



EFFECT OF YOGA PRACTICES ON TRIGLYCERIDES HIGH DENSITY LIPOPROTEINS AND URIC ACID AMONG FEMALE DIABETIC PATIENTS

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Abstract

The purpose of the present study was to find out the effect of yoga practices on triglycerides, high density lipoproteins and uric acid among female diabetic patients. For this purpose, thirty female diabetic patients 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 triglycerides, high density lipoproteins and uric acid. Triglycerides, high density lipoproteins 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 Mannheim 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 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 triglycerides, high density lipoproteins 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 triglycerides, high density lipoproteins and uric acid level.

Key words: Yoga practice, diabetic patients, triglycerides, high density lipoproteins, 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]

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]

METHODS

Thirty female diabetic patients living around Annamalainagar, Chidambaram, Cuddalore District, Tamilnadu 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. triglycerides, 2. high density lipoproteins and 3. Uric acid. The triglycerides, high density lipoproteins 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 triglycerides, high density lipoproteins and uric acid. 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.

RESULT AND DISCUSSION

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

Table – I Analysis of Covariance and 'F' ratio for Triglycerides, High density lipoproteins and Uric acid for Yoga Practice Group and Control Group

Variable Name	Group Name	Yoga Practice Group	Control Group	'F' Ratio
Triglycerides (mg/dl)	Pre-test Mean \pm S.D	134.47 \pm 15.226	134.67 \pm 15.159	0.001
	Post-test Mean \pm S.D.	130.33 \pm 14.105	134.27 \pm 17.694	15.844*
	Adj. Post-test Mean	131.89	133.93	25.861*
High density lipoproteins (mg/dl)	Pre-test Mean \pm S.D	48.45 \pm 3.861	46.22 \pm 4.126	1.163
	Post-test Mean \pm S.D.	50.53 \pm 2.331	45.39 \pm 3.968	5.861*
	Adj. Post-test Mean	50.116	46.083	25.263*
Uric Acid (in mg/dl)	Pre-test Mean \pm S.D	6.853 \pm 0.841	6.796 \pm 0.5434	0.899
	Post-test Mean \pm S.D.	5.953 \pm 0.256	6.859 \pm 0.5153	4.773*
	Adj. Post-test Mean	5.799	6.887	10.231*

* 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).

RESULT

After applying the analysis of covariance, the result of this study showed that there was a significant decrease in triglycerides and uric acid for the yoga practice group and also there was a significant increase in the high density lipoproteins level after the experimental period. Further, comparing the adjusted post-test means of the criterion variables, such as the triglycerides (F- ratio – 25.961 $p > 0.05$) and high density lipoproteins (F-ratio – 25.263 $p > 0.05$) the yoga practice group was significantly increased and in uric acid level, there was a significant decrease (F – ratio – 10.231 $p > 0.05$) after the yoga practices. The result of

the study also shows that there was a significant difference in triglycerides, uric acid and high density lipoproteins 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 triglycerides and an increase in high density lipoproteins (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 triglycerides, high density lipoproteins and in the uric acid level also.

Reference:

- [1] Retrieved from <http://hinduism.about.com/bl-yoga-define.htm> on 24-04-2012.
- [2] Swami Vishnu Devananda (2000), *The Sivananda Companion to Yoga*, New York: Fireside Book, Simon and Schuster.
- [3] Retrieved from <http://sivanandaonline.org/html> on 20-04-2012.
- [4] Retrieved from <http://www.medterms.com/script/main/art.asp?articlekey=2974> on 22-04-2012.
- [5] Retrieved from <http://www.medterms.com/script/main/art.asp?articlekey=2974> on 22-04-2012.
- [6] Retrieved from <http://yoga2ayurvedha4healing.googlepages.com> on 24-02-2012
- [7] Retrieved from http://www.health.am/topics/more/cholesterol_and_the_heart/ on 12-04-2012.
- [8] A. Dehgan, M. van Hoek, E.J. Sijbrands, A. Hofman and J.C. Witteman, "High Serum Uric Acid as a Novel Risk Factor for Type-2 Diabetes", *Diabetes Care*, 31:2, (February 2008), 361 – 2.
- [9] K.V.V. Prasad, M. Sunita, P.S. Raju, M.V. Reddy, B.K. Sahay and K.J.Y. Murthy, "Impact of Pranayama and Yoga on Lipid Profile in Normal Healthy Volunteers", *Journal of Exercise Physiology*, 9:1, (2006), 1 – 6.
- [10] Sayyed, Anjum, Jyotsna Patil, Vilas Chavan, Shrirang Patil, Sujeet Charugulla, Ajit Sontakke and Neelima Kantak, "Study of Lipid Profile and Pulmonary Functions in Subjects Participated in Sudarshan Kriya Yoga", *Al Ameen J Med Sci*, 3:1, (2010), 42 – 49.
- [11] Diuwaldo J. Dugarte, "One Hatha Yoga Session Inhibits Oxidative Stress in Human Saliva", *Medicine & Science in Sports & Exercise*, 40:5, (May 2008), 245 – 246.
- [12] J.R. Poortmanx and J. Vanderstraenten, "Kidney Function During Exercise in Healthy and Diseased Humans. An Update", *Sports Medicine*, 18:6, (December 1994), 419 – 37.