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ORIGINAL ARTICLE

ANALYSIS OF THYRIOD DISORDER AND ITS RELATION WITH GIOTROGENS

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ABSTRACT: OBJECTIVE: Evaluate the prevalence of thyroid disorder and sensitise women patients about thyroid health and its relation with goitrogenic foods. Method: By random selection method 300 female patients who attended outpatient clinic were subjected to thyroid Function test (T3, T4, TSH) and USG NECK. A questionnaire relating thyroid disorders and gaitrogens were given to them and analysis was done. **RESULT:** The results show prevalence of hypothyroidism is 7.3%, Goitre is 4% and hyper thyroidism is 0.6%. Analysis of questionnaire shows that though 81% of women population use iodised salt, 80% of women population are not aware of goitrogenic foods and its relation to thyroid disorder. **CONCLUSION:** Though implementation of universal salt iodisation was done in 1986, awareness of goitrogenic foods and its relevance to thyroid disorder is not known to women. Hence sensitisation of women population should be enhanced.
KEYWORDS: Hypothyroidism, Goitrogens, Hyper Thyroidism, Goitre.

INTRODUCTION: Thyroid gland is called master gland [(1)] as it plays a part in almost every other system in our body. Thyroid gland has two secretary cells-Follicular and parafollicular cells. Follicular cells [(2)] secrete T4 thyroxine and T3 (Triiodo Thyronine) which are bound to thyroglobin which is the primary component of colloid matrix. The hyphothalamus-pitutory-thyroid axis regulates thyroid hormones production and releases in a classic feedback system. TRH is a regulatory hormone from hyphothalamus and TSH is a regulatory hormone from anterior pituitary. Several factors affects this axis and lead to increase or decrease in production of the hormone. Important among them are Goitrogens.

METHOD: By random selection method, 300 female patients were selected and were subjected to thyroid function test and USG neck. The study was conducted during the period March 2014 to February 2015 in surgical OPD clinic in north Chennai. A questionnaire relating thyroid disorders and goitrogens was given to them and analysis was done.

THE RESULTS WERE AS FOLLOWS:

Nature of Thyroid Disorder	No. of Patients	In % Age
Hypothyroid patients with no goitre	22 patients	7.3%
Euthyroid patients with goitre	12 patients	4%
Hyperthyroid patients with no goitre	2 patients	0.6%

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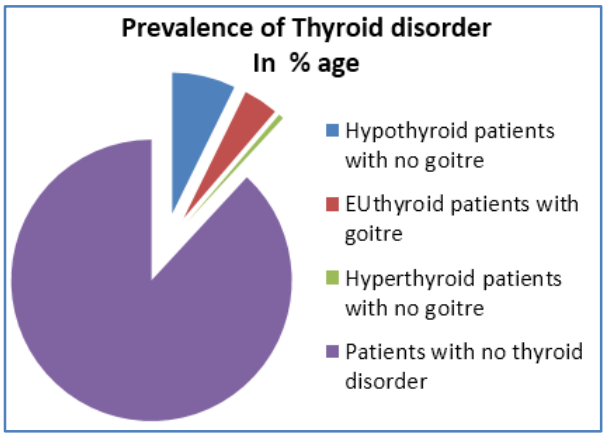
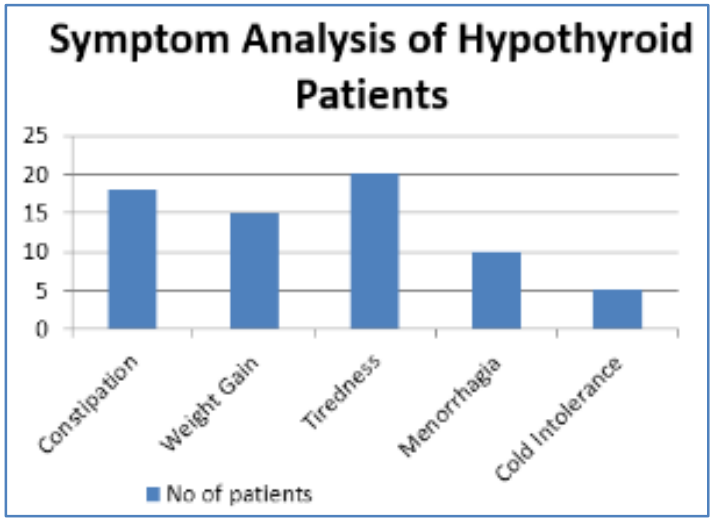


Symptoms	No. of Patients	Age Group	Duration	In % Age
Constipation	18	20-45	1-2 years	81.8%
Weight Gain	15	22-50	6-8 months	68%
Tiredness	20	30-60	5-6 months	90%
Menorrhagia	10	30-50	4-5 months	45%
Cold Intolerance	5	20-40	6-7 months	22%

Symptoms Analysis of Hypothyroid Patients



Symptoms	No. of Patients	Age Group	Duration	% age
Unexplained Diarrhea	2	25-35	5-6 months	100%
Weight Loss	2	35-50	2-3 months	100%
Amenorrhea	-	-	-	-
Heat Intolerance	1	35-40	10-12 months	50%
Tremors	2	30-40	1-2 years	100%

Symptoms Analysis of Hyperthyroid patient's

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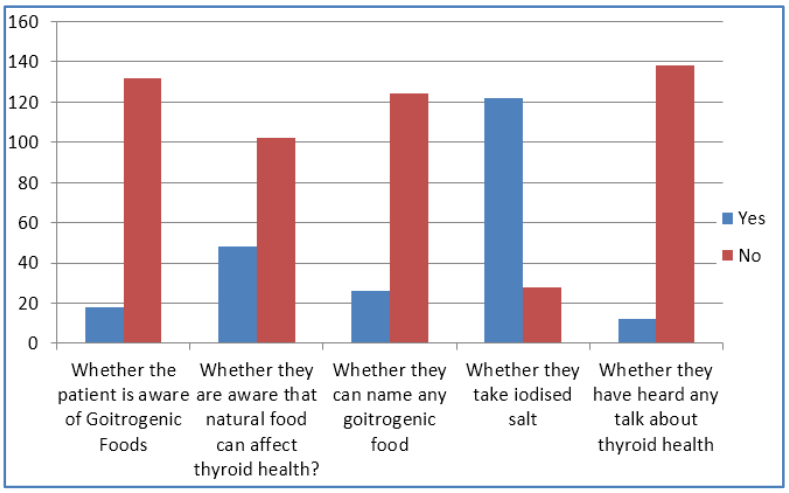
Thyroid Disorder	No. of Patients	Age group
Benign pathology	11	20-50
Malingnant Pathology	1	50 years
Analysis of Thyroid swelling: 12 patients having goitre were subjected to FNAC		

Analysis of Questionnaire given to Patients: Patients who were reluctant, who did not understand, who did not answer all questions were left. And rest of the feedback from the questionnaire were analyzed.

Questions	Yes	No
Whether the patient is aware of Goitrogenic Foods	18	132
Whether they are aware that natural food can affect thyroid health?	48	102
Whether they can name any goitrogenic food	26	124
Whether they take iodised salt	122	28
Whether they have heard any talk about thyroid health	12	138
Total no. of questionnaire fully answered: 150		

RESULTS: Analysis showed 22 patients (7.3%) were diagnosed as hypothyroid with no goitre. 12 patients (4%) were diagnosed as having goitre. And 2(0.6%) patients were diagnosed of hyperthyroid status with no goitre. The commonest symptoms of hypo thyroidism was tiredness (90%) and the age group was from the age of 20-60 and the duration of symptoms ranged from 4 months to 2 years. Commonest of the hyperthyroid symptoms was weight loss, unexplained diarrhea, Tremors. And the age group was 25-50 and duration ranged from 2 months to 2 year. From USG Neck and FNAC, it was found that the commonest cause of goitre was of benign pathology.



Questionnaire Analysis Chart

DISCUSSION: The thyroid is most important and often mismanaged, gland in our body. Located in front of our neck, this butterfly shaped gland secretes hormones that control some major functions including weight management, how we use energy, how we metabolise food and how we sleep. For

women, hormones can shift out of balance during child bearing and menopause and even under chronic stress, putting them under higher rate of thyroid conditions than man at various times of life.

Hypothyrodism: is a condition where T4 AND T3 levels are below normal and TSH is above normal level. Patients present with symptoms of tiredness, mental lethargy, cold intolerance, weight gain, constipation. The signs are cold extremity, dry skin and hair, hoarse voice, Bradycardia, delayed relaxation phase of angle jerk.[3] Treatment of Hypothyroidism is substitution of oral thyroxine and routine follow up.

Hyperthyroidism occurs due to raised levels of circulating thyroid hormones and they lead to emotional instability, weight loss, excessive appetite, heat intolerance, Tachycardia. Treatment includes anti thyroid drugs and beta blocker.

Thyroid enlargement (Goitre): The normal thyroid gland is impalpable. The term goitre (LATIN, Guttur-Throat [4]) is used to describe generalized enlargement of thyroid.

CLASSIFICATION:

- **Simple Goitre (Euthyroid)**
  1. Diffuse hyperplastic.
     - Physiological.
     - Pubertal.
     - Pregnancey.
  2. Multinodular Goitre.
- **Toxic:**
  1. Diffuse.
     - Graves disease.
  2. Multi nodular.
  3. Toxic Adenoma.
- **Neo Plastic:**
     - Benign.
     - Malignant.
- **Inflammatory**
- **Granularmatours**
- **Fibrosing**
- **Infective**
- **Anyloid**

Causes of Goitre: Puberty Goitre/Pregnancy Goitre – conditions were metabolic demands are high and production of T3 & T4 are comparatively normal due to feedback mechanism TSH increase leading to goitre:

1. Iodine deficiency goitre.
2. Goitrogens.
3. Dyshornonegenisis – Defective hormone synthesis.

Goitrogens are substances that suppress the function of the thyroid glands by interfering with iodine uptake which can as a result cause enlargement of the thyroid i.e., Goitre.

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Goitrogenic Foods:

Cassava when crushed and not detoxified by soaking[5]
Soybeans,[6] Soybean oil, Soyflour, Soylecithin,
Pine nuts, Peanuts, Flax seed,
Miller, Strawberries,
Pears, Peaches, Spinach.

Vegetables contains ISO Thiocynates:

1. Cabbage.
2. Broccali.
3. Cauliflower.
4. Radish.
5. Turnip.

ACTIONS OF GOITROGENS: Most goitrogens are naturally occurring chemicals that are ingested in food or drug. These chemicals can interfere with thyroid functions in different ways. Some compounds induce antibodies that cross react with thyroid glands. Others interfere with thyroid peroxidise, the enzyme responsible for adding iodine during production thyroid hormones. Either way, the thyroid is not able to produce as many of the hormones that are needed for regulatory metabolism. For people with healthy thyroid function, the thyroid simply compensates and makes more of hormones as they are called for. But in some people where thyroid function is already compromised, the thyroid gland may actually grow more cells as it tries to make up for inadequate hormone production, eventually forming a goitre.

Should these foods to be avoided totally?

Taking the benefits they give as healthy foods, that support digestive, skeletal, cardiovascular and immune function these goitrogen containing foods can be steamed, cooked or fermented to reduce goitrogen substances and vegetable can be rotated not eating same vegetables every day and above all enjoy them as a part of richly varied diet of wholesome food.

Natural Remedies[7] of Thyroid Health:

1. The trace minerals of iodine and selenium are most well-known natural remedies. Remember to take good care of yourself overall, by eating natural and healthy food, exercising regularly and managing emotional stress
2. Take time for yourself each day, even if it is only few minutes to practise deep breathing or simple stretches.

Thyroid Supporting Foods:

- Researchers[8] show thyroid gland needs key nutrients that are highly available.
- Food rich in iodine–Sea vegetables, cow's milk, egg, raisin.
- Food rich in Tyrosine–Fish, Bananas, almonds.
- Non-cruciferous vegetables and fruits.[9]
- Tomatoes, green beans, peas, cucumber, eggplant, carrot, mangoes, citrus fruits, apricot.

CONCLUSION: Though implementation of universal salt iodisation was done in 1986, awareness of goitrogenic foods and its relevance to thyroid disorder is not known to women. Hence sensitization of women population should be enhanced.

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