Evaluation of Knowledge of Pregnant and Lactating Women Regarding Iodine Nutrition

Kahkashan Jamshed Alam*, Shelesh Kumar Goel**

Abstract :

Background:*During the second half of pregnancy, there is an upsurge in foetal thyroid hormone production further contributing to increased maternal iodine requirements, as iodine can cross placenta. The chief route of iodine excretion is kidney excretion. Iodine deficiency significant affects child development. Deficiency of iodine is one of the most prevalent and widespread micro nutrient deficiency. Therefore, the present study was conducted with the main aim to establish and assess the knowledge of pregnant and lactating mothers with respect to iodine nutrition.*

Materials and Methods:*The present prospective descriptive study was conducted in the Department of Community Medicine, Dr. B. S. A. Medical College, Rohini, Delhi(India) during a period of 1 year. It was a questionnaire-based survey. A questionnaire was formed that included regarding the knowledge and practices of the subjects about iodine supplementation. The questionnaire had questions regarding the type of dietary intake of dairy products, cereals, seafood, vegetables and fruits. The questionnaire was a modified version obtained from previous studies. The results, thus, obtained were arranged in a tabulated form and analysed using SPSS software.*

Results:*25 subjects out of 140 were illiterate, while 59 were educated up to the level of high school. 34 and 22 subjects were educated up to the level of graduation and post-graduation respectively. There were 33 lactating mothers and 32 pregnant women who knew that fruits comprise iodine. There were 34 pregnant and 31 lactating women who knew that vegetables are a source of iodine. 25 pregnant and 27 lactating subjects knew that iodine deficiency can cause malformation during pregnancy.*

Conclusion:*From the above study, it is discernible that there is a dearth of knowledge of pregnant and lactating women pertaining to iodine importance.*

Keywords: *Iodine, Lactating, Pregnancy, Thyroxine.*

Introduction

The level of maternal thyroxine increases by 50% during pregnancy. This is due to the fact that there is an increase in thyroxine binding globulin, and there is stimulation of TSH receptors by human chronic gonadotropin [1]. Degradation of T4 (thyroxine) into inactive form T3 (triiodothyronine) is enhanced by the placenta, as it is a rich source of deiodinase. Due to this fact, the demand of thyroid hormone increases which can only be met by adequate demand of iodine, which, in turn, is satiated by the dietary sources and supplemental iodine [2]. During the second half of pregnancy, there is an upsurge in foetal thyroid hormone production further contributing to increased maternal iodine requirements, as iodine can cross placenta. The chief route of iodine excretion is kidney excretion [3]. It is responsible for 90% of the iodine management of the body.

*MBBS, MS (Obstetrics & Gynaecology), PhD (Public Health), International School of Medicine, International University of Kyrgyzstan, Bishkek, Kyrgyzstan.

**Professor, Department of Community Medicine, Dr. B. S. A. Medical College, Rohini, Delhi, India.

Corresponding Author
Dr. Kahkashan Jamshed Alam,
International School of Medicine,
International University of Kyrgyzstan, Bishkek, Kyrgyzstan.

There is a 30% to 50% increase in glomerular filtration rate of iodine during the beginning of pregnancy, which further decreases the circulating iodine pool of body [4]. Iodine deficiency significantly affects child development. Deficiency of iodine is one of the most prevalent and widespread micro nutrient deficiencies.[3] It leads to widespread development and functional abnormalities in foetus which are collectively known as Iodine Deficiency Disorders (IDD)[5,6]. Iodine plays an important role in normal growth and development of foetus until birth,as it is also a component of thyroid hormones [7].Various reasons for low uptake of iodine are the use of noon iodised salts and the use of substances other than iodophers in diary industry for cleansing purposes. It has also been observed that there is lack of cognizance amongst the general population regarding the usefulness of iodine in our body [8]. Therefore, the present study was conducted with the main aim to establish and assess the knowledge of pregnant and lactating mothers with respect to iodine nutrition.

Materials And Methods

The present prospective descriptive study was conducted in the Department of Community Medicine, Dr. B. S. A. Medical College, Rohini, Delhi(India) during a period of 1 year. The study was approved by the Institutional Ethical Committee, prior to the initiation of the study, and all the subjects were informed about the study and a written consent was obtained from them in their vernacular language. Women belonging to all the trimesters equally participated in the study. The study included a total of 140 subjects, out of them 70 were pregnant and 70 were lactating. Patients with any systemic illness belong to ASA grade III, patients taking diuretics or antihypertensives or subjects with training about nutrition were excluded from the study. It was a questionnaire-based survey. A questionnaire was formed that included regarding the knowledge and practices of the subjects about iodine supplementation. The questionnaire had questions regarding the type of dietary intake of dairy products, cereals, seafood, vegetables and fruits. The questionnaire was a modified version obtained from previous studies.[3,5] It was modified for pregnant and lactating women. It also had questions related to various modifications in diet during the pregnant and lactating period, health changes associated with inadequate intake of iodine in diet. The subjects were also tested for their basic knowledge regarding their awareness of iodine deficiency as a health problem. The results, thus, obtained were arranged in a tabulated form and analysed using SPSS software. Chi square and student t test were used as a test of significance. Probability value of less than 0.05 was considered significant.

Results

Mean age of the pregnant women was 28.1 years (Table 1). 25 subjects out of 140 were illiterate, while 59 were educated unto the level of high school. 34 and 22 subjects were educated upto the level of graduation and post-graduation respectively (Table 1). Majority of the subjects were in their second trimester of pregnancy. There were 21.4% in the first trimester of pregnancy. Rest 52.8% and 25.7% were in second and third trimester of pregnancy. Knowledge of pregnant and lactating subjects about the potential sources of iodine is shown in Table 2.

Non-significant results were obtained while assessing the knowledge of lactating women about source of iodine. 57.1% and 45.7% subjects knew that meat and fish were good source of iodine respectively. There were 33 lactating mothers and 32 pregnant women who knew that fruits have iodine. There were 34 pregnant and 31 lactating women who knew that vegetables are source of iodine. 25 pregnant and 27 lactating subjects knew that iodine deficiency can cause malformation during pregnancy. More than 50 percent of the pregnant subjects were aware that iodine deficiency can also results in goitre. Non-significant results were obtained while comparing the knowledge of pregnant women about sources of iodine (p-value > 0.05). While comparing the knowledge of pregnant women and lactating women in relation to consequences associated with iodine deficiency, non-significant results were obtained (p-value >0.05). (Table 3)

Table 1: Demographic details of the study population

VARIABLE	FREQUENCY	PERCENTAGE
Mean age	28.1 years	
Level of education		
Illiterate	25	17.8
Graduate	59	42.1
High school	34	24.3
Post graduate	22	15.7
Trimester (n=70)		
First	15	21.4
Second	37	52.8
Third	18	25.7

Table 2: Knowledge of women regarding source of iodine

SOURCE	PREGNANT WOMEN		LACTATING WOMEN	
	KNOW (n/%)	DON'T KNOW (n/%)	KNOW (n/%)	DON'T KNOW (n/%)
Meat	40/57.1	30/42.8	38/54.3	32/45.7
Milk	42/60	28/40	40/57.1	30/42.8
Fish	32/45.7	38/54.3	36/51.5	34/48.6
Bread	42/60	28/40	41/58.6	29/41.4
Fruits	32/45.7	38/54.3	33/47.1	37/52.8
Salt	44/62.8	26/37.2	46/65.7	24/34.3
Egg	42/60	28/40	45/64.3	25/35.7
Vegetables	34/48.5	36/51.5	31/44.3	39/55.7

Table 3: Comparison of knowledge of pregnant and lactating women regarding iodine deficiency

ADVERSE EVENT	PREGNANT WOMEN		LACTATING WOMEN		P value
	N	%	N	%	
Foetal malformation	25	35.7	27	38.5	0.79
Weak bones	37	52.8	31	44.2	0.61
Goitre	33	47.1	25	35.7	0.55
Impairment in physical development	23	32.8	22	31.4	0.54
Blindness	27	38.6	30	42.8	0.67
Mental retardation	25	35.7	26	37.1	0.59

Discussion

In the present study, it was observed that majority of the subjects were in their second trimester of pregnancy. There were 21.4% in the first trimester of pregnancy. Rest 52.8% and 25.7% were in second and third trimesters of pregnancy. Non-significant results were obtained while assessing the knowledge of lactating women about source of iodine. 57.1% and 45.7% subjects knew that meat and fish were good source of iodine respectively. There were 33 lactating mothers and 32 pregnant women who knew that fruits have iodine. There were 34 pregnant and 31 lactating women who knew that vegetables are source of iodine. 25 pregnant and 27 lactating subjects knew that iodine deficiency can cause malformation during pregnancy. More than 50% of the pregnant subjects were aware that iodine deficiency can also results in goitre. In a study conducted by Charlton to determine the knowledge about iodine nutrition and its effect on the Australian women found that even after fortification, the knowledge remained poor. This was also a questionnaire-based survey. There were only 60% pregnant and 45% lactating women who were having iodine supplements along with normal diet. Dietary food contributed to highest dietary iodine intake. The intake of fish and seafood was only 3%-8% of total intake. There is little to negligible awareness regarding the importance of iodine-rich diet. Therefore, in public health programmes like consumer education programme, increase in uptake and monitoring of iodine levels should be carried out [9]. Charlton et al. conducted another study in the year 2012 to assess the alteration in median urinary iodine concentration amongst Australian women. The mild iodine deficiency confirmed pre-fortification has steadily improved to 145.5 ìg/L in 2011 and 166 in 2012. However, there were only few subjects who were having iodine supplementations had levels of urinary iodine that indicated sufficient iodine uptake. There was improvement seen in the level of iodine after the introduction of iodine fortification, however there is still a need for iodine supplementation during pregnanacy [10].

In a study conducted by Clifton et al. to determine the iodine status amongst South Australian women during pregnancy, he also evaluated the effect of bread fortification with iodised salt. A total of 196 women were involved and their urine samples were collected at 18, 30, 36 weeks gestation and 6 months postpartum. Levels of spot urine iodine concentrations were also assessed. Median concentration were within the mild deficient range amongst women not taking supplements (<90 ìg/L). Among the women who were having iodine-containing multivitamins urine concentration were within the range as per the WHO recommendations (150-249 ìg/L) for sufficiency. The use of fortified brad increased the median UIC from 68 ìg/L to 84 ìg/L (p = .011) but that was still in the deficient range. Pregnant women in Australia were not likely to reach advised iodine levels without any iodine supplementation, even after the compulsory iodine supplementation of bread that was instituted in October 2009 [11].

Conclusion

From the above study, it is clear that there is lack of knowledge of pregnant and lactating women on iodine importance. Not much of them involve themselves in iodine supplementation. Therefore, it is the need of the hour to increase this knowledge through community based programmes and encourage women to involve in iodine supplementation.

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