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Research Article

# ASSESSMENT OF IODIZATION STATUS OF SALT AND AWARENESS ABOUT IODIZED SALT IN HOUSEWIVES AND SHOPKEEPERS IN ADOPTED COMMUNITY OF DEHRE HEALTH CENTRE AHMEDNAGAR

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**ABSTRACT:**

The present study was undertaken to find out the type of salt used by the community, the status of iodine in iodized salt, awareness about importance of iodized salt amongst housewives and shopkeepers of local area, showing knowledge about health Benefits of iodized salt in housewives & shopkeepers, source of knowledge of housewives & Shopkeepers about importance of iodized salt, and association of Educational status of Housewives with awareness of Benefit of iodized salt. Whole of the community was using iodized salt as well as shopkeepers were selling it, but it was observed that cow brand variety lacked in iodine content. The study was conducted in slum area and being cheap source of salt; it was used by maximum households. This is very dangerous situation as it gives false impression of use of iodized salt, without proper health benefits.

**Keywords :-** Iodine, Iodized salt, Health benefits of iodized salt, salt testing kit, cross sectional study

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## INTRODUCTION

In India the Iodine deficiency disorder, especially Goitre has been known Since the days of Lord Buddha and before 3000 BC[1]. The Kangra Valley study (1956) states that consumption of adequately iodized salt on a regular and continuous basis reduces Goitre prevalence [2-5].On basis of this study, the Government of India launched the National Goitre control programme in 1962. Its name was changed to National Iodine deficiency disorder control programme in 1992.One of the important activity of this programme is iodization of common salt. The Government of India stands commited for Universal iodization of salt by 1992. Edible salt is the ideal vehicle for iodization as it is consumed by one and all, easily available, inexpensive and no overdose. The added iodine does not affect the appearance, taste and well accepted by consumers.

The Government of India brought iodized salt under PFA act in 1968. Under PFA Act, Iodine content should be 30 ppm and 15 ppm at manufacturer and consumer level respectively[4]. Potassium iodine in iodized salt is easily lost when exposed to sun, moisture, heat etc. Hence adequate care should be taken during transporting and storage at all levels.

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Government of India banned the sale and storage of Non-iodized salt in 1997.**National family health survey-2**(1998-99) states that only 60% households were consuming adequately iodized salt in Maharashtra state, highest in **Mizoram** (91.3%) and lowest in **Tamilnadu** (21.2%). In September 2000 Government of India lifted the ban on the sale and storage of non-iodized salt. DLHS-RCH Report (2002) states that only 45% households were consuming adequately iodized salt in Maharashtra state in 2002. **UNICEF** (2003) states that only 50% households in India were consuming adequately iodized salt. In April 2005, Government of India drafts proposal to ban on sale of non-iodized salt [5]**.**

Present study was conducted to find out the iodization status of salt used by the community with aid of field Salt testing kit (STK).

## MATERIAL AND METHODS

This Cross-sectional study was carried out in adopted community of Rural health training centre of department of community medicine, Vikhe Patil Institute Of Medical Sciences, Ahmednagar during July to December 2014. There are total 600 households in Dehre Village. As per record every house was numbered. The first household sample was chosen randomly from 5$^{th}$ house of first 10 households then every alternate house was selected by systematic random sampling. Total 262 salt samples were collected and tested for status of iodine, out of these 150 were collected from households and 112 from 40 local shopkeepers having shops in the same area. Information regarding iodine deficiency disorders, the storage pattern and brand names were collected in pretested proforma.

A new salt testing kit (STK) has been developed by Indian Coalition for control of Iodine Deficiency Disorders (ICCIDD) New Delhi. The kit rapidly distinguishes iodized salt from non-iodized salt, indicating that it is a qualitative test. The kit consists of solution bottle, a steel plate, small spoon, and standard colour plate for matching. A spoonful of salt is to be taken in a plate and a drop of solution is to be added. The blue colour formed is matched with standard colour indicating presence of potassium iodide.[2]

## OBSERVATION AND DISCUSSION

### Type of salt used by the community

Three type of commercial brand were available in study area. They are Cow Brand, Tata salt & Captain Cook. Cow brand is manufactured at Nagpur only.

Total 262 salts samples were collected from community, Out of which, 51.52% were cowbrand and remaining 48.47% samples were Tata and Captain Cook brands.

Out of 262 collected salt samples, 150(57.26%) were collected from households. 95(63.33%) households were using Cow Brand and remaining 55(36.66%) were using Tata and Captain Cook brands. All salt packs were of 1kg. capacity. 112(42.74%) salt samples were collected from 40 local shopkeepers. 36(90%) shopkeepers were selling all the three brands and 4(10%) were selling exclusively cowbrand. This may be due to cost and demand for cowbrand.

Cowbrand was costing 4Rs. per pack which was cheaper as compared to Tata and Captain-cook Salt, which were 8-10Rs. per pack; hence cowbrand salt was most popular. All the salts were iodized salt as it has been mention on packets. No non-iodized salt was available for sale as well as at household's level [6].

### Iodine status in iodized salt

Iodine content of 127(48.47%) salt packets of Tata & Captain Cook salt was satisfactory (100%). When this was compared with the iodine content mentioned on salt packs, it was found that for Tata & Caption Cook it was < 15 ppm. It was observed that out of total 135(51.52%) cowbrand sample, none of the sample tested positive for iodine; however Cow Brand boasted of having 30 ppm iodine content. For cow brand salt there is gross disparity between actual and projected iodine content, which is an alarming situation.

Study carried out in Orissa as an exercise to Track progress towards elimination of IDD mentioned similar results that is 45% of households were using adequately iodized salt [7].

Finding of NFHS-2 (1998-99) mentioned slightly lower results i.e. only 35% households in Orissa using adequately iodized salt [5].

### Storage pattern used by the community

To retain the iodine contents, storage of iodized salt plays very important role as potassium iodate is easily lost when exposed to sun, moisture, etc. It is necessary to use thick high quality polythene bags. The two brands Tata & Captain Cook have thick polythene bags with proper seal but Cowbrand salt was available in thin polythene which might get easily damaged.

At household level(150 salt sample) salt is to be stored in tightly closed container, however it was found that more than 43.64% of households, the storage pattern was not satisfactory. At many house holds it was kept in semi closed(24.04%) or open container (4.59%) or even kept in same wide open pack (15.00 %). The survey was carried out in the month of May & June, when the environmental temperature and humidity was high. Probably this may be the reason for iodine loss.

At retailers level (112 salt samples) iodized salt should be sold as a sealed pack & not as loose salt. Salt packets also should be kept in dry and cool environment. Storage was satisfactory in 30 (75%) shopkeepers. Even 10(25%) shopkeepers were selling the loose salt from 1kg. packs which are not advisable as it leads to iodine loss.

**Awareness about importance of iodized salt in housewives and Shopkeepers.**

Out of total 150 housewives, only 36% had knowledge regarding health benefits of iodized salt. Large no. of housewives (64%) were not aware of importance of iodized salt though they were using it. Out of total 40 local shopkeepers, 80% had knowledge regarding health benefits of iodized salt.

**Knowledge about health Benefits of iodized salt in housewives & shopkeepers**

Awareness in housewives and shopkeepers regarding iodized salts prevents Goitre was 24% as well as 50% respectively. Awareness in housewives and shopkeepers regarding iodized salts is necessary for normal growth and development of brain was only 5.33% and 20% respectively. Awareness in housewives and shopkeepers regarding importance of iodized salts for prevention of mental retardation in neonate was 4% and 5% respectively. Awareness regarding iodized salts preventing cretinism was very poor in housewives 1.33% and in shopkeepers 5% respectively.

Similar are the finding of the qualitative study carried out in Bihar. The authors clearly stated that people are using iodized salt without knowing its health benefits [6].

**Source of knowledge of housewives & Shopkeepers about importance of Iodized salt.**

Out Of 54 Housewives, 51.65% mentioned television as the main source of information as compared to local shopkeepers i.e. 3.12%. Most of the shops were small and television was not available for viewing, however 75% of shopkeepers got information from Newspaper and Radio. This show that mass media plays important role in educating masses in health related events. This being adopted area of Urban Health Training Centre, health providers regularly visited the community; hence it was the second most important source of information for households as 18.59%.

Study in Orissa also mentioned that mass media like T.V. and Radio plays important source of information [7].

It has been observed that education definitely plays the part in imparting health information and use of healthy practices. The difference observed was highly significant ($p < 0.001$). Lower education (Illiterate, primary and middle school) was compared with higher education (High school, Jr. College, & Degree/ Diploma).

In local shopkeepers, out of 40, all were literate and 80% were aware about benefits of iodized salt, indicating that education definitely plays the part.

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**Table 1. Type of salt used by the community**

| Type of Salt | No. | Percentage |
|---|---|---|
| Tata | 72 | 27.48 % |
| Captain Cook | 55 | 20.99 % |
| Cowbrand | 135 | 51.52 % |
| Total | 262 | 100 % |

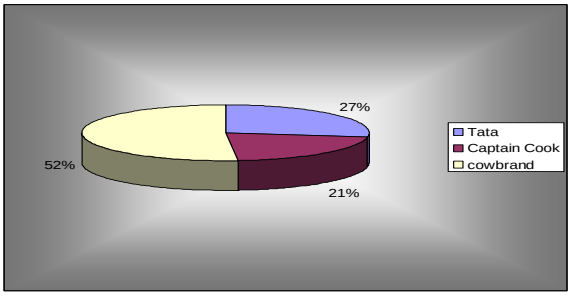


**Table 2. Iodine status in iodized salt** n = 262

| Type of salt | Iodine status | | Total (%) |
|---|---|---|---|
| | Present (%) | Absent (%) | |
| Tata | 72 (100) | 00 (00) | 72 (100) |
| Captain cook | 55 (100) | 00 (00) | 55 (100) |
| Cowbrand | 00 (00) | 135 (100) | 135 (100) |
| Total | 127 (48.47) | 135 (51.52) | 262 (100) |

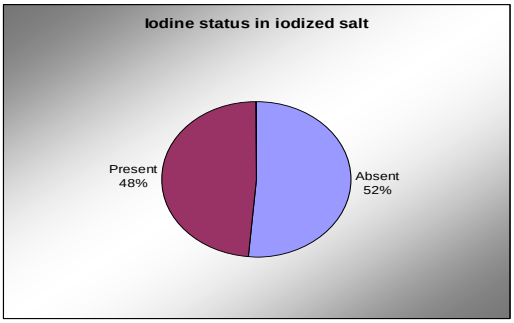


**Table 3. Storage pattern used by the community**

N = 262

| Sr. No. | **Storage pattern** | Salt samples | Percentage (%) |
|---|---|---|---|
| 1. | Tightly Closed container | 148 | 56.48% |
| 2. | Semiclosed container | 63 | 24.04 % |
| 3. | Open Container | 12 | 04.59 % |
| 4. | Kept in pack itself | 39 | 14.89% |
| | Total (%) | 262 | 100 % |

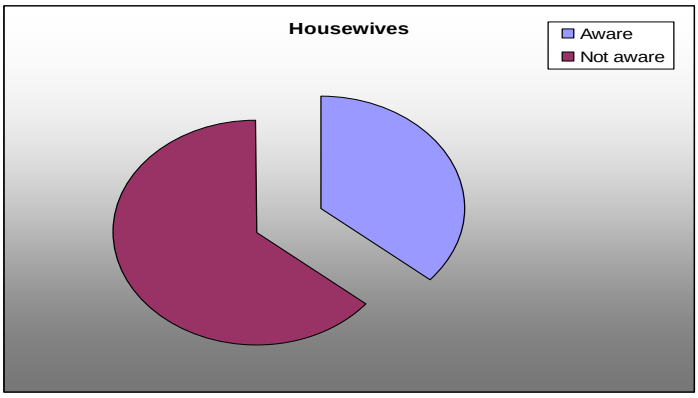


**Table 4. Awareness about importance of iodized salt in housewives & Shopkeepers**

| Awareness | Housewives (%)<br>n = 150 | Shopkeepers (%)<br>n = 40 |
|---|---|---|
| Aware | 54(36%) | 32(80%) |
| Not aware | 96(64%) | 08(20%) |
| Total | 150(100%) | 40(100%) |

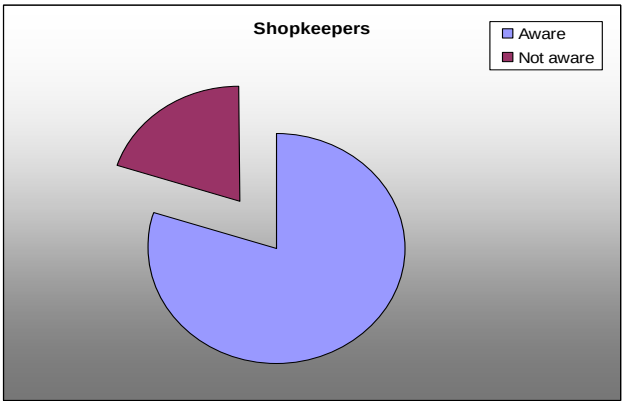

**Table 5. Showing knowledge about health Benefits of iodized salt in housewives & shopkeepers**

| Sr. No. | Health Benefits | Housewives (%) n =150 | Shopkeeper (%) n =40 |
|---|---|---|---|
| 1 | Prevents Goitre | 36 (24%) | 20 (50%) |
| 2 | Prevents Mental Retardation in Neonate | 06 (4%) | 02 (05%) |
| 3 | Normal growth & development of Brain | 08 (5.33%) | 08 (20%) |
| 4 | Prevents cretinism | 02 (1.33%) | 02 (05%) |
| 5 | Prevents Still birth / IUD | 02 (1.33%) | -- |
| 6 | Prevents Neuromuscular weakness | -- | -- |
| 7 | Defect in vision, hearing & speech | -- | -- |

**Table 6. Source of knowledge of housewives & Shopkeepers about importance of Iodized salt.**

| Source | Housewives ( % ) n = 54 | Shopkeeper ( % ) n = 32 |
|---|---|---|
| Newspaper | 05(9.25%) | 14(43.75%) |
| Television | 28(51.65%) | 01(3.12%) |
| Radio | 07(12.96%) | 10(31.25%) |
| Street play | 04(7.40%) | 04(12.5%) |
| Health providers | 10(18.59%) | 03(9.37%) |

**Table 7. Association of Educational status of Housewives with awareness of Benefit of Iodized salt.**

| Ed. Status | Awareness | | Total |
|---|---|---|---|
| | Yes ( % ) | No ( % ) | |
| Illiterate | 00 | 10 (10.41 %) | 10(6.66%) |
| Primary | 02 (3.70%) | 24 (25%) | 26(17.33%) |
| Middle | 08 (14.81%) | 19 (19.79%) | 27(18%) |
| High school | 20 (37.03%) | 41 (42.70%) | 61(40.66%) |
| Jr. College | 16 (29.62%) | 02 (2.08%) | 18(12%) |
| Degree / Diploma | 08 ( 14.81% ) | 00 | 08(5.33%) |
| Total | 54(100) | 96(100%) | 150 ( 100% ) |

$x^2$=19.10, D.F=1, p<0.001

## SUMMARY AND CONCLUSION

The present study was undertaken to find out the type of salt used by the community, the status of iodine in iodized salt, awareness about importance of iodized salt amongst housewives and shopkeepers of local area,1. showing knowledge about health Benefits of iodized salt in housewives & shopkeepers, source of knowledge of housewives & Shopkeepers about importance of iodized salt, and association of Educational status of Housewives2. with awareness of Benefit of iodized salt. Whole of the community was using iodized salt as well as shopkeepers were selling it, but it was observed that cow brand variety3. lacked in iodine content. The study was conducted in slum area and being cheap source of salt; it was used by maximum households. This is very dangerous situation as it gives false impression of use of iodized salt, without proper health benefits.

**Recommendation:**

1. Government should try to make quality iodized salt available through public distribution system at an affordable price and stringent quality control should be followed.
2. Efforts of health providers should be improved regarding awareness of importance of iodized salt amongst housewives and shopkeepers.
3. Government should try to increased IEC activities (Information, education, and communication) regarding importance of iodized salt.

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