Case Report

Effect of a structured yoga intervention on thyroid function and symptom profile in a woman with primary hypothyroidism: A case report

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ABSTRACT

Hypothyroidism is a prevalent endocrine disorder associated with metabolic and multi-system disturbances. Although levothyroxine remains the standard treatment, many patients continue to experience residual symptoms, highlighting the need for an integrative therapeutic approach like Yoga. The present case is about a 42-year-old woman with primary hypothyroidism presented with unexplained weight gain, irregular menstruation, fatigue, and disturbed sleep. Baseline thyroid function tests revealed an elevated thyroid-stimulating hormone (TSH) level, along with reduced triiodothyronine (T3) and thyroxine (T4) levels. Along with continued conventional medical management, the patient participated in a structured yoga intervention for 3 months. Following the intervention, thyroid function tests showed improvement, with a reduction in TSH and increases in T3 and T4. The patient also reported subjective improvements in energy levels, sleep quality, and menstrual regularity. Adherence to the yoga program was good, and no adverse events were reported. This case report suggests that a structured yoga program is a safe and effective approach, along with conventional medical therapy in the management of primary hypothyroidism, contributing to both biochemical improvement and symptomatic relief.

Key words: Hypothyroidism, Quality of Life, Thyroid Hormones, Yoga.

Hypothyroidism is a common endocrine disorder characterized by low thyroid hormone levels. It has different causes and multisystem involvement, often leading to weight gain, menstrual irregularities, fatigue, and sleep disturbances. Primary hypothyroidism involves the inability of the thyroid gland to produce sufficient hormones, whereas secondary hypothyroidism occurs due to pathology of the pituitary gland or hypothalamus [1]. The diagnosis of hypothyroidism is based on the thyroid profile; thyroid-stimulating hormone (TSH), free triiodothyronine (T3) and thyroxine (T4). Conventional management primarily relies on medication to replace levothyroxine [2]. However, many patients continue to experience residual symptoms despite biochemical control using hormone replacement. Thus, the management requires a holistic approach to prevent recurrence or residual symptoms. This has led to growing interest in alternative approaches like yoga and other traditional therapies.

Yoga is an ancient Indian mind–body practice that integrates loosening exercises, asanas, breathing techniques, relaxation, and meditation [3]. Regular practice of yoga can improve physiological functions, psychological well-being, and overall quality of life in individuals with various health conditions. In recent years, clinical research has explored yoga as a supportive therapy for endocrine and metabolic disorders [4]. Yoga has positive effects on metabolic outcomes, modulates endocrine imbalances, reduces stress-related hormonal imbalance, and enhances autonomic regulation, contributing to holistic health management. It can enhance circulation, causing better neuromuscular and psychological functioning. Dynamic practices may help to stimulate metabolism and improve energy levels, while relaxation and meditative techniques improve sleep quality and mental health [5].

Although emerging clinical evidence suggests beneficial effects of yoga, the studies showing clinical improvements remain limited in literature. The present case report describes the impact of a structured yoga intervention on thyroid function and associated clinical symptoms in a woman with hypothyroidism.

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CASE PRESENTATION

A 42-year-old female diagnosed with hypothyroidism for one year presented with unexplained gradual weight gain, irregular menstruation, disturbed sleep, and persistent lack of energy over the past two years. On taking the history, it was found that she has reduced physical endurance and mental fatigue, affecting her daily functioning and overall quality of life. The patient had been on medication with levothyroxine 50 mcg orally once daily for 1 year for the management of hypothyroidism. There was no history of other endocrine disorders, chronic systemic illness, or psychiatric disease.

Family history did not reveal any known hereditary or genetic endocrine conditions. The obstetric and menstrual history revealed gravida 2, parity 2, with two live births. She had undergone a tubectomy at the age of 24 years and currently has irregular menstruation. Psychosocial history suggested increased stress and a relatively sedentary lifestyle with limited structured physical activity, along with impaired sleep quality over the past year. The patient was moderately built and well-nourished on physical examination with a body mass index of 24.1 kg/m² without any pallor or edema. No signs of thyroid enlargement, tremors, or other systemic abnormalities were detected. Vital signs were within normal limits at the time of examination.

Thyroid function tests (TFT), including serum TSH, T3, and T4 levels, were checked before and after the intervention to confirm the diagnosis and improvement. TSH was 18 µIU/mL with reduced T3 (0.91 ng/mL) and T4 (6.54 µg/dL), confirming hypothyroidism. Additional investigations, such as hemoglobin, fasting glucose, lipid profile, anti–thyroid peroxidase (TPO) antibodies, or thyroid ultrasonography, were not performed, as the patient was already diagnosed with hypothyroidism and was on stable levothyroxine therapy and was evaluated for adjunctive yoga intervention. Therefore, the autoimmune etiology could not be established, and the diagnosis was considered as primary hypothyroidism.

Intervention: The treatments planned were combining conventional medical management with 50 mcg orally once a day for 3 months with yoga, consisting of Pawanamuktasana Series I, Surya Namaskar, AUM chanting, and Yoga Nidra, for 1 hour a day, in five weekly sessions over 3 months (Table 1). The patient was given structured yoga guidance for the first month at the yoga department. The patient continued her prescribed medical treatment without modification. The structured yoga protocol has been modified during her menstruation, as AUM chanting and yoga Nidra were advised. During these times, the yoga protocol was temporarily adjusted to focus on gentle relaxation practices for five days. Once the patient reported feeling subjectively comfortable and recovered, the full yoga protocol was resumed. During the 3-month intervention period, the patient experienced menstruation on two occasions.

Table 1. Structured Yoga Intervention Protocol.

S. No.	Yoga Practice	Rounds / Repetitions	Duration (minutes)
1.	Pawanamuktasana Series I	10 movements per practice	20
2.	Surya Namaskar	6 rounds slow and 6 rounds dynamic	20
3.	AUM Chanting	9 repetitions	5
4.	Yoga Nidra	Guided practice through recorded sessions on mobile.	15

Follow-up and Outcomes

The patient was instructed to visit the hospital at least once a week, and daily phone calls were made to maintain updates and report any adverse events. During the first month, the patient attended 18 supervised sessions with an adherence of about 90% to the program. After shifting to home-based practice, she consistently maintained the routine, completing 38 home sessions with an adherence rate of approximately 95% at a frequency of five sessions per week. After the 3 months of structured yoga protocol, the follow-up thyroid function tests demonstrated improvement, with TSH of 12 µIU/mL (Figure 1), T3 of 1.29 ng/mL (Figure 2), and T4 of 8.82 µg/dL (Figures 3). Tolerability was assessed through patient self-report during follow-up visits, and no adverse events or discomfort related to yoga practices were reported.

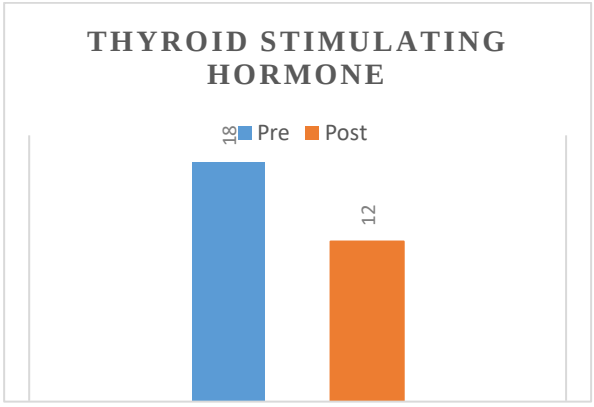


Figure 1: Pre- and post-level of thyroid-stimulating hormone

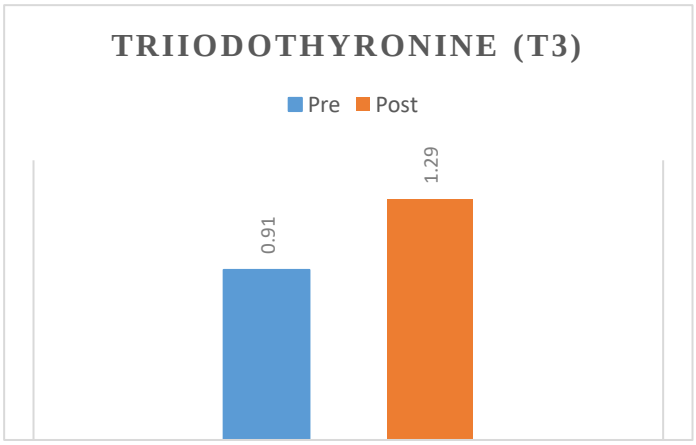


Figure 2: Pre- and post-level of triiodothyronine.

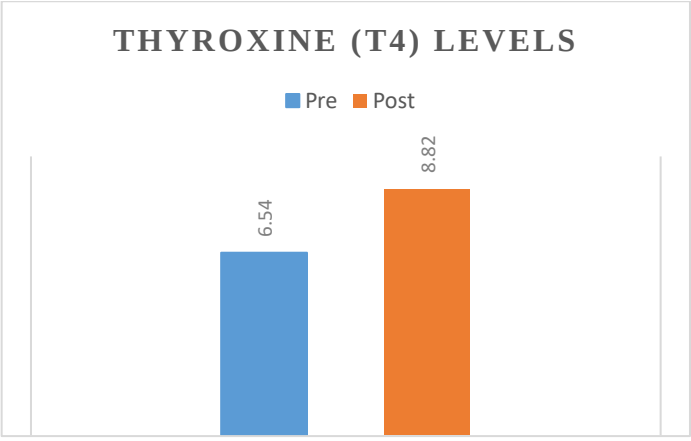


Figure 3: Pre- and post-level of thyroxine(T4)

The timeline from the onset of symptoms to the diagnosis and interventions with the outcomes is given in Table 2.

Table 2: Timeline of each clinical event.

Time Point	Clinical Events
April 2023	Gradual onset of unexplained weight gain, irregular menstruation, disturbed sleep, and persistent lack of energy
January 2024: Initial Diagnosis of Hypothyroidism	Initiated levothyroxine 50 mcg orally once daily.
March 2025: Baseline assessment	Hypothyroidism on stable medical management. • BMI: 24.1 kg/m² • TFT: TSH (18 µIU/mL) • T3 (0.91 ng/mL) • T4 (6.54 µg/dL)
Initiation of intervention	Enrolment into a structured yoga program along with conventional treatment with 50 mcg levothyroxine orally once a day.
March to June 2025: Intervention period	Regular practice of Pawanamuktasana Series I, Surya Namaskar, AUM chanting, and Yoga Nidra for 1hour a day, weekly five sessions for 3 months.
June 2025: Post-intervention assessment.	Subjective improvement in energy levels, sleep quality, and menstrual regularity. Improvement in thyroid function tests. • Reduced TSH (12 µIU/mL) • Increased T3 (1.29 ng/mL) • T4 (8.82 µg/dL);

DISCUSSION

The present case highlights the potential role of structured yoga along with conventional medical management in women with primary hypothyroidism. After 3 months of regular practice of structured yoga, the patient demonstrated significant improvement in thyroid profile. It shows a reduction of thyroid-stimulating hormones, and an increase in T3, T4 levels, along with subjective improvements in fatigue, sleep. These findings are consistent with the literature, suggesting that yoga may offer multifactorial benefits in hypothyroidism along with standard pharmacotherapy [5, 6].

Previous clinical trials, systematic reviews, and randomized controlled trials (RCTs) have consistently reported the improvements in thyroid profiles when yoga is added to routine care [5, 6]. Many studies have demonstrated a reduction in TSH levels and, in some cases, normalization or an increase in T3 and T4 values with yoga therapy, compared to medication alone [7,8]. The biochemical changes observed in this case also align with these findings and support the view that yoga helps to optimize thyroid axis regulation. It also has a positive effect on symptoms associated, supporting the physiological well-being and quality of life in hypothyroid patients. Persistent fatigue, mood disturbances, and sleep problems were reported in patients with levothyroxine therapy only for thyroid disorders [9, 10]. However, in this case, subjective improvements in energy levels and sleep were noted.

The yoga module advocated by most of the studies is dynamic practices (Pawanamuktasana Series I and Surya Namaskar), and relaxation-based techniques (AUM chanting and Yoga Nidra). The same protocols are followed in the present case also [4, 6, 11]. Dynamic asanas enhance metabolic activity, improve circulation, and support weight and energy regulation, while relaxation and meditative practices downregulate the stress response. Proposed mechanisms include modulation of the hypothalamic–pituitary–adrenal axis, improved autonomic balance with increased parasympathetic activity, reduced systemic inflammation and oxidative stress, and indirect immune modulation. These mechanisms are relevant in hypothyroidism, where stress and lifestyle factors are known to influence symptom severity and hormonal regulation [5, 12].

Despite these encouraging findings, as a single-case observation, the results of this study cannot be generalized. Also, the independent effect of yoga cannot be conclusively separated from ongoing medical therapy. Yet, the absence of adverse effects and good adherence highlight yoga as a safe, feasible, and low-cost approach. Larger, well-designed RCTs with standardized yoga protocols and longer follow-up are required to clarify its role in integrative management and to establish evidence-based clinical guidelines.

CONCLUSION

The results of the present case suggest that a structured yoga intervention, used alongside conventional medical therapy, may lead to modest improvements in thyroid function and meaningful benefits in symptoms, stress, sleep, and quality of life in primary hypothyroidism. Overall, this case supports existing evidence that yoga should be viewed as complementary, not an alternative therapy for hypothyroidism.

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