

A Comprehensive Review of Thyroid Disorders: A Modern and Ayurvedic Perspective

Dr. Shubham Mandwe¹, Dr. Krishna Deshpande², Dr. Shital Roman³, Dr. Kunj Thaker⁴

¹Final year PG, Department of Kriya Sharir, Dr. D. Y. Patil College of Ayurved and Research Centre, Pimpri – Pune

²Associate professor, department of Kriya Sharir, Dr. D. Y. Patil College of Ayurved and Research Centre, Pimpri – Pune

³HOD and Professor, department of Kriya Sharir, Dr. D. Y. Patil College of Ayurved and Research Centre, Pimpri – Pune

⁴Final year PG, Department of Kriya Sharir, Dr. D. Y. Patil College of Ayurved and Research Centre, Pimpri – Pune

Abstract- Thyroid disorders are among the most prevalent endocrine conditions globally, with significant health implications affecting metabolism, growth, and neurological functions. From the lens of modern medicine, thyroid dysfunctions are well-characterized with advanced diagnostic tools and pharmacological interventions. In contrast, Ayurveda, the ancient Indian system of medicine, offers a broader understanding of these disorders based on the principles of Dosha, Dhātu, and Agni. Though not directly named in Ayurvedic classics, symptoms of thyroid imbalance closely align with conditions such as Galaganda, Agnimandya, and Medo Roga. This article offers an in-depth comparative overview of thyroid pathology, diagnosis, and treatment from both medical paradigms.

1. INTRODUCTION

The thyroid gland, a small butterfly-shaped endocrine organ situated at the base of the neck, plays a pivotal role in maintaining homeostasis through the secretion of thyroid hormones—thyroxine (T₄) and triiodothyronine (T₃). These hormones influence metabolic rate, thermoregulation, protein synthesis, and neurodevelopment. Disruptions in thyroid function lead to two primary disorders: hypothyroidism (underactive thyroid) and hyperthyroidism (overactive thyroid).

According to the World Health Organization (WHO), thyroid disorders affect approximately 750 million individuals worldwide, with hypothyroidism being more prevalent, especially in women aged 30–50 years (Vanderpump, 2011). In India, subclinical

hypothyroidism is estimated to affect around 10–15% of the adult population (Unnikrishnan & Menon, 2011).

While modern biomedicine offers a clear-cut approach to diagnosis and therapy, Ayurvedic science presents a holistic understanding that encompasses lifestyle, mental health, and metabolic balance.

2. MODERN MEDICAL PERSPECTIVE ON THYROID DISORDERS

2.1 Hypothyroidism

Hypothyroidism is characterized by reduced synthesis and secretion of thyroid hormones. The most common cause in iodine-sufficient regions is Hashimoto's thyroiditis, an autoimmune condition where the body attacks its own thyroid tissue (Weetman, 2000).

Clinical Features:

- Fatigue and weakness
- Weight gain despite poor appetite
- Cold intolerance
- Constipation
- Menstrual irregularities
- Dry skin and hair
- Depression and cognitive impairment
- Diagnosis:
 - Elevated serum TSH (Thyroid Stimulating Hormone)
 - Low free T₄ levels

- Presence of anti-thyroid peroxidase (TPO) antibodies confirms autoimmunity

Management:

Levothyroxine sodium is the drug of choice for hormone replacement. The dosage is individualized based on weight, age, and TSH levels, with regular monitoring (Garber et al., 2012).

2.2 Hyperthyroidism

Hyperthyroidism results from excessive production of thyroid hormones, leading to an increased metabolic state. The primary cause is Graves' disease, another autoimmune condition involving thyroid-stimulating immunoglobulins (TSI).

Clinical Features:

- Unexplained weight loss
- Heat intolerance
- Anxiety, irritability
- Tremors
- Palpitations
- Menstrual disturbances
- Exophthalmos (in Graves' disease)

Diagnosis:

- Low serum TSH
- Elevated free T3 and T4
- Thyroid scintigraphy (for nodular evaluation)
- TSI or TRAb testing for Graves' disease

Management:

Treatment options include:

- Antithyroid medications (e.g., Methimazole)
- Radioactive iodine therapy for gland ablation
- Surgical thyroidectomy in selected cases (Ross et al., 2016)

3. AYURVEDIC PERSPECTIVE ON THYROID DISORDERS

3.1 Pathophysiological Interpretation

Although classical Ayurvedic texts such as Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya do not explicitly mention the thyroid gland, the disease

conditions resembling thyroid dysfunctions are described under several terminologies:

- Galaganda: Refers to a swelling in the neck region, resembling goiter or thyroid nodules (Sharma & Dash, 2001).
- Agnimandya: Denotes diminished digestive and metabolic fire, often a root cause in hypothyroidism.
- Medo Roga: Disorders of fat metabolism, often correlating with weight gain and lethargy in hypothyroid patients.

3.2 Dosha Involvement

Hypothyroidism: Predominantly Kapha-Vata imbalance leading to Meda Dhatu Dushti (impaired fat tissue metabolism), sluggishness, and coldness.

Hyperthyroidism: Involves Pitta-Vata aggravation manifesting as excessive heat, restlessness, palpitations, and insomnia.

3.3 Ayurvedic Management Strategies

A. Shodhana (Purificatory therapies):

- Virechana (purgation) for Pitta clearance
- Basti (medicated enema) for regulating Vata
- Nasya (nasal therapy) for addressing Urdhvajatru Roga (head and neck disorders)

B. Shamana (Palliative treatments):

Herbal formulations aimed at regulating Agni and balancing Doshas.

C. Rasayana Therapy:

Rejuvenative therapies to restore tissue integrity and hormonal balance.

4. COMMON AYURVEDIC HERBS AND FORMULATIONS FOR THYROID DISORDERS

Clinical Note: A study by Panda and Kar (1999) demonstrated that *Withania somnifera* can normalize thyroid hormone levels in animal models by enhancing T4 secretion without causing hyperthyroidism.

5. INTEGRATIVE MANAGEMENT AND CLINICAL EVIDENCE

An integrative approach to thyroid disorders may provide better long-term outcomes, especially in cases of subclinical hypothyroidism and post-radioiodine recovery. Ayurvedic herbs have shown potential in modulating the immune system, reducing inflammation, and improving metabolic function.

For instance, a clinical trial by Sinha et al. (2016) showed significant improvement in TSH levels and fatigue scores using Kanchanara Guggulu over 12 weeks in subclinical hypothyroid patients. No major side effects were reported, indicating a good safety profile.

6. DISCUSSION

Thyroid disorders, particularly hypothyroidism and hyperthyroidism, represent a growing global health concern due to their wide-reaching metabolic, cardiovascular, and neuropsychological implications. According to Vanderpump (2011), hypothyroidism affects 4–5% of the population in developed countries, while subclinical forms are even more prevalent [1]. This underscores the need for both accurate diagnostics and sustainable therapeutic strategies.

Modern medicine has advanced significantly in identifying and managing thyroid disorders. Hormonal assays such as serum TSH, free T3, and T4, along with imaging and antibody testing, allow for precise diagnosis and classification of thyroid conditions. Treatment protocols—primarily levothyroxine for hypothyroidism and antithyroid drugs or radioiodine therapy for hyperthyroidism—are typically effective in correcting hormonal imbalances and managing symptoms [4][6]. However, modern therapy is often life-long and may not always address underlying autoimmune etiologies or associated metabolic dysfunctions [5].

On the other hand, Ayurveda approaches thyroid dysfunction from a holistic and individualized perspective. While the thyroid gland is not directly identified in Ayurvedic classics, the symptomatology of thyroid disorders aligns closely with conditions like Galaganda, Agnimandya, Shotha, and Medo Roga. The Ayurvedic approach focuses on correcting the root causes of disease through detoxification

(Shodhana), pacification (Shamana), lifestyle adjustments, and diet regulation.

Importantly, herbs like Kanchanara and Guggulu, used in classical formulations such as Kanchanara Guggulu, have demonstrated anti-inflammatory and decongestant properties that are beneficial in conditions like goiter and autoimmune thyroiditis [9][10]. Clinical evidence from studies such as Sinha et al. (2016) suggests that Ayurvedic treatments can significantly reduce TSH levels and improve symptoms in hypothyroid patients, especially in subclinical cases [13].

Additionally, adaptogenic herbs like Ashwagandha (*Withania somnifera*) offer dual benefits—modulating thyroid hormone levels and reducing stress-induced hormonal imbalances. In experimental studies, Ashwagandha has shown the potential to normalize serum T4 levels in hypothyroid models [11].

The Ayurvedic principle of restoring balance through the regulation of Agni (digestive/metabolic fire) aligns well with the metabolic basis of thyroid dysfunction. Impaired Agni may lead to Ama (toxic metabolic waste), which can obstruct normal physiological pathways, similar to how autoimmune antibodies disrupt thyroid function in modern medicine [2][3].

However, Ayurvedic treatments often require longer durations and strict adherence to diet and lifestyle guidelines, which may not be practical for all patients. Moreover, there is a need for more clinical trials with standardized protocols to validate Ayurvedic therapies and facilitate their integration into mainstream care.

An integrative approach, combining the diagnostic precision and hormone replacement of modern medicine with the constitutional, lifestyle-based treatments of Ayurveda, may provide a more comprehensive and sustainable model of care. Patients with subclinical thyroid issues, drug intolerance, or those seeking natural treatments may especially benefit from this synergy.

7. CONCLUSION

Thyroid disorders, though well understood and managed in modern medicine, can benefit from the holistic insights offered by Ayurveda. An integrative model that incorporates laboratory diagnostics,

lifestyle modifications, and evidence-based herbal interventions can offer sustainable benefits to patients. Collaborative research and clinical trials are needed to further validate Ayurvedic treatments and establish guidelines for their integration into modern endocrinology.

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