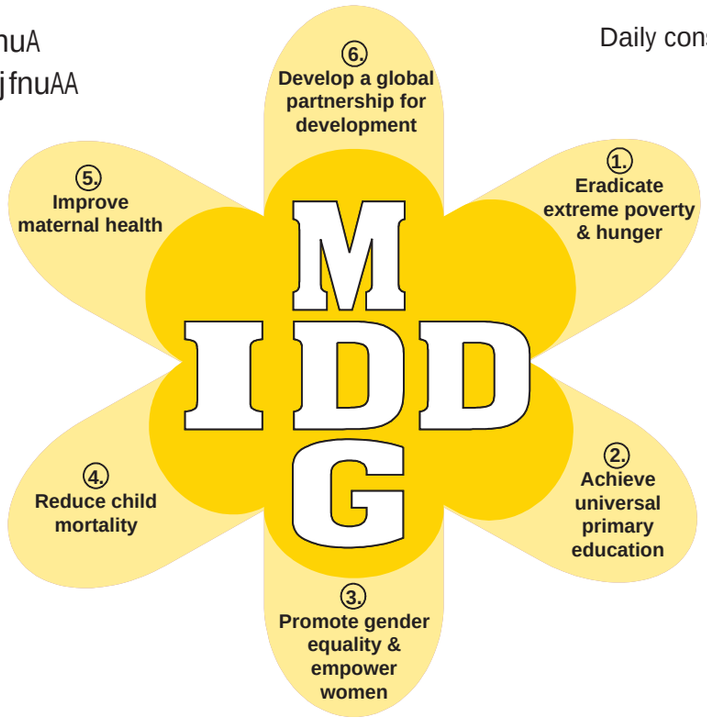
Daily consumption of Iodised salt is a healthy habit

IODINE DEFICIENCY DISORDERS

MILLENIUM DEVELOPMENT GOALS




ICCIDD

IQ+ "Iodine Quota Intelligence Quotient"

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