

## STATUS OF CONSUMPTION OF IODIZED SALT IN AGRA DISTRICT

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### ABSTRACT :

*Research question : To enquire the practices regarding the use of iodized salt and level of iodination in the consumed salt in rural and urban Agra district?*

#### *Objective :*

1. To know about the type of iodized salt consumed.
2. To know about the presence of iodine in the consumed salt.

*Study design : Cross sectional study.*

*Sampling technique : Multi stage random stratified cluster sampling.*

*Study methods : Multi indicator rapid assessment household survey.*

*Settings : Mohallas of Agra city and villages of district Agra.*

*Sample Size : 3200 households of 80 clusters of Agra district.*

*Study variable : Type of salt consumed, and presence of iodine in the consumed salt.*

*Statistical analysis : Tests of significance.*

*Results : 48% households were consuming packed grinded salt followed by unpacked grinded salt (36.5%). Out of 640 salt samples were tested for the presence of iodine, 49.4% were found positive.*

### Introduction :

Iodine deficiency is the most common preventable cause of mental deficiency in the world today. IDD constitute a major public health problem for India.<sup>1</sup> Survey by Ministry of Health and family welfare, of 283 of the country's 587 districts in 29 states and 6 union territories, classified 247 districts (87%) as endemic. All states/UT's except 2 had at least one endemic district. Overall, an estimated 167 million people risk developing iodine deficiency disorders, 54 million have goiter, and 2.2 million are cretins.<sup>2</sup>

The consequences of iodine deficiency

include goitre, reduced mental function, increased rates of still births and abortions, and infant deaths. Severe mental and neurological impairment known as cretinism occurs in babies with severely iodine deficient mothers. Deficiencies in iodine later in infancy and childhood cause mental retardation, delayed motor development, growth failure and stunting, neuromuscular disorders and speech and hearing defects. Mild deficiency can cause lethargy, and this is reversible when iodine status improves.<sup>3</sup>

The present study assessed type of salt consumed, and presence of iodine in the consumed salt through Multi-Indicator Rapid

Assessment (MIRA) survey techniques in Agra district of U.P.

**Material and Methods :**

Present study was conducted in District Agra of U.P. state, India, which has a population of 3.6 million. A cross sectional study was done utilizing multi stage random stratified clustersampling and multi indicator rapid assessment technique for interviews. Study was conducted in 30 urban and 50 rural clusters of district Agra. The development of questionnaire and its field-testing (during pilot study) were done from April 2002 to June 2003. The actual survey with simultaneous data entry was done from June 2003 to Dec. 2003.

During the stage one of sampling, cumulative population of the district was calculated and the total required 80 communities were selected from the lists by using standard cluster sampling technique with a sampling interval of 36332 and a random number of 24868. During the second stage, maps of all the selected 80 communities were sorted out and each community was divided into four quadrants. In each quadrant, 10 households were visited in continuation by selecting first household randomly; the random number taken as the last digit of currency note. This gave us the 40 households, required from a cluster, making a total of 3200 households for the study. The study was conducted by the author under guidance of coauthors which was monitored through observing filled formats, counterchecking the covered houses and by validating the data entered.

A total of 3200 households in the selected 80 clusters of district Agra were interviewed during house to house visit for type of salt consumed, and presence of iodine in the

consumed salt through iodine testing kit supplied by UNICEF.

The information collected was computerized in specific programme developed on computer software Fox pro(version 2.6) and analyzed with the help of SPSS statistical software (version 10.3).

**Results :**

Persual of table reveals that maximum i.e. 48 percent households were consuming packed grinded salt followed by unpacked grinded salt (36.5%). A small percentage of households were consuming unpacked-grinded salt and washed-crystal salt (10.9% & 4.6% respectively).

In households of Agra city most commonly consumed common salt was (60%) packed-grinded salt and second common was washed-crystal salt in 24.7 percent households only, while 12.8 and 2.6 percent were utilizing unpacked-grinded salt and washed-crystal salt respectively.

Washed-crystal salt and packed-grinded salt was consumed by more than four - fifth rural households (43.6 and 40.8 percent respectively) while about 16 percent were consuming unpacked-grinded salt or unwashed-crystal salt (9.9 and 5.8% respectively).

When enquired regarding the iodination of salt consumed in the households, it was found that many of community members (39.5%) were aware of it, the percentage of awareness being 50.6 percent in urban area. In rural area, about 32.8 percent were aware that the salt used by them was iodized while out of packed grinded salt users, majority (62.5%) were aware about the iodination status of the salt.

Table - 1  
Awareness and Consumption of Type of Salt among Households

Type of salt Used	Awareness												
	Rural				Urban				Combined				
	Iodized	Not Iodized	Don's Know	Total	Iodized	Not Iodized	Don's Know	Total	Iodized	Not Iodized	Don's Know	Total	
Unwashed-crystal salt	No.	20	26	69	115	9	8	14	31	29	34	83	146
	%	3.0	4.6	8.8	5.8	1.5	3.1	4.1	2.6	2.3	4.2	7.4	4.6
Washed-crystal salt	No.	166	271	435	872	74	105	117	296	240	376	552	1168
	%	25.3	42.4	55.5	43.6	12.2	41.3	34.5	24.7	19.0	46.2	49.2	36.5
Unpacked-grinded salt	No.	60	67	70	197	51	53	49	153	111	120	119	350
	%	9.1	12.0	8.9	9.9	8.4	20.9	14.5	12.8	8.8	14.7	10.6	10.9
Packed-grinded salt	No.	410	196	210	816	473	88	159	720	883	284	369	1536
	%	62.5	35.0	26.8	40.8	77.9	34.6	46.9	60	7.0	34.9	32.9	48
Total	No.	656	560	784	2000	607	254	339	1200	1263	814	1123	3200
	%	(32.8)	(28)	(39.2)	(100)	(50.6)	(21.2)	(28.3)	(100)	(39.5)	(25.4)	(35.1)	(100)

A large number of community members (35.1%) did not know about the iodination of

salt in which 39.2 and 28.3 percent were residing in rural and urban areas respectively.

**Table - 2**  
**Results of Salt Samples Tested for Iodine**

			Rural	Urban	Combined
<b>No. of Samples Tested</b>		<b>No.</b>	400	240	640
<b>Positive</b>	<b>&lt;15 ppm</b>	<b>No.</b>	110	91	201
		<b>%</b>	27.5	38.0	31.4
	<b>&gt;15 ppm</b>	<b>No.</b>	39	76	115
		<b>%</b>	9.8	31.7	18.0

The salt samples were tested for the presence of iodine in every 5th household in the area surveyed. Out of 640 samples, 49.4 percent were tested positive. In the urban areas, nearly about two-third samples found to be positive for iodine (69.4%), while in rural areas this was 37.3 percent only.

Among households in which salt samples were found positive only 18 percent were found to consume common salt iodine above the optimum level i.e. more than 15 parts per million (ppm), being higher in urban area compared to rural (31.7 and 9.8 percent respectively).

**Discussion :**

When enquired regarding the iodization of salt consumed in the households, it was found that nearly forty percent community members (39.5%) were aware of it, the percentage of awareness being 50.6 percent in urban area. In rural area, about 32.8 percent were aware that the salt used by them was iodized while out of packed grinded salt users, majority (62.5%) were aware about the iodination status of the salt.

**Nandan D et al. (1995)** found in Mathura, Etah and Almorah districts that high

percentages of people were not aware of the type of salt they were consuming i.e. 46.0%, 80.6% and 57.1% in respective districts. **Panwar D.S. (1997)** reported that the 43.8 percent of household members were aware of type of salt they were consuming (whether iodized or not), and the awareness was lower (32.4%) in the rural areas.

Around 48 percent households were consuming packed grinded salt followed by unpacked grinded salt (36.5%). A small percentage of households were consuming unpacked-frinded salt and washed-crystal salt (10.9% & 4.6% respectively).

*Nandan D et al. (1995) MIRA survey-UP (1995), Udaykiran et al (1996) and Multi Indicator cluster Survey-UP-UNICEF (2000) reported that the percentage of households using iodized salt was 45percent, 31.4percent, 35 percent and 48 percent respectively which is higher to the findings of present study.*

Among households in which salt samples found positive only 18 percent were found to consume common salt with iodine above the optimum level i.e. more than 15 ppm, being higher in urban area compared to rural (31.7 and 9.8 percent respectively).

**Panwar D.S. (1997)** reported that among households in which salt samples found positive was 63.4 percent while in the present study it was 49.4 percent may be because of increasing imitated brands of common salts in the district. Very low figures were found regarding the consumption of common salt with the optimum level of iodine i.e. more than 15 ppm, was only 18 percent in the district.

**Udaykiran et al (1996)** reported from Southern Karnataka that none of the salt sample tested positive for iodine content at household level showing the dark aspect of situation of iodization in that area.

Overall the situation in the urban area seems to be good but specific awareness programs are needed for the promotion and utilization of iodized salt at household level in Agra district.

Universal iodination of salt at the factory level does not necessarily ensure the universal use of iodized salt. In the rural areas where cheap raw salt is available in the market, special measures are necessary to ensure the universal of iodized salt.

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