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Effect of Yogic Practices on Body Mass Index and Systolic Blood Pressure Among Middle Aged Women Suffering with Hypothyroidism

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Abstract: The present study was aimed to evaluate the effects of yoga practices on the body mass index and systolic blood pressure in hypothyroid middle-aged women. The hypothesis was that middle-aged hypothyroid women and the control group would show statistically significant changes in several physiological indicators including body mass index and systolic blood pressure after engaging in yoga activities. Random group sampling was used to choose 30 middle-aged women with hypothyroidism in Chennai, India. These women were then divided into two groups each of 15. Both Group I and Group II were given a pre-training on the predetermined outcomes measures before the training programme formally began. Yoga was administered to Group A, whereas the Control Group was instructed to engage in active rest. The two groups (A and B) were assessed again using the identical dependent variables as the first post-test eight weeks after the initiation of the experiment. Significant differences between the experimental and control groups were calculated using the analysis of covariance (ANCOVA). The results showed that middle-aged women with hypothyroidism who engaged in yoga activities had decreases in their body mass index and systolic blood pressure. In this case, the hypothesis was accepted with a probability of 0.05. So, it was found that middle-aged women with hypothyroidism who engage in yoga activities had a better chance of keeping their body mass index and systolic blood pressure within normal ranges.

Keywords: Yogic practices, Blood Pressure, Systolic blood pressure, Body mass index (BMI), Hypothyroidism

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Introduction

When the thyroid gland does not produce enough of hormones, a condition known as hypothyroidism develops. It is possible that the condition of hypothyroidism would not show any symptoms in its early stages. Untreated hypothyroidism may lead to a number of health

problems, including weight gain, aches and pains in the joints, infertility, and even heart disease. Hypothyroidism occurs at an unexpectedly high rate. In most cases, middle-aged women are more likely to be affected than middle-aged men. Subclinical hypothyroidism affects around 28 out of every 1,000 men and 75 out of every 1,000 women. Hypothyroidism has several causes, including autoimmune disorders, radiation therapy, and birth defects of the thyroid (hypothyroidism that a baby is born with). Iodine toxicity may occur from either an excess or deficiency. It seems that the pituitary gland had a malfunction. Sympathetic and parasympathetic nerves innervate the thyroid gland extensively. The synthesis of thyroid hormone may be stimulated by infusions of adrenaline or norepinephrine or by sympathetic stimulation (Bharathi, 2005). Thyroid hormones control the cellular metabolism. When there isn't enough of a certain hormone, cellular processes in the body move too slowly, and when there is too much, they move too rapidly. Thyroid hormones control the body's oxygen consumption rate. This metabolic process affects the intake of the three basic nutrients found in food: carbs, proteins, and fats. Thyroid hormones influence every cell in the body, although they have a greater impact on specific tissues and functions than others. To provide just one example, a fetus's physical and mental well-being are reliant on the mother's supply of thyroid hormones until the twelfth week of pregnancy, when the fetus's own thyroid gland starts to operate. Lack of hormones will limit a baby's development, while an overabundance may induce rapid growth. According to research by Kosuri and Sridhar (2009), hypothyroidism patients might benefit from yoga because of the way it regulates their hormones.

The aim of the present study was to determine whether yoga practices on middle-aged hypothyroid women would have any discernible effects on certain physiological indicators (body mass index (BMI) and systolic blood pressure). It was predicted that middle-aged women with hypothyroidism would have significant BMI and systolic blood pressure differences from the control group as a result of yoga practices. Women of middle age with hypothyroidism were the only participants residing in the city of Guntur. Only participants older than 35 and younger than 45 were included. The sole independent variable was yogic practices. Just the BMI and the Systolic BP were included as dependent variables.

Materials and Methods

Thirty hypothyroid women, ages 35 to 45, were selected at random from Guntur for the research and divided into two groups (group I and II), each group consists 15 participants. Each group (I and II) completed a pretest on the dependent variable of interest before the training programme got underway. The study continued for eight weeks, Group I participants continued their regular 60 min yoga practises. Group II (the control group) was not given any additional instructions beyond the standard protocol and was thus free to continue with their usual routines and behaviours during the trial. Body mass index (BMI) and blood pressure were used as dependent variables again after eight weeks. Analysis of covariance (ANCOVA) was used to identify statistically significant differences between experimental groups and the control group. The significance threshold for the analysis was set at 0.05 (Sinha, 2007)

Following yoga practices were given to Group I;

1. Loosening the joints.

2. Surya Namaskar

3. Asanas

- Navasana
- Paschimottanasana
- Noukasana
- Ardha matsyendrasana
- Pawan mukatasana
- Janusirsasana

- Salabasana
- Sarvangasana
- Matsyasana
- Ardha halasana
- Bhujangasana
- Savasana

4. Pranayama

- Anulomvilom
- Kapalapathi
- Ujjai

5. Yoga Nidra

Results and Discussion

Analysis of covariance (ANCOVA) was performed to determine whether there was a statistically significant difference between the groups before and after the training period, and a level of confidence of 5% was used to test the hypothesis.

The F-ratio value was more than the table value for both BMI and Systolic blood pressure, indicating that there was a statistically significant difference between the post-test and adjusted post-test averages of the yoga practise group and the control group on physiological variables.

As indicated in Table 1, the mean pre-test Body Mass Index scores for group I (yogic practices) in the experimental condition were 24.63, whereas those for group II (control) were 25.54. The difference between the post-test mean scores of 22.49 and 24.96 indicates that eight weeks of yoga practice led to a considerable improvement. To be statistically significant at the 0.05 level, the pre-test F value has to be more than 0.11. The value obtained was just 0.11 This proved that the initial randomization was fair and that there were no significant differences between the groups. The examination of post-test scores revealed a statistically significant difference between the groups with a F value of 53.69, which was much more than the minimal requirement of 3.1. This indicated that there were statistically significant differences in the post-test means of the subjects.

On the basis of variations in test results between groups before and after treatment, adjusted mean scores were calculated and statistical analysis was conducted. The observed F value of 53.22 was more than the minimum required F value of 3.1. After 8 weeks of yoga practice, the physiological variable BMI was substantially different across groups.

The post-intervention adjusted averages of body mass index (BMI) in the yoga training group and the control group are shown in Figure 1.

In terms of body mass index and systolic blood pressure, group I was substantially different from the control group due to the impact of yoga practises on selected physiological markers. Thus, the hypothesis was accepted with a confidence level of 0.05. The findings of this study is in conformity with the observations of Shantakumari *et al.* (2012).

The resulting F value of 0.88 when comparing pre-test scores was less than the required F value of 4.10 for significance at the 0.05 level. This indicated that the pre-test randomization was fair and that there was no significant difference between the groups. Analysis of post-test results revealed a F value of 125.12, which was more than the minimum required F value of 4.11. This indicated that there were statistically significant differences in the post-test averages of the subjects. On the basis of variations in test results between groups before and after treatment, adjusted mean scores were calculated and statistical analysis was conducted.

Yoga practices (Group I) resulted statistically significant differences in systolic blood pressure (Table 2, Fig. 2), as determined by an analysis of the study's physiological factors. Thus, the hypothesis was accepted with a confidence level of 0.05 The present study derives support from the reports of Nejati *et al.* (2015).

Shantakumari *et al.* (2012) studied the effect of yoga therapy on body mass index and oxidative

Table 1: Analysis of Co-variance (ANCOVA) for the Pre, Post and Adjusted Post Test Mean Values for Yoga Group and Control Group on BMI (Kg/M^2)

Test	Experimental Group – I (yogic practices)	Control group	Source of variance	df	Sum of square	Mean square	F
Pre-test mean	24.63	25.54	Between	1	0.69	0.344	0.11
			Within	28	262.47	3.02	
Post-test mean	22.49	24.96	Between	1	362.40	181.20	53.69*
			Within	28	293.60	3.37	
Adjusted mean	22.79	25.14	Between	1	360.72	180.36	
			Within	27	291.466	3.39	53.22*

*Significant at 0.05 level of confidence. Table F-ratio at 0.05 level of confidence for 1 & 28 (df) =4.21, 1 and 27 (df) =4.22.

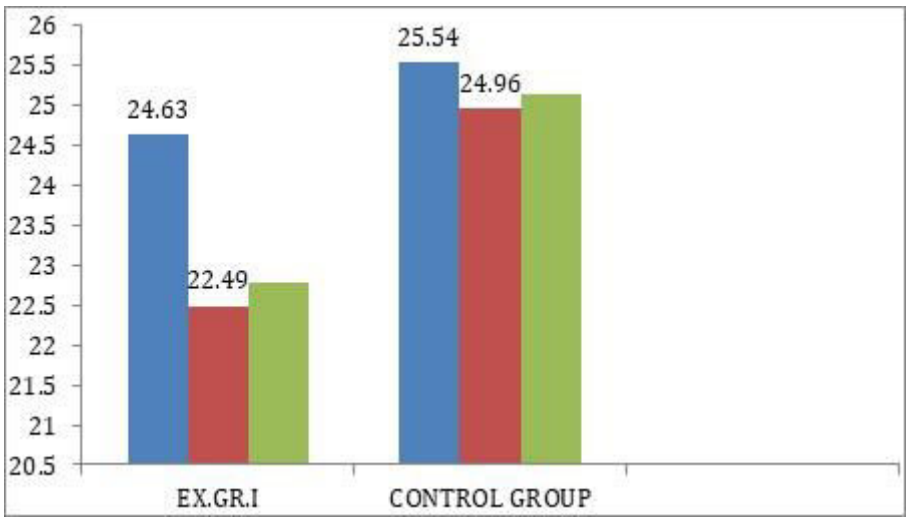

Fig. 1: Pre, Post and Adjusted Post Mean Values of Yoga Group and Control Group on BMI (Kg/m^2).

Table 2: Computation of mean and analysis of covariance of systolic blood pressure (mm/Hg) of experimental and control group

Test	Experimental Group (Yogic Practices)	Control group	Source of variance	Df	Sum of square	Mean square	F
Pre-test mean	141.1667	141.87	Between	1	24.16	12.078	0.88
			Within	28	1193.00	13.71	
Post-test mean	126.5	140.63	Between	1	3275.02	1637.51	125.12*
			Within	28	1138.63	13.09	
Adjusted mean	126.58	140.63	Between	1	3250.66	1625.33	
			Within	27	1120.223	13.03	124.78*

* Significant at 0.05 level of confidence. The table value required for significance at 0.05 with df 1and 38 and 1 and 37 are 4.10 and 4.11, respectively.

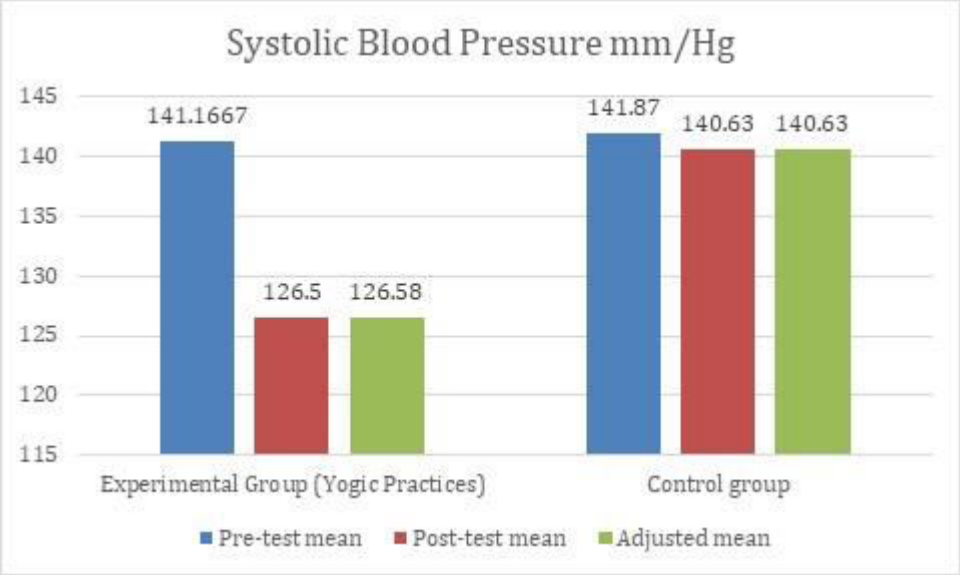

Fig. 2: Adjusted post-test values of control group and experimental group on systolic blood pressure.

state. Forty men and women with morbid obesity were recruited for the research. Before and after a month of yoga, body weight, BMI, blood sugar, MDA level, and total antioxidant status were all assessed. The data were examined using the paired t-test, with a significance level of 0.05. As compared to pre-yoga levels, body weight, BMI, fasting blood sugar, postprandial blood sugar, malondialdehyde (MDA), and total antioxidant level reduced dramatically, while total antioxidant level rose significantly. Therapeutic yoga may aid obese individuals in reducing their body mass index and improving their oxidative status and other psychological physiological processes, making it simpler for them to overcome the health issues associated with obesity.

Latha and Kalliappan (1991) studied 14 participants with essential hypertension. Seven of these participants engaged in a six-month yoga and thermal biofeedback technique programme. The control group had seven patients. During treatment stages, substantial reductions in systolic blood pressure were seen. Only when the thermal feedback was introduced did the diastolic pressure decline somewhat. Meanwhile, the usage of blood pressure medicine decreased dramatically. Yoga and thermal biofeedback training did not assist individuals in altering their perceptions of stressful circumstances.

Among middle-aged women with hypothyroidism, it was hypothesised that yoga practise would lead to statistically significant differences in selected physiological indicators such BMI (body mass index) and Systolic blood pressure compared to the control group. The results showed that middle-aged women with hypothyroidism who participated in yoga practises had a significantly lower body mass index (BMI) and systolic blood pressure (BP) than the control group.

Conclusion

The results of this study led to the conclusion that practicing yoga resulted in a substantial reduction in both the body mass index (BMI) and the systolic blood pressure of middle-aged women who suffered from hypothyroidism.

References

Bharathi J. (2005) Yoga for everyday. Rupa Publishers, New Delh, pp. 9.

Kosuri M and Sridhar GR. (2009) Yoga practice in diabetes improves physical and psychological outcomes. Metab Syndr Relat Disord. 7(6): 515-517.

Latha and Kalliappan KV. (1991) Thermal biofeedback

techniques in the management of stress and high blood pressure on hypothyroidism: a systematic review. Evidence-Based Complementary Altern Med. 4: 469-486.

Sinha P. (2007) Yoga Meaning, Values and Practice. Jaico Publishing House, Mumbai.