A survey on the Prevalence, Diagnostic Approach, Complication and Treatment of Hyperthyroidism in Dhaka Medical College & Hospital, Dhaka

[*In the partial fulfillment of the requirements for the degree of Masters of Pharmacy]*

Submitted To

Department of Pharmacy

Faculty of Health & Life Sciences

Daffodil International University

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APPROVAL

This thesis paper, **"survey on the Prevalence, Diagnostic Approach, Complication and Treatment of Hyperthyroidism in Dhaka Medical College & Hospital, Dhaka",** submitted to the Department of Pharmacy, Faculty of Health & Life Sciences, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Masters of Pharmacy and approved as to its style and contents.

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DECLARATION

I hereby declare that this thesis report, **"survey on the Prevalence, Diagnostic Approach, Complication and Treatment of Hyperthyroidism in Dhaka Medical College & Hospital, Dhaka",** is done by me under the supervision Dr. Md. Sarowar Hossain Associate Dean & Associate Professor, Department of Pharmacy Faculty of Health & Life Sciences Daffodil International University. I am declaring that this thesis is my original work. I also declare that neither this thesis nor any part therefore has been submitted elsewhere for the award of Master's degree.

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Certificate

This is to certify that the results of the investigation that are embodied in this thesis works are original and have not been submitted before in substance for any degree or diploma of this university. The entire present work submitted as a thesis work for the partial fulfillment of the degree of Masters of Pharmacy.

Supervised By

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My Parents,

The persons who always encourage me in every sphere of my life.

My teacher,

The persons who guided me in this process and the faculties who kept me on track.

Abstract

Hyperthyroidism, a condition characterized by excessive production of thyroid hormones, presents significant public health challenges globally, including in Bangladesh. This survey investigates the prevalence and treatment procedures of hyperthyroidism among patients at Dhaka Medical College & Hospital (DMCH). 60%, considered themselves quite knowledgeable about Hyperthyroidism. In contrast, 35% of the participants indicated that they lacked familiarity with the condition. Majority of respondents (70%) reported that they have not been impacted by Hyperthyroidism, while 30% indicated that they have been affected by the condition. 41% of respondents indicated experiencing Hyperthyroidism for a duration of 6-12 month. Additionally, 29% of participants reported enduring Hyperthyroidism for more than 2 years. As per the research findings, 33% of those surveyed noted feelings of nervousness, anxiety, and irritability. Furthermore, 30% of the participants reported experiencing a swollen neck due to an enlarged thyroid gland (goitre). Majority of the participants (55%) have been replied that doctor diagnosed Hyperthyroidism by blood test that measure level of thyroid stimulating hormone (TSH) & 37% responders replied that doctor diagnosed Hyperthyroidism by blood test that measure T4and T3 level. In this investigation, 35% participants have been replied that doctor prescribed Anti-thyroid medications, 30% retorted that doctor prescribed Surgery (thyroidectomy). Most of the participants (42%) retorted that they have been experienced itching after taken anti-hyperthyroidism medication. 35% of respondents reported that they had participated in Hyperthyroidism support or community events. This survey underscores the necessity for continuous monitoring and tailored treatment plans to enhance patient outcomes in hyperthyroidism management at DMCH.

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Chapter 1
Introduction

1. Introduction

Hyperthyroidism, a condition characterized by excessive production of thyroid hormones, poses significant health challenges worldwide. In Bangladesh, the prevalence of this endocrine disorder reflects broader global trends, impacting numerous individuals with symptoms ranging from weight loss and anxiety to more severe cardiovascular complications [1]. Understanding the prevalence and treatment procedures for hyperthyroidism is crucial for improving patient outcomes and healthcare strategies. Dhaka Medical College & Hospital (DMCH), one of the largest and most prominent medical institutions in Bangladesh, serves a diverse population and provides comprehensive healthcare services, including endocrinology [2]. This survey aims to elucidate the prevalence of hyperthyroidism among patients at DMCH and to evaluate the treatment protocols implemented. By examining the frequency of hyperthyroidism cases and the effectiveness of various treatment methodologies, this study seeks to contribute valuable insights into the management of this condition in a major healthcare setting. This survey will provide a detailed analysis of patient demographics, the spectrum of clinical presentations, diagnostic approaches, and the therapeutic strategies employed at DMCH. The findings will offer a foundation for enhancing clinical practices and developing targeted interventions to better address hyperthyroidism, ultimately aiming to improve patient care and health outcomes in Bangladesh [3].

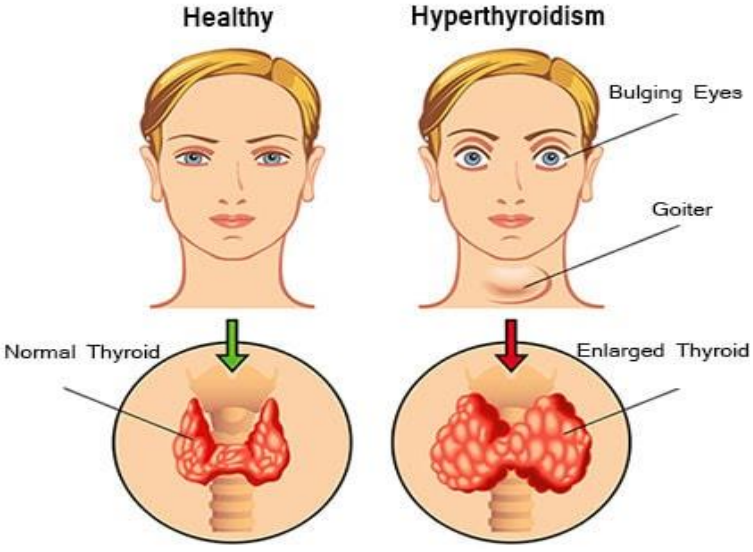

Figure 1: Hyperthyroidism

1.1 Etiology of Hyperthyroidism

Hyperthyroidism results from an overproduction of thyroid hormones (thyroxine [T4] and triiodothyronine [T3] by the thyroid gland. The etiological factors contributing to hyperthyroidism are diverse, encompassing autoimmune disorders, nodular thyroid disease, inflammation, and exogenous factors [4]. The primary causes include:

- **Graves 'disease**

Autoimmune Mechanism: Graves' disease is the most common cause of hyperthyroidism. It occurs when the immune system produces antibodies called thyroid-stimulating immunoglobulin's (TSIs) that mimic the action of thyroid-stimulating hormone (TSH), leading to increased hormone production.

Genetic and Environmental Factors: A combination of genetic predisposition and environmental triggers, such as stress, infection, or iodine exposure, contributes to the development of Graves' disease [5].

- **Toxic Multinodular Goiter (Plummer's Disease)**

Nodular Growth: This condition involves the formation of multiple hyperfunctioning nodules within the thyroid gland. These nodules autonomously produce thyroid hormones, independent of TSH regulation.

Age and Iodine Deficiency: Toxic multinodular goiter is more common in older adults and in regions with long-standing iodine deficiency [6].

- **Toxic Adenoma**

Single Hyper functioning Nodule: A toxic adenoma is a single benign tumor within the thyroid gland that autonomously secretes thyroid hormones, leading to hyperthyroidism.

Somatic Mutations: The development of toxic adenomas is often linked to somatic mutations in the thyroid-stimulating hormone receptor (TSHR) or the Gs alpha subunit.

- **Thyroiditis**

Inflammation: Thyroiditis refers to inflammation of the thyroid gland, which can lead to the release of preformed thyroid hormones into the bloodstream. Subtypes include subacute thyroiditis (de Quervain's), postpartum thyroiditis, and silent thyroiditis.

Transient Hyperthyroidism: Inflammation-induced hyperthyroidism is usually transient, often followed by a hypothyroid phase before returning to euthyroidism [7].

- **Iodine-Induced Hyperthyroidism (Jod-Basedow Phenomenon)**

Excess Iodine Intake: Excessive iodine intake, either from diet, medication, or contrast agents, can trigger hyperthyroidism, particularly in individuals with preexisting thyroid abnormalities.

- **Exogenous Thyroid Hormone Intake**

Overmedication: Excessive intake of synthetic thyroid hormone (levothyroxine) can lead to hyperthyroidism, a condition termed factitious hyperthyroidism.

Intentional Misuse: Some individuals may intentionally misuse thyroid hormone for weight loss or other purposes, resulting in hyperthyroid symptoms [8].

- **Other Causes**

TSH-Secreting Pituitary Adenomas: Rarely, hyperthyroidism can be caused by a pituitary tumor that secretes excess TSH, stimulating thyroid hormone production.

Struma Ovarii: A rare ovarian tumor composed of thyroid tissue, which can autonomously produce thyroid hormones.

Understanding the etiology of hyperthyroidism is critical for accurate diagnosis and effective management. Tailoring treatment to the underlying cause ensures optimal patient outcomes and mitigates the risk of complications associated with this endocrine disorder [9].

1.2 Pathogenesis of Hyperthyroidism

Hyperthyroidism is a condition characterized by the excessive production of thyroid hormones by the thyroid gland, leading to an accelerated metabolic state in the body. The pathogenesis of hyperthyroidism involves several potential mechanisms and causes, which can be broadly categorized into primary hyperthyroidism (originating from the thyroid gland itself) and secondary hyperthyroidism (due to external factors or influences on the thyroid gland) [10].

1. **Graves' Disease**

Graves' disease is the most common cause of hyperthyroidism. It is an autoimmune disorder where the body's immune system produces antibodies called thyroid-stimulating immunoglobulins (TSIs) that mimic thyroid-stimulating hormone (TSH). These TSIs bind to and activate the TSH receptors on the thyroid gland, stimulating excessive thyroid hormone production.

Pathogenesis:

- **Autoimmune Response**: The exact cause of the autoimmune response is unclear, but genetic, environmental, and immunological factors are involved.
- **TSI Production**: The immune system's production of TSIs leads to continuous stimulation of thyroid hormone synthesis and secretion.
- **Thyroid Growth**: This excessive stimulation also causes the thyroid gland to grow, leading to a goiter.

2. Toxic Multinodular Goiter (Plummer's Disease)

This condition involves multiple autonomously functioning thyroid nodules that produce excess thyroid hormone independently of TSH regulation [11].

Pathogenesis:

- **Nodular Growth**: The nodules develop and grow due to somatic mutations in the thyroid cells.

- **Autonomous Hormone Production**: These nodules acquire the ability to produce thyroid hormones without TSH stimulation, leading to hyperthyroidism.

3. Thyroid Adenoma

A thyroid adenoma is a benign tumor of the thyroid gland that produces thyroid hormones independent of TSH regulation [12].

Pathogenesis:

- **Somatic Mutations**: Mutations in the TSH receptor or signaling pathway genes lead to constitutive activation of thyroid hormone synthesis.
- **Hormone Overproduction**: The adenoma cells continuously produce thyroid hormones, causing hyperthyroidism.

4. Thyroiditis

Thyroiditis refers to inflammation of the thyroid gland, which can lead to the release of stored thyroid hormones into the bloodstream, causing temporary hyperthyroidism [13].

Pathogenesis:

- **Inflammation**: Conditions like subacute thyroiditis, postpartum thyroiditis, and Hashimoto's thyroiditis can cause thyroid inflammation.
- **Hormone Release**: Inflammation damages thyroid follicles, releasing preformed thyroid hormones into circulation.
- **Transient Hyperthyroidism**: The condition is often self-limiting, with a period of hyperthyroidism followed by hypothyroidism as hormone stores are depleted.

5. Excessive Iodine Intake

Iodine is essential for thyroid hormone production, but excessive iodine intake can lead to hyperthyroidism, especially in individuals with underlying thyroid disease [14].

Pathogenesis:

- **Jod-Basedow Phenomenon**: In people with pre-existing thyroid nodules or latent Graves' disease, excess iodine can trigger overproduction of thyroid hormones.

- **Thyroid Dysregulation**: High iodine levels bypass the normal regulatory mechanisms of thyroid hormone synthesis.

6. Thyroid-Stimulating Hormone (TSH)-Secreting Pituitary Adenoma

A rare cause of hyperthyroidism is a pituitary adenoma that secretes excess TSH, leading to overstimulation of the thyroid gland [15].

Pathogenesis:

- **Pituitary Tumor**: The adenoma produces excessive TSH, which stimulates the thyroid gland.
- **Thyroid Hormone Overproduction**: This results in increased production of thyroid hormones despite normal feedback mechanisms.

7. Exogenous Thyroid Hormone Administration

Taking excessive amounts of synthetic thyroid hormone (levothyroxine) can cause hyperthyroidism [16].

Pathogenesis:

- **Overmedication**: Excessive doses of thyroid hormone medication overwhelm the body's regulatory mechanisms.
- **Metabolic Effects**: The surplus of thyroid hormones accelerates metabolic processes, mimicking hyperthyroidism.

The pathogenesis of hyperthyroidism involves a variety of mechanisms ranging from autoimmune stimulation, autonomous thyroid nodules, and inflammation to external factors such as iodine intake and medication. Understanding these mechanisms is crucial for accurate diagnosis and effective management of the condition [17].

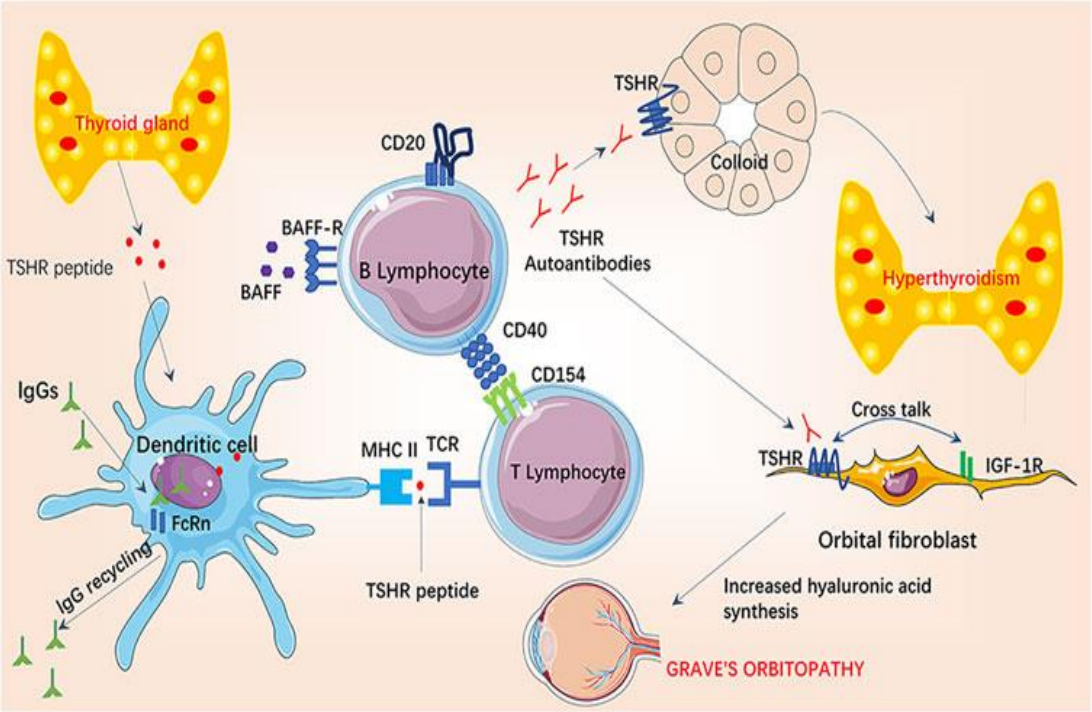

Figure 2: Pathogenesis of Hyperthyroidism [18]

1.3 Prevention and Management Strategies of Hyperthyroidism

Hyperthyroidism, a condition characterized by an overactive thyroid gland producing excessive thyroid hormones, can lead to various health issues if left untreated. Effective prevention and management strategies are crucial for maintaining optimal health. Here is an overview of the key strategies:

Prevention Strategies

1. **Regular Screening and Early Detection**:

- **Routine Check-ups**: Regular thyroid function tests, especially for those with a family history of thyroid disorders, can help in early detection and timely intervention.
- **Awareness of Symptoms**: Educating individuals about the symptoms of hyperthyroidism (e.g., weight loss, rapid heartbeat, nervousness) can prompt early medical consultation [19].

2. **Iodine Intake Regulation**:

- **Balanced Diet**: Ensuring adequate but not excessive iodine intake through diet is essential, as both deficiency and excess can affect thyroid function.
- **Monitoring in High-Risk Areas**: In regions with iodine deficiency, public health measures like iodine supplementation or iodized salt programs are crucial.

3. **Lifestyle Modifications**:

- **Stress Management**: Chronic stress can affect thyroid function, so incorporating stress-reducing activities such as yoga, meditation, or regular exercise can be beneficial.
- **Avoiding Smoking**: Smoking is linked to thyroid dysfunction, so quitting smoking can reduce the risk [20].

Management Strategies

1. **Medical Treatments**:

- **Antithyroid Medications**: Drugs like methimazole or propylthiouracil reduce thyroid hormone production and are often the first line of treatment.
- **Beta-Blockers**: These medications can help manage symptoms such as rapid heart rate and anxiety but do not address the underlying cause.

2. **Radioactive Iodine Therapy**:

- **Mechanism**: This treatment involves taking radioactive iodine orally, which selectively destroys overactive thyroid cells.
- **Considerations**: It is generally effective but can lead to hypothyroidism, requiring lifelong thyroid hormone replacement therapy [21].

3. **Surgery**:

- **Thyroidectomy**: Partial or total removal of the thyroid gland may be necessary in cases where other treatments are ineffective or contraindicated.

- **Post-Surgery Care**: Lifelong thyroid hormone replacement therapy is usually required after a thyroidectomy.

4. **Diet and Nutrition**:

- **Avoid Excess Iodine**: Patients should avoid foods high in iodine, such as certain seaweeds, if advised by their healthcare provider.
- **Balanced Nutrition**: A well-balanced diet supports overall health and can help manage symptoms [22].

5. **Regular Monitoring**:

- **Follow-up Appointments**: Regular visits to an endocrinologist to monitor thyroid function and adjust treatment plans as necessary.
- **Symptom Tracking**: Patients should keep track of their symptoms and communicate any changes to their healthcare provider.

Complementary Approaches

1. **Herbal Remedies**: Some herbs like bugleweed and lemon balm may help manage symptoms, but they should only be used under professional guidance due to potential interactions with conventional treatments.
2. **Acupuncture and Traditional Medicine**: These may offer symptom relief for some patients but should complement, not replace, standard medical treatments [23].

Patient Education and Support

1. **Informing Patients**: Providing detailed information about the condition, treatment options, and lifestyle adjustments is vital for patient engagement and adherence to treatment.
2. **Support Groups**: Encouraging participation in support groups can provide emotional support and practical advice from others with similar experiences.

Conclusion

Preventing and managing hyperthyroidism involves a combination of regular screening, lifestyle adjustments, medical treatments, and patient education [24].

Chapter 2
Literature Review

2.1 Literature Review

Analysis 1:

A retrospective study was conducted to assess the prevalence of malignant thyroid tumors in 202 patients who underwent surgery for hyperthyroidism. Thyroid cancer was found in 12 patients (5.9%), including nine cases of papillary carcinoma, one case of follicular carcinoma, and two cases of Hürthle cell carcinoma. The coexistence of hyperthyroidism and thyroid cancer was more commonly observed in patients with single toxic adenomas compared to those with toxic diffuse or multinodular goiters. In five instances, thyroid malignancy was identified within the hyperthyroid lesion itself (three in toxic adenomas and two in diffuse goiters). Eight patients had malignant lesions with a maximum diameter of less than 1 cm, and five of these exhibited unfavorable histologic characteristics, such as minimal capsular invasion or multifocality. All patients diagnosed with thyroid cancer are currently alive and apparently free of residual disease. The study concludes that hyperthyroid patients, especially those with single toxic adenomas [25].

Analysis 2:

The appropriate treatment for hyperthyroidism involves recognizing its signs and symptoms and determining its cause. The most frequent cause is Graves' disease, but other causes include thyroiditis, toxic multinodular goiter, toxic adenomas, and side effects from certain medications. Diagnosis typically starts with a thyroid-stimulating hormone (TSH) test. If results are unclear, radionuclide uptake measurements can help identify the cause. For hyperthyroidism due to thyroiditis, symptomatic treatment is usually adequate since it is temporary. Graves' disease, toxic multinodular goiter, and toxic adenomas can be treated with radioactive iodine, antithyroid drugs, or surgery, with radioactive iodine being the preferred treatment in the U.S. if there are no contraindications. Surgery, or thyroidectomy, is considered when other treatments are ineffective or not suitable, or when a goiter causes compression symptoms. New treatments are also being explored. Special care is necessary for pregnant or breastfeeding patients, and for those with Graves' ophthalmopathy or amiodarone-induced hyperthyroidism. Patient preferences should be taken into account when choosing a treatment, and ongoing monitoring is crucial [26].

Analysis 3:

This article examines the pathological lesions linked to clinical and/or biochemical hyperthyroidism. It starts by discussing the descriptive pathology of classic Graves' disease, then covers the less common toxic nodular goiter and hyper-functioning thyroid nodules. The article also addresses the impact of non-thyroidal hormones, glandular function (including lesions in the pituitary and hypothalamus), ectopic production of thyroid-stimulating proteins by non-thyroidal tumors, hyper-function caused by reactions to external drugs, and conditions resulting from mechanical or destructive causes of hyperthyroidism [27].

Chapter 3

Purpose of the study

3.1 Purpose of the study

The purpose of this study is to investigate the prevalence and treatment procedures of hyperthyroidism among patients at Dhaka Medical College & Hospital. By conducting a comprehensive survey, this research aims to:

- Assess the current rate of hyperthyroidism among the patient population.
- Examine the various treatment protocols being utilized.
- Recognize any emerging trends in the management of hyperthyroidism.
- Aiming to improve the overall management of hyperthyroidism within the hospital and potentially at a broader level.

Chapter 4
Materials & Method

4. Methodology

4.1 Study Design

This cross-sectional study, focusing on Hyperthyroidism patients, took place at Dhaka Medical College & Hospital in Dhaka between February and April 2024. Following approval from the institution's ethical committee, all participants gave their informed consent. A specially designed questionnaire was utilized to gather fundamental information and details from the patients regarding Hyperthyroidism. The data collection was carried out through a physical survey using Google Forms.

4.2 Inclusion Criteria

Contributors who had patients with Hyperthyroidism met the inclusion criteria.

4.3 Exclusion Criteria

Patients who refused to take part in the trial were not included.

Chapter 5

Results & discussion

5.1 Age of Responders

Q: Age

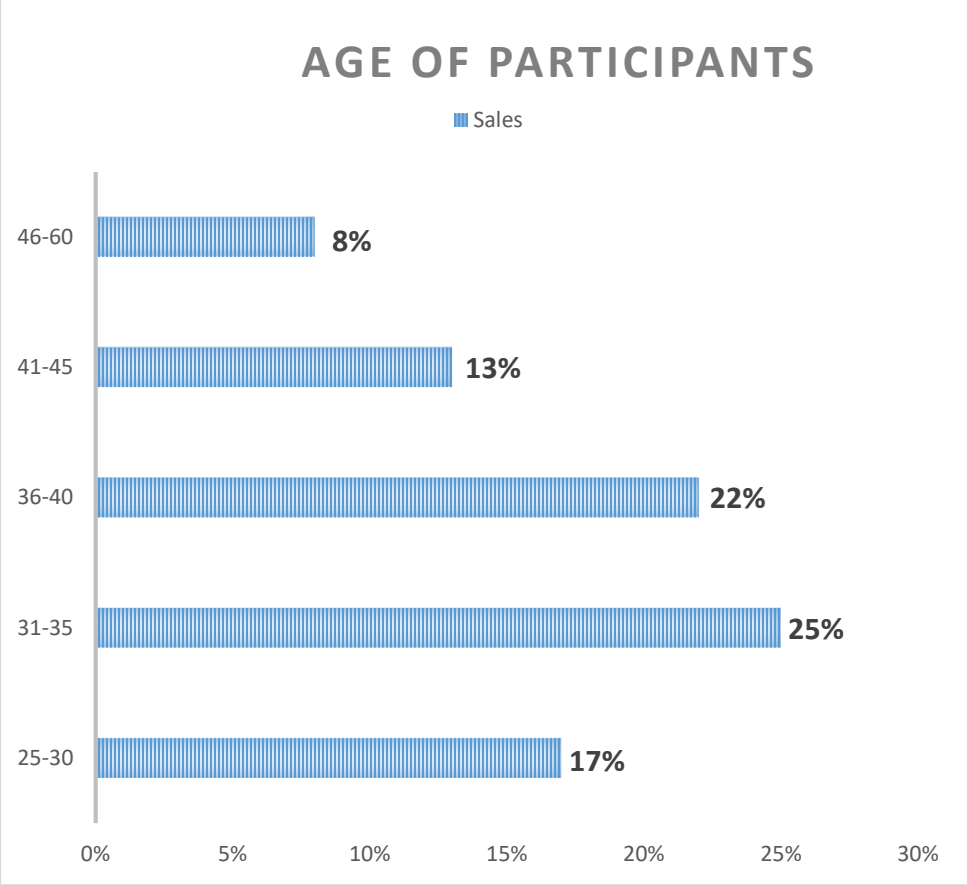

Figure 3: Age of Responders

Discussion: A total of 200 individuals participated in the study, with ages ranging from 31 to 40. The largest group of participants (25%) were between 31 and 35 years old. Participants aged 25 to 30 made up 17% of the study, while those aged 36 to 40, 41 to 45, and 46 to 60 accounted for 22%, 13%, and 8% of the participants, respectively.

5.2 Gender of Participants

Q: Gender

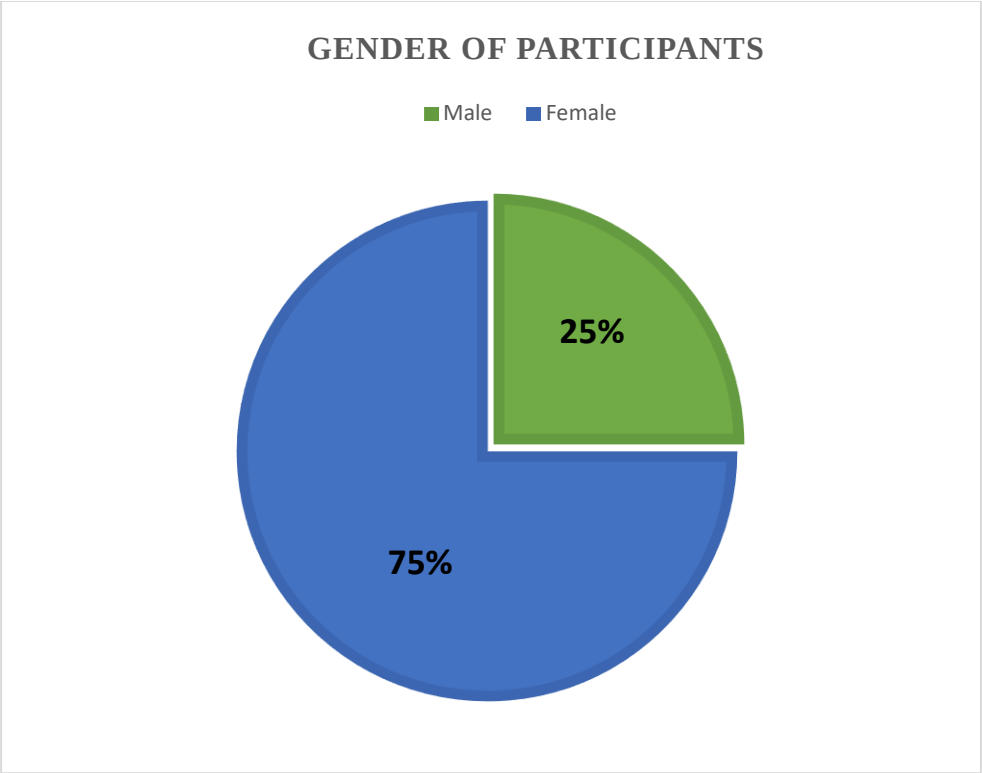

Figure 4: Gender of Participants

Discussion: In this examination, there was a balanced representation of genders, with 25% being male and 75% female participants.

5.3 Professional Status of Responders

Q: What is your profession?

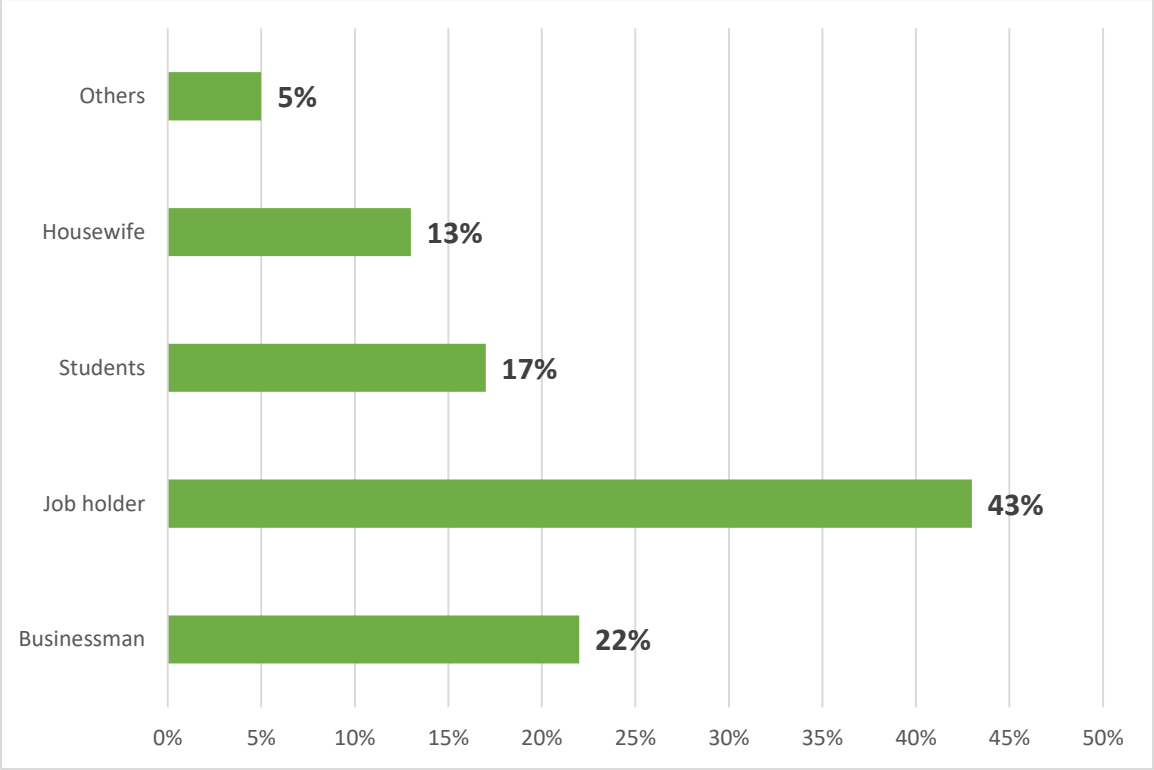

Figure 5: Professional Status of Responders

Discussion: The survey included participants from various professions. As shown in Figure 5, the largest group consists of individuals employed in jobs (43%), followed by businesspeople who make up 22% of the participants.

5.4 Familiar with Hyperthyroidism

Q: How familiar are you with Hyperthyroidism?

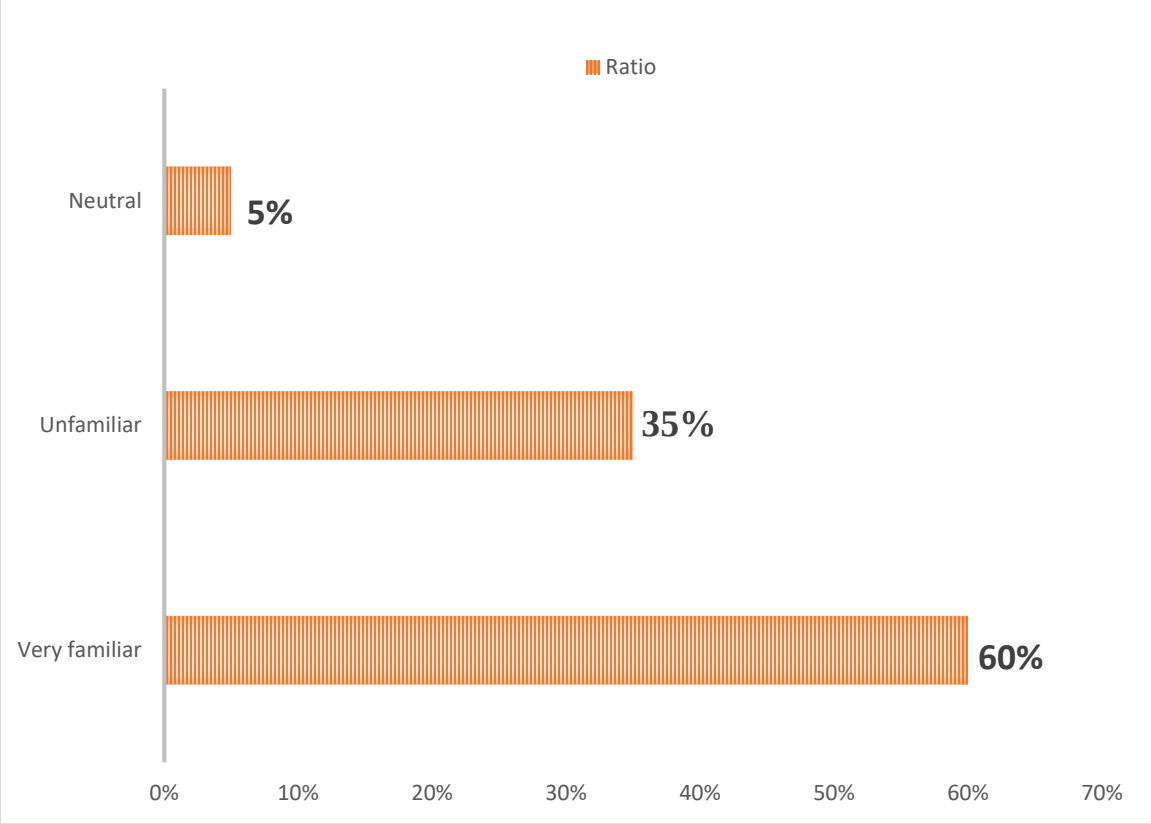

Figure 6: Familiar with Hyperthyroidism

Discussion: Hyperthyroidism is a condition where the thyroid gland produces excessive amounts of thyroid hormones, namely thyroxine (T4) and triiodothyronine (T3). These hormones regulate metabolism, and their overproduction can lead to various symptoms and health issues. The study revealed that a significant majority of respondents, 60%, considered themselves quite knowledgeable about Hyperthyroidism. In contrast, 35% of the participants indicated that they lacked familiarity with the condition.

5.5 Affected ratio of Hyperthyroidism

Q: Have you ever been affected by Hyperthyroidism?

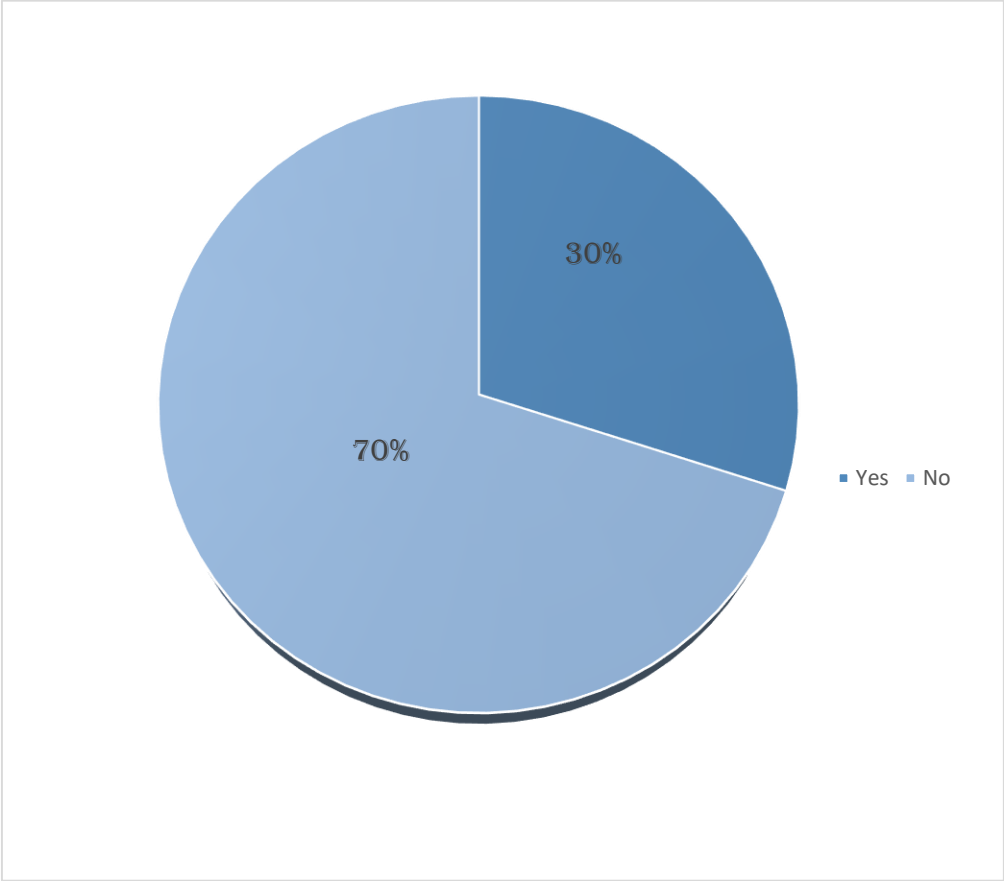

Figure 7: Affected ratio of Hyperthyroidism

Discussion: According to the survey, the majority of respondents (70%) reported that they have not been impacted by Hyperthyroidism, while 30% indicated that they have been affected by the condition.

5.6 Duration of illness

Q: If yes, how long ago were you diagnosed?

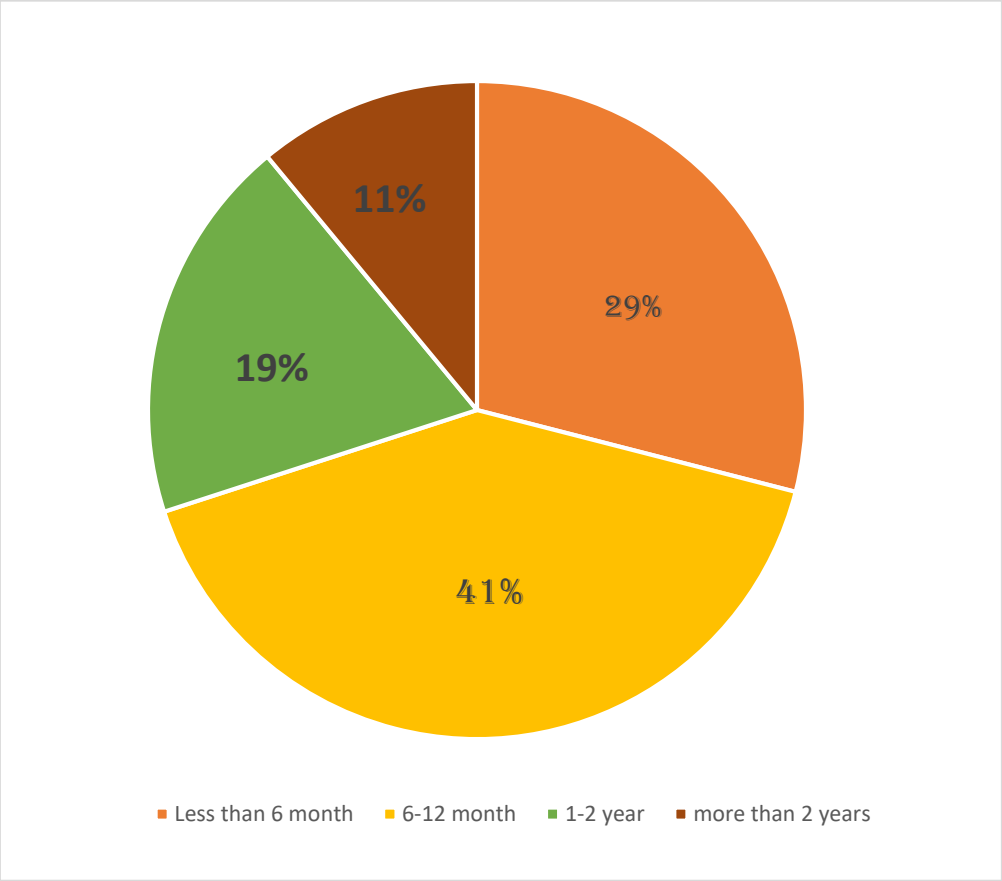

Figure 8: Duration of illness

Discussion: According to the survey findings, 41% of respondents indicated experiencing Hyperthyroidism for a duration of 6-12 month. Additionally, 29% of participants reported enduring Hyperthyroidism for more than 2 years, while 19% stated they had been dealing with the condition for 1-2 year.

5.7 Symptoms of Hyperthyroidism

Q: If yes, what kind of symptoms have you experienced?

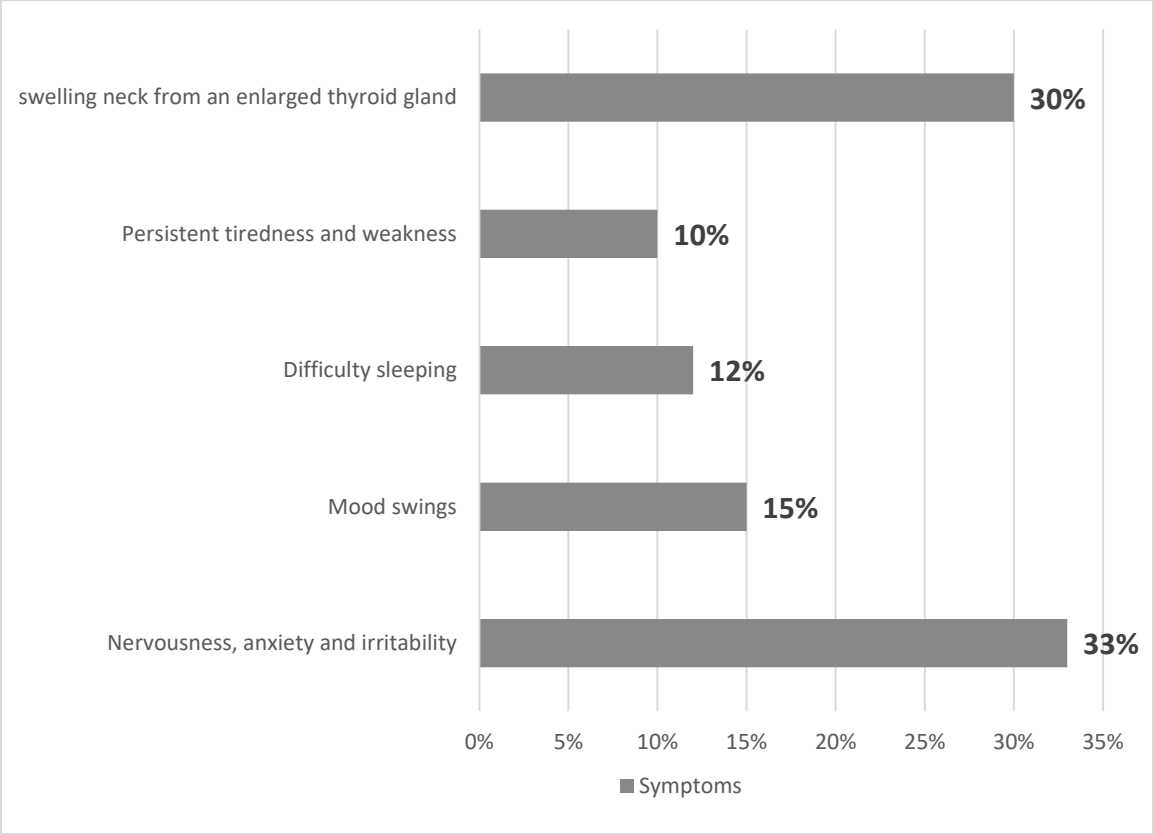

Figure 9: Symptoms of Hyperthyroidism

Discussion: Many patients dealing with the condition displayed various symptoms. As per the research findings, 33% of those surveyed noted feelings of nervousness, anxiety, and irritability. Furthermore, 30% of the participants reported experiencing a swollen neck due to an enlarged thyroid gland (goitre), and 15% mentioned encountering mood swings. Additionally, 12% of the respondents stated they had trouble sleeping.

5.8 Diagnosis of Hyperthyroidism in patients

Q: How do doctor typically diagnose Hyperthyroidism in patients?

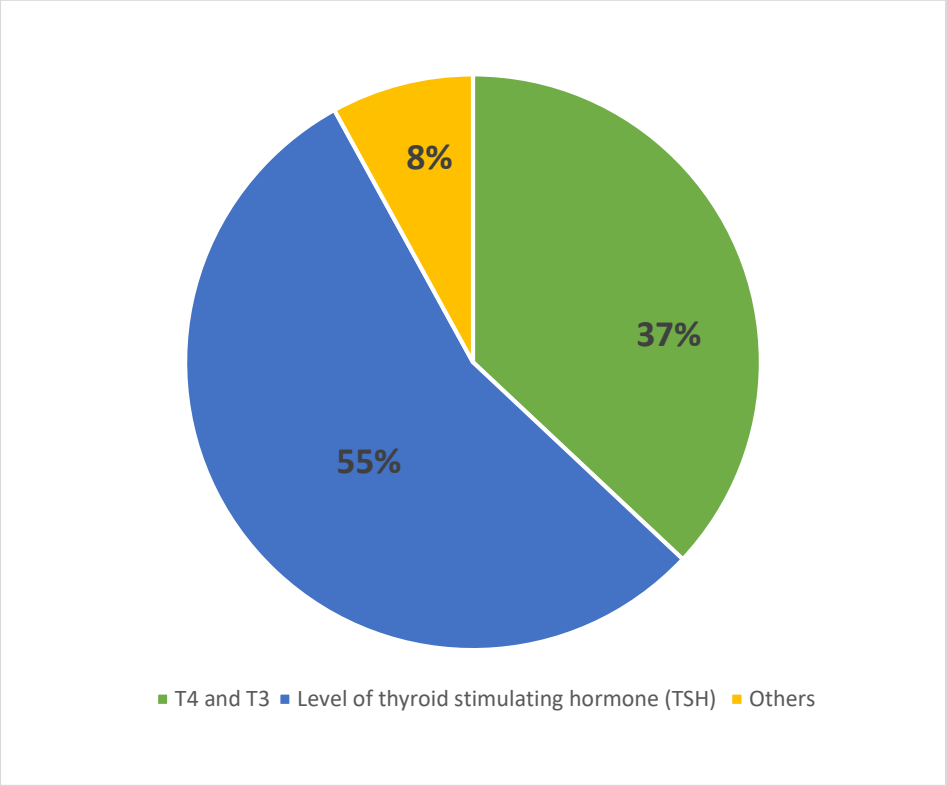

Figure 10: Diagnosis of Hyperthyroidism in patients

Discussion: As per this survey, majority of the participants (55%) have been replied that doctor diagnosed Hyperthyroidism by blood test that measure level of thyroid stimulating hormone (TSH) & 37% responders replied that doctor diagnosed Hyperthyroidism by blood test that measure T4and T3 level.

5.9 Management of Hyperthyroidism patients

Q: What treatment methods have you been prescribed?

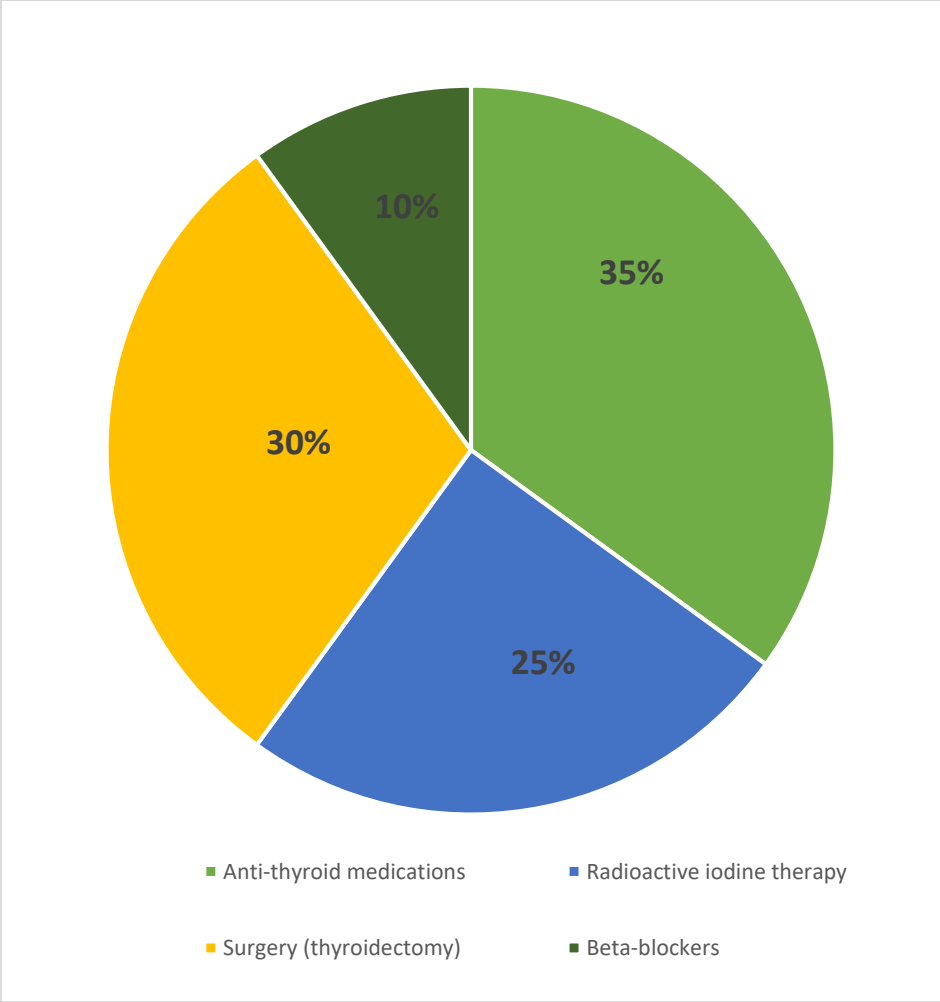

Figure 11: Management of Hyperthyroidism patients

Conversation: Management of hyperthyroidism involves a comprehensive approach that includes diagnosis, pharmacological treatment, possible surgical intervention, and ongoing monitoring. In this investigation, 35% participants have been replied that doctor prescribed Anti-thyroid medications, 30% retorted that doctor prescribed Surgery (thyroidectomy) & 25% participants have been replied that doctor prescribed radioactive iodine therapy for the management of Hyperthyroidism.

5.10 Side effect from taken treatment

Q: Have you experienced any side effects from your treatment?

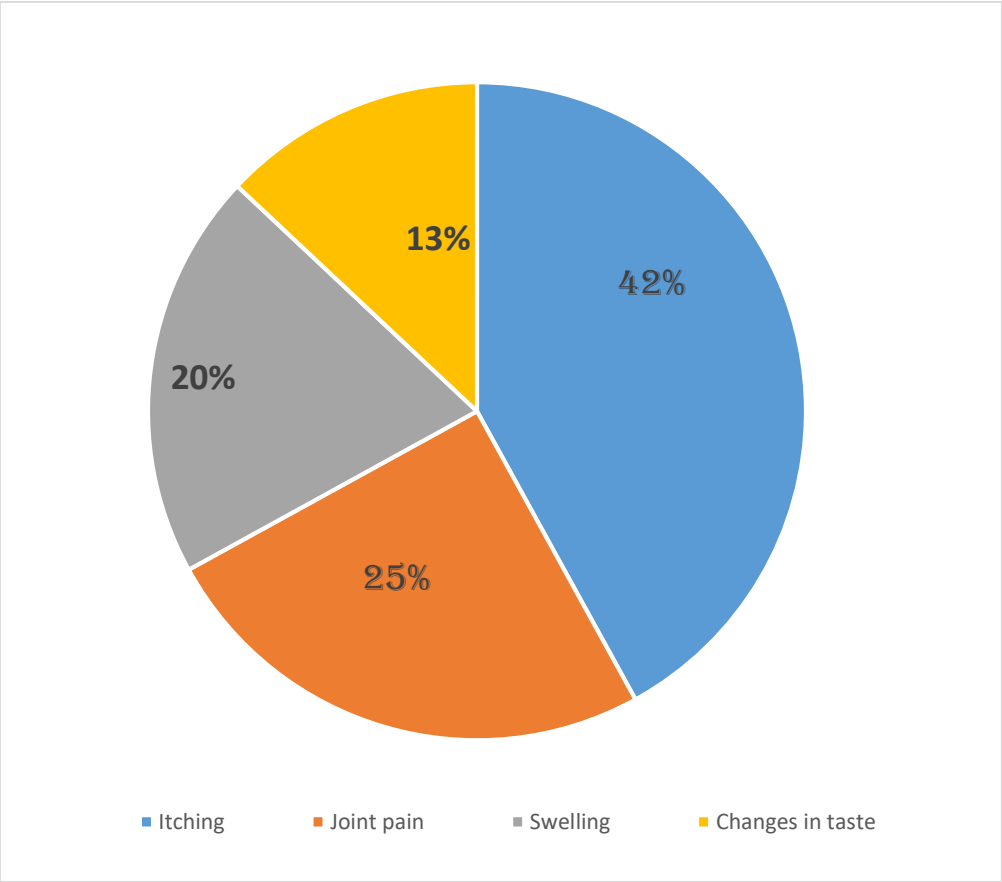

Figure 12: Side effect from taken treatment

Discussion: As per this investigation, most of the participants (42%) retorted that they have been experienced itching after taken anti-hyperthyroidism medication, 25% replied that they have been experienced joint pain & 20% replied that they have been also suffered swelling after taken anti-hyperthyroidism medication.

5.11 Satisfaction level on current management protocols for Hyperthyroidism

Q: How satisfied are you with the current management protocols for Hyperthyroidism at Dhaka Medical College & Hospital?

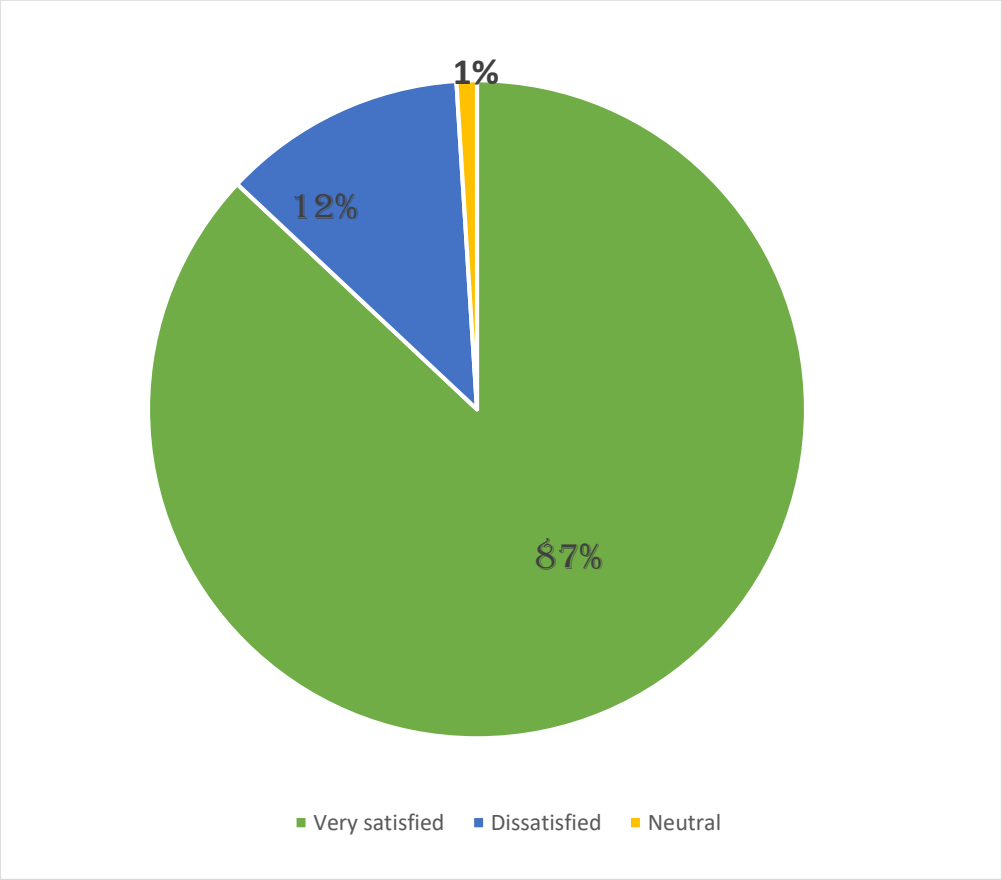

Figure 13: Satisfaction level on current management protocols for Hyperthyroidism

Discussion: The study found that 87% of participants were very satisfied with the current treatment methods for Hyperthyroidism at Dhaka Medical College & Hospital.

5.12 More prone to affect Hyperthyroidism

Q: Who is the more prone to affect Hyperthyroidism?

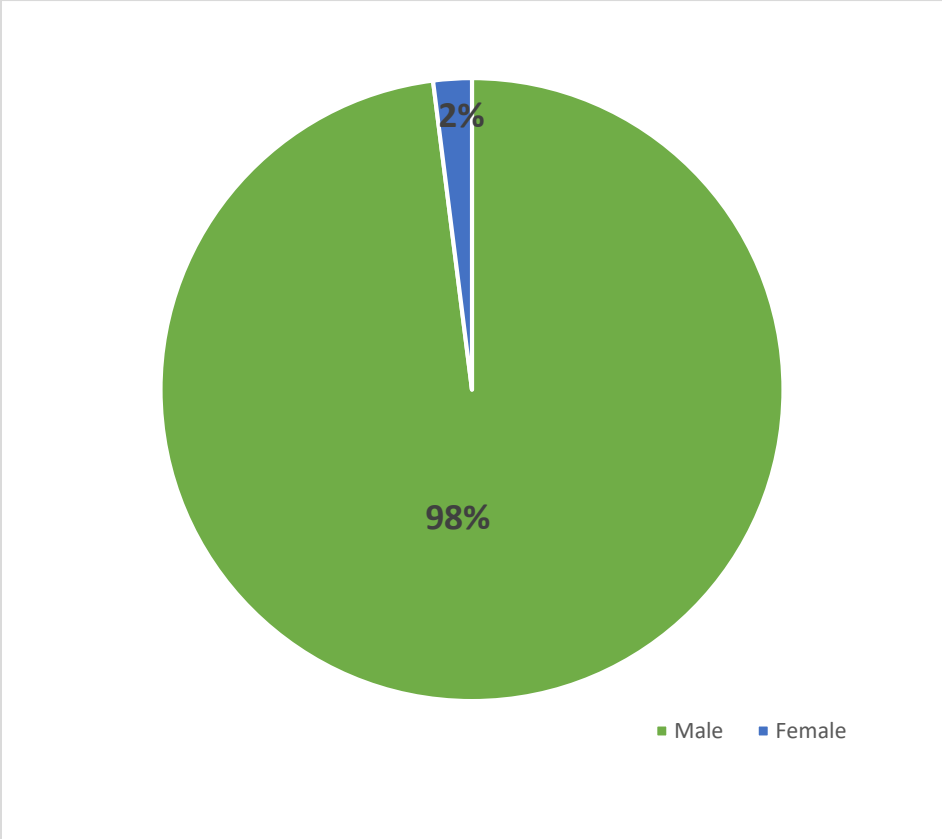

Figure 14: More prone to affect Hyperthyroidism

Discussion: While an overactive thyroid can affect anyone, it is approximately ten times more prevalent in women than in men and usually occurs between the ages of 20 and 40. In this investigation (98%) responders have been replied that women are more prone to affect by Hyperthyroidism.

5.13 Participated in any Hyperthyroidism support groups or community events

Q: Have you ever participated in any Hyperthyroidism support groups or community events?

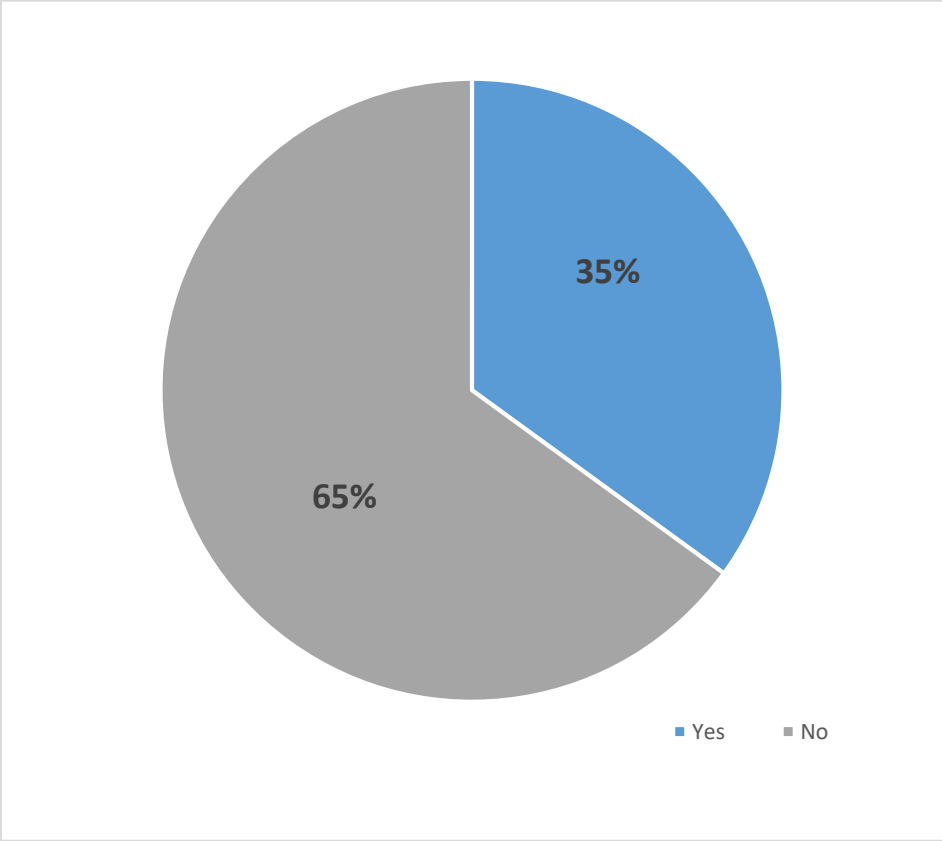

Figure 15: Participated in any Hyperthyroidism support groups or community events

Discussion: According to this investigation, 35% of respondents reported that they had participated in Hyperthyroidism support or community events.

Chapter 6
Conclusion

6. Conclusion

The survey on the prevalence and treatment procedures of hyperthyroidism at Dhaka Medical College & Hospital provides critical insights into the current state of this endocrine disorder within the institution. The data indicates that hyperthyroidism remains a significant health issue, affecting a considerable portion of the patient population. The findings reveal a higher prevalence among females, particularly within the age group of 20-40 years, aligning with global trends. 60%, considered themselves quite knowledgeable about Hyperthyroidism. In contrast, 35% of the participants indicated that they lacked familiarity with the condition. According to the survey, the majority of respondents (70%) reported that they have not been impacted by Hyperthyroidism, while 30% indicated that they have been affected by the condition. 41% of respondents indicated experiencing Hyperthyroidism for a duration of 6-12 month. Additionally, 29% of participants reported enduring Hyperthyroidism for more than 2 years. As per the research findings, 33% of those surveyed noted feelings of nervousness, anxiety, and irritability. Furthermore, 30% of the participants reported experiencing a swollen neck due to an enlarged thyroid gland (goitre). Majority of the participants (55%) have been replied that doctor diagnosed Hyperthyroidism by blood test that measure level of thyroid stimulating hormone (TSH) & 37% responders replied that doctor diagnosed Hyperthyroidism by blood test that measure T4and T3 level. In this investigation, 35% participants have been replied that doctor prescribed Anti-thyroid medications, 30% retorted that doctor prescribed Surgery (thyroidectomy). Most of the participants (42%) retorted that they have been experienced itching after taken anti-hyperthyroidism medication. 35% of respondents reported that they had participated in Hyperthyroidism support or community events. In conclusion, while Dhaka Medical College & Hospital is equipped to manage hyperthyroidism effectively, there is room for improvement in diagnostic capabilities, treatment adherence, and patient education.

Chapter 7
Reference

References

1. Tunbridge, W. M. G., Evered, D. C., Hall, R., Appleton, D., Brewis, M., Clark, F., Evans, J. G., Young, E., Bird, T., & Smith, P. A. (1977). The spectrum of thyroid disease in a community: The Whickham survey. *Clinical Endocrinology (Oxf)*, 7(6), 481-493.

2. Wartofsky, L., Glinoer, D., Solomon, B., Lagasse, R., & Nagataki, S. (1991). Differences and similarities in the diagnosis and treatment of Graves' disease in Europe, Japan, and the United States. *Thyroid*, 1(2), 129-135.

3. Surks, M. I., Chopra, I. J., Mariash, C. N., Nicoloff, J. T., & Solomon, D. H. (1990). American Thyroid Association guidelines for use of laboratory tests in thyroid disorders. *JAMA*, 263(11), 1529-1532.

4. Ruiz, M., Rajatanavin, R., Young, R. A., Braverman, L. E., & Soeldner, J. S. (1982). Familial dysalbuminemic hyperthyroxinemia: A syndrome that can be confused with thyrotoxicosis. *New England Journal of Medicine*, 306(10), 635-639.

5. Sakata, S., Nakamura, S., & Miura, K. (1985). Autoantibodies against thyroid hormones or iodothyronine: Implications in diagnosis, thyroid function, treatment, and pathogenesis. *Annals of Internal Medicine*, 103(4), 579-589.

6. Ross, D. S., Daniels, G. H., & Gouveia, D. (1990). The use and limitations of a chemiluminescent thyrotropin assay as a single thyroid function test in an outpatient endocrine clinic. *Journal of Clinical Endocrinology & Metabolism*, 71(3), 764-769.

7. Nicoloff, J. T., & Spencer, C. A. (1990). The use and misuse of the sensitive thyrotropin assays. *Journal of Clinical Endocrinology & Metabolism*, 71(3), 553-558.

8. Davies, P. H., & Franklyn, J. A. (1991). The effects of drugs on tests of thyroid function. *European Journal of Clinical Pharmacology*, 40(5), 439-451.

9. Parle, J. V., Franklyn, J. A., Cross, K. W., Jones, S. C., & Sheppard, M. C. (1991). Prevalence and follow-up of abnormal thyrotrophin (TSH) concentrations in the elderly in the United Kingdom. *Clinical Endocrinology (Oxf)*, 34(1), 77-83.

10. Reinwein, D., Benker, G., Konig, M. P., Pinchera, A., Schatz, H., & Schleusener, A. (1988). The different types of hyperthyroidism in Europe: Results of a prospective survey of 924 patients. *Journal of Endocrinological Investigation*, 11(3), 193-200.

11. Learoyd, D. L., Fung, H. Y. M., & McGregor, A. M. (1992). Postpartum thyroid dysfunction. *Thyroid*, 2(1), 73-80.

12. Totterman, T. H., Karlsson, F. A., Bengtsson, M., & Mendel-Hartvig, I. (1987). Induction of circulating activated suppressor-like T cells by methimazole therapy for Graves' disease. *New England Journal of Medicine*, 316(1), 15-22.

13. Kampmann, J. P., & Hansen, J. M. (1981). Clinical pharmacokinetics of antithyroid drugs. *Clinical Pharmacokinetics*, 6(5), 401-428.

14. Barnes, H. V., & Bledsoe, T. (1972). A simple test for selecting the thioamide schedule in thyrotoxicosis. *Journal of Clinical Endocrinology & Metabolism*, 35(2), 250-255.

15. Okamura, K., Ikenoue, H., Shiroozu, A., Sato, K., Yoshinari, Y., & Fujishima, M. (1987). Reevaluation of the effects of methylmercaptomidazole and propylthiouracil in patients with Graves' hyperthyroidism. *Journal of Clinical Endocrinology & Metabolism*, 65(4), 719-723.

16. Franklyn, J. A., Black, E. G., Wilson, E. M., Davis, J. R. E., & Sheppard, M. C. (1988). Limitations of a sensitive assay for thyrotropin in managing patients with thyroid disease. *Clinical Chemistry*, 34(5), 991-992.

17. Dahlberg, P. A., Karlsson, F. A., Lindstrom, B., & Wide, L. (1981). Studies of thyroid hormone and methimazole levels in patients with Graves' disease on a standardized anti-thyroid drug regimen. *Clinical Endocrinology (Oxf)*, 14(6), 555-562.

18. Mashio, Y., Beniko, M., Ikota, A., Mizumoto, H., & Kunita, H. (1988). Treatment of hyperthyroidism with a small single daily dose of methimazole. *Acta Endocrinologica (Copenh)*, 119(1), 139-144.

19. Reinwein, D., Benker, G., Lazarus, J. H., & Alexander, W. D. (1993). A prospective randomized trial of antithyroid drug dose in Graves' disease therapy. *Journal of Clinical Endocrinology & Metabolism*, 76(6), 1516-1521.

20. Cooper, D. S., Goldminz, D., Levin, A. A., Ladenson, P. W., Daniels, G. H., Molitch, M. E., ... & Maloof, F. (1983). Agranulocytosis associated with antithyroid drugs: Effects of patient age and drug dose. *Annals of Internal Medicine*, 98(1), 26-29.

21. Tamai, H., Takaichi, Y., Morita, T., Komaki, G., Matsubayashi, S., & Kuma, K. (1989). Methimazole-induced agranulocytosis in Japanese patients with Graves' disease. *Clinical Endocrinology (Oxf)*, 30(5), 525-530.

22. Tajiri, J., Noguchi, S., Murakami, T., & Murakami, N. (1990). Antithyroid drug-induced agranulocytosis: The usefulness of routine white blood cell count monitoring. *Archives of Internal Medicine*, 150(3), 621-624.

23. Liaw, Y. F., Huang, M. J., Fan, K. D., Li, K. L., Wu, S. S., & Chen, T. J. (1993). Hepatic injury during propylthiouracil therapy in patients with hyperthyroidism: A cohort study. *Annals of Internal Medicine*, 118(6), 424-428.

24. Greer, M. A., Kammer, H., & Bouma, D. J. (1977). Short-term antithyroid drug therapy for the thyrotoxicosis of Graves's disease. *New England Journal of Medicine*, 297(4), 173-176.

25. Sugrue, D., McEvoy, M., Feely, J., & Drury, M. I. (1980). Hyperthyroidism in the land of Graves: Results of treatment by surgery, radio-iodine and carbimazole in 837 cases. *Quarterly Journal of Medicine*, 49(193), 51-61.

26. Hedley, A. J., Young, R. E., Jones, S. J., Alexander, W. D., & Bewsher, P. D. (1989). Antithyroid drugs in the treatment of hyperthyroidism of Graves' disease: Long-term follow-up of 434 patients. *Clinical Endocrinology (Oxf)*, 31(2), 209-218.

27. Teng, C. S., & Yeung, R. T. T. (1980). Changes in thyroid-stimulating antibody activity in Graves' disease treated with antithyroid drugs and its relationship to relapse: A prospective study. *Journal of Clinical Endocrinology & Metabolism*, 50(1), 144-147.