

IMPACT OF YOGIC PRACTICE ON BLOOD SUGAR AND LIPID PROFILE OF WORKING WOMEN

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ABSTRACT

Yoga has been shown to have therapeutic benefits for individuals with a wide range of health conditions. The present study was conducted to assess the effect of Yogic practices on blood sugar and lipid profile of working women. Twenty working (age range 45 to 55 years) women were selected from Alagappa University women Faculty members and randomly divided into two groups (n=10) of yogic practice group and control group. Yogic practice group were subjected to regular yoga practice (Asanas, SuryaNamaskar, Kriyas, Pranayamas) for 12 weeks (3 sessions per week, 45 minutes per session), while the control group did not participated any regular activity. The dependent variables were fasting plasma glucose, post-prandial blood sugar, total cholesterol, triglycerides, low density lipoprotein, very low density lipoprotein and high density lipoprotein and were examined before and after 12 weeks of yogic practice in both groups. . In order to find out the effects of yoga on lipid profiles of working women, the Analysis of Covariance (ANCOVA) was used and the F-ratio was found out. Whenever the F-ratio was found significant, least significant Difference (LSD) Post hoc test applied to determine which of the paired means difference was significant. In all the cases 0.05 levels of significance were fixed. It may be concluded that Impact of yogic practice would bring proper control of blood sugar and lipid profile levels of working women.

Keywords: Working women; Asana; Pranayama; blood sugar; Lipid profile

INTRODUCTION

India has more diabetics than any other country in the world, according to the International Diabetics Foundation. According to recent estimates, approximately 51 million people was diabetes in 2010 and by 2030, 87 million people is expected to have diabetes in India. Keeping in view the alarming increase in the incidence and prevalence of diabetics in India, WHO has declared India as the – Diabetic Capital of the world.

The major risk factor for coronary artery disease in diabetes mellitus is dyslipidemia. The characteristic features of diabetic dyslipidemia are a high plasma triglyceride concentration, low High Density Lipoprotein (HDL) concentration and increased concentration of small dense low-density lipoprotein (LDL) particles. Insulin resistance leads to increased flux of free fatty acids and hence the lipid changes. Coronary artery disease is the most important cause of death and disability among older women. By the year 2015, cardiovascular mortality is likely to rise

to 90% in females in India. High circulating serum cholesterol, low-density lipoprotein-cholesterol (LDL-C) and serum triglycerides are major risk factors of this disease. The modification of lipid profile maybe important both in the prevention and control of coronary heart disease. Behaviour methods are recommended by the National Cholesterol Education Programme as the first line of prevention and treatment for hypercholesterolemia and other risk factors.

Yoga is an ancient traditional India, psychological, physical and spiritual exercise practice that has been studied for several decades for its role in the management of numerous chronic diseases. It is a form of physical activity consisting of various postures (Asana) and breathing techniques (Pranayama). Yoga is generally safe, simple to learn, and can be practiced by even ill, working or disabled individuals. Yoga has been shown to have therapeutic benefits for individuals with a wide range of health conditions. It seems that, yoga improves psychological conditions to manage stress, reduce anxiety and negative emotions, and increase positive emotions and to achieve emotional balance. The present study was undertaken to assess the Impact of yogic practice on blood sugar and the lipid profile of working women.

METHODOLOGY

Twenty working women in the age group of 45-50 years were selected from Alagappa University women Faculty members as subject. The subjects were randomly divided into two groups equally; of which experimental group underwent yogic practice along with the conventional medicines. Yoga Intervention: **Asanas** - Surya Namaskar, Yogamudra, Paschimatyasana, Ardha Matsyendrasans, Bhadrasana, Bhujangasana, Shalabhasana, Dhanurasana, Nawkasana, Sethu Bandhasans, Shavasana. **Kriyas** - Kapalabhathi, Agnisara. **Pranayamas** - Ujjayi, Aunloma-Viloma, Bharamari.(45 min).The yogic practice group were treated with their respective training of 45 minutes per day for three days a week for a period of twelve weeks. The subjects of the control group were not allowed to participate in any of the training programme and continued with the conventional medicines. The subjects in both the groups as belonged to the Working women, so it won't be rong to assume their dietary habits and socio-economic statuses were similar. Written consent was taken from all the patients after the procedure was explained to them. Before the start of experimental treatment, all 20 subjects underwent baseline testing for assessment of their blood sugar (fasting plasma glucose, post-prandial blood sugar) and lipid profile (total cholesterol, triglycerides, low-density lipoprotein, very low-density lipoprotein, high-density lipoprotein). Final testing, which repeat of the baseline tests, was conducted at the end of the 12-week yogic Practice.

STATISTICAL TECHNIQUE

All the statistical calculations were done with the help of SPSS software Version 17. To find out the mean and standard deviation of the selected variables, descriptive statistics were employed. In order to find out the effects of yoga on lipid profiles of working women, the Analysis of Covariance (ANCOVA) was used and the F-ratio was found out. Whenever the F-ratio was found significant, least significant Difference (LSD) Post hoc test applied to determine

which of the paired means difference was significant. In all the cases 0.05 levels of significance were fixed.

ANALYSIS OF DATA

Table- I Descriptive Statistics And Analysis Of Covariance For The Pre And Post Test Data Of Blood Glucose Of Yogic Practices Group And Control Group

Blood Sugar	Yogic Practice Group		Control Group		F-Value
	Pre test	Post Test	Pre test	Post Test	
FPG	168.30±14.86	158.50±11.70	165.30±27.34	165.50±27.03	4.17
PPBG	236.80±42.60	228.70±42.70	235.60±25.97	236.20±26.67	7.56

Significant at the 0.05 level

Table- Ii Lsd Test For The Differences Between The Adjusted Post Tests Paired Means Of Blood Glucose

Blood Sugar	Adjusted Post-Test Means		Mean Difference	Standard Error
	YPG	CG		
FPG	156.981	166.662	-9.681	3.313
PPBG	227.509	236.200	-8.691	1.605

Significant at the 0.05 level

Table- Iii Descriptive Statistics And Analysis Of Covariance For The Pre And Post Test Data Of Lipid Profiles Of Yogic Practices Group And Control Group

Lipid Profiles	Yogic Practice Group		Control Group		F-Value
	Pre test	Post Test	Pre test	Post Test	
TC	206.90±30.94	201.80±31.70	207.80±36.90	207.90±36.50	21.85
TG	166.90±28.62	161.90±27.87	159.70±23.64	160.20±23.67	16.17
LDL	127.50±15.11	123.70±14.89	125.10±17.21	125.00±17.62	18.22
VLDL	35.00±4.47	32.70±3.74	33.90±3.73	33.90±3.25	8.12
HDL	47.60±3.66	51.20±3.55	47.40±3.37	47.30±3.33	20.53

Significant at the 0.05 level

Table- Iv Lsd Test For The Differences Between The Adjusted Post Tests Paired Means Of Lipid Profiles

Lipid Profiles	Adjusted post-test Means		Mean Difference	Standard Error
	YPG	CG		
TC	200.86	206.06	-5.20	0.733
TG	157.45	162.76	-5.31	0.727
LDL	123.23	126.94	-3.71	0.512
VLDL	32.48	34.56	-2.08	0.519
HDL	51.35	47.64	3.71	0.570

Significant at the 0.05 level

From the table 1, using ANCOVA, the F ratio for adjusted post-test means in Fasting Plasma Glucose (FPG) and Post Prandial Blood Sugar (PPBS) of the subjects were 4.17 and 7.56 respectively, which were significant at 0.05 levels. From the Table 3, using ANCOVA, the F-ratio for adjusted post test means in Total Cholesterol (TC), Triglycerides (TG), Low-Density Lipoprotein (LDL), Very Low-Density Lipoprotein (VLDL), High Density Lipoprotein (HDL) of the subjects were 21.85, 16.17, 18.22, 8.12, 20.53 respectively, which were significant at 0.05 levels. The above analysis of the data indicated that there were a significant difference in the adjusted post-test means among yogic practice group and control group. Further, to determine which of the paired means had a significant difference, the LSD post hoc test was applied for blood sugar and lipid profile and the result was presented in Table 2 and Table 4.

DISCUSSION

Present study was undertaken to find out the impact of yogic intervention on blood sugar and lipid profile of working women. The results show that following 12 weeks of yogic practice significant ($p \leq 0.05$) decrease in FPG and PPBG values in yogic practice group. The exact mechanisms of yogic intervention in decreasing the blood sugar.

The possible mechanisms are various yogic intervention may be directly rejuvenating cells of pancreas as a result of which there may be increase in utilization and metabolism of glucose in the peripheral tissues, liver and adipose tissues through enzymatic process. Muscular relaxation, development and improved blood supply to muscles might enhance insulin receptor expression on muscles causing increased glucose uptake by muscles and thus reducing blood sugar.

The significant ($p \leq 0.05$) decrease in TC, TG, LDL, and VLDL values coupled with significant ($p \leq 0.05$) increase in HDL (Table 3) in our participants imply an improved lipid profile having good prognostic value. This decrease of 'bad' cholesterol and a concomitant increase in 'good' cholesterol has significance when viewed in light of the cardiovascular risk profile of diabetic patients. It has been previously reported that hatha yoga exercise and conventional PT exercise may have preventative and protective effects on diabetes mellitus by decreasing oxidative stress and improving antioxidant status. A similar mechanism may be working in our patients as systematic review also found the effects of yoga training to be more prominent with regard to fasting blood glucose level and lipid profile.

The decrease in lipid profile reported a significant reduction in free fatty acids, LDL, VLDL, and an increase in HDL. The improvement in the lipid profile after yoga could be due to increased hepatic lipase and lipoprotein and thus increase uptake of triglycerides by adipose tissues. These changes suggest improvement in the insulin sensitivity following yogic exercise.

CONCLUSION

It may be concluded that impact of yogic practice would bring proper control of blood sugar and lipid profile levels in working women.

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