



EFFICACY OF YOGA THERAPY WITH AYURVEDIC DIET ON BODY MASS INDEX AND TESTOSTERONE AMONG ADULT WOMEN SUFFERING WITH POLY CYSTIC OVARIAN SYNDROME

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ABSTRACT

The purpose of the random group experimental study was to find out the efficacy of Yoga Therapy with Ayurvedic Diet on Body Mass Index (BMI) and Testosterone among adult women suffering with Poly Cystic Ovarian Syndrome. For the purpose of the study, 30 Adult women with Poly Cystic Ovarian Syndrome were selected randomly using random sampling method from Chennai between the age group of 20 and 35 years and they were divided into two groups I, and II with 15 subjects each. It was hypothesized that there would be significant differences among the adult women with PCOS on selected physiological and hormonal variables such as Body Mass Index (BMI) and Testosterone than the control group. Preliminary test was conducted for two Groups on Body Mass Index (BMI) and Testosterone before the start of the training program. Group I subjects were given Yoga therapy for 60 minutes, 6 days a week for a total period of eight weeks along with Ayurvedic Diet. Group II (Control Group) were in active rest. After the experimental period, the two groups were retested again on the same selected dependent variables. Analysis of co-variance (ANCOVA) was used to find out the significant differences between the experimental group and the control group. The test of significance was fixed at 0.05 level of confidence. The results of the study proved that the Experimental Group showed significant differences on selected physiological and hormonal variables such as Body Mass Index (BMI)(Decreased) and Testosterone(Decreased) than the Control Group due to Yogic practices among adult women with Poly Cystic Ovarian Syndrome. The hypothesis was accepted at 0.05 level of confidence. Hence it is concluded that Yogic therapy with Ayurvedic diet are beneficial to the adult women with Poly Cystic Ovarian Syndrome to maintain healthy Body Mass Index (BMI) and Testosterone.

Key words: Yoga therapy, Adult Women, Poly Cystic Ovarian Syndrome, Testosterone, Body Mass Index.

I. INTRODUCTION

Polycystic Ovary syndrome (PCOS) is an endocrine disorder which affects women belongs to the reproductive age group, causing irregular menstruation, excess secretion of male hormones and large numbers of follicles formed in the ovaries which is not capable of releasing egg for ovulation. The genetic as well environmental factors play a major role in the pathogenesis of PCOS. Genetically, it may be caused due to the heavy exposure of androgens in fetal uterus tissues resulting in the disturbed hypothalamic–pituitary–ovarian axis of fetus impairing the folliculogenesis. Research study shows that 20-60% of chances of getting PCOS in the first-degree relatives.

Causes:

Genetic Tendency, bad dietary choices, weakened immune system, accumulation of toxins, Insulin resistance and obesity.

Symptoms:

Menstrual disorders such as oligo menorrhoea/amenorrhoea/hypermenorrhoea, central Obesity, infertility, excess Androgens, Hirsutism and androgenic alopecia, oily and acne prone skin, Acanthosis Nigricans (dark patches of skin on folds and creases).

Psychological disorders including anxiety, depression and eating disorders.

Complications:

Endometrial cancer, complications in pregnancy such as gestational diabetes, pre-eclampsia and pre term labor, Sleep Apnea, metabolic syndrome such as Cardiovascular disease, high Tri glycerides and low HDL cholesterol levels, high blood

pressure and high sugar levels, Inflammation of liver, Depression.

Yoga Therapy for Poly Cystic Ovarian Syndrome

Yoga therapy works at levels much more subtle and deeper than just the physical body ensuring a holistic treatment for Poly Cystic Ovarian Syndrome. Surya Namaskar and Asana (Yoga postures) helps to open up the pelvic area and promotes blood flow to the uterus and massages them soothing inflammations, enhancing their functions. It also stimulates the secretions of entire endocrine system. Regular practise also aids in shedding the excess fat in the body. Pranayama nourishes the body with abundant of pranic energy (life force) which is also very useful to speed up the healing process. Yoga nidra involves conscious relaxation of whole body and exploration of deep impressions stored in the subconscious mind resulting in unwinding them, alleviating the unwanted stress aiding in calm and tranquil mind.

Ayurvedic Diet for Poly Cystic Ovarian Syndrome

According to Ayurveda, Shukra dhatu (reproductive tissue) plays a very vital role in keeping the female reproductive system normal and healthy. Shukra dhatu can be considered as combination of androgen and estrogen in an appropriate proportion. Any imbalance in shukra dhatu can cause infertility in women. When doshas vitiate, the composition of androgen and estrogen in shukra dhatu will be disturbed in women causing cysts (granthis) to appear in ovaries. The Ayurvedic diet is a component of Ayurveda and has been practiced for thousands of years. Ayurveda mentions Poly Cystic Ovarian Syndrome is caused due to the kapha and vata dosha aggravation. The Ayurvedic diet involving balance between vata and kapha dosha can effectively address the imbalance in Shukra dhatu and helps to fight Poly Cystic Ovarian Syndrome.

OBJECTIVES OF THE STUDY

The objectives of the study were to find out whether there would be any significant difference on selected Physiological variable among adult women with Poly Cystic Ovarian Syndrome due to Yoga Therapy with Ayurvedic diet.

The objectives of the study were to find out whether there would be any significant difference on selected Hormonal variable among adult women with Poly Cystic Ovarian Syndrome due to Yoga Therapy with Ayurvedic diet.

STATEMENT OF THE PROBLEM

The purpose of the study was to find out the efficacy of Yoga therapy with Ayurvedic diet on Body Mass Index and Testosterone among adult women with Poly Cystic Ovarian Syndrome.

HYPOTHESIS

It was hypothesized that there would be significant differences due to Yoga therapy with Ayurvedic diet on selected Physiological variable such as Body Mass Index (BMI) and hormonal variable such as testosterone than the control group among adult women suffering with Poly Cystic Ovarian Syndrome.

DELIMITATIONS

- The study was delimited to women suffering with Poly Cystic Ovarian Syndrome
- The subjects are selected from north Chennai only
- The age group of subjects were ranged from 25 to 35 years only.
- The dependent variables chosen under physiological variable was Body Mass Index only.
- The dependent variables chosen under hormonal variable was testosterone hormone only.
- The independent variable chosen was Yoga Therapy with Ayurvedic Diet only.

LIMITATIONS:

- The factors like life style, body structure, and social activities were not taken in to consideration for this study.
- The factors like family heredity and motivational factors were not taken into consideration for this study.
- Certain factors like environmental and climatic conditions, economical background and also day to day work were not taken into consideration.
- The factors like diet, medication and personal habits were not taken in to consideration for the study.

II. REVIEWS ON RELATED LITERATURE

Loganayagi S and Duraisami V studied the effect of yogic practices with and without diet modifications on selected Physiological variable among Polycystic Ovarian Syndrome adults. Adult women diagnosed with polycystic ovary syndrome studying in Shri Krishnasamy college, Chennai and were in the age group between 18 and 25 years of old were taken into consideration for study. They were split into three groups: Experimental group I (yogic practices with diet modifications), Experimental group II (yogic practices without diet modifications) and control group (no intervention) with 15 subjects each. The experimental group I underwent yogic practices alone for twelve weeks and the experimental group II underwent yogic practices with diet modifications twelve weeks whereas the control group continued their normal routine without any treatment. The pre and post test data were collected and statistical treatment such ANCOVA and Scheffe's Post Hoc test calculations were made. The result shows that there is significant decrease in Body Mass Index due to twelve weeks of yogic practices.

Nidhi R et.al.,(2013) compared the Holistic yoga program with the conventional exercise program in adolescent polycystic ovarian syndrome (PCOS). Adolescent girls from a residential college in Andhra Pradesh are made to undergo test based on rotterdam criteria, out of the adolescent girl who satisfied the Rotterdam criteria, ninety girls were selected randomly and divided in to two groups. The group I was given holistic yogic practices and the group II was given physical exercises for one hour per day for 12 weeks. Anti-müllerian hormone (AMH-primary outcome), luteinizing hormone (LH), follicle-stimulating hormone (FSH), testosterone, prolactin, body-mass index (BMI), hirsutism, and menstrual frequency measurements were taken

before and after intervention period. Mann – whitney test was used for statistical calculation. The result showcased that Yoga program was very efficient than physical exercise in reducing AMH, LH, and testosterone, mFG score for hirsutism, and improving menstrual frequency and non significant changes were observed in body weight, FSH and prolactin among adolescent girls suffering with PCOS.

III. METHODOLOGY

To achieve the purpose of the study, among the 60 adult women suffering with Poly Cystic Ovarian Syndrome living in North Chennai, 45 subjects were filtered and finally, 30 subjects were selected randomly using random sampling method, between the age group of 25 and 35 years and they were divided into two groups, experimental and Control group with 15 subjects in each group. The measurements on the selected dependent variables such as Body Mass Index (BMI) and Testosterone Hormone were made for Group I and II before the start of the training program. Group I subjects were given Yoga therapy for 60 minutes, six days in a week for a total period of eight weeks along with Ayurvedic Diet.

Yoga Therapy involving Loosening the Joints, Surya Namaskar followed by Asanas such as Trikonasana, Viparitarani, Halasana, Matsyasana, Bhujangasana, Dhanurasana, Ushtrasana, artha matsyendrasana, Maha mudra and Pranayama practices such as Kapalabhati, Nadishodana, Ujjayi followed by Yoga Nidra along with the Ayurvedic diet involving balance of vata and kapha dosha. Group II (Control Group) subjects were permitted to undergo normal routine work during the training period.

After eight weeks, the two groups were retested again on the same selected dependent variables such as Body Mass Index and Testosterone Hormone. Analysis of Co-Variance (ANCOVA) was used to find out the significant differences between experimental group and the control group. The test of significance was fixed at 0.05 level of confidence.

IV. RESULTS AND DISCUSSIONS:

The data concerned to the variable collected from the two groups pre and post training period were statistically examined using Analysis of Co-variance (ANCOVA) to determine the significant difference and the hypothesis was tested at 0.05 level of Significance.

TABLE I
COMPUTATION OF ANALYSIS OF COVARIANCE ON TRAINING GROUP AND CONTROL GROUP ON BODY MASS INDEX(Scores in Kg/m²))

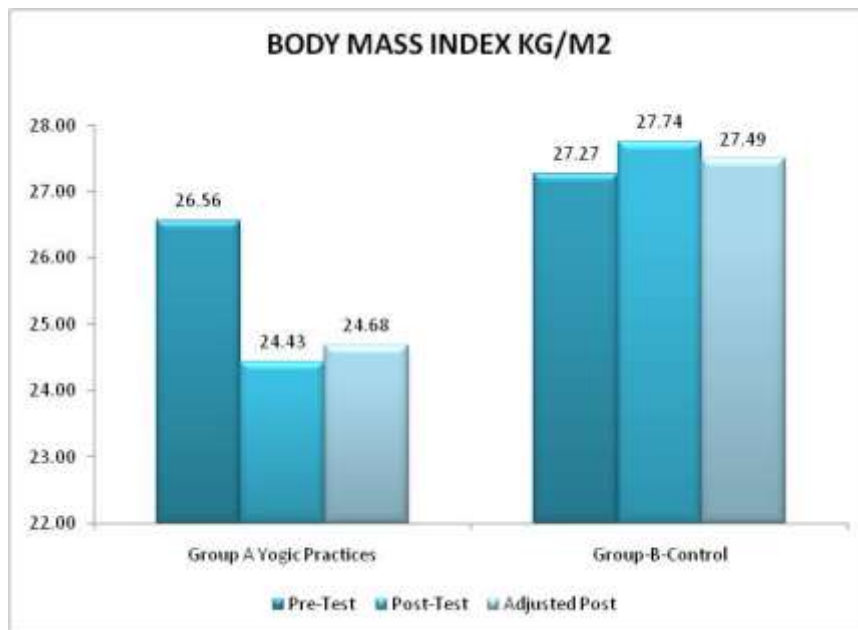
TEST	GROUP 1 YOGA THERAPY	GROUP2 CONTROL GROUP	SOURCE OF VARIANCE	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SUM OF SQUARES	F- RATIO
Pre	26.56	27.27	Between	27.27	27.45	27.27	1.94
			With in	392.65	389.42	14.02	
Post	24.43	27.74	Between	82.36	16.68	82.36	8.30*
			With in	277.77	372.16	9.92	
Adjusted Post	24.68	27.49	Between	58.59	17.31	58.59	21.18*
			With in	74.70	20.57	2.77	

*Significant at 0.05 level of confidence. (Table F-ratio at 0.05 level of confidence for 1 and 28 (df) =4.2, 1 and 27 (df) =4.21)

The obtained F value from the above table shows that pre-test score 1.94 was smaller than the required F value of 4.20 to be significant at 0.05 level which in turn signifies that there was no remarkable difference between the experimental and control group. On the other hand, acquired F value of the post test scores 8.30 was greater than the recommended F value 4.20 which showcases a significant difference between the post test scores of experimental and control group. On evaluating the pre and post-test values of the experimental and control group adjusted mean values were computed and put through the statistical calculation. The adjusted post-test F value 21.18 was greater than the recommended F value of 4.20. This confirms that there was a significant difference on Body Mass Index (decreased) due to 12 weeks of Yoga therapy treatment among adult women with PCOS. The outcome of this study on Body Mass Index is in compliance with the research work carried over by **Loganayagi S et.al.**, The ordered adjusted means on Body Mass Index were presented through bar diagram for better interpretation of the outcome of this study in Figure -1.

Figure – 1

BAR DIAGRAM SHOWING THE MEAN DIFFERENCES AMONG THE GROUPS ON BODY MASS INDEX (Scores in Kg/m2)



* Significant at 0.05 level of confidence

TABLE-II

COMPUTATION OF ANALYSIS OF COVARIANCE OF TRAINING GROUPS AND CONTROL GROUP ON TESTOSTERONE HORMONE (Scores in ng/dL)

Significant at 0.05 level of confidence.(Table F-ratio at 0.05 level of confidence for 1 and 28 (df) =4.2, 1 and 27 (df) =4.21)

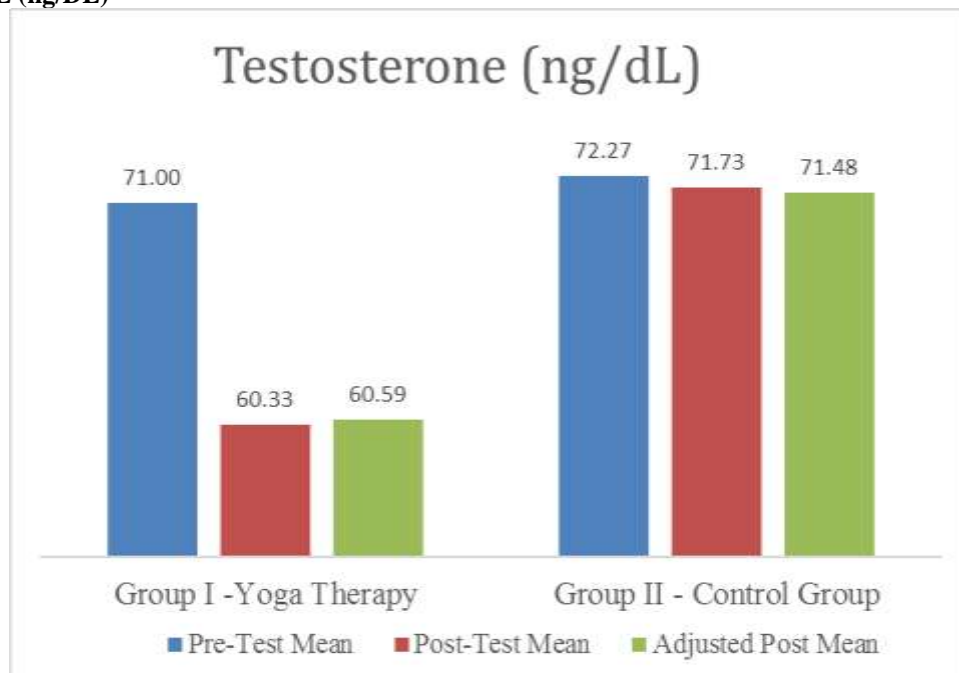
TEST	GROUP I YOGA THERAPY	GROUP 2 CONTROL GROUP	SOURCE OF VARIANCE	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SUM OF SQUARES	F-RATIO
Pre	70.22	70.21	Between	1	70.21	70.21	1.98
			With in	28	992.14	35.43	
Post	61.26	70.23	Between	1	603.19	603.19	25.71*
			With in	28	656.82	23.46	
Adjusted Post	61.27	70.22	Between	1	604.16	604.16	115.93*
			With in	27	140.70	5.21	

*Significant at 0.05 level of confidence. (Table F-ratio at 0.05 level of confidence for 1 and 28 (df) =4.2, 1 and 27 (df) =4.21)

The obtained F value from the above table shows that pre-test score 1.98 was smaller than the required F value of 4.20 to be significant at 0.05 level which in turn signifies that there was no remarkable difference between the experimental and control group. On the other hand, acquired F value of the post test scores 25.71 was greater than the required value 4.20 which showcases a significant difference between the post test scores of experimental and control group. On evaluating the pre and post-test values of the experimental and control group adjusted mean values were computed and put through the statistical calculation. The adjusted post-test F value 25.71 was greater than the recommended F value of 4.20. This proved that there was a significant difference on Testosterone hormone (decreased) due to 12 weeks of Yoga therapy treatment among adult women with Poly Cystic Ovarian Syndrome. The outcome of this study on Testosterone is in compliance with the research work carried over by **Nidhi R et.al.,(2013)**. The ordered adjusted means on Testosterone were presented through bar diagram for better interpretation of the outcome of this study in Figure -2.

Figure 2

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG EXPERIMENTAL AND CONTROL GROUPS ON TESTOSTERONE (ng/DL)



* Significant at 0.05 level of confidence

The outcome of the study exhibits that Body Mass Index (BMI) decreased and Testosterone decreased significantly due to Yogic Therapy for Group-I than Group II. Hence the hypothesis was accepted at 0.05 level of confidence. The above findings were also substantiated by the observations made by experts such as **Loganayagi S and Nidhi Ram et.al., (2013)**.

DISCUSSION ON HYPOTHESIS

It was hypothesized that there would be significant differences on selected Physiological variable such as Body Mass Index (BMI) and Hormonal variable such as Testosterone due to Yoga Therapy among adult women suffering with Poly Cystic Ovarian Syndrome than the control group. The results proved that there were significant differences on Body Mass Index (BMI) (Decreased) and Testosterone(Decreased) due to yoga therapy than the control group among adult women suffering with Poly Cystic Ovarian Syndrome.

CONCLUSION:

It was concluded that there were significant differences on Body Mass Index (decreased) and Testosterone hormone levels (decreased) among experimental group I compared to control group due to Yoga therapy among adult women with Poly Cystic Ovarian Syndrome. Hence, Yoga therapy is good for adult women suffering from PCOS.

V. REFERENCES:

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