

A Study on Knowledge, Attitude and Practices Regarding Household Consumption of Iodized Salt among Selected Urban Women of Tripura, India

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ABSTRACT

Introduction: Iodine deficiency is not only responsible for endemic goiter but it is the single most common cause of preventable mental retardation and brain damage in the world today. Wide range of variation exists in household consumption of iodized salt across different states which warrant the need of the present study.

Aim: To assess the knowledge, attitude and practices regarding household consumption of iodized salt and associated factors among women in an urban area of Tripura.

Materials and Methods: A community based cross-sectional study was conducted among 260 randomly selected women, who were involved in day to day household cooking, residing within the field practice area of Urban Health Training Centre (UHTC), Dukli under Department of Community Medicine, Tripura Medical College and Dr BRAM Teaching Hospital, for a period

of three months. A predesigned, pretested, semi-structured interview schedule was used for data collection and analysed using SPSS version 16.0 software. Data were represented in the form of frequency distribution tables; Chi-square test and Fisher's-exact test was used to see the associations as and when required.

Results: In this study, majority (64.62%) of the participants have not heard of iodized salt but showed good practice (87.3%) regarding iodized salt consumption. Good knowledge, attitude was significantly associated with higher age group, education and socio-economic class of the participants.

Conclusion: Although majority of the participants showed good knowledge and practice related to iodized salt consumption at household level, time of adding salt while cooking was still faulty in most of them.

Keywords: Cooking, Dukli, Female, Iodine, Packaged salt

INTRODUCTION

Iodine is the key element for maintaining normal thyroid function, as well as normal growth, development of body and brain. Though iodine deficiency is known for causing endemic goiter, its most deleterious effect is on the developing brain of a fetus, ranging from mild dysfunction to irreversible intellectual impairment. It is the single most common cause of preventable mental retardation and brain damage in the world today. World Health Organization (WHO) has mentioned that the normal dietary intake of iodized salt should be maximum upto 5 gm per person per day. Iodine Deficiency Disorder (IDD) is a significant Public Health (PH) problem all over the world [1-3].

Various thyroid related diseases like hypothyroidism, hyperthyroidism, goiter, cretinism etc. have been found to be associated with IDDs worldwide; even there is increased risk of coronary artery disease, autoimmune disorders, cognitive impairment and cancer [4]. Excess dietary salt causes high blood pressure, which is a major modifiable risk factor for coronary heart disease and stroke [5]. High salt intake is related not only with high blood pressure but also with an increased risk of stroke and cardiovascular disease. Moderate dietary sodium restriction is recommended as part of the non-pharmacologic therapy of hypertension [6,7].

About 1.5 billion people worldwide live at risk of IDD of which more than 655 million people are already affected with IDD [2]. Salt iodization programs have been implemented in many countries of the world including India, and two-thirds of the global population (71%) is estimated to be covered by iodized salt [8]. Current estimates (2011), based on Urinary Iodine Concentration (UIC) of school-aged children as a biomarker of recent iodine intake indicate that, overall, 29.8% of the population has an inadequate iodine intake [9].

In India, about 200 million people live at risk of IDD, whereas more than 71 million people are suffering from goiter and other IDDs [2]. No state or Union Territory (UT) in India has been found to be free from IDD [10].

In India as per the Coverage Evaluation Survey 2009, 91% of households had access to iodized salt, of which 71% consumed adequately iodized salt [11]. Although this vary across different states and union territories, there is difference between rural and urban coverage of adequately iodized salt consumption at household level even within a state (83.2% in urban vs. 66.1% in rural areas) [2].

As per DLHS-4 (2012-13) reports, the prevalence of household consumption of iodized salt at rural level is 73.7% while it is 82.4% at urban level and 76.1% at overall level [12].

As it is evident from the previous studies [1-12], that emphasis has been given mainly on adequate iodized salt intake and household salt consumption assessment, but certain issues of knowledge, attitude and behavioural practices among population and difference in rural and urban areas, are much less explored throughout the country as well as in north-eastern India. Lack of adequate studies on these issues in Tripura warrants need of a study like the present one.

The specific objective of the study is to assess the knowledge, attitude and practices regarding household consumption of iodized salt and to find out the factors influencing them, among women in an urban area of Tripura.

MATERIALS AND METHODS

The study is a community based cross-sectional study conducted among women residing in the field practice area of Urban Health

Training Centre, Dukli under Department of Community Medicine, Tripura Medical College and Dr BRAM Teaching Hospital, for a period of three months (November 2017 to January 2018). A minimum sample size of 260 was calculated considering prevalence (p) as 82.4% as per DLHS-4 report of urban Tripura [12] and allowable error (l) as 5% using the formula of $n=4 pq/l^2$, where n is total sample size and $q=1-p$. This gives a minimum sample size of 232. Finally, considering 10% as non-response rate, 260 individuals were selected from a peri-urban area for the purpose of this study.

Study individuals were selected by simple random sampling technique, where 260 individuals from the field practice area of UHTC Dukli were selected by using computer generated random number table starting from one fixed point. Household numbers from routine field survey of UHTC were used for random sampling. If women were not found or absent in the house during survey, the next household as per random number table was visited until the required sample size was achieved.

Women who were involved in cooking daily household meals and gave their consent to participate were included in the study. If more than one person from target population were found in the same household, the one with less experience in daily cooking was excluded from the study. Also, those who were not mentally healthy were not included. A pre-designed, semi-structured, pre-tested interview schedule was developed by the investigators to collect the required information from the study participants. The interview schedule consisted of two parts; in the first part the investigators asked questions (eight in number) related to socio-demographic characteristics of the respondents and second part of the schedule involved six questions related to knowledge, three questions of attitude and five questions to find out practice of consumption of iodized salt at household level. The interpretation of the questions has been mentioned. The schedule was translated into local language (Bengali) by experts in literature for appropriateness and comprehension. The schedule was pre-tested in a separate urban female population of the same city, by the investigators before commencing the original research work and Cronbach's alpha calculated to be 0.69, which means good reliability.

The collected data were entered in SPSS version 16.0 computers based software and represented in proportions with the help of frequency distribution tables and charts. Chi-Square Test and Fisher's-exact test were used to see the association between socio-demographic factors with the knowledge, attitude and practice of the study participants ($p < 0.05$ was used as significant).

A well explained written informed consent, translated into local language (Bengali) was taken from all the study participants before interview.

Study proposal was submitted in front of the Institutional Ethics Committee of Tripura Medical College and Dr BRAM Teaching Hospital (Ref. Sl. IEC/SFTMC/2017/5/002, Dated: 15/09/2017) and ethical clearance was taken before commencing the study.

RESULTS

The present study revealed mean age of participants as 36.89 ± 12.001 years and nearly similar proportion of participants being above mean {115 (44.2%)} and below or equal to mean {145 (55.8%)}. All the study participants were Hindu by religion and General caste {124 (47.7%)} followed by ST {86 (33.1%)}. Most of them were married, housewives and had high school education. Majority belonged to nuclear families and from SES Class IV followed by SES Class III as per modified BG Prasad's SES Classification, January 2017 [Table/Fig-1] [13].

In this study majority {168 (64.62%)} of the participants haven't heard of iodized salt and among the rest 80 (86.96%) believed its common salt with iodine rather than any special salt. Only 31 (11.9%) participants were aware that the salt they consume at their home was having iodine and only 52 (20%) knew that iodized salt doesn't taste any different than

Variables		Frequency	Percentage (%)
Age	≤mean	145	55.8
	Above mean	115	44.2
	Total	260	100.0
Religion	Hindu	260	100.0
	Total	260	100.0
Caste	General	124	47.7
	OBC	3	1.2
	SC	47	18.1
	ST	86	33.1
	Total	260	100.0
Marital status	Unmarried	12	4.6
	Married	224	86.2
	Widowed	24	9.2
	Total	260	100.0
Education	Illiterate	32	12.3
	Primary school	30	11.5
	Middle school	55	21.2
	High school	94	36.2
	Higher secondary	29	11.2
	Graduate and above	20	7.7
	Total	260	100.0
Occupation	Student	11	4.2
	Housewife	184	70.8
	Govt. Employee	8	3.1
	Health worker	1	0.4
	Private employee	6	2.3
	Shop owner	1	0.4
	Business	1	0.4
	Agriculture	1	0.4
	Agriculture labour	1	0.4
	Daily labour	43	16.5
	Old age or Retired	3	1.2
	Total	260	100.0
	Type of family	Nuclear	184
Joint		76	29.2
Total		260	100.0
Socio-Economic Status classification as per modified BG Prasad's scale	Class I	8	3.1
	Class II	49	18.8
	Class III	77	29.6
	Class IV	98	37.7
	Class V	28	10.8
	Total	260	100.0

[Table/Fig-1]: Socio demographic characteristics of study of population (n=260).

table salt. Only 19 (7.3%) participants knew how to identify iodized salt from the packet. Although almost all {258 (99.2%)} preferred packaged salt than unpackaged open salt and for majority {96 (36.9%)}, taste was the main reason for their salt preference. Still majority believed that iodized salt was somewhat important {118 (45.4%)} followed by very important {91 (35%)} in their diet for maintaining good health. When interviewed about their practices, almost all of them {258 (99.2%)} replied that they were using packaged salt and only 2 (0.8%) were using coarse salt. Most of them {243 (93.5%)} were avoiding direct exposure of edible salt to sunlight and storing salt in dry area {254 (99.7%)}. Most of them were using covered container for salt. Majority said that they used to add salt either in the middle of cooking {161 (61.9%)} or at the beginning {95 (36.5%)} but only 4 (1.5%) added salt at the end of cooking [Table/Fig-2].

Variables	Frequency	Percentage
Knowledge		
Heard about iodised salt		
Yes	92	35.38%
No	168	64.62%
If heard about iodised salt, what it is (n= 92)		
Ordinary common salt with a small quantity of iodine	80	86.96%
Special type of salt with good quantity of iodine	2	2.17%
Others	3	3.26%
Don't know	7	7.61%
The salt used for cooking at your home contains iodine		
Yes	31	11.9%
No	118	45.4%
Don't know	111	42.7%
Iodised salt tastes different from that of non-iodised salt		
Yes	61	23.5%
No	52	20.0%
Don't know	147	56.5%
How to recognise iodised salt from its packet		
By seeing "Smiling sun" sign	19	7.3%
By seeing iodine level printed	59	22.7%
By seeing "Green leaves" sign	1	0.4%
Others	8	3.1%
Don't know	173	66.5%
Intake of iodised salt is important for health		
Yes	175	67.3%
No	5	1.9%
Don't know	80	30.8%
Attitude		
Opinion on salt preference		
Packaged salt	258	99.2%
Unpackaged salt	2	0.8%
Reason for salt preference		
Taste	96	36.9%
Tradition	91	35.0%
Quantity	5	1.9%
Health	47	18.1%
Quality of salt	19	7.3%
Cheaper	1	0.4%
Others	1	0.4%
Importance of iodised salt in your diet		
Very important	91	35.0%
Somewhat Important	118	45.4%
Not important	2	0.8%
Don't know	49	18.8%
Practice		
Type of salt used		
Packaged salt	258	99.2%
Coarse salt (unpackaged)	2	0.8%
Sunlight exposure to salt		
Yes	17	6.5%
No	243	93.5%
Salt storage place		
Dry area	254	97.7%
Moist area	3	1.2%
Near to fire	3	1.2%

Type of salt container		
With cover	251	96.5%
Without cover	9	3.5%
Salt is added to food in kitchen		
At the beginning of cooking	95	36.5%
In the middle of cooking	161	61.9%
At the end of cooking	4	1.5%

[Table/Fig-2]: Frequency distribution table of participants' responses on their knowledge, attitude and practices of household iodised salt consumption (n=260).

[Table/Fig-3] revealed good knowledge and good practice among majority {146 (56.2%) and 227 (87.3%) respectively} of the participants regarding iodized salt consumption but poor attitude among 152 (58.5%) of the individuals.

Variables	Frequency	Percentage (%)	
Knowledge	Poor	114	43.8
	Good	146	56.2
Attitude	Poor	152	58.5
	Good	108	41.5
Practice	Poor	33	12.7
	Good	227	87.3

[Table/Fig-3]: Frequency distribution table of quality of knowledge, Attitude and practice of study population (n = 260).

Socio demographic factors		Knowledge		Attitude		Practice	
		Poor	Good	Poor	Good	Poor	Good
Age	≤Mean	53	92	76	69	18	127
	>Mean	61	54	76	39	15	100
p-value		0.008*		0.026*		0.880	
Caste	SC	71	53	79	45	17	107
	ST	1	2	1	2	0	3
	OBC	13	34	23	24	7	40
	GEN	29	57	49	37	9	77
p-value		<0.001* [□]		0.246		0.790	
Marital status	Unmarried	4	8	6	6	0	12
	Married	96	128	129	95	28	196
	Widow	14	10	17	7	5	19
p-value		0.263		0.380		0.219 [□]	
Education	Illiterate	24	8	31	1	7	25
	Literate	90	138	121	107	26	202
p-value		<0.001*		<0.001*		0.150 [□]	
Occupation	Not working	76	122	112	86	24	174
	Working	38	24	40	22	9	53
p-value		0.002*		0.268		0.621	
Type of family	Nuclear	80	104	106	78	20	164
	Joint	34	42	46	30	13	63
p-value		0.852		0.664		0.170	
Economic status	Class I	3	5	2	6	0	8
	Class II	15	34	23	26	3	46
	Class III	29	48	47	30	10	67
	Class IV	49	49	57	41	17	81
	Class V	18	10	23	5	3	25
p-value		0.025* [□]		0.009* [□]		0.347 [□]	

[Table/Fig-4]: Association of socio-demographic factors with knowledge, attitude and practices of study participants (n=260).

(*) denotes significant p-values (<0.05). Tests applied were Chi-square and Fisher's-exact test.

([□]) denotes p-values from Fisher's-exact test

Mean age, social caste, education, occupation and socio-economic class of the individuals were found to have significant association with their knowledge of iodized salt consumption (p-value=0.008, <0.001,

<0.001, 0.002, 0.025 respectively). Similarly mean age, education and SES class had significant association with attitude of iodized salt consumption (p -value=0.026, <0.001, 0.009 respectively) [Table/Fig-4].

DISCUSSION

The present study revealed mean age of participants as 36.89±12.001 years and majority (55.8%) were aged less than 37 years. As per modified BG Prasad's SES Classification, January 2017, majority belonged to Class IV (lower middle socio-economic class). They had similarity in baseline characteristics to various other studies included in discussion [14-25].

While assessing knowledge of the study participants regarding consumption of iodized salt it was found in this study that only 35.38% of the participants have heard of iodized salt. Similar results were found in a study done by salt commission in 2010 in eight states [14] and study by Sen TK et al., West Bengal, where they have found that 57.8% and 60% of their study population have never heard of iodized salt [15]. Although there was lot of dissimilarities in various other studies regarding the same e.g., like study done in Chennai by Cariappa MP et al., where 79.6% population knew about iodized salt, only 30.6% in a study at Bangalore by Jaiswal N et al., 72% of the population in study done by Kumar P et al., and among studies done in other countries, 36.7% of the population in study done by Sarah NA et al., in Ghana, 85.3% in study at Sindh and provinces of Pakistan by GN Khan et al., 69.3% of urban population of study done by Tsegaye M et al., in Southern Ethiopia [16-21]. This difference in knowledge could probably be because of difference in population distribution, their education and salt consumption pattern.

In this study, 11.9% of the study participants were aware that the salt they consume at their homes were having iodine which is quite less than that of study results by Roy R et al., in Uttar Pradesh, where 90.9% of the study population knew that packaged salt contains iodine [22]. This is a matter of serious concern regarding knowledge of our study population. Similarly the proportion of our study population having knowledge on identifying iodized salt packet by 'smiling sun' logo was also very poor (7.3%) consistent to findings in various other studies, 12.2% in study done by Cariappa MP et al., in Chennai and only 4% in study done by Kumar P et al., [16,18].

While various other studies reported majority of their study population were unaware of the importance of iodized salt (63.4% in study by Sen TK et al., in West Bengal and 53.8% in the study by Roy R et al., [15,22]. Most of our study population (80.4%) opined that iodized salt was important in their daily food.

Although most of our study population were using packaged salt, avoiding direct sun exposure to salt, keeping salt in dry place and in covered container but only 1.5% were using salt at the end of cooking, whereas, it was 8.16% in the study at Chennai [16], 7.1% in study at Bangalore [17] but comparatively lesser than study at Ethiopia where 50.2% of study population used salt at the end of cooking [23].

Majority of the participants in the present study showed good knowledge and practice regarding iodized salt consumption, better than what Aruna RT et al., found in their study in Karnataka [24].

The present study revealed that higher age, improved literacy status and higher socio-economic class were the factors that were significantly associated with good knowledge and attitude of the participants which is consistent with study findings by salt commission in eight states of India and Singh S et al., in Kanpur [14,25]. This might be because higher education and income allowed people to understand and act upon information regarding iodized salt consumption at their household level.

LIMITATION

Lack of availability of a standard questionnaire format and subjective nature of responses, especially lack of objective assessment of practice of iodized salt consumption by the participants could be the possible limitations of the study.

CONCLUSION

The study revealed good knowledge and practices regarding consumption of iodized salt among urban women involved in household cooking in Tripura, even though majority of them haven't heard of iodized salt. Also, adding salt at the end of cooking to avoid loss of iodine content in salt was not among their common practices, consistent with other parts of our country. A positive change in the attitude and above mentioned practice might help in reducing the burden of IDD in our country which is a scope for future research work in this context.

Ethical Approval: The study was approved by the Institutional Ethics Committee (Tripura Medical College and Dr BRAM Teaching Hospital, Agartala).

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