

**EFFICACY OF HATHA YOGIC PRACTICES WITH SATTVIC DIET ON  
SELECTED PARAMETERS AMONG MIDDLE AGED WOMEN (35-60)  
SUFFERING WITH HYPOTHYROIDISM – PILOT STUDY**

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**ABSTRACT**

The aim of this randomised group experimental study was to investigate the effects of a sattvic diet and hatha yogic practices on a few selected parameters in middle-aged women with hypothyroidism. It was predicted that middle-aged obese women who practiced hatha yoga would differ significantly from the control group in terms of their BMI and thyroid stimulating hormone. Thirty middle-aged women, ranging in age from 35 to 60, were chosen at random from Vijayawada for the study. They were split into two groups, A and B, each with fifteen subjects. Prior to the commencement of the training program, a pretest on the chosen dependent variables was administered to Groups A and B. Group B (Control Group) did not receive any specific treatment, but instead engaged in active rest. Group A was given hatha yogic practices along with a modification of their sattvic diet. The Group A and B were retested on the same chosen dependent variables as the posttest following the 12-week experimental period. The effectiveness of the experimental and the control group was analyzed using paired t test and independent t test. The significance test had a fixed confidence level of 0.05. The study findings on the thyroid stimulating hormone and chosen body mass index find that the Experimental Group's yogic practices and sattvic diet modifications caused them to differ significantly from the Control Group. The hypothesis was accepted with a confidence level of 0.05. Therefore, middle-aged hypothyroidism women's body mass index and thyroid stimulating hormone were reduced by yogic practices combined with sattvic diet modifications.

**KEYWORDS:** Yogic practices, Body Mass Index, Thyroid stimulating hormone, Hypothyroidism

**INTRODUCTION**

A condition known as hypothyroidism, or underactive thyroid, occurs when the thyroid gland fails to produce adequate amounts of certain important hormones. Early on, hypothyroidism might not show any symptoms at all. Untreated hypothyroidism can eventually lead to a variety of health issues, including heart disease, obesity, joint pain, and infertility. Often, hypothyroidism occurs. Women are more likely than men to experience it, and it usually strikes around middle age. One in 1,000 men and eighteen per 1,000 women suffer from hypothyroidism. Much more common, affecting roughly 28 out of 1,000 men and 75 out of 1,000 women, is asymptomatic hypothyroidism. causes of the autoimmune condition

hypothyroidism. partial or complete surgical resection of the thyroid radiation treatment. According to certain research, norepinephrine or adrenaline infusion or sympathetic stimulation may enhance thyroid hormone secretion (H. Maurice Goodman, 2003). Thyroid hormones regulate a cell's metabolism, or how quickly it functions. The body's cells function too slowly in low hormone levels and too quickly in high hormone levels. The rate of oxygen consumption is regulated by thyroid hormones. The main ingredients of food—sugar, protein, and fat—are all impacted by this metabolic effect on how they are used. All cells in the body are impacted by thyroid hormones, which have comparable effects on specific tissues and bodily functions. A child's growth will be slowed by too few hormones, and their growth will be accelerated by too many hormones. Yoga is good for hypothyroidism and balances the endocrine system. (Kamatchi, C., 2022).

### **OBJECTIVES OF THE STUDY**

The aim of the study was to determine whether hatha yoga practices combined with a sattvic diet would have any significant effects body mass index and thyroid stimulating hormone, in middle-aged women with hypothyroidism.

### **HYPOTHESIS**

It was predicted that middle-aged women with hypothyroidism practicing hatha yogic practices and sattvic diet would significantly differ from the control group in terms of their body mass index and thyroid stimulating hormone.

### **REVIEW OF RELATTED LITERATURE**

**Kamatchi, C. et al., (2022)** studied that how yoga practices affected middle-aged women with hypothyroidism's low density lipoprotein and self-confidence. Thirty middle-aged women with hypothyroidism who were between the ages of 45 and 55 were randomly chosen for the study and split into two groups, A and B, each with fifteen subjects. Prior to the intervention, a pretest on dependent variables was administered to both groups. Group B was placed in active rest rather than receiving any specific treatment, while Group A was given yogic practices for eight weeks. After intervention two Groups (A and B) were retested using the same set of dependent variables as the posttest. To determine the significant differences between the Group A and Group B, analysis of covariance (ANCOVA) was employed. The study's finds that, as a result of their yoga practices, the experimental group significantly differed from the control group on the chosen biochemical and psychological variables. The hypothesis was accepted with a confidence level of 0.05. It said that women with hypothyroidism under middle-aged group got beneficial from yoga practices due to their decreased low density lipoprotein and increased self-confidence.

**Shuchi Mohan, et al., (2022)** study conducted to look into the effects of yogic practices on thyroid hormones, specifically T3, T4, and TSH, as its review was not previously documented. Through June 2020, searches were conducted using GOOGLE and PUBMED. Yoga and thyroid or thyroid disorder was the search term used. Only experimental studies that examined the effects of routine thyroid hormone treatment and were published in widely read English-language journals were chosen. Eleven of the 41 papers that were found via different searches satisfied the requirements for the final review. Patients with hypothyroidism demonstrated a reduction in thyroid stimulating hormone (TSH), hyperthyroidism demonstrated a decrease in tetraiodothyronine (T4), and the population with polar triiodothyronine (T3) syndrome demonstrated a positive effect of yoga. In middle-aged, healthy individuals, TSH levels increased in the male population and nearly significantly increased in the female population. Additionally, basal T3 and T4 levels decreased in both the male and female populations. Every change was within the expected range. T3, T4, or TSH did not significantly change in the other two studies on healthy subjects. One study, which used a hand mudra exclusively on hypothyroid patients, revealed notable variations in the levels of these parameters. In summary, yoga practice has the potential to normalize thyroid hormone functioning and enhance overall health.

## **METHODOLOGY**

The study aimed to address this by randomly selecting thirty middle-aged hypothyroidism women from Vijayawada who were between the ages of 35 and 60. An advertisement was published in local news article in local language and news spread through word of mouth. Total of 97 were enrolled for study. The inclusion criteria was set by readings of TSH range from 8 to 12 and BMI range from 25.5 to 29.9. Participants with history of psychic disorder, thyroid cancer, surgery within past 12 months, pregnant women, were excluded from the study. These women were then divided into two equal groups, A and B, each consisting of fifteen subjects based on random sampling using lot method. Prior to the commencement of the training program, a preliminary test on the chosen dependent variable was administered to both groups (A and B). Assessment test was done from genuine laboratory. For a total of twelve weeks, Group A received 60 minutes a day of yogic practices combined with sattvic diet modifications. The practices are Loosening exercises, Suryanamaskar, Arthakatti chakrasan, uttan hastasna, padahastasan, vajrasan, ustrasan, marjariasan, sethubandha, sarvangasan, matsyasan, naukasan, janusirasana, makarasan, bhujangasan, shalabasan, shavasana. Pranayama includes surya bheda, bhramari, bhastrika, ujjayi, nadishodan. And sattvic diet schedule was provided to subjects of Group A, based personal verification were not done. During the experiment, Group B (control group) was not given any special training and was allowed to carry out their regular and normal

lifestyle. Twelve weeks later, the same physiological and hormonal dependent variables—body mass index and thyroid stimulating hormone—were assessed again for the two groups. The effectiveness of the experimental group and the control group was determined using the "t" test. The significance test had a fixed confidence level of 0.05.

## RESULTS AND DISCUSSIONS

**Table 1: Distribution of Demographic variables among Women with Hypothyroidism**

Demographic variables	
1. Age in year	Between 31 – 40 years – 9, Between 41 – 50 years – 12, Between 51 – 60 years - 9
2. Occupation	Home maker -15 , Private employee –6 Govt employee - 5 and Business -4
3. No. of children	Single child – 13, two children – 13 and three children - 4
4. Marital status	Married - 30
5. Religion	Hindu – 27, Christian – 2 and others - 1

**Table 2: Descriptive Statistics for Study variables in Pre-test among Women with Hypothyroidism for Group A and Group B**

Clinical variables	Group A (n=15)		Group B (n=15)		t test (p value)
	Mean	SD	Mean	SD	
BMI	28.15	2.76	29.25	1.87	t= 1.266 p= 0.216 (N.S)
TSH	8.65	0.77	9.38	1.42	t= 1.754 p= 0.090 (N.S)

Note: N.S. – Not Significant

**Table 3: Descriptive Statistics for Study variables in Post-test among Women with Hypothyroidism for Group A and Group B**

Clinical variables	Group A (n=15)		Group B (n=15)		t test (p value)
	Mean	SD	Mean	SD	
BMI	23.86	2.58	30.37	1.68	t = 8.168, p= 0.000 ***
TSH	5.27	0.51	11.20	1.50	t = 14.462, p= 0.000 ***

Note: \*\*\* - p'0.001 Level of Significant, N.S. – Not Significant

From the table 2 and table 3 data showed that significant improvement in compared with pre and post test. In pre test BMI 28.15(2.76) and 29.25 (1.87) at  $p < 0.216$  whereas post test shows 23.86 (2.58) and 30.37 (1.68) at  $p = 0.000$  level of significance. In TSH pre test shows 8.65 (0.77) and 9.38 (1.42) at  $p < 0.090$  whereas post test shows 5.27(0.51) and 11.20(1.50) at  $p < 0.000$  level of significance.

**Table 4: Effectiveness of Intervention Yoga Practice on BMI and TSH among Women with Hypothyroidism for Group A and Group B**

Group	Effect Score of BMI		Effect Score of TSH	
	Mean (SD)	Paired t test and p value	Mean (SD)	Paired t test and p value
Group A	4.29 (2.53)	t=7.05 p=0.000 ***	3.38 (2.35)	t=17.78 p=0.000 ***
Group B	1.12 (0.87)	t=5.03 p= 0.000 ***	1.81 (0.71)	t=9.78 p= 0.000 ***
Independent t value and p value	t = 8.168, p= 0.000 ***		t = 14.462, p= 0.000 ***	

Note: \*\*\* -  $p < 0.001$  Level of Significant

**Table 5: Correlation between Study variables among Women with Hypothyroidism for Group A and Group B**

		1	2	3	4
Correlations	1. BMI_pre r =				
	p value	-			
	2. BMI_post r=	0.564**	-		
	p value	0.001			
	3. TSH_pre r=	0.041	0.214	-	
	p value	0.829 (N.S)	0.255 (N.S)		
	4. TSH_post r=	0.247	0.778**	0.555**	-
	p value	0.189 (N.S)	0.000	0.001	

Note: \*\*\* -  $p < 0.001$  – Level of Significant, N.S. – Not Significant

## CONCLUSIONS

It was concluded that hatha yogic practices with diet modifications decreased Body Mass Index and thyroid stimulating hormone level among middle aged hypothyroidism women.

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