EFFECT OF YOGA PRACTICES ON TOTAL CHOLESTEROL TRIGLYCERIDESAND URIC ACID AMONG WOMEN 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 women diabetic patients. For this purpose, thirty women diabetic patients (type – I) around Annamalainagar, Chidambaram, Cuddalore District, Tamilnadu 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- and post-test means and any significant difference that was exists between the yoga practice group and control group on selected criterion variables. The result of the study shows the yoga practice has decreased the total cholesterol, triglycerides and uric acid significantly ($P > .05$). It was concluded from the results of the study that yoga practice has bring positive changes in total cholesterol, triglycerides and uric acid and it was due to the performance of various asana postures.

Keywords: Yoga practice, Diabetic patients, Total Cholesterol, Triglycerides, Uric acid, ANCOVA

Introduction

Yoga is one of the most ancient cultural heritages of India. Yoga is a spectacularly multifaceted phenomenon, and as such it is very difficult to define because there are exceptions to every conceivable rule [1]. Yoga is a complete science of life that originated in India many thousands of years ago [2]

Yoga was evolved ceturites ago, it is an ancient and perfect art, science and philosophy which takes one towards the innermost trust [3].

Diabetes mellitus is classified into four broad categories: type 1, type 2, gestational diabetes and "other specific types". The "other specific types" are a collection of a few dozen individual causes [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. Uric acid is a diprotic acid with pKa_1=5.4 and pKa_2=10.3 [5]. The uric acid levels are controlled and lowered by insulin, a hormone, which is a produced by the pancreas.

Some of the yogaasanas which cures diabetes are Ardha Chandrasana, Bhujangasana, Salabhasana, Poorna Salabhasana, Dhanurasana and Ustrasana. The postures of asanas causes the internal viscera to stretch and stimulates the pancreas, glands and organs.

Cholesterol is a waxy compound, is a kind of sterol. It is found in plants and animals. Our body manufacturing the cholesterol which is needed by the liver and with smaller amounts produced in the small intestine and in individual cells of our body. Cholesterol is also found in the blood circulation of humans.

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 [6]. After yogic practices, the total cholesterol, triglycerides, lipoproteins were significantly lowered [7].

Methods

Selection of Subjects

Thirty women diabetic patients (type – I) living around Annamalainagar, Chidambaram, Cuddalore District, Tamilnadu were selected as subjects and their age ranged between 35 and 40 years. These subjects were divided into two equal groups, such as, Group - I (n = 15) underwent yoga practices and Group – II (n = 15) acted as control, which did not undergo any special exercises apart from their day-to-day activities.

Criterion Variables Selected

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.

Training

Yoga practice period was conducted six days (Monday to Saturday) per week for twelve weeks Table 1. Self regulation in diet and medicine which was prescribed by the physician was followed and a regular interrogation about the subjects' diet and medicine were also followed.

Table 1
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			Monday Tuesday Wednesday	5 – 10 Minute
Bhujangasana			1 minute	10 seconds			

Shalabasana			1 minute	10 seconds		Thursday Friday & Saturday	
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			40 minutes		3	Monday Tuesday Wednesday Thursday Friday & Saturday	
Halasana	7– 9 Weeks	66 min	1 minute	30 seconds			5 – 10 Minutes
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
Paschimottasana			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 2.

Table 2
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	193.20 ± 12.885	192.07 ± 12.43	0.06
	Post-test Mean ± S.D.	190.13 ± 10.514	191.93 ± 9.30	0.247
	Adj.Post-test Mean	189.708	192.359	6.179*
Triglycerides (mg/dl)	Pre-test Mean ± S.D	134.47 ± 15.226	134.67 ± 15.15	0.001
	Post-test Mean ± S.D.	126.33 ± 1.05	134.27 ± 17.69	1.844
	Adj.Post-test Mean	14.105	134.27	6.832*
Uric Acid (in mg/dl)	Pre-test Mean ± S.D	5.7013 ± 0.247	5.808 ± 0.2421	1.429
	Post-test Mean ± S.D.	5.6253 ± 0.256	5.824 ± 0.2369	4.864*
	Adj.Post-test Mean	5.674	5.775	6.205*

* Significant at .05 level of confidence.

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 shows 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 = 6.179, p < 0.05) and triglycerides (F = 6.832, p < 0.05) the yoga practice group was significantly

decreased and in uric acid level, there was a significant decrease ($F = 6.205$, $p < 0.05$) 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.

Discussion

In the present study, the yogic practice group reduced the total cholesterol, triglycerides and uric acid significantly. The present findings of the result is in line with the findings of Prasad *et al* (2006) [8] and Sayyed *et al* (2010) [9] and also in uric acid level which was also supported by the findings of Dugarte (2008) [10] and Poortmanx and Vanderstraenten (1994) [11]. It was proved that there was a stretch and stimulation of various internal organs like heart, lungs, liver, pancreas etc., which improves the functions of these organs. Moreover, there are other benefits of yogasana, which they help to burn off the fat from muscles and it results to reduce the level of lipid profiles. In future, instead of women diabetic patients, male diabetic patients those who were working in various offices may be selected as subjects, because, these people are under severe environmental and work stress.

Conclusions

Diabetic patients who were working in offices may face severe environmental and work stress. Thus, yoga practice for twelve weeks significantly improve their fitness level and also helps to reduce their risk factors by minimizing the total cholesterol, triglycerides and uric acid levels.

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