



Frontiers

Effect of Yogic Practices with and without Diet modifications on selected risk factors among College Girls suffering with Irregular Menstruation

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A B S T R A C T

The present random group experimental study was designed to find out the effect of Yogic practices on selected Biochemical variables among college girls suffering with irregular menstruation. To achieve the purpose of the study, 90 adolescent girls suffering with irregular menstruation problems came forward from sembakkam, Chennai city, 60 were screened and 45 were selected randomly by using random sampling method aged between 18 years to 21 years. The subjects were divided into experimental group A, experimental group B and control group C of 15 subjects each. It was hypothesized that there would be significant differences in Biochemical variables such as Glucose tolerance and Total cholesterol among college girls suffering with irregular menstruation due to the influences of yogic practices with and without diet modification than the Control Group. Experimental Group A underwent training for 12 weeks, six days a week for a maximum of one hour in the morning and suggested with diet chart. Experimental Group B underwent training for 12 weeks, six days a week for a maximum of one hour in the morning without diet suggestions. The control group was kept in active rest. The pre test and post test was conducted before and after the training for all three groups and the scores on Glucose tolerance and Total cholesterol were measured. The data collected from the three groups were statistically analysed by using Analysis of Co-Variance (ANCOVA) to determine the significant differences and tested at 0.05 level of significance. The result of the study showed that the Glucose tolerance and total cholesterol were significantly reduced as result of Yogic practices and diet modification in Group A and Similarly in Group B as result of Yogic practices alone. Hence the hypothesis was accepted at 0.05 level of confidence. The conclusion was that the Yogic practices and diet modification helped to reduce Glucose level and Total cholesterol among college girls suffering with irregular menstruation.

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Introduction:

In the present scenario nearly 30 to 40% of Girls suffer with irregular menstruation. Hence fertility among females has become a rare phenomenon. It is mainly inculcated due to poor dietary habits, and lifestyle adapted among the young generation. Irregular menstruation leads to so many health risks such as overweight, blood pressure and Type 2 diabetics in addition to infertility.

Yoga as a Way of Life is the boon given by our ancestors to solve not only irregular menstruation but also all other diseases. Yogic life leads us to well being smoothly and peacefully.

OBJECTIVES OF THE STUDY

The objective of the study was to find out whether there would be any significant difference on selected Biochemical variables due to yogic practices with and without diet modifications among college girls with irregular menstruation.

PURPOSE OF THE STUDY

The Purpose of the study was to find out whether there would be any significant difference on selected Biochemical variables such as Glucose tolerance and total cholesterol due to yogic practices with and without diet modifications among college girls with irregular menstruation.

HYPOTHESIS

1. It was hypothesized that there would be significant differences due to yogic practices with and without diet modifications (group A and group B) than the control group (group C) on selected Biochemical variables such as Glucose tolerance and total cholesterol among college girls suffering with irregular menstruation.
2. It was hypothesized that there would be significant differences

between the Yogic practices with diet modifications group (Group A) and Yogic practices without diet modifications group (group B) on selected Biochemical variables such as Glucose tolerance and total cholesterol among college girls suffering with irregular menstruation.

DELIMITATIONS

- The study was confined to college girls suffering with irregular menstruation from Chennai City, India only.
- The age of the subject was ranged from 18years to 21 years only.
- The study was confined to yogic practices and diet modification as independent variables only
- The study was confined to Glucose tolerance and Total cholesterol as dependent variables only.

LIMITATIONS

- The factors like Socio-Economical status were not taken into consideration.
- The climatic conditions were not considered.
- Factors like Life style habits were not taken into consideration.
- Subjects' day to day activities were not taken into account.
- Medication followed by subjects was not controlled.
- Instructions were only given for Diet modification group. Personal verification was not done.

REVIEW OF RELATED LITERATURE

Nidhi R et.al., (2012) studied the effect of a yoga program on glucose metabolism and blood lipid levels in adolescent girls with polycystic ovary syndrome. This study involved 90 subjects under the age group of 15 to 18 with polycystic ovarian syndrome. A yoga group practiced surya namaskar, asanas, pranayama, and

meditation 1 hour per day each day for 12 weeks. The changes in fasting insulin, fasting blood glucose, and homeostasis model assessment of insulin resistance were observed. Yoga was found to be more effective in improving glucose, lipid, and insulin values, including insulin resistance values, in adolescent girls with PCOS.

Fruzzetti F et.al., (2009) studied and evaluated the metabolic profiles of adolescents with different phenotypes of polycystic ovary syndrome (PCOS). Adolescents with PCOS (n = 120) were divided into four groups. The endocrine and metabolic profiles were evaluated. Adolescents with PCOS showed reduced insulin sensitivity and dyslipidemia. Triglycerides, low-density lipoprotein and total cholesterol were higher in the phenotypes with hyperandrogenemia. Insulin resistance and body mass index were not significantly different between PCOS phenotypes. Triglyceride positively and high-density lipoprotein cholesterol levels negatively correlated with free testosterone and free androgen index. The risk of metabolic alterations may vary in adolescent PCOS patients with different phenotypes. Hyperandrogenemia is a risk factor for dyslipidemia. This information may be of relevance in counselling adolescents with PCOS.

METHODOLOGY

To fulfil the goal of the random group

experimental study, 90 adolescent girls suffering with irregular menstruation problems came forward from sembakkam, Chennai city, 60 were screened and 45 were selected randomly using random sampling method. The age of the subjects ranged between 18 to 21years. The subjects were divided into experimental group A, experimental group B and control group C of 15 subjects each. First experimental group was involved in yogic practices for 12 weeks with diet modification, Second experimental group was involved in yogic practices for 12 weeks only and the third control group kept in active rest.

The Yogic Practices given to the experimental groups A&B include Loosening Exercises, Surya namaskara, Parivarthatrikosana, Padahasthasana, Adhomukthaswasana, Bujangasana, Salabasana, Pachimottanasana, Padhakonasana, Arthamachendriyasana, Koormasana, Sarvangasana, Mathyasana, UjjaiPranayamam, Kapalapathi, Bhastrika, Nadishodhana, Meditation and Shanthiasana.

Yogic Diet Chart Given To Experimental Group A

Following items are instructed to be included in their diet everyday: Whole grains, Pulses, Nuts, Vegetables, Dairy products, Fruits. The Proportion of dietary items are: Grains 30%, Dairy Products 20%, Vegetables and Fruits 27%, Nuts 5%, Pulses and Fats 18%.

DIET CHART

Break Fast	Iddly or pongal, Sambar, Vadai, Chattini and Banana
Snacks	Dry Fruits or Fresh Fruits or Juice ,Vegetable soup or Green Tea
Lunch	Rice, Sambar, Vegetables, Fruits, Curd or Buttermilk
Snacks	Nuts , Fruits
Dinner	Rice or Chappathi, Dal, Vegetables, Salad, Fruits, Milk

Nutrients in the diet chart are Carbohydrates 60% , Fats 30%, and Proteins, Vitamins, Minerals, Water 10% The selected variables, Glucose tolerance

and Total cholesterol were measured through blood test.

RESULTS AND DISCUSSION

The data pertaining to the variables

collected from two groups before and after the training period were statistically analysed by using Analysis of Co-Variance (ANCOVA) to determine the significant difference and tested at 0.05 level of significance.

RESULTS ON GLUCOSE TOLERANCE

The data pertaining to the variables

collected from three groups before and after the training period were statistically analysed by using Analysis of Co-Variance (ANCOVA) to determine the significant difference and tested at 0.05 level of significance. The Analysis of Covariance (ANCOVA) on two experimental groups and control group in Glucose tolerance test (Fasting One Hour) was analysed and presented in Table I.

TABLE I

COMPUTATION OF ANALYSIS OF CO-VARIANCE OF TRAINING GROUPS AND CONTROL GROUP ON GLUCOSE TOLERANCE (in Scores in mmol/L)

Tests/ Groups	EX.GR-A	EX.GR-B	CG-C	SOV	Sum of Squares	df	Mean Squares	“F” Ratio
Pre Test	161.53	160.87	157.20	B	163.33	2	81.67	0.49
				W	7017.87	42	167.09	
Post Test	117.33	130.40	161.53	B	15468.31	2	7734.16	66.80*
				W	4862.67	42	115.78	
Adjusted Post Test	116.98	130.19	162.10	B	15779.04	2	7889.52	71.08*
				W	4550.75	41	110.99	
Mean gain	-44.20	-30.47	4.33					

* Significant at 0.05 level of confidence (Table F ratio at 0.05 level of confidence for df 2 and 42 = 3.22, 2 and 41 = 3.23).

The obtained F ratio on pre test scores 0.49 was lesser than the required F value of 3.22 to be significant at 0.05 level. This proved that there was no significant difference between the groups in pre test and the randomization at the pre test was equal. The post test scores analysis proved that there was significant difference between the groups, as they obtained F value 66.80 was greater than the required F value of 3.22. This proved that the differences between the post test means of the subjects were significant. Taking into consideration the pre and post test scores among the groups, adjusted mean

scores calculated. The obtained F value was 71.08, which was greater than required F value of 3.23. This proved that there was significant difference among the means due to twelve weeks of yogic practices with diet modification and yogic practices without diet modification on variables as in line with study conducted by **Nidhi R et.al., (2012)**.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table II

TABLE II

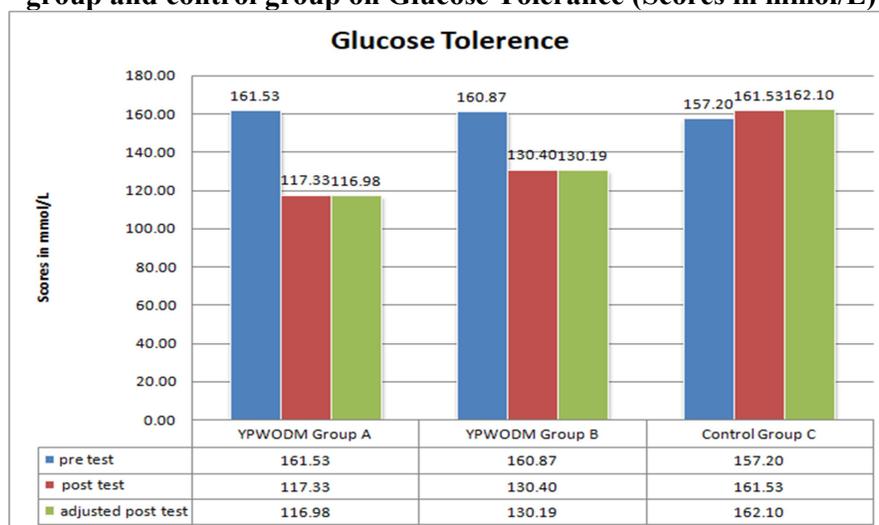
SCHEFFE'S POSTHOC TEST FOR GLUCOSE TOLERANCE

EX.GR-A	EX.GR-B	CG-C	Mean Difference	CD at 5% Level
116.98	130.19		13.21*	11.98
116.98		162.10	45.11*	
	130.19	162.10	31.91*	

The difference of paired mean difference value of the two experimental groups is greater than the C.I value. Hence it is concluded that there is significant difference in Glucose Tolerance between Group A and Group B.

The pre-test, post-test and adjusted post-test mean values of yogic practices with diet modifications and the control group on Glucose Tolerance were graphically presented in Figure 1.

Figure 1
Bar diagram showing the mean difference of yogic practices with diet modifications group and control group on Glucose Tolerance (Scores in mmol/L)



* Significant at 0.05 level of confidence (Table F ratio at 0.05 level of confidence for df 2 and 42 = 3.22, 2 and 41 = 3.23).

RESULTS ON TOTAL CHOLESTEROL

TABLE III
COMPUTATION OF ANALYSIS OF CO-VARIANCE OF TRAINING GROUPS AND CONTROL GROUP ON TOTAL CHOLESTEROL (in Scores in mg/dL)

Tests/ Groups	EX.GR-A	EX.GR-B	CG-C	SOV	Sum of Squares	df	Mean Squares	“F” Ratio
Pre Test	220.33	216.67	218.67	B	163.33	101.11	2.00	0.36
				W	7017.87	5830.00	42.00	
Post Test	131.33	141.67	219.67	B	12698.53	69967.78	2.00	373.87*
				W	5262.67	3930.00	42.00	
Adjusted Post Test	131.00	142.02	219.65	B	13041.97	70021.46	2.00	385.42*
				W	4917.29	3724.34	41.00	
Mean gain	-89.00	-75.00	1.00					

* Significant at 0.05 level of confidence (Table F ratio at 0.05 level of confidence for df 2 and 42 = 3.22, 2 and 41 = 3.23).

The obtained F ratio on pre test scores 0.36 was lesser than the required F value of 3.22 to be significant at 0.05 level. This proved that there was no significant difference between the groups in pre test and the randomization at the pre test was equal. The post test scores analysis proved that there was significant difference between the groups, as obtained F value 373.87 was greater than the required F value of 3.22. This proved that the differences between the post test means of the subjects were significant. Taking into consideration the pre and post test scores among the groups, adjusted mean scores

calculated .The obtained F value was 385.42, which was greater than required F value of 3.18. This proved that there was significant difference among the means due to twelve weeks of yogic practices with diet modification and yogic practices without diet modification on variables as in line with study conducted by **Fruzzetti F et.al., (2009)**.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table V

Table V
SCHEFFE'S POSTHOC TEST

EX.GR-A	EX.GR-B	CG-C	Mean Difference	CD at 5% Level
131.00	142.02		11.02*	10.83
131.00		219.65	88.65*	
	142.02	219.65	77.62*	

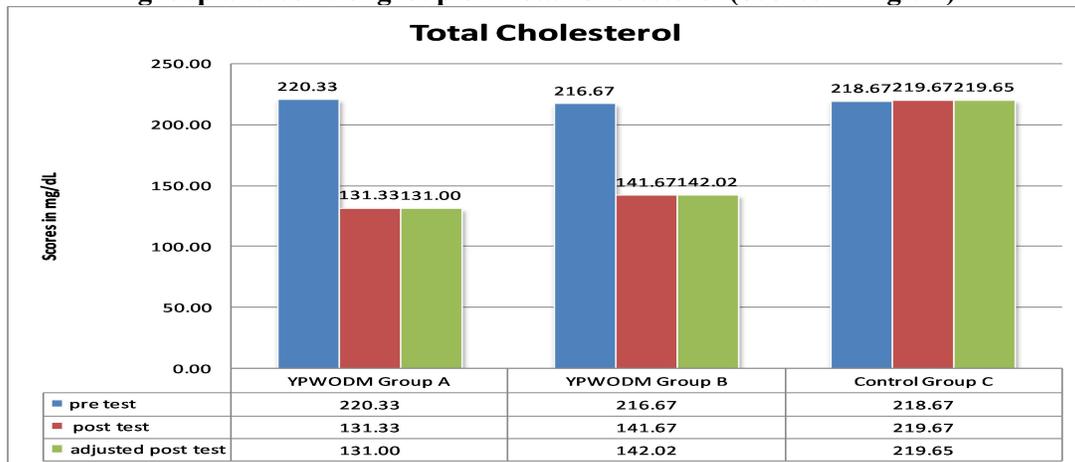
The difference of paired mean difference value of the two experimental groups is greater than the C.I value. Hence it is concluded that Experimental Group A i.e Yoga with Diet Modifications shows significant difference in Total Cholesterol than Group B i.e Yoga without Diet

Modifications.

The pre-test, post-test and adjusted post-test mean values of yogic practices with diet modifications and the control group on Total Cholesterol were graphically presented in Figure 2.

Figure 2

Bar diagram showing the mean difference of yogic practices with diet modifications group and control group on Total Cholesterol (Scores in mg/dL)



* Significant at 0.05 level of confidence (Table F ratio at 0.05 level of confidence for df 2 and 42 = 3.22, 2 and 41 = 3.23).

DISCUSSION ON HYPOTHESIS.

It was hypothesized that there would be significant differences on selected Biochemical variables such as Glucose Tolerance and Total Cholesterol due to yogic practices with and without diet modifications among college girls suffering with irregular menstruation than the control group. The results proved that there were significant differences on Glucose Tolerance (Decreased) and Total Cholesterol (Decreased) due to yogic practices than the control group among college girls suffering with irregular menstruation. The hypothesis was accepted at 0.05 level of confidence.

It was hypothesized that there would be significant differences on selected Biological variables such as Glucose Tolerance and Total Cholesterol due to

yogic practices with diet modifications and yogic practices without diet modifications among college girls suffering with irregular menstruation than the control group. The results from the post hoc test proved that there were significant differences on Total Cholesterol (Decreased) due to yogic practices with diet modifications than due to yogic practices without diet modifications among college girls with irregular menstruation.

CONCLUSION

It was concluded that yogic practices with and without diet modifications decreased Glucose Tolerance and Total Cholesterol significantly among college girls suffering with irregular menstruation. Hence, yogic practices with and without diet modifications are beneficial to college girls suffering with irregular menstruation.

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