Original article:

Knowledge and practices regarding use of iodised salt and iodine deficiency disorder among the population of Rani, Kamrup(R), Assam

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Abstract:

Background: Iodine deficiency is an important public health issue as it is a preventable cause of intellectual disability. Through this study it is aimed to know about the knowledge and practices regarding use of iodised salt during cooking and iodine deficiency disorder among the people in Rani Area, Kamrup district, Assam. Objectives**:** 1.To assessed theknowledge and practicesregarding use of iodised salt and iodine deficiency disorder.2. To assess the presence of iodine in salt consumed in households of rani area.

Setting and Design: A community based cross-sectional study was conducted in rural villages (Under Rani RHTC) in Kamrup district, Assam, with total 150household's member.

Methods and Materials: This study was carried out over a period of 2 months (1st July, 2015 to 31st August, 2015) using a pre-structured questionnaire and iodine testing kit to estimate iodine content. A simple random sampling technique was used to select the respondents from all the sample villages

Statistical Analysis: The data was analysed manually, using INSTAT graph pad and summarised by frequencies and percentages value <0.05 was considered statistically significant

.**Results:** The study revealed that 90% of households in the Rani area consumed iodised salt and knowledge of iodised salt was quite high as 90%. In addition 74.67% had knowledge that inadequate intake of iodised salt can lead to the development of goitre.

Key Words: Knowledge, Practices, Iodized salt, Iodine deficiency disorders,Assam

Introduction:

Iodine is considered to be one of the most essential micronutrients for the normal physical and mental development of human beings.The iodine (120-150 microgram/day for adults) is taken primarily by food (90%) and the remaining from drinking water. The level of the iodine in the soil determines also the level of its presence in water and food. The erosion of soil and de forestation is considered to be the reasons for the decrease of the iodine level in hilly and mountain areas [1].

Iodine deficiency disorders (IDD) are linked to iodine deficient soil. Due to glaciations, flooding, rivers changing course and deforestation the iodine present in top soil is constantly leached. This in turn leads to deficiency of iodine in crops grown on iodine deficient soil with consequently low iodine in the diet for livestock and humans. In the past, iodine deficiency was thought to cause only goitre and cretinism. However, over the last quarter of the century, it has become increasingly clear that iodine deficiency leads to a much wider spectrum of disorders commencing with the intrauterine life and extending through childhood into adult life with serious health and social problems. The spectrum of diseases includes goitre, cretinism, hypothyroidism, brain damage, abortion, still birth, mental retardation, psychomotor defects and

hearing and speech impairment[2]. Majority of consequences of IDD are invisible and irreversible but at the same time preventable.IDD constitute the single largest cause of preventable brain damage worldwide leading to learning disabilities and psychomotor impairment [3]. Children living in iodine-deficient areas on an average have lower intelligence quotient (IQ), by as much as 13.5 IQ points as compared to children living in iodine-sufficient areas [4]. Goitre is only the tip of the iceberg .Iodine deficiency results in physical and mental retardation.In our country, it is estimated that more than 200 million people are at risk of IDD,while the number of persons suffering from goitre and other iodine deficiency disorder is above 71 million. The surveys conducted by the central and state health directorates, Indian Council of Medical Research(ICMR) and Medical institutes have clearly demonstrated that not even a single state/union territory is free from the problem of IDD. Sample surveys have been conducted in 28 states and 7 union territories which have revealed that out of 324 districts surveyed so far, 263districts are IDD endemic i.e. the prevalence of IDD is above 10 per cent [4].

Materials and methods:

A cross-sectional descriptive household survey design was employed for the study to assess the knowledge and practices of respondents regarding the intake of iodized salt and determine the iodine content of salts used by households [7].

Sample and sampling procedure: Administratively, the villages of Rani Area, Kamrup District, Assam, under Rani RHTC which is the field practice area of Gauhati Medical College and Hospital (GMCH)situated 30 km away from GMCH with a total population of approximately 34,325 people. A total sample size of 150 households was randomly selected from all the selected five sample villages in the Rani area under Rani RHTC. Individuals aged 18 years and above in these households who were responsible for preparing meals constituted the subjects for the study. A combination of cluster and simple random sampling techniques was used to select households to participate in the study. One respondent from each households were randomly selected total of 30 respondents from 30 households from each of the five(5) clearly demarcated villages in the area, resulting in a total number of 150 respondents representing 150 households in the Rani area, Kamrup,Assam.

Data collection procedure: Prior to the administration of the questionnaire, the questionnaire was developed employing some questions from similar studies conducted in Ethiopia [8], Mongolia [9] and South Africa [10]. the instrument was pre-tested in 20 households in two villages not selected for the actual study in the Rani area, Kamrup. The necessary modifications and corrections were made on the questionnaire before it was finally administered in the study area. Informed consent was obtained from both heads of the households and the respondents before the interview was conducted. In each household, permission was obtained to run tests on samples of the salt used for cooking to determine their iodine levels. The tests were conducted using the rapid testing kits [5,6]. To determine the iodine levels in the salt samples, colour charts on the kit corresponding to values of 0-15 PPM,15-30 PPM were used.

Data analysis: At the end of the interviews, questionnaires were checked for completeness and internal consistency.The data was analysed manually, using INSTAT GRAPH PAD and summarised by frequencies and percentages,p value <0.05 was considered statistically significant.

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Results:

Socio-demographic status of respondents

Socio-demographic information on the study participants is presented in Table 1. As shown in Table 1, the majority 136(90.67%%) were females, out of which 133(88.67%)were housewife suggesting that in the Rural setting of Assam women are usually responsible for meal preparation. It also suggests that, health education and awareness programmes which seek to promote the consumption of iodized salt should aim at targeting women groups and organizations at the community level.

Variable	No's (%)
Gender	
Female	**136 (90.67%)**
Male	14(9.33%)
Respondent's education level	
No formal education	11 (7.33%)
Primary school	37(24.67%)
Middle school	34(22.67%)
High school	**56(37.33%)**
Graduation	12 (8%)
Professional	0
Respondents' Occupational status	
Housewife	133(88.67%)
Farmer	10(6.67%)
Shop owners	7(4.67%)
Civil servant	0

Knowledge of respondents regarding iodized salt and iodine-deficiency disorders

Responses given by the study participants to the knowledge questions are indicated in Table 2. As shown in Table 2, majority (90%) of the respondents indicated that they had heard about iodized salt. The friends and relatives (41.48%) was the major medium by which respondents were informedabout the importance of iodized salt and iodine-deficiency diseases. Majority (74.67%) of the respondents indicated that the intake of iodized salt is important because it cures goitre whereas 70.67% indicated that the intake of iodized salt enables individuals to remain healthy. (63.33%) of the respondents agreed that iodine deficiency can lead to growth retardation, particularly in children. Regarding storage of iodized salt, 76(56.29%) of the respondent indicated thatiodine content reduces when not sored in enclosed container. Majority 102(68%) of the respondents indicated that iodine deficiency can lead to mental retardation.

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Table-2: Showing Knowledge of respondents regarding iodized salt and iodine-deficiency disorders.

Question/Responses	No's (%)
Heard about iodised salt	
Yes	**135(90%)**
No	15(10%)
Source of information about iodised salt	
Radio	14 (10.37%)
Friends/Relatives	**56 (41.48%)**
Television	**37 (27.40%)**
Health workers	28 (20.74%)
Every salt contains iodine	
Yes	34 (22.67%)
No	**116 (77.33%)**
Why intake of iodised salt is important	
To remain healthy	106(70.67%) (Multiple responses)
To cure goitre	112(74.67%)
To grow well	63(42%)
Don't know	20(13.33%)
Iodine content reduces when iodised salt is not stored in enclosed container	
Yes	76(56.29%)
No	59(43.70%)

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Table-3 showing knowledge regarding Iodine deficiency disorder:

Variables	No's (Percentage %)
Iodine deficiency can expose children to mental retardation	
Yes	102(68%)
No	48(32%)
Iodine deficiency can lead to growth retardation	
Yes	95(63.33%)
No	55(36.67%)
Iodine deficiency can lead to development of goitre..	
Yes	112(74.67%)
No	38(25.33%)

Respondents' practices regarding the use of iodized salt

Figure 1 depicts exclusive users of iodized salt and common salt, and users of both iodized and common salt. The results revealed that majority (90%) of the respondents use iodized salt exclusively, whereas 6% of the respondents used both common and iodized salt. The respondents who indicated that they used both salts said it was partly due to shortage of iodized salt on the market at certain times. In addition, others indicated that they were unable to distinguish iodized salt from unionized salt sold on the markets. On the other hand, 4% of the respondents reported that they used common salt exclusively, and they attributed this practice due to their lack of knowledge regarding iodised salt. Responses given to other questions assessing the practices of respondents are presented in Table 4. The results revealed that majority (59.25%) indicated that they had been using iodized salt for less than five years whereas only 2.96% reported that they had used iodized salt for 16 years and above. An observation made was that, for 93.33% of the respondents whose salt samples were tested, the iodine content was found to be in between15 ppm-30 ppm. The remaining 6.67% of the respondents had salt with no iodine content. Out of the 150 salt samples which were tested, the brand names of 52% were Tata salt. Majority (84.67%) of the respondents stored their salt in the recommended way in closed containers. For the 3.33% who stored salt in containers without a lid and another 12% who stored it in polythene bag.

Iodine content in household salt The majority (93.33%) of the respondents consumed salt with an iodine level of 15ppm and above, whereas 6.67% consumed salt with an iodine content of less than 15 PPM or 0 PPM as shown in Table 4.

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Table 4:**Practice of respondents regarding the use of iodised salt**

Variables	No's (% Percentages)
Duration of use of iodised salt in years(N=135)	
Less than 5 years	80(59.25%)
From 5-10	34(25.18%)
From 11-15 years	17(12.59%)
16 years and above	4(2.96%)
Cannot remember	0
Brand name of salt used by respondent (Household)	
Tata	78(52%)
Annapurna	60(40%)
Unknown	12(8%)
Type of container used to store salt at home	
Container with a lid	127(84.67%)
Container without a lid	5(3.33%)
Polythene bag	18(12%)
Iodine content	**No's (Percentage %)**
0 ppm	10(6.67%)
15 ppm to 30 ppm	140(93.33%)
Total	150

Table 5: Showing the **Iodine content in household salt sample tested….**

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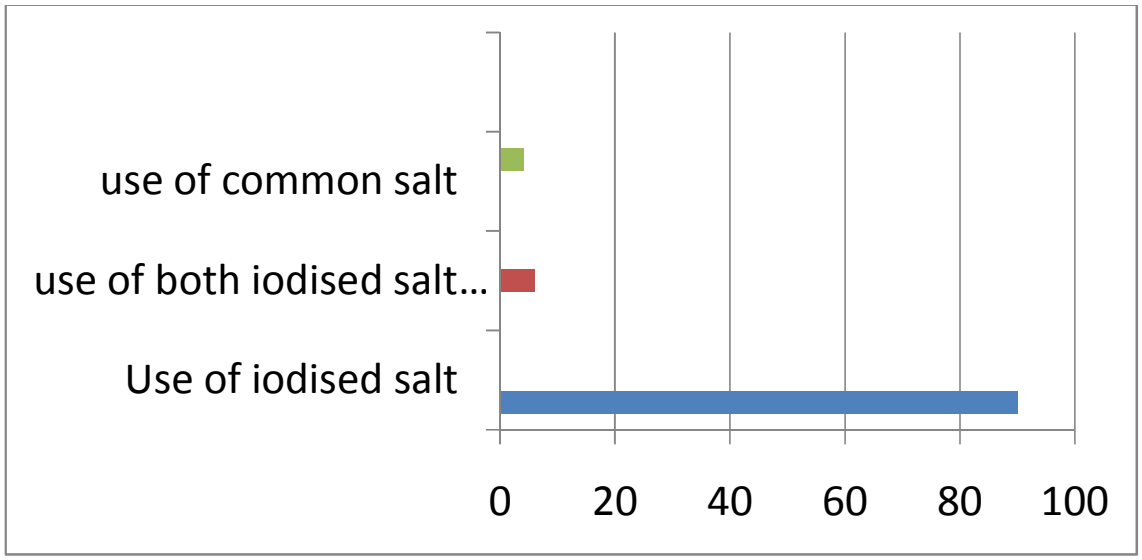
Figure 1: Showing the **Use of iodised salt by Respondents..**



Discussion:

Iodization of salt is the major strategy that has been employed to help avert the public health effect of iodine deficiency disorders (IDDs). A high proportion (90%) of the respondents heard about iodised salt. A significant proportion of the respondents (41.48%) indicated that their major source of information about iodized salt was the friends and relatives followed by (27.40%) of the respondents source of information was television. Around (90.67%) respondents are female and (9.33%) are male. Out of 136 (90.67%) female respondents around (88.67%) were housewives. Majority (59.25%) of the respondents had been using iodised salt since 5 years and most of them(52%) used iodised salt with brand name TATA salt.

A high proportion (56.29%) of the respondents knew that the iodine content of iodized salt reduces when it is not stored in enclosed containers. Majority (74.67%) and (68%) of the respondents indicated that iodine deficiency can lead to development of goitre and mental disorder respectively.

Conclusion:

The knowledge on iodized salt of people in charge of preparing household meals in the district is relatively high, as most (90%) of them heard about iodized salt. However, their knowledge levels regarding iodine deficiency disorder and storage of salt were not high as used of salt. But practices of storage of salt a good proportion around (84.67%) in enclosed container and use of iodised salt around (90%)of the respondents.

Recommendation:

On the basis of the findings of the study, recommendations made include the following: In the propagation of educational messages, great effort should be made to enhance the knowledge regarding the importance of iodine and iodine deficiency disorder and identification mark of iodised salt and un iodised salt.

A suggestion for further study is the need to assessthe iodine status of school children and pregnant women in particular, which should include the determination of Urinary Iodine Concentration (UIC) levels as recommended by the WHO. This is because these two groups are described as the most vulnerable groups confronted by iodine deficiency disorders.

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