Journal of Saidu Medical College 2012; 2 (2)

EVALUATION OF STATUS OF SALT IODIZATION AND COMMUNITY AWARENESS REGARDING USE AND AVAILABILITY OF IODIZED SALT IN DISTRICT SWAT

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ABSTRACT

The effect of Iodine deficiency disorders (IDD) ranges from stillbirth to reductions in IQ according to the level of iodine deficiency and is effectively preventable by the use of iodized salt. Globally it affects 2 billion people, mostly in mountainous areas. Northern areas of Pakistan are highly endemic for IDD. Swat was the first district to introduce salt iodization in the private sector, in 1993.

Objectives: Objectives of this descriptive study is to assess the present status of iodized salt in District Swat with regard to availability, usage and awareness of the inhabitant of the household about the benefits of iodized salt.

Material & Methods: Duration of study:3 months. Sample size: data was collected by a pretested questionnaire, separately designed for shops, houses and salt factories, from all salt producing factories in the area and stratified randomized technique was used for50 shops & 240 houses of the area, with equal half were taken from rural & urban areas.

Result: Result of cumulative use of iodized salt 90 %, availability is 90 % & production is 89 % . The overall awareness about the use of iodized salt benefits is 39.2 %, more in urban (45 %) areas as compare to rural areas (33.3 %).

KEY WORDS: Iodine deficiency disorders (IDD), iodized salt, USI (universal salt iodization)

INTRODUCTION

Iodine deficiency disorders (IDD) is an important and a serious public-health problem, exerts its saddest and most significant effect on the developing embryo which results in failure of nervous system & producing reductions in IQ of 10 to 15 IQ points[1]. Thus the consequences of IDD on heath is present from fetal life upto adulthood including abortion &stillbirth[2]. The iodine is essential for the synthesis of thyroid hormone, which in turn effect every cell of the body. Therefore, it is the most effectively preventable& controllable cause of mental retardation[3]. Its affects approximately two billion people worldwide, majority of them are present in the developing & third-world countries[4]. India is seriously affected with 100 million suffering from iodine deficiency, 4 million from goiter, and 0.5 million from cretinism[4]. Northern areas of Pakistan (Dir, Swat, Chitral and Gilgit) are highly endemic for IDD (Iodine deficiency disorders). It is also reported from other parts of the country like Azad Jammu and Kashmir, Peshawar, Swabi, Islamabad, Quetta and even up to Karachi[5]. According to UNICEF (1998) 70% of the total population in Pakistan is at risk of Iodine deficiency disorders (IDD)[6].

Iodized salt is table salt mixed with a minute amount of iodide compound, may slowly lose its iodine content due to evaporation by exposure to air over long periods[7]. Since the initiation of Salt iodization, the number of households using iodized salt has risen globally, resulting in reduction of iodine deficiency disorders dramatically. The United States Food and Drug Administration recommend 150 micrograms of iodine per day for both men and women.

In 1987 the government of Pakistan, in collaboration with UNICEF, launched a crash

program of iodized oil administration in the Northern Areas, AJK and Swat district which is followed by launching of iodized salt project in 1989. Swat was the first district to introduce salt iodization into the private sector, in 1993. Till 2008, 95% of salt available for local use in Swat is iodized[7].

Like others programs, salt iodization was severely affect due to withdrawal of support of the donor agencies and law and order situation in Swat. A Descriptive study with a stratified randomized sampling technique was designed to assess the present status of iodized salt in District Swat with the ultimate objectives to control IDD.

MATERIAL AND METHODS

Setting: This study was conducted in Tehsil Kabal and Tehsil Babozi in District Swat from 1st march to 30th may 2012.

STUDY POPULATION:

Sample size: All salt producing factories (18 in number) in district swat.

From utility shops of the area. 50 shops (25 in rural area, 25 in urban area) and (240 houses) 120 houses in rural area (Kabal proper, Kanju, and Barabandi) and 120 houses from urban area (Amankot, Saidu Sharif and Watkay) were selected.

Sample Technique: The whole population of Swat was divided into two strata, rural & urban areas. 3 villages were randomly selected from each area (120 houses from rural area Kabal proper, Kanjue, and Barabandi and 120 houses from urban area Amankot, Saidu proper and Watkay). From each village WHO cluster sample technique was used for collection of samples for households, four clusters were done in each area and 10 houses were included in one cluster. Randomized sample technique was use for shops in each area. All salts factories of district swat were included for sampling.

Inclusion criteria: All unlocked houses, shops and factories. Both males and females between age15 to 60 years were interviewed.
Exclusion criteria: Locked houses, shops and factories in the area

Data collection tool: A pretested questionnaire was used to collect data and information. Data was analyzed by ordinary calculator and presented in appropriate table.

METHODOLOGY

Data collection procedure: Data was collected from the following;

1. From all salt producing factories in district swat. Before collection of samples, President of salt producing factories association was contacted and purpose of the study was discussed with him. The owner of the salt factories was informed in advance about the date and purpose of visit of factories. The salt factories were visited along with the president. Confirmation of salt iodization was done by Rapid kit method by taking samples of the available packed salt in factory and also from unpacked grinded salt present at sight of machine at four different points.

   The change in color from white to purple according to the concentration of iodine in the salt from zero to 30 parts per million (ppm) is matched with the color indicators marked on the kit bottle which indicate the concentration of iodine in the sample.The result shown in Table 1.

2. Household survey

House hold survey was conducted with the help of volunteers accompanied by the investigator. Data was collected from 240 house of each area adopting WHO cluster technique. 10 houses were included in each cluster. Data collection Training program was conducted and questioner was translated into Urdu and each question was explain to volunteer and testing of salt by kit was explain.

The result was assembled in tabulated form and %age of iodized and non-iodized salt was plotted area wise as shown in Table 1, 2 & 3.

Statistical analysis: All collected data was analyzed by ordinary calculator.

Table 1

Shows status of use & availability of iodized salt in District Swat

Sampling Unit	Total No. of samples	Rural areas				Urban areas				Commutative Percentage of positive result
		Number of samples	Presence of iodine	Absence of iodine	Percentage of positive result	No. of samples	Presence of iodine	Absence of iodine	Percentage of positive result	
Shops	50	25	22	3	88 %	25	23	2	92 %	90 %
Houses	240	120	104	16	87 %	120	112	8	93 %	90 %
Salt Factories	18	4	3	1	75 %	14	13	1	93 %	89 %

Table 2

Shows status of use, availability& production of iodized salt in District Swat

Types of sampling unit	Total No. of samples	Presence of iodine	Percentage of positive result	Absence of iodine	Percentage of negative result
Shops	50	45	90 %	5	10 %
Houses	240	216	90 %	24	10 %
Salt Factories	18	16	89 %	2	11 %

Table 3

Shows the status of awareness of households in Swat regarding the use of iodized salt

Types of sampling unit	Types of area	No. of samples	Awareness about the use of iodized salt			
			Present	Percentage of positive result	Absent	Percentage of negative result
Houses	Urban	120	54	45 %	66	55 %
	Rural	120	40	33.3 %	80	66.7 %
	Total	240	94	39. 2 %	146	60.8 %

DISCUSSIONS

Our study is conducted at three different levels, i.e. at the level of production, distribution and consumption.

In a study conducted in Peshawar[(8)11], only two (9.5%) of total 21 manufacturers supply iodized salt and 19 (90.5%) manufacturers supply salt with low or high level of iodine from the recommended level of UNICEF/WHO.

In our study sixteen (89 %) of total 18 manufacturers supply iodized salt while three (11%) supply salt without iodine content.

A study conducted in United States[9], Forty-seven of 88 samples fell below the USFDA recommended Iodine content while 6 exceeded it. A similar study conducted in District Swat[10], Eighty percent (80%) and 76% of the salt samples submitted by the boys and girls respectively were iodized.

In the same study conducted in District Swat[8], through clinical examination, overall goiter rate in boys and girls has been found to be 52% and 45% respectively while the prevalence of goiter was not included in our study.

In 1989 when the iodized salt project was launched through Utility Stores Corporation, Swat was the first district to introduce iodization into the private sector, in 1993. Since then, the district has attracted the attention of IDD control activities on regular basis. When salt iodization was officially applied to the private sector, the response from local producers was limited, and remained so until 1997, when about 20 per cent of the salt produced locally was iodized. Also, the demand was almost negligible and the level of motivation was very low. The scenario, however, has changed over the years. Now there are 12 salt Producers , providing 750 metric tons of salt for a total population of about 1.2 million; all of it is iodized, it is available throughout the district, and the price has not increased (IDD INTERNATIONAL COUNCIL FOR CONTROL OF IODINE DEFICIENCY DISORDERS VOLUME 18-NUMBER 1-FEBRUARY 2002 NEWSLETTER).

According to our study, 90 % of the salt samples are iodized. It is found that 39. 2 % of people have knowledge about iodine as compared to 96% in previous studies. This is due to disturbance of law & order situation, communication and paralysis of all programs concerned with salt iodization.

CONCLUSION

According to our study we came to the following conclusion

90% people of Swat District are using iodized salt.

Iodized salt utilization is more in urban areas than rural areas due to easy accessibility.

The availability of iodized salt is more in urban areas because of an effective monitoring system by the administration with collaboration salt association organization swat and factory owners . Urban population is more aware due to media and public health workers.

Media is playing important role in educating people about the importance of using iodized salt. Due to reduced role of media during swat conflict, awareness of people is greatly affected. So the role of media in rural area needs to be established again.

Role of LHWs of national program for production of awareness of the people regarding the use of iodized salt benefit may also be enhanced.

RECOMMENDATIONS

Iodized salt should be pack in airtight bags made of either high density polyethylene (HDPE) or polypropylene (PP). In many countries this may call for a major switch from conventional packing materials made of straw or jute. The cost of adding extra iodine to compensate for its loss from inexpensive packing must be weighing against the cost of switching to a more expensive packing material.

The distribution network of potassium iodate should be streamlined so as to insure the supply of unionized salt to local market.

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Each bag should be marked with the following legend to identify the contents for monitoring purposes of Iodized salt

1. Name of manufacturer_____
2. Month/ year of manufacture_____
   Batch no_____
3. Iodizing agent: Potassium iodate/potassium iodide_____
4. Iodine content _____ppm
5. Date of expiry _____
6. Net weight _____ kg
7. Price _____/bag



The distribution network to the rural areas should be improved so that the people of these areas also get sufficient iodized salt.

An awareness campaign for the rural areas involving media and national program for family planning and mother and child health (Lay health worker LHWs) should be involved to increase the use of iodized salt in these areas

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