Research Paper

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A Study of Utilization of Iodized Salt in Rural Population of Nalgonda District of Telangana (India)

Medical Science

KEYWORDS : Iodine deficiency disorders, Use of iodized salt, Rural, Nalgonda

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ABSTRACT

Background. Iodine deficiency disorders are important public health priority globally as well as in India. The present study was undertaken to determine the prevalence of utilization of adequately iodized salt at house-hold level among rural community in Nalgonda district of Telangana.

Methodology. One hundred and fifty-four households were interviewed for knowledge regarding iodine deficiency disorders, socio-demographic profile and cultural practices related with purchase and storage of salt. A sample of salt from each household was tested for adequate presence (> 15ppm), inadequate presence (< 15 ppm) and absence of iodine.

Results. The study revealed that 83.1% of households were using adequately iodized salt, 7.8% were using inadequately iodized salt while 9.1% were using salt that has no iodine. Use of crystal salt and open storage of salt were significantly associated with non-utilization of adequately iodized salt.

Conclusion. Health education of the community regarding Iodine deficiency disorders and its prevention through use of iodized salt is recommended.

Introduction

World Health Organization (WHO) has defined Iodine Deficiency Disorders (IDD) as all consequences of iodine deficiency that can be prevented by ensuring an adequate intake of iodine. [(1)] Iodine deficiency is a geochemical environmental problem and occurs due to deficient iodine in ground water and locally grown foods in areas lacking iodine in soil. Iodine deficiency reckons its impact right from development of fetus to all ages of human life. It results in abortions, still birth, congenital anomalies, perinatal mortality, mental retardation, deaf-mutism, dwarfism, goiter, hypothyroidism, hyperthyroidism and retarded physical development. [(2)] Globally about 2 billion are people are at risk of IDD. [(3)] The 39th World Health assembly held at Geneva, in May 1986 recognized IDD as a major public health priority, and urged all Member States to give high priority to prevention and control of IDD through appropriate nutritional programmes as part of primary health care.[(4)]

IDD continues to be major public health problem in India. Surveys conducted by the Central and Sate Directorates, Indian Council of Medical Research and medical institutes have revealed that not a single State/UT is free from IDD. Out of 325 districts surveyed so far 263 are IDD-endemic, i.e. the prevalence of IDD is above 10 percent of the population. [(5)] It is estimated that 350 million Indians are at risk of IDD as they consume salt with inadequate iodine. [(6)] Thus, deficiency of iodine a *micro*nutrient required at 90-150 micrograms (250 microgram for pregnant & lactating mothers) per day poses a serious threat to the health, well being, economic productivity and advancement of millions of people, and has *mega* social and economic implications on individuals, families, communities and the country.

The salt iodization programme was introduced in India in 1962 as National Goiter Control Programme. In 1992 the programme was renamed as the National Iodine Deficiency Disorders Control Programme (NIDDCP) to reflect the spectrum of disorders, including goiter, that occur due to iodine deficiency.[(5)] National policy of universal salt iodization was adopted in 1986, and subsequent legislation prohibits the sale of non-iodized salt for human consumption. In spite of the legislation and self-sufficiency in production of iodized salt, the country has not attained universal consumption of iodized salt. Unfortunately, the poorest, and those living in rural/tribal areas have little access to iodized salt, either because of ignorance or economy[(7).] National Family Health Survey (NFHS-3:2005-2006) [(8)] revealed that in Andhra Pradesh (now divided into Andhra Pradesh and Telangana) only 20.3% of household were consuming adequately iodized salt. A follow up study (Iodized Salt Coverage Study 2010)[(9)] selected 1200 rural households across the state of Andhra Pradesh and reported that 46.9% of households were consuming salt with iodine content of 15 ppm or more.

The present study was undertaken in rural areas of Nalgonda district of Telangana (India) to study the prevalence of utilization of iodized salt in the district and social determinants associated with non-utilization.

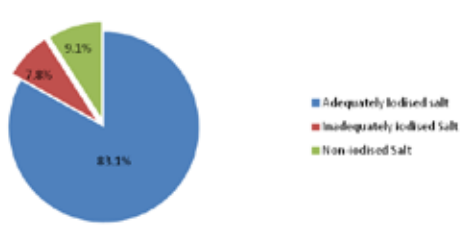
Methodology

A cross-sectional design was used to study 154 households in 5 villages (minimum 30 in each village) of the district. The villages and households were selected by two stage random sampling. Socio-demographic data were obtained on a pre-tested structured questionnaire by trained undergraduate students. A sample of salt being used for cooking was obtained during the interview and tested using commercially available semi-quantitative kits (MBIKITS International) for absence, inadequate presence (< 15 ppm) and adequate presence (≥ 15 ppm) of iodine. Data was compiled in SPPS ver 19 and analyzed using the software. Ethical clearance from Institutional Ethical Committee and informed consent of the interviewee were obtained.

Results

A total of 154 houses were included in the study. The study revealed that 128 households (83.1%) were consuming adequately iodized salt, while 12 households were using inadequately iodized salt and 14 households had no iodine in salt consumed by them (Figure 1).

Figure 1: Utilisation of Iodised Salt



Level of knowledge regarding basic aspects of iodine, IDD and its prevention among study population is shown in Table 1. It is observed that the level of awareness is low, with only 34.4% being aware that iodine is added to salt to control IDD.

Table 1: Knowledge of the Interviewee regarding IDD

Knowledge-related questions	Yes (percentage)	No (percentage)
Ever heard of Iodine?	73 (47.3)	81 (52.6)
Does know that deficiency of Iodine can cause diseases like goiter or mental retardation in children?	39 (25.3)	115 (74.7)
Does know that Iodine is added to Salt?	53 (34.4)	101 (65.6)

Table 2 depicts various social factors and practices related with purchase and storage of salt at household level. The table is self explanatory.

Table 2: Socio Factors & Practices related with Purchase and Storage of Salt at Households

Variables		Number using non-iodized/ inadequately iodized salt (n=26)	Number using adequately iodized salt (n=128)	P value (Fisher's Exact test where indicated)
Religion	Hindu	25	115	P = 0.46
	Others	1	13	
Education Head of family	No formal education	9	52	P = 0.67
	Primary & secondary	10	38	
	10+2 or higher	7	38	
Education spouse of head of the family	No formal education	16	78	P = 0.95
	Primary & secondary	5	23	
	10+2 or higher	5	27	
Occupation of head of family	Labourer	9	55	P = 0.71
	Salaried (Govt/Pvt)	13	54	
	Any other including self-employed	4	19	
Per Capita monthly income (Rs)	Less than 1,000	12	26	P = 0.31
	1,000-1,999	9	52	
	2,000-2,999	3	22	
	3,000 or more	2	18	
Type of Salt	Crushed	10	118	P < 0.001*
	Crystal	16	10	
Storage of Salt	Container with lid	14	100	P <0.05*
	Open storage	12	28	
Amount of salt purchased at one time	1 Kg or less	125	19	P = 0.27
	More than 1 Kg	29	7	
Source of Salt	Kirana/home seller/ weekly market	24	113	P = 0.73
	Public Distribution System	2	15	

Statistically significant

As evident from the table, social factors like religion, education of head of family as well his spouse, occupation and per capita income are not associated with use of iodized salt. However, type of salt (crushed or crystal) and proper storage of salt at households are significantly associated with the utilization of non-iodized or inadequately iodized salt.

Discussion

National Family Health Survey-2 (1998-99) and NFHS-3 (2005-06)[8] revealed that 49% and 51% of Indian were using adequately iodized salt, with Andhra Pradesh showing less than national averages (only 20.3% during NFHS-3). In a study[9] conducted by Salt Commissioner of India during 2010 in 8 States, revealed that the 46.9% % of households in Andhra Pradesh were consuming adequately iodized salt, an improvement of more than double since NFHS-3. The present survey, although not representative of whole State reveals that 83.1% of population in Nalgonda district of Telangana (earlier a district of Andhra Pradesh) are consuming adequately iodized salt. This shows a constant progress towards universal salt iodization in the State, although the credit for achievement should be bestowed on the legislation, rather than health education, as level of knowledge continues to be dismal. The findings of this study are in-agreement with a recent study[10] conducted in Darjeeling district of West Bengal, India which revealed that 92.6% of salt samples tested had adequate iodine content of > 15 ppm.

Significant association of proper storage of salt with iodine content as brought out by this study is consistent with findings of a study[11] conducted in Madhya Pradesh that also reported inappropriate salt storage leading to suboptimal levels of iodine. Indeed, safe keeping of any food item is essential not only to maintain its nutritional value, but also to prevent contamination. Thus, storing salt in container with well fitting lids should be part of Information, Education and Communication (IEC) activities.

Conclusion

The study reveals that in spite of poor knowledge in the community regarding iodine and impact of its deficiency on health, the utilization of iodized salt in rural Nalgonda is showing a northward trend. However, there is a need to improve the knowledge so that the target of Universal Salt Iodization is achieved at the earliest. The implementation of legislation has improved the *supply side*, but public health specialists must ensure that *demand* side is improved through IEC activities.

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