



## Effectiveness of structured teaching programme regarding knowledge on importance of iodine rich food among prenatal mothers at selected PHC, Ramanagara district

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### Abstract

**Background and objectives:** Iodine is the key element required for the production of thyroid hormones, and its deficiency, even mild, is harmful in pregnancy, causes deleterious effects on fetal brain development and other complications of pregnancy. Iodine deficiency is best managed by ensuring adequate intake of iodine rich foods and can be prevented by upgrading the knowledge of prenatal mothers regarding importance of iodine rich food through STP. Present study attempts to evaluate the effectiveness of STP on knowledge regarding importance of Iodine rich food among prenatal mothers at selected PHC, Ramanagara District.

**Methods:** The research approach used in the present study is experimental approach with pre experimental design. Respondents were selected through purposive sampling technique. The pre-test was conducted on 50 prenatal mothers in 9 sessions by using structured interview schedule followed by implementation of STP and post test was conducted after 7 days to find out the effectiveness.

**Results:** Majority of the respondents were from 18-22 years, completed secondary school education, were housewives, were Hindus, were belonged to nuclear family, were primigravida, were in second trimester of pregnancy, had family income below Rs. 5000, were vegetarians, 2% were had the habit of tobacco chewing. Major information is from mass media.

Regarding effectiveness of STP, the overall mean knowledge score in the pre-test was 37.9% and 76.7% in the post test with enhancement of 38.9% and it is significant at 5% level. Analysis of demographic variable showed there is significant association between gravid, type of family, food habits with knowledge score at 5% level ( $P>0.05$ ).

**Interpretation and conclusion:** Overall findings of the study showed that there is inadequate knowledge among prenatal mothers regarding importance of Iodine rich food and STP was significantly effective in the enhancement of knowledge of prenatal mothers, which in turn contribute to improve their offspring's health.

**Keywords:** iodine, thyroid hormones, PHC, Ramanagara district

### Introduction

Nutrients are organic and inorganic complexes contained in food. There are about 50 different nutrients which are normally supplied through the foods what we eat. Nutrients are broadly classified into micronutrients and macronutrients. Macronutrients are proteins, fats and carbohydrates. Micronutrients are vitamins and minerals.

Iodine is an essential micronutrient, required in minute amount. An adult's body contains 50 mg of iodine. About one third of the iodine is found in the thyroid glands where it is stored in the form of thyroglobin. It is required for the synthesis of the thyroid hormones, Thyroxin ( $T_4$ ) and Triiodothyronin ( $T_3$ ).  $T_3$  and  $T_4$  regulate the rate of oxidation within the cells and influence physical and mental growth, functioning of nervous and muscle tissues, circulatory activity and metabolism of all nutrients.

When a small amount of thyroid hormone in blood drops, the pituitary gland secretes a hormone called thyroid stimulating hormone (TSH). As name suggests, TSH then stimulates the thyroid gland to increase its uptake of iodine from blood, so that more  $T_4$  can be synthesized. When necessary, thyroxin is then converted to the metabolically active  $T_3$ , a process that involves removing one iodine atom from  $T_4$ . These thyroid

hormones regulate metabolism in every cell of the body and play a role in virtually all physiological functions.

Iodine is absorbed from stomach and duodenum (97%). Iodine that is not actively transported into the thyroid is primarily excreted in the urine (90%) with a very small amount present in the feces.

The body cannot make iodine but gets it from the diet Foods high in iodine are salt-water fish, seafood and shellfish, malt bread, cheese, yogurt, iodized table salt. Other foods containing iodine include eggs, dairy products, garlic, lima beans, mushrooms, sea salt, sesame seeds, soybeans and soy products, strawberries, vegetables like asparagus, spinach, summer squash, Swiss chard, turnip greens. Iodine content of most natural foods is typically quite low, but varies with the soil they are grown in, and the water and fertilizers used. Apart from foods containing iodine, the richest source is actually iodized salt. Addition of small amount of iodine to table salt in form of sodium iodide, potassium iodide and or potassium iodate is known as iodized salt. A  $\frac{1}{4}$  teaspoon of iodized table salt provides 95 micrograms of iodine 66 Iodine compounds have also been added to other foodstuffs such as flour, water and milk.

Iodine is very important in all stages of life. There is an

increased demand for iodine during pregnancy and early childhood. Women with iodine deficiency during pregnancy are at a risk of several thyroid problems including goiter and hypothyroidism.

One third of the world population remains iodine deficient, and 30% of households do not have access to iodized salt according to 2007 UNICEF estimates.

In India 50 percent of the children born every year suffer from iodine deficiency leading to various ailments and disorders. Iodine deficiency there is a craving need to fill knowledge gap regarding iodine, its sources and its importance in pregnancy. Education about importance of iodine rich food during prenatal period will help to prevent maternal and foetal adverse effects. The investigator took an interest to assess the current knowledge regarding importance of iodine rich food among prenatal mothers and awareness to prenatal mothers on importance of iodine rich food; it helps to prevent further iodine deficiency disorders.

### Objectives of the study

1. To assess the existing knowledge on importance of Iodine rich food among prenatal mothers.
2. To develop and conduct structured teaching programme on importance of Iodine rich food among prenatal mothers.
3. To evaluate the effectiveness of structured teaching programme regarding knowledge on importance of Iodine rich food among prenatal mothers.
4. To find an association between post test knowledge scores and selected demographic variables.

### Hypotheses

**H1:** There will be a significant difference between mean pre test and post test knowledge scores regarding knowledge on importance of Iodine rich food among prenatal mothers.

**H2:** There will be a significant association between post test knowledge scores regarding knowledge on importance of Iodine rich food among prenatal mothers with selected demographic variables.

### Review of literature

A study was conducted to evaluate the efficacy of the iodine prophylaxis by WHO and International Council for Control of Iodine Deficiency Disorders at Poland. The study revealed that 50% of prenatal women only are additionally supplemented with iodine. The study recommended that strengthening of public awareness on necessary increase of iodine consumption especially in pregnancy and in children and continues monitoring system of biologic effects and technologic quality of the model of iodine prophylaxis.

A study was conducted to evaluate iodine status and to examine the sources of iodine among 600 pregnant women at Barcelona, Spain. The study revealed that median URC of all pregnant women were below the recommended level. However median was high among women who had high milk intake (117 microg/1), used iodized salt (117 microg/1) or who were supplemented with Iodine (141 microg/1). The study suggested that milk is the important source of iodine,

and iodine supplementation was also an important source of iodine, although not enough to reach the current recommendations.

A study was conducted to assess the iodine deficiencies in women of desert areas of Western Rajasthan. A total of 1193 women, 384 pregnant, 400 lactating and 409 non pregnant were examined. The study revealed that a high proportion of women (80.8%) consumed salt having inadequate iodine content. Only 19% of salt samples had adequate iodine content, which calls for caution. The study suggests the development of nutritional packages utilizing local dietary aspects.

### Methodology

- **Research Approach:** Experimental approach
- **Research Design:** One group pre-test and post-test design.
- **Setting of the Study:** Bairamangala Primary health centre, Ramanagara district.

### Variables under study

- **Independent variable (IV):** Structured teaching programme on importance of Iodine rich food among prenatal mothers.
- **Dependent variable (DV):** Knowledge on importance of Iodine rich food among prenatal mothers.

**Sample:** 50 prenatal mothers attending Bairamangala PHC, Ramanagara District.

**Sampling Technique:** Purposive sampling technique.

### Description of the tool

In the present study the following tools were used.

**Part-I:** consisted of 10 items related to demographic data of the subjects such as age, religion, educational qualification, occupation, religion, family income, type of family, type of diet, personal habits, duration of pregnancy, sources of health information.

**Part-II:** Structured interview schedule consisted of 30 items on knowledge regarding importance of iodine rich food. Each item of the schedule has one correct answer, every correct answer would fetch one mark and wrong answer a score of 'zero' and the total score of the interview schedule is 30.

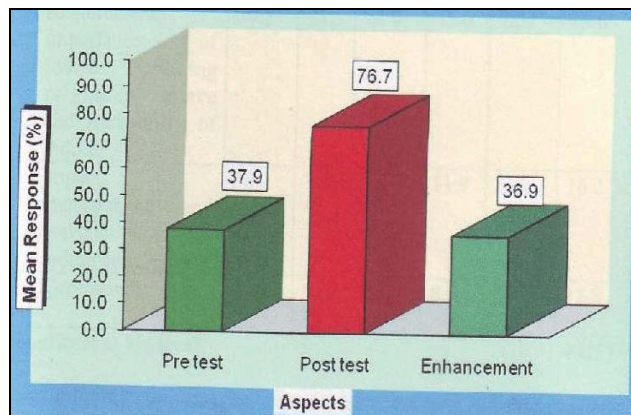
### Results & discussion

- Maximum number of respondents 50% (25) were in the second trimester of pregnancy and minimum number of respondents 18% (9) were in the first trimester of pregnancy.
- Pretest knowledge score was inadequate 72.0% (=50%), Moderate 28.0% (51-75%) and Adequate was 0.0% (>75%)
- But in post test 36.0% of them had moderate knowledge (51-75%), 64.0% of them had adequate knowledge (> 75%) and none of them had inadequate knowledge (=50%).

**Table 1:** Over all pre test and post test mean knowledge on importance of iodine rich food N=50

Aspects	Max. Score	Respondents Knowledge				Paired 't' test
		Mean	SD	Mean (%)	SD (%)	
Pre test	30	11.36	4.3	37.9	14.3	21.49
Post test	30	23.02	2.6	76.7	8.6	
Enhancement	30	11.66	3.8	38.9	12.8	

\*Significant at 5% level,  $t(0.05, 49df) = 1.96$

**Fig 1**

Over all Pre test and Post test Mean knowledge on Importance of Iodine rich food

The study findings reveals that the overall pre test mean knowledge scores as 37.90% and the post test knowledge scores as 76.7%. The mean enhancement score was found to be 38.9%. The statistical results established significant at 5% level ( $t=21.49^*$ ) indicating the effectiveness of structured teaching programme in enhancing the knowledge of respondents.

### Conclusion

The knowledge scores was found to be inadequate (= 50% Score) and moderate (51-75% Score) in pre test.

The STP was conducted to help prenatal mothers to learn more about importance of iodine rich food.

There was significant association was found with selected demographic variables like gravid, type of family, food habits in post test.

### Major findings related to demographic variables

- In the present study the maximum number of respondents 44% (22) were in the age group of 18-22 years and minimum number of respondents 14% (7) were in the age group of 27-30 years.
- Maximum number of respondents 44% (22) had completed secondary school education and minimum number of respondents 8% (4) were graduates.
- Majority of respondents 90% (45) were housewives, and 6% (3) of the respondents were private employees and on business.
- Majority of respondents 62% (31) were primigravidas and 38% (19) of them were multigravidas.
- Maximum number of respondents 50% (25) were in the second trimester of pregnancy and minimum number of respondents 18% (9) were in the first trimester of pregnancy.

- Majority of respondents 86% (43) of the respondents were belongs to Hindu religion and remaining 14% (7) of respondents were belongs to Muslim religion.
- Majority of respondents 58% (29) were from nuclear families followed by 42% (21) were from joint families.
- The maximum number of respondents 72% (36) were had family income below Rs. 5000 and minimum number of respondents had a family income between Rs. 10,001-15,000.
- Regarding food habit, majority of respondents 76% (38) were consuming vegetarian diet followed by 24% (12) of respondents were consuming mixed diet.
- 2% (1) of the respondents were having the habit of tobacco chewing followed by 2% (1) were having other habits like drinking alcohol, smoking.
- 38% (19) of the respondents were getting health information through mass media and only 16% (8) of them were getting information through friends and relatives.

### Implications & recommendations

#### Nursing practice

- It helps the health care professionals to gain knowledge regarding the importance of iodine rich food for prenatal mothers
- Nursing professionals can provide education to prenatal mothers to prevent complications of iodine deficiency.
- Nursing professionals can motivate the significant others and the family regarding importance of iodine rich food among prenatal mothers.

#### Nursing education

- As a nurse educator, there are abundant opportunities for nursing professionals to educate the students regarding importance of iodine rich food among prenatal mothers and vulnerable groups.
- The study can be extended for educating the prenatal mothers and family members so that complications of iodine deficiency can be prevented.
- This study stresses the need for in-service education for the nursing personnel in order to teach regarding importance of iodine rich food among prenatal mothers and children.

#### Nursing administration

- The nursing administrator can take part in developing protocols, standing orders in teaching importance of iodine rich food among prenatal mothers.
- The nursing administrator can appoint nursing professionals those who have trained in nutritious programme.
- The nursing administrators should explore and encourage innovative ideas in the preparation of an appropriate

teaching material. She should organize sufficient manpower, money and material for disseminating information regarding importance of iodine rich food among prenatal mothers.

### Recommendations

On the basis of the findings of the study following recommendations have been made:

- A similar study can be replicated on a large sample to generalize the findings.
- A similar study can be conducted in other groups like children, women of child bearing age, general public.
- The study can be conducted with testing of iodine content of the salt used by the samples.
- An experimental study can be undertaken with a control group of effective comparison of the result.
- A comparative study can be conducted in rural and urban setting.
- Training programme may be conducted to all health care personnel at PHC, ASHA workers, Anganwadi workers to manage and prevent iodine deficiency among prenatal mothers.
- IEC materials may be developed in areas of importance of iodine rich food.

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