Effect of Yoga Practices on Total Cholesterol Triglycerides and Uric Acid among Male Diabetic Patients

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Abstract

The purpose of the present study was to find out the effect of yoga practices on total cholesterol, triglycerides and uric acid among male diabetic patients. For this purpose, thirty male diabetic patients around Arogya Mandhir, Bangalore, Karnataka State, in the age group of 35 – 40 years were selected. They were divided into two equal groups, each group consisted of fifteen subjects, in which group – I underwent yoga practices and group – II acted as control that did not participate in any special activities apart from their regular day-to-day activities. The training period for this study was six days in a week for twelve weeks. Prior to and after the training period the subjects were tested on total cholesterol, triglycerides and uric acid. Total cholesterol, triglycerides and uric acid were tested after taking 10 ml (5 ml separately for uric acid test) of blood samples by venous puncture method, by using Boehringer Manheimm Kit Method. The Analysis of Covariance (ANCOVA) was used to find out any significant difference between the pre-test mean and post-test means and significant difference that was exists between the yoga practice group and control group on selected criterion variables. It was concluded from the results of the study that yoga practice has decreased the total cholesterol, triglycerides and uric acid significantly (P > .05) after yoga practices (P > .05). It was found that there was a significant difference was occurred between the yoga practice group and control group on total cholesterol, triglycerides and uric acid level

Keywords: Yoga Practice, Diabetic Patients, Total Cholesterol, Triglycerides, Uric Acid, Boehringer Mannheim kit method, ANCOVA.

Introduction

Yoga is one of the most ancient cultural heritage of India. The word *yoga* in Sanskrit means "to unite", and so *yoga* can be said to connote a unitive discipline.[1] Yoga is a complete science of life that originated in India many thousands of years ago.[2] Yoga is an exact science. It is a perfect, practical system of self-culture. It is the discipline of the mind, senses and the physical body.[3]

Diabetes mellitus: Better known just as "diabetes" -- a chronic disease associated with abnormally high levels of the sugar glucose in the blood.[4] Diabetes mellitus is a group of metabolic diseases characterized by high blood sugar (glucose) levels, that result from defects in insulin secretion, or action, or both. Elevated levels of uric acid (hyperglycemia) lead to spillage of glucose into the urine, hence the term sweet urine. Normally, uric acid levels are tightly controlled by insulin, a hormone produced by the pancreas. Insulin lowers the uric acid level. [5]

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Yoga Asanas for Curing diabetes are Ardha Chandrasana, Bhujangasana, Salabhasana, Poorna Salabhasana, Dhanurasana and Ustrasana. Most of these postures cause the internal viscera to stretch, bringing stimulation to the pancreas and other glands and organs that otherwise receive no stimulation.[6]

Cholesterol is also found in the blood circulation of humans. The cholesterol in a person's blood originates from two major sources, dietary intake and liver production. [7] The association of high serum uric acid with insulin resistance has been known since the early part of the 20th century, nevertheless, recognition of high serum uric acid as a risk factor for diabetes has been a matter of debate. [8]

Methodology

Thirty male diabetic patients living around Arogya Mandhir, Bangalore, Karnataka State were selected as subjects and their age ranged between 35 and 40 years. They were divided into two equal groups, such as, Group - I underwent yoga practices   (n = 15) and Group - II acted as control (n = 15), which did not undergo any special exercises apart from their day-to-day activities.   The yoga practice period was six days (Monday to Saturday) per week for twelve weeks. Self regulation in diet was followed and a regular

interrogation about the subjects' diet was also followed. The researcher consulted with the yoga experts, selected the following variables as criterion variables: 1. total cholesterol, 2. triglycerides and 3. Uric acid. The total cholesterol, triglycerides and uric acid was measured by using the Boehringer Mannheim Kit method. For the purpose of collection of data the subjects in both the groups (experimental group and control group) were asked to report at early morning, one day prior and one day after experimental period, in fasting condition. 5 ml of blood was collected from each subject by venous puncture method and the blood thus collected was stored in small bottles for pre and post-test for measuring the total cholesterol, triglycerides and uric acid.

Table I. Training schedule for yogic practice group

List of Yogasanas	Weeks	Duration	Maintaining Duration (seconds)	Recovery in between Yogasanas in seconds	Repetitions	Frequency	Warming up and cooling down
Padmasana	1 - 3 Weeks	20 min.	1 minute	30 seconds	2	Monday Tuesday Wednesday Thursday Friday & Saturday	5 – 10 Minutes
Trikonasana			1 minute	30 seconds			
Dhanurasana			1 minute	30 seconds			
Meditation – Omkar.			2 minutes	15 seconds			
Pranayama – Nadisuthi			2 minutes	15 seconds			
Shavasana			2 minutes		1		
As in previous week	4 – 6 Weeks	40 min	20 minutes		2	Monday Tuesday Wednesday Thursday Friday & Saturday	5 – 10 Minutes
Bhujangasana			1 minute	10 seconds			
Shalabasana			1 minute	10 seconds			
Utkattasana			1 minute	10 seconds			
Gomukasana			1 minute	10 seconds			
Meditation – Omkar.			2 minute	10 seconds			
Pranayama – Sitali.			2 minute	10 seconds			
Shavasana			2 minutes		1		
As in previous week	7– 9 Weeks	66 min	40 minutes		3	Monday Tuesday Wednesday Thursday Friday & Saturday	5 – 10 Minutes
Halasana			1 minute	30 seconds			
Matsyasana			1 minute	30 seconds			
Uttanasana			1 minute	30 seconds			
Meditation – Omkar			1 minute	30 seconds			
Pranayama – Bhastrika.			1 minute	1 minute			
Shavasana			2 minutes		1		
As in previous week	10 – 12 Weeks	86 min	66 minutes		3	Monday Tuesday Wednesday Thursday Friday & Saturday	5 – 10 Minutes
Paschimotasana			1 minute	30 seconds			
Ushatrasana			1 minute	30 seconds			
Meditation – Omkar.			1 minutes	30 seconds			
Pranayama – ujjayi.			1 minute	30 seconds			
Shavasana			2 minutes		1		

Results

        The data collected prior to and after the yoga practice period on total cholesterol, triglcerides and uric acid on yoga practice group and control group were analysed and presented in the following Table – I.

Table II. Analysis of Covariance and 'F' ratio for Total Cholesterol, Triglycerides and Uric acid for Yoga Practice Group and Control Group

Variable Name	Group Name	Yoga Practice Group	Control Group	'F' Ratio
Total Cholesterol (mg/dl)	**Pre-test Mean ± S.D**	220.66 ± 13.861	221.09 ± 12.88	0.76
	Post-test Mean ± S.D.	217.57 ± 13.77	221.79 ± 13.96	4.893*
	Adj. Post-test Mean	215.739	2221.44	14.335*
Triglycerides (mg/dl)	**Pre-test Mean ± S.D**	139.68 ± 13.671	139.73 ± 11.293	0.978
	Post-test Mean ± S.D.	137.31 ± 12.469	139.88 ± 10.664	9.615*
	Adj. Post-test Mean	136.831	140.118	15.866 *
Uric Acid (in mg/dl)	**Pre-test Mean ± S.D**	6.379 ± 0.661	6.351 ± 0.863	0.771
	Post-test Mean ± S.D.	5.559 ± 0.931	6.335 ± 0.6031	6.801*
	Adj. Post-test Mean	5.251	6.416	11.621*

* Significant at .05 level of confidence. (The table values required for significance at .05 level of confidence with df 1 and 28 and 1 and 27 were 4.20 and 4.21 respectively).

        The analysis of covariance (ANCOVA) was used to find out the significant difference if any, among the experimental group and control group on selected criterion variables separately. In all the cases, .05 level of confidence was fixed to test the significance, which was considered as an appropriate. After applying the analysis of covariance, the result of this study showed that there was a significant decrease in total cholesterol and triglycerides for the yoga practice group and also there was a significant decrease in the uric acid after the experimental period. Further, comparing the adjusted post-test means of the criterion variables, such as the total cholesterol ('F' ratio – 14.335, $p > 0.05$) and triglycerides ('F' ratio – 15.886, $p > 0.05$) the yoga practice group was significantly decreased and in uric acid level, there was a significant decrease ('F' ratio – 11.621, $p > 0.05$) after the yoga practices. The result of the study also shows that there was a significant difference in total cholesterol, triglycerides and uric acid level between the yoga practice group and control group.

Conclusions

1. It was concluded the results of the study that there was a significant decrease in total cholesterol and triglycerides (Prasad *et al 2006* [9] and Sayyed *et al 2010* [10]) and also in uric acid level (Diuwaldo J. Dugarte *2008* [11] *and* J.R. Poortmanx and J.

Vanderstraenten [12] among diabetes patients after the twelve weeks of yoga practice.

2. It was also concluded from the results of the present study that there was a significant difference was occurred between the yoga practices group and control group on total cholesterol, triglycerides and in the uric acid level also.

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