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A Study on Knowledge, Attitude and Practices Regarding Iodized Salt in Urban, Rural and Slum Areas of Kanpur (India)

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ABSTRACT
Iodine deficiency is a preventable health problem, and its impact on socio-economic development has also been recognized globally during the last decade. Although salt iodization is progressing well, it is important to assess the knowledge, attitude & practices regarding iodized salt. A cross sectional study was carried out in urban, rural and slum areas of Kanpur through stratified random sampling. It was found that 55 per cent of the slum respondent did not know about iodized salt and only 5 per cent of urban respondents knew the symbol of iodized salt. Results revealed that knowledge about use of iodized salt to prevent goiter in urban, rural and slum population was 85.7 per cent, 67.05 per cent and 44.7 per cent respectively. Maximum (92.0 per cent) of the urban respondents were using branded packaged salt. The brands commonly being used by the urban population were Tata, Annapurna and Captain Cook. In slums, 4% of the families were using crystalline salt. Maximum (47 per cent) of the urban respondents were using glass container to store salt. The study concludes that studied population knew about iodized salt but there is lack of knowledge about health benefits, symbol of iodized salt and proper handling especially in rural and slum areas.
Key Words - *Iodized salt, Knowledge, Attitude, Iodine, Iodine deficiency disorders (IDD)*

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I. INTRODUCTION

Iodine deficiency disorders have been recognized as a public health problem in 118 countries worldwide, and there are approximately 1.5 billion people at risk. Iodine deficiency particularly affects pregnant women, fetus, neonates and children and causes mental and physical disorder. Iodine deficiency is a preventable health problem, and its impact on socioeconomic development has also been recognized globally during the last decade.

Iodine is an essential element in the chemical structure of thyroid hormones. The human body requires around 150 µg of iodine everyday, which works out to be a spoonful (5 g) over life span of seventy years. For any disease to be effectively controlled, it's essential that people at all level viz. from the community to policy makers acknowledge the existence of problem.

The simplest approach to control IDD is to provide additional iodine through distribution of iodized salt in the place of ordinary salt. Iodized salt is considered as the most appropriate measure for iodine supplementation. The advantage of supplementing with iodized salt is that, it's used by all sections of the community irrespective of social & economic status **(Delange and Hetzel, 2006).**

The whole iodine content of salt is not available to the consumer as 20-60% of iodine lost during cooking, as iodine is a volatile substance. Improper storage, faulty transportation and careless domestic handling of iodized salt lead to the loss of iodine from salt - iodine mixture.

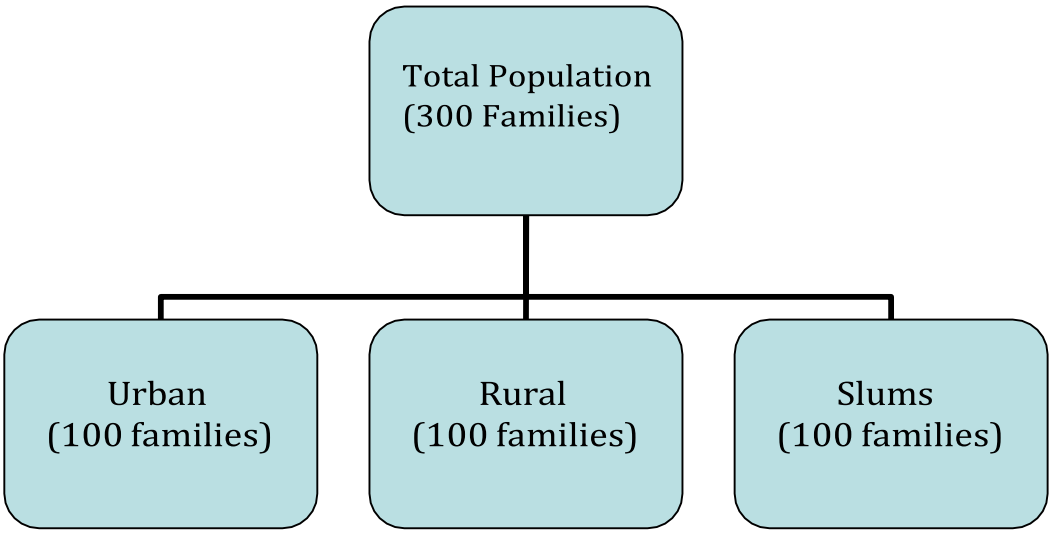
Statement Of The Problem- Although salt iodization under NIDDCP is progressing well, it is important to assess the knowledge, attitude and practices regarding iodized salt.

Specific Problem - To evaluate knowledge, attitude & practices regarding iodized salt by urban, rural and slum population of Kanpur.

II. METHODOLOGY

Selection of Locale- The research was carried at Kanpur district of Uttar Pradesh. Kanpur is divided into six zones. For the present study *Nawabganj, Azad Nagar and Vishnupuri* of urban locality, *Singhpur* village and slums situated at *Pahalwanpuram* and *Gurudev* of Zone 5 were selected.

Sample and its selection- The population was stratified into 3 major groups' viz. Urban, Rural and Slum. Hundred families were selected from each major group.



Construction & Control of Research tool - A predesigned and pretested questionnaire was used as a tool for collection of information through interviewing respondents.

Procedure of data collection – The respondent of each family was interacted individually and persuaded to answer the questions and data related to knowledge, attitude & practices regarding iodized salt was recorded in pre-prepared & pre-tested questionnaire

III. RESULTS AND DISCUSSION:

Knowledge regarding iodized salt

Results of the study revealed that more than 90 per cent of the respondents residing in urban areas had knowledge about iodized salt. About 85.0 per cent of population living in rural area and 67.0 per cent of the respondents of slum area knew about iodized salt. On an average,

57.0 per cent of the respondents did not know about iodized salt. The z^2 value was found to be positively significant at 5% level. **(Table No.1)** A study conducted in south Orissa revealed that about 92.3 per cent of the respondents did not know what is iodized salt (**Satapathy, *et. al.,* 2004).**

It was observed that 81.0 per cent of the urban area and 62.0 per cent of the rural population had known about the health benefits of iodized salt whereas more than 55.0 per cent of the slum respondents did not know about it. The z^2 value was found to be positively significant at 5% level. Knowledge regarding iodized salt and its health benefits was asked and it was found to be more in high income group as compared to middle and low income group **(Singh *et al.*, 1996).**

Yamada, *et. al.,* (2008) reported that cretinism was least well known consequences of iodine deficiency & revealed that the studied population accepted iodized salt as a good tool to prevent IDD.

It was observed that there was little knowledge about iodized salt. In urban and rural areas only 5 & 1 per cent of the respondents respectively had known about symbol of iodized salt while in slum, nobody knew about it. The z^2 value was found to be positively significant at 5% level **(Table No.-1).** A similar study conducted in Agra reported that subjects from rural areas were less aware about iodized salt as compared to subjects from urban area **(Pawar, 1997).**

Table 1- Knowledge of the respondents about iodized salt.

S. No.	Knowledge about Iodized salt	Urban		Rural		Slum		Total	
		N	%	N	%	N	%	N	%
1.	Yes	91	91.0	85	85.0	67	67.0	81.0	243
2.	No	09	9.0	15	15.0	33	33.0	19.0	57
	Total	100.0	100	100.0	100	100.0	100	100.0	300
									$z^2 = 20.14$*
.	Knowledge about health benefits of iodized salt	Urban		Rural		Slum		Total	
		N	%	N	%	N	%	N	%
1.	Yes	81	81.0	62	42.0	42	42.0	185	61.7
2.	No	19	19.0	38	58.0	58	58.0	115	38.3
									$z^2 = 32.19$*
	Knowledge about symbol of iodized salt	Urban		Rural		Slum		Total	
		N	%	N	%	N	%	N	%
1.	Yes	5	5.0	1	1.0	00	0.0	6	2.0
2.	No	95	95.0	99	99.0	100	100.0	294	98.0
	Total	100	100.0	100	100.0	100	100.0	300	100.0
									$z^2 = 4.7831$*

Attitude

It was found that 85.7 per cent, 67.05 per cent and 44.7 per cent population of urban, rural and slum area, was having knowledge about iodized salt, and were using iodized salt to prevent goiter. On an average, more than 60 per cent of the respondents were using iodized salt to prevent goiter and only 1.64 per cent of the respondents were using iodized salt to prevent cretinism. The z^2 value was found to be significant at 5% level **(Fig.-1). Yamada *et. al.,* (2008)** reported that cretinism was least well known consequences of iodine deficiency and revealed that the studied population accepted iodized salt as a good tool to prevent IDD.

A similar study conducted in Car Nicobar districts of Andman & Nicobar islands revealed that the local name of goitre was 'Rulo" and 44% of the populations felt that it affected only females. None had correct knowledge about the cause of goitre **(Mallik *et al.,* 1998).**

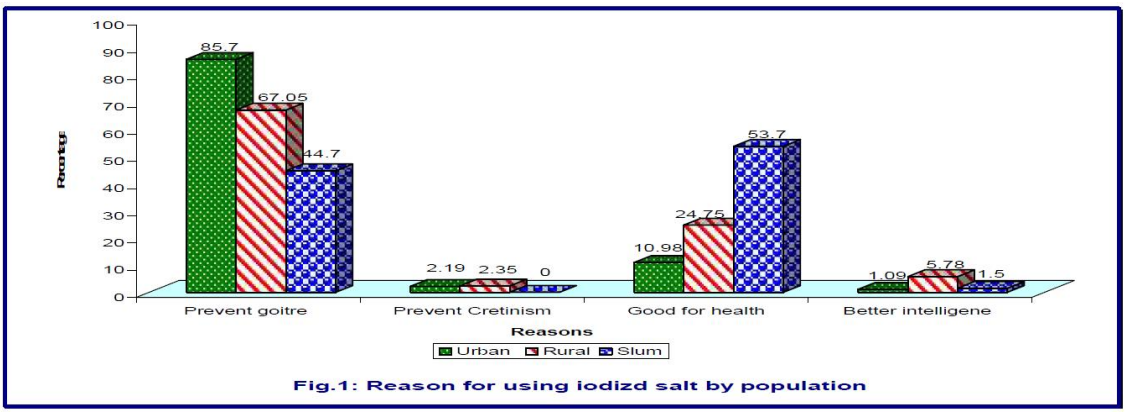


Fig.1: Reason for using iodizd salt by population

Practices

It's interpreted from the survey summarized in **Table no.-4** that maximum of the urban respondents (92.0 per cent) were using branded & packaged iodized salt including *Tata*, *Annupurna*, Captain Cook and *Nirma*. In slum area, 4.0% of the respondents were using crystal salt. It was reported by **Bhat (2008)** that in Jammu region, 74.47er cent of the households were consuming powdered salt whereas 25.53 per cent of the studied population were consuming crystalline salt.

Satapathy *et al.,* (2004) revealed that 22.0 per cent of the studied population was consuming both crystalline and loose salt whereas 7.9 per cent of the respondents were not sure about the type of salt they

consumed.
It was found that 60.0 per cent of the total respondents added salt initially during cooking while

40.0 per cent of the respondents added salt lastly during cooking. The z^2 value was found to be significant at 5% level. **Sharma (2008)** suggested that during cooking, salt should be the last ingredient to be added to prevent iodine loss because of its instability to heat. **(Table -2)**

Table-2 Practice of using salt during cooking.

S. No.	Use of salt during cooking	Urban		Rural		Slum		Total	
		N	%	N	%	N	%	N	%
1.	Add Salt initially	55	55.0	64	64.0	61	61.0	180	60.0
2.	Add salt lastly	45	45.0	36	36.0	39	39.0	120	40.0
	Total	100	100.0	100	100.0	100	100.0	300	100.0
$z^2 = 1.80$									

It was found that maximum of the respondents from urban area stored salt in kitchen. In rural area, 76.0er cent of the respondents stored salt in kitchen and only 24.0% of the respondents stored salt in room other than kitchen whereas in slum, 19.0% of the respondents stored salt in room other than kitchen. The $\chi 2$ value was found to be positively significant at 5% level. Maximum respondents stored salt in kitchen because of quick accessibility of salt during cooking, simplification of work and convenience during working in kitchen **(Table-3).**

Table-3 Distribution of the respondents according to their storage place of salt :

S. No.	Storage place of salt	Urban		Rural		Slum		Total	
		N	%	N	%	N	%	N	%
1.	Kitchen	99	99.0	76	76.0	81	81.0	256	85.3
2.	Store Room	1	1.0	24	24.0	19	19.0	44	14.7
	Total	100	100.0	100	100.0	100	100.0	300	100.0
$\chi^2 = 20.77$*									

It was revealed that in urban, maximum respondents (47 per cent) were using glass containers for salt storage. In rural area, 32.0 per cent of the respondents were using steel containers whereas 8 per cent of the rural respondents were using earthenware pot for salt storage. Maximum (40 per cent) of the slum respondents were using plastic containers for storage of salt. **(Fig.-2).** A study in Assam reported that 80.89 per cent and 12.15 per cent of the respondents were using plastic or glass jars respectively. About 3.41per cent of the respondents used earthenware pots **(Patowary *et al.*, 1995).**

Iodine retention is varying with the storage practices of iodized salt. Highest per cent retention of iodine irrespective of type of salt was noticed in intact salt packet (97.97 per cent), in glass jars (82.66 per cent) followed by earthenware pot (80.85 per cent). Powdered salt has maximum iodine retention that is 91.16 per cent **(Jaishree & Naik, 2002).**

To prevent loss of iodine in salt, its handling should be proper as reported by **Rangnathan (1990)** that stability of iodine in iodized salt is highly affected by moisture as moisture absorb by salt and iodine migrate to bottom of container.

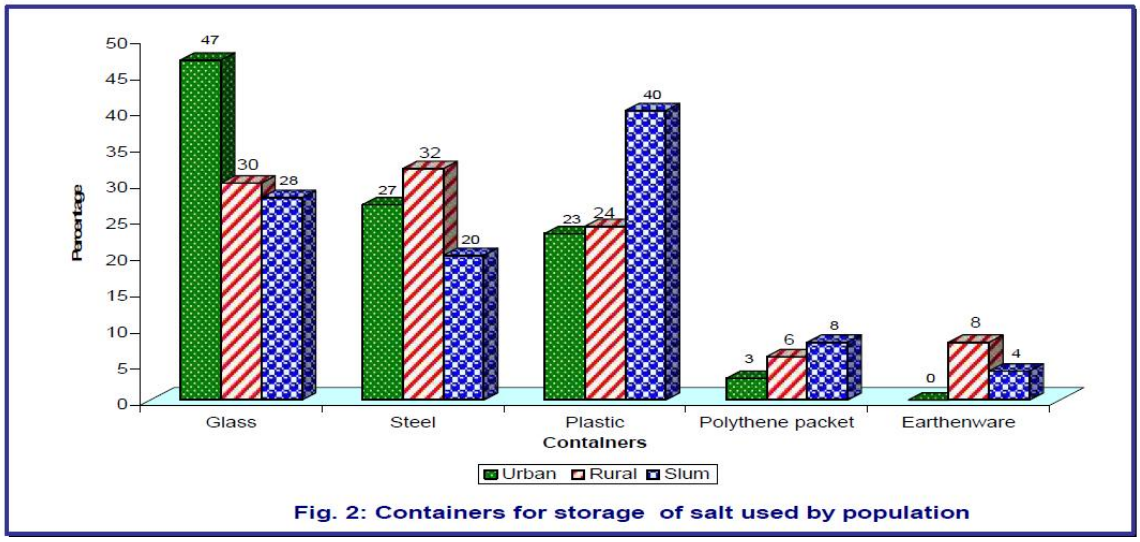


Fig. 2: Containers for storage of salt used by population

It was found that in urban population, 89.0 per cent of the respondents were using dry spoon to take salt from the container. 11.0 per cent of the urban respondents were using wet hands or spoons. On an average, 2.7 per cent and 3.0 per cent of the respondents were using wet spoon and wet hands respectively **(Table No.-4).**

Table-4 Handling practices of the salt.

S. No.	Medium of taking salt		Urban		Rural		Slum		Total	
			N	%	N	%	N	%	N	%
1.	By Hand	Dry	9	9.0	20	20.0	22	22.0	51	17.0
		Wet	2	2.0	2	2.0	5	5.0	9	3.0
2.	By Spoon	Dry	89	89.0	76	76.0	67	67.0	232	77.3
		Wet	-	-	2	2.0	6	6.0	8	2.7
		Total	100	100.0	100	100.0	100	100.0	300	100.0

Survey results regarding purchasing practices revealed that 68.0 per cent of the urban respondents were purchasing 2 kg salt for one month. The z^2 value was found to be positively significant at 5% level **(Table No.-5).**

Table-5 Monthly purchasing of salt by the respondents

S. No.	Amount of salt purchased	Urban		Rural		Slum		Total	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1.	1 kg.	28	28.0	12	12.0	28	28.0	68	22.7
2.	2 kg.	68	68.0	73	73.0	65	65.0	206	68.7
3.	> 2 kg.	4	4.0	15	15.0	7	7.0	26	8.6
	Total	100	100.0	100	100.0	100	100.0	300	100.0
									$z^2 = 6.11$

Conclusion- It was concluded from the present study that the studied population was aware about iodized salt but there was lack of knowledge about health benefits, proper handing and symbol of iodized salt. The careless domestic handling & storage were specially observed in rural & slum areas because of unawareness so there is need to focus on these areas specially.

Recommendation- There is urgent need to focus on projects to improve the purchasing, storage and usage practices of the rural and slum population for proper utilization of iodized salt by demonstration through mass media.

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