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Study of the Knowledge, Awareness, Compliance of Patients with Hypothyroidism

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Abstract

The main objective of this study was to assess the practices and knowledge in the patients of Hypothyroidism. A simple random study was conducted in an Endocrinologist outpatient department in Mumbai. A Questionnaire was circulated online to the patients who visited Endocrinologist. The questionnaire was validated by Dr Ameya Joshi expert endocrinologist before giving it out to the patients. The form was given to 100 patients at clinics of which 72 were filled. Of which 81.5% were female and almost 40% hypothyroid patients were graduate. 50% hypothyroid patients knew the meaning of thyroid. 52% patients thought obese were at a major risk for getting hypothyroidism. 94% patients knew the location of thyroid gland, 62.5% knew the meaning of hypothyroidism, 84.7 % knew they had to visit an endocrinologist for consultation, 93.1% patients took the medicine on time. 72.2% understood that they had to continue the medicine even with normal thyroid levels, 73.6% patients were taking vitamin D and iron supplements, 65.3% thought they might lose weight even with hypothyroidism. Around 52.8% people took their medicine in the gap of 30-45 minutes, 43.1% assumed iodized salt can cure their thyroid troubles, 50% do not have cruciferous vegetables at all due to hypothyroidism.93.6% perceived weight gain as a major symptom of hypothyroidism. Majority of the people belonged to Metro cities and were well qualified and educated yet lacked basic knowledge about their disease condition. At the end of the survey all the patients were given a patient education booklet regarding Hypothyroidism and General guidelines on Diet.

Keywords

Awareness, Hypothyroidism, Knowledge, Practices, Thyroid.

INTRODUCTION

As estimate of 42 million people in India are going through thyroid diseases as earlier research suggested. As a matter of concern in India predominately Hypothyroidism make up to 11% in comparison to 2% and 4-6% in UK and US, respectively. The thyroid gland is like a butterfly shaped in the neck region just in front of the wind pipe and below the 'Adam's apple'. It functions as a producer of different kind of hormones known as the Thyroid Hormones. The thyroid hormone regulates the body's metabolism and the way the body utilises or metabolises carbohydrates, proteins and fats in the body. it also helps in the regulation of temperature, it also releases catecholamines (dopamine) which are the feel-good hormones in the body. The main thyroid hormones are T4 and T3. Thyroxine or T4 is the precursor which gets converted to the active triiodothyronine or T3.[1]

When TSH is released, it requires Iodine and Tyrosine to produce T4 and T3. Tyrosine which is a protein which binds with the mineral iodine is a non-essential amino acid whose levels are controlled by L-Phenylalanine.

Table 1 Thyroid Hormones

TRH	TSH	T4	T3
Released by Hypothalamus, inside the brain	Released by Pituitary	The thyroid hormone is secreted in the presence of iodine + tyrosine.	The active thyroid hormone

Assessment in Thyroid Disease

Evaluation of thyroid status based on laboratory tests such as full thyroid panel. A typical reference range for TSH in many laboratories is approximately 0.2-5.5 mi/L. It is important to do a dietary recall and history taking to understand the diet pattern of the person.

This is important step to identify any nutrition deviancies or micronutrients pertaining to thyroid health along with an evaluation of calorie intake.[3]

TSH >2 mi/L Increased 20-year risk of hypothyroidism
TSH >2 mi/L Increased frequency of thyroid antibodies
TSH >4 mi/L Increased risk of heart disease
TSH >2-4 mi/L Cholesterol values respond to thyroxine replacement.

Hypothyroidism

Hypothyroidism is a condition, when there is reduced production of thyroid hormone by the Thyroid Gland. The prevalence of hypothyroidism is more in females than males. Hypothyroidism has a greater impact on the wellbeing and health of a person. If not treated can lead to a number of complications like elevated cholesterol levels, Low body temperature, depression, muscle weakness, inability to lose weight. In the Indian scenario there is a lot of gaps between the patient's awareness knowledge and compliance when it comes to taking medicines. There are many studies done to understand the gaps and awareness programs are done for patients suffering from Diabetes Mellitus or heart disease but

data for Hypothyroidism are less. It is a topic which is not taken seriously by the patients. Hence to impart the knowledge and understand the awareness of the patients it will help the doctors or physician to concentrate on issues which are neglected otherwise with they interact for the first time with these patients.

Figures Caption

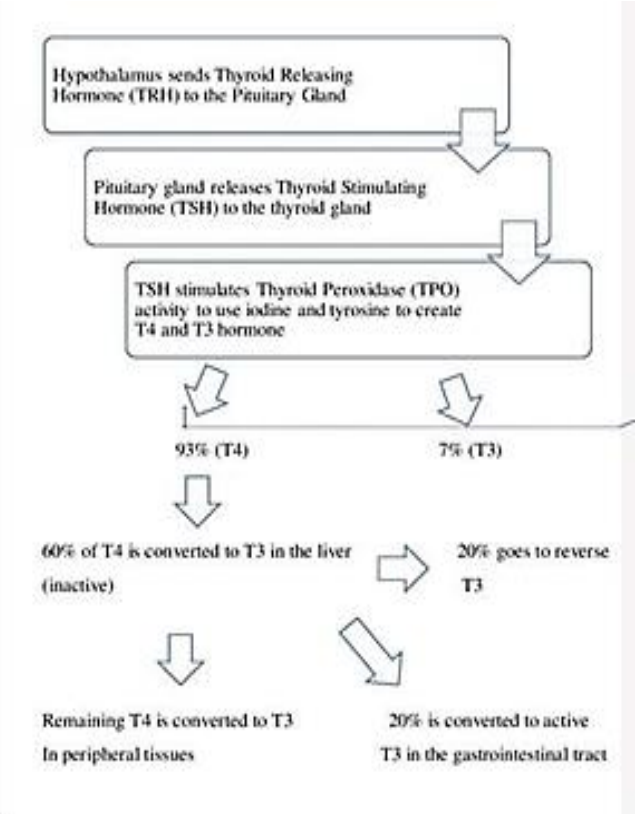

Figure 1: Variation in Thyroid function with Reference range and Adverse outcomes

Pathophysiology

It is an autoimmune disorder in which the immune system attacks and destroys the thyroid gland.

Thyroid autoantibodies indicate the body's immune system is attacking itself and whether an autoimmune thyroid condition is present.

Common Symptoms

1. Fatigue
2. Forgetfulness
3. Depression
4. Heavy menses
5. Dry course hair
6. Weight gain
7. Mood swings
8. Hoarse voice

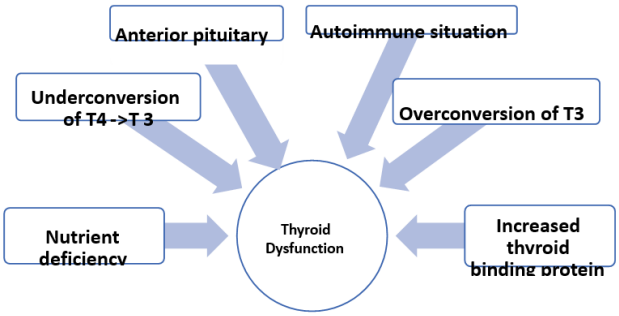

Figure 2: Thyroid Dysfunction

Medical Management

Drug Therapy

Levothyroxine (synthetic T4) Most commonly prescribed synthetic form of thyroid hormone replacement drug thyroxine

Nutrition Management

Supplementation with nutrients
Anti-inflammatory diet
Elimination diet if food sensitivity is possible

Medical Nutrition Therapy

There are several nutrients required for thyroid functioning particularly iodine and selenium. Other deficiencies include iron, vitamin A, zinc.

Dietary Constituents of Hypothyroidism

Iodine in Thyroid Disease

As a trace element it is present in the body in small amounts 10-15 mg and about 7080% in present in the Thyroid Gland.

Iodine is actively absorbed in the thyroid gland to help produce the biochemically active thyroid hormones.

Inadequate intake of iodine impairs iodine thyroid function and results in different disorders.

Randomized controlled intervention trials in iodine deficient people have shown that iron with iodine is well absorbed instead of iodine alone.[2]

Iron in Thyroid Disease

TPO is a glycosylated heme enzyme that is iron dependent. The insertion of heme iron into TPO is necessary for the enzyme to translocate to the apical cell surface of thyrocytes thus assisting TPO to catalyse the two initial steps of thyroid hormone synthesis.

A full assessment of iron status could likely help to identify the cause of many cases of thyroid malfunction.

Selenium

As Selenocysteine is a cofactor for 5'-deiodinase.If selenium is deficient the deiodinase activity is impaired resulting in a decreased ability to deiodinate T4 to T3.

Objectives:

1.The main aim of the study was to test the knowledge of the patient thus a questionnaire was in such order to ensure each respondent to receive the same stimuli.

2.Study also aimed at getting accurate and complete information and so formal closed end questions were given.

3. The study managed to keep the questionnaire basic and brief so that the interest of the respondent does not reduce.[4]

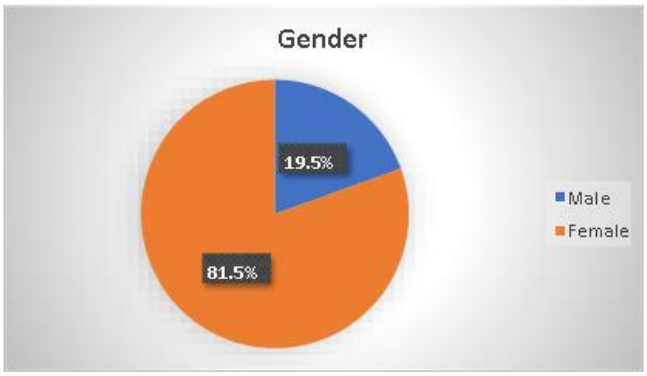

Figure 3 : Gender of the Hypothyroid Patients enrolled in the study[6]

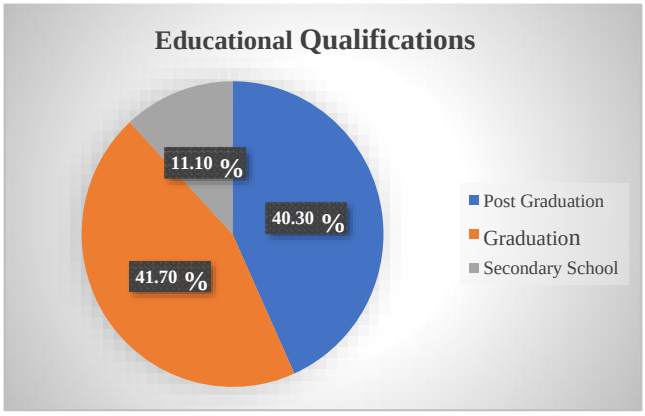

Figure 4 : Educational Qualifications[7]

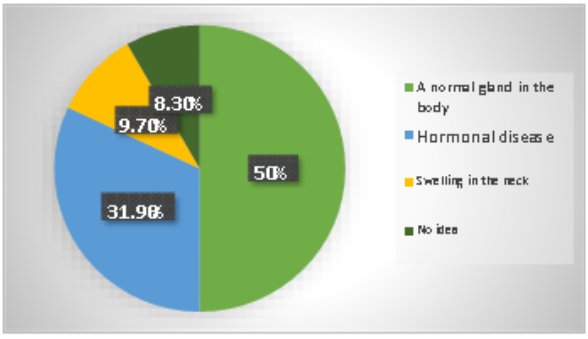

Figure 5 Meaning of the word Thyroid[6]

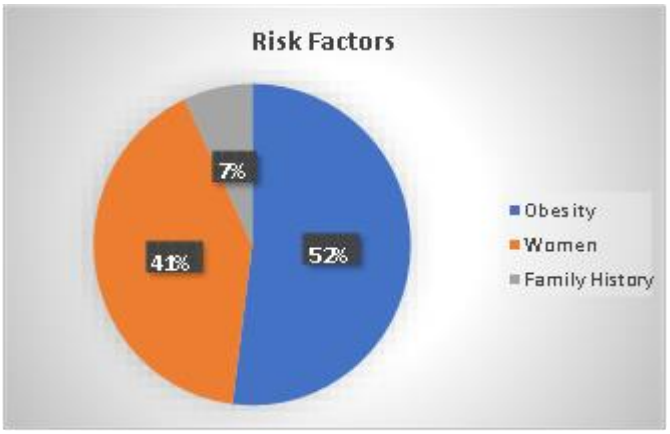

Figure 6 : Risk factors according to the hypothyroidism subjects[6]

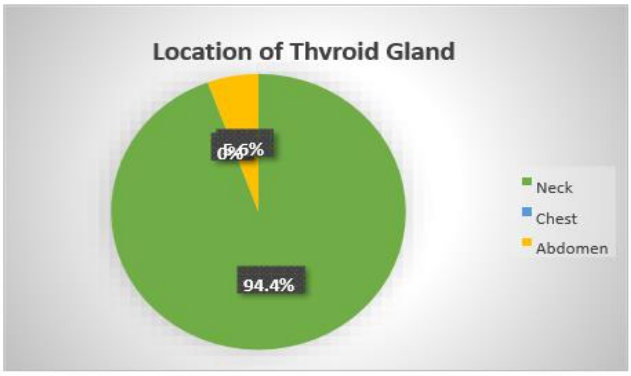

Figure 7: Location of the Thyroid Gland[6]

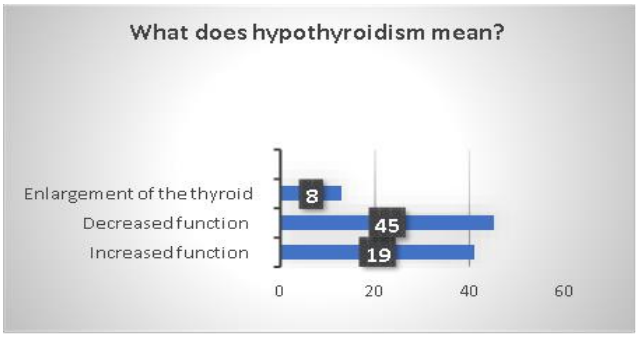

Figure 8: Meaning of the word 'Hypothyroidism'[6]

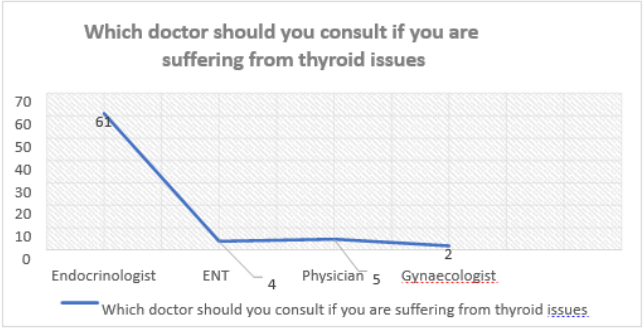

Figure 9: Doctor to be consulted when you have Hypothyroidism[8]

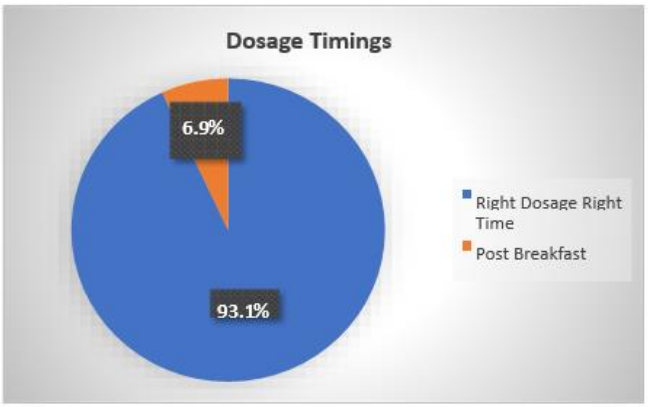

Figure 10 Dosage Time[9]

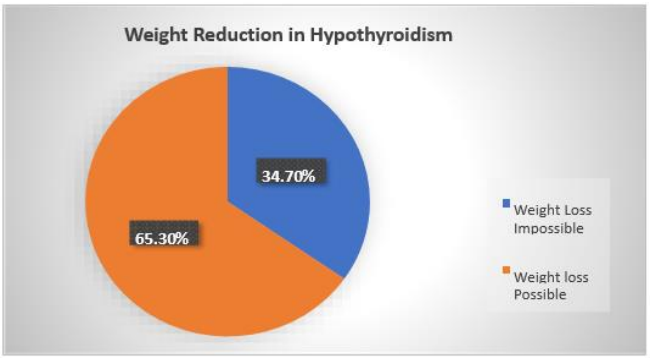

Figure 14 : Weight Reduction Possibility in Hypothyroidism[10]

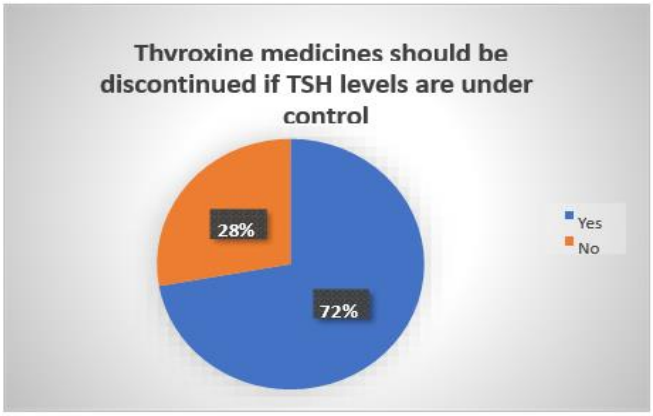

Figure 11 : Thyroxine after TSH levels under control[11]

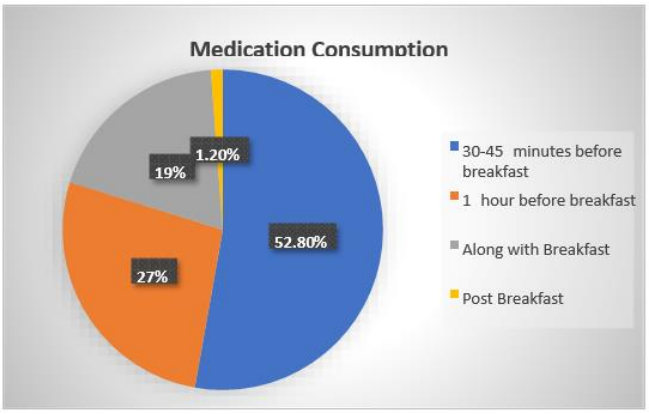

Figure 15: Medication Consumption Method[18]

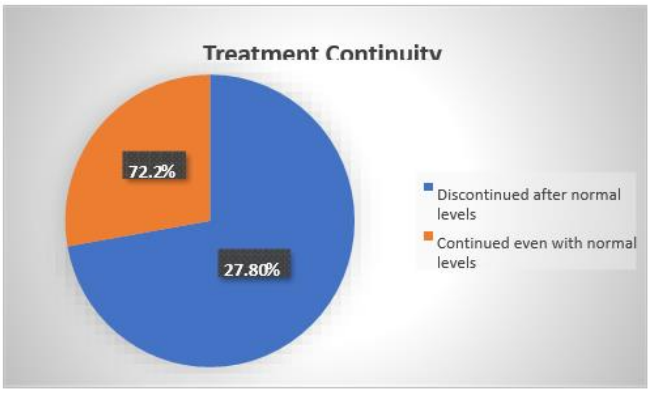

Figure 12: Treatment Continuity post normal levels[11]

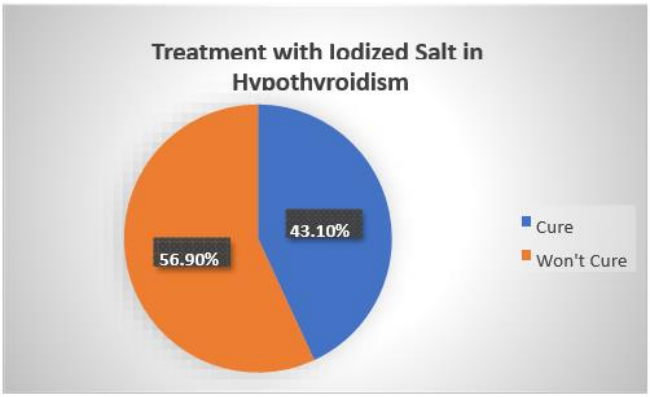

Figure 16 : Iodized salt as treatment in Hypothyroidism[19]

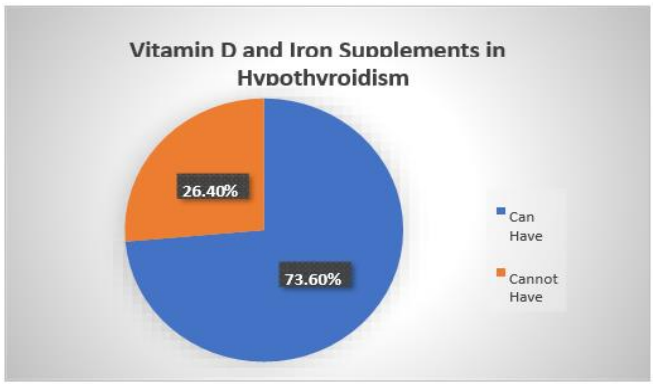

Figure 13: Supplementation in Hypothyroidism[6]

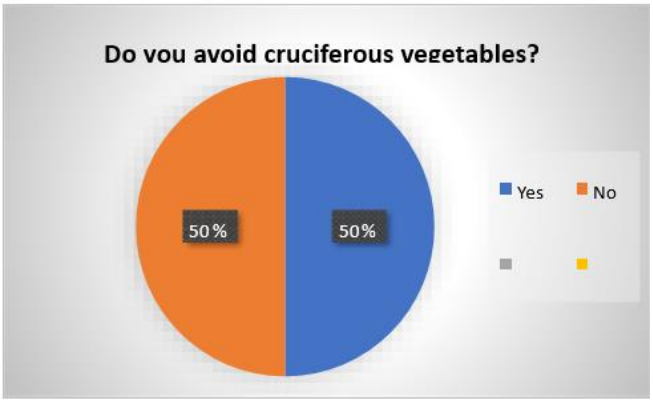

Figure 17: Cruciferous vegetables to be avoided[20]

Study of the knowledge, awareness, compliance of patients with hypothyroidism

Figures & Tables

Table 1: Thyroid Hormones[21]

TRH	TSH	T4	T3
Released by Hypothalamus, inside the brain	Released by Pituitary	The thyroid hormone is secreted in the presence of iodine + tyrosine	The active thyroid hormone

Table 2: Questions for Hypothyroid Patients[2]

Questions	Responses, n (%)
What time of day you take your thyroid tablets?	Early morning – 59 (81.9) Afternoon – 13 (18.1) Night – 0
Do you take your thyroid tablets before food?	Yes –63 (86.8) No – 9(13.1)
Time gap followed between levothyroxine and food intake	5-10 minutes gap-24(33) 30-45 minutes gap-38(52.7) After breakfast – 5 (6.9) With breakfast -5(6.9)
How frequently do you miss your thyroid tablet?	Once a week – 29 (40.9) Twice a week – 7(9.01) Thrice or more – 8(11.4) Once / twice a month – 10 (13.5) Never – 18 (25)
How frequently do you visit your thyroid physician?	Once a month - 20(27.8) Once in 3-6 months – 28 (38.9) Once in a year – 24 (33.1)
How frequently have you stopped your medications in the last one year thinking you were normal?	Once – 8 (11.4) Twice – 10(14.3) Thrice – 8(11.4) No – 46(62.7)
How often do you get your thyroid tested?	Every 3 months – 8(12.2) Every 6 months – 15(20.4) Every 9 months – 4(5.73) Every 12 months - 6(8.19) When doctor advises – 39(53.2)
Do you avoid cabbage or cauliflower in your diet?	Yes – 36(40.9) No - 36(55.7)
Do you feel thyroid medications are helping you in reducing your complaints?	Very much - 21 (29.1) To some extent – 32(44.4) Not always – 19 (2.6)
Have you taken alternative medications for hypothyroidism?	Ayurveda – 13 (18) Siddha - 0(0) Yunani - 0(0) Homeopathy – 21 (29) No – 38 (53)

CONCLUSION

The present study was aimed to assess the knowledge, awareness and compliance of the patients with hypothyroidism. The main objective of the study was to understand the gap between the knowledge of the hypothyroid patients and the compliance of the hypothyroid patients about their medications and diet. The study also aimed at understanding the association between knowledge awareness and practice with

- Age
- Gender
- Education

An extensive review of literature was conducted which helped to create the content for the questionnaire. Literature review also enabled to develop the methodology of the study.

The tool developed and used for data collection was a structured questionnaire. The structured questionnaire consisted of three parts

1. Question on Knowledge
2. Question on Practice
3. Question on Compliance

The data was collected online through Google Form. Hypothyroid patients were forwarded the link. The patients were selected from an endocrine clinic in Mumbai (Borivali). The sample size of the patients was 72.[10]

Major findings of the study

- The hypothyroid patients enrolled in the study were 72 of which 58 patients almost 80.5% were female while 14 patients i.e 19.5% were male
- The mean duration of the patients suffering from hypothyroidism was 6 years
- The mean age of the patients with hypothyroidism was 37.5 years
- Majority of the Hypothyroid patients belonged to the City of Mumbai - The hypothyroid patients were well educated. 40.3% were Post Graduate,41.7% were graduated,11.1% had completed their secondary schooling.
- According to the questionnaire given the first question was about the meaning of the word ‘Thyroid’ about 50% knew the meaning of the word thyroid that it is a gland. While 31.9 % thought it was a hormonal disease. 9.70 % thought it was a swelling at the neck rest 8.30% patients had no idea about what it meant.
- While assessing the risk factors as perceived by the hypothyroid patients almost 52% patients thought obese people are more likely to get it while 41% patients thought women are more affected. 7% patients believed that previous family history of hypothyroidism are more likely to get affected
- When asked about the location of the gland majority about 94.4% knew it was located at the neck region while 5.6 % thought it was in the abdomen region
- Around 45 people out of 72 (62.5%) assumed the meaning

of hypothyroidism as decreased function of Thyroid gland followed by the 19 people (26.3%) who believed it as increased function of thyroid gland while there were 8 people (11.2%) who perceived it as enlargement of thyroid gland.

- 84.7 % people knew they have to visit an Endocrinologist for their thyroid disease. 0.05% people thought they need to visit and ENT specialist, 0.06% Physician while only 0.02 % thought they need to visit a gynaecologist.
- 93.1% took the right dosage and right time of thyroxine while there were 6.9% who took the medicine post breakfast.
- 72.2% understood that the medicine should not be discontinued even after the levels are under control while 27.8% discontinued the medicine once the levels were under control
- 73.6% confirmed that they can take Vitamin D and Iron tablets when they have thyroid disease rest 26.4% thought it will hamper the thyroxine uptake in the body and should not be taken.
- There was a mixed response in the way people consume the thyroid medicine around 52.8% take their medicine 30-45 minutes before breakfast. Some wait for an hour before eating anything. Few took medicines with breakfast and few took post breakfast.
- Around 43.1 % thought they can be cured by taking in Iodized salt. - It was noted a 50-50% to the most popular myth that cruciferous vegetables need to be avoided completely in the diet so 50% said yes and 50% said no - Symptoms perceived related to hypothyroidism by study participants were weight gain (93.6%), irregular menstrual cycle (65.2%), infertility (55.6%), constipation (51.2%), excessive hair fall (41.2%), and skin problems (38%). However, most participants believed that primary hypothyroidism can cause enormous weight gain.

A small number of patients with primary hypothyroidism lacked basic knowledge about the disease and are non-compliant with the medicine and dietary guidelines. This study was conducted among the educated crowd and they were given thyroid proformas and leaflet later to educate them. Thus, providing patient information leaflet in all clinics or hospital will help the patient in learning and getting basic knowledge of the disease they are suffering. Also counselling the patients with the right time and method of taking medicine is also important.

There are still major myths and beliefs as well as low level of compliance seen in the patients of hypothyroidism. Awareness Program and Counselling by Clinical.

Nutritionist is a must for the patients instead of looking up at all false information given out everywhere.

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