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Effect of yogic practices on selected lipoprotein profiles

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Abstract
The purpose of the study was to find out the effect of pranayama and yogasana on lipoprotein profile in diabetic patients. The objective of the study is to determine the high density and low-density lipoprotein of diabetic patients and the effect of yoga asana on these variables. To achieve the purpose of the study, twelve middle aged men diabetic patients were selected from Tuticorin district. The age of the subjects was ranged from 35-45 years. The subjects performed pranayama and selected yoga asana in the morning time for 30 – 40 minutes every day for 40 days which was given by the yoga expert. High density lipoprotein and low-density lipoprotein were selected as dependent variables. The selected variables were estimated before and after the yogic program of 40 days with the help of qualified Lab Technician. The single group pre and post test random group design was used as experimental design. The dependent "t" test was applied to determine the difference between the means of diabetic patients. The level of confidence was fixed at .05 levels. The result of the study shows that there was a significant improvement in both low- and high-density lipoprotein content between pre and post test. Hence it is recommended that, similar study may be attempted by changing the hematological variables, may be attempted by the state or national level young aged men and women, and may be conducted for the cardiac patients.

Keywords: High density lipo protein, low density lipo protein, diabetics

Introduction

Yoga, a Vedic science has been applied in the field of therapeutics in modern times. Yoga has given patients the hope to reduce medication besides slowing the progression of the disease. Yoga employs stable postures or asanas and breath control or pranayama. It has already proven its mettle in the improvement of oxidative stress as well as in improving the glycaemic status of diabetics through neuroendocrinal mechanism. The 40 days study was undertaken to see if yoga-asanas and pranayamas have any influence on the lipid profile and serum insulin level of patients of uncomplicated type 2 diabetes.

Yoga has been applied in the field of therapeutics in modern times. Studies have been conducted to understand changes occurring during yogic exercises (asana and pranayama). Significant physical, physiological, psychological and endocrinal changes have been reported by various yogic regimes over a period of time (Patel, 1975) [5].

A thing that has a total deficiency of insulin and needs insulin injections is diagnosed as having type I diabetes (Insulin Dependent Diabetes Mellitus or IDDM). Type 2 diabetic (Non-Insulin Dependent Diabetes Mellitus or NIDDM) is usually an overweight individual whose insulin secretion is normal. The insulin cannot however act at the site of tissues and is managed on a weight loss regime of exercise, diet and oral hypoglycemic medications. In addition to the increased levels of glucose, metabolic disorders of plasma lipid occur in NIDDM patients (Rugmini & Sinha, 1975) [6].

In this context, exercise in diabetic patients can improve insulin sensitivity, glycogenic control and lipid profile. However, the levels of physical training recommended for patients is 50-70% of maximum aerobic capacity lasting 30 minutes three to five times a week is not feasible in many patients because of age, obesity, cardiovascular disease and other problems.

Long term motivation and compliance are also poor in such cases (Udupa *et al*, 1975) [10].

Methodology

The purpose of the study was to find out the effect of pranayama and yogasana on lipoprotein profile among diabetic patients. The objective of the study is to determine the high- and low-density lipoprotein profile of diabetic patients and the effect of yoga asana on these variables. To achieve the purpose of the study, twelve middle aged men diabetic patients were selected from Tuticorin district. The age of the subjects was ranged from 35-45 years. The subjects performed pranayama and selected yoga asana in the morning time for 30 – 40 minutes every day for 40 days which was given by the yoga expert. High- and low-density lipoproteins were selected as dependent variables. The selected variables were estimated before and after the yogic program of 40 days with the help of qualified Lab Technician. The single group pre and post test random group design was used as experimental design. The dependent "t" test was applied to determine the difference between the means of diabetic patients. The level of confidence was fixed at .05 levels.

Table 1: Name and Duration of Various Yogaasanas Included in Yogic Exercises

Name	Duration
Surya Namaskar	3-7 turns of each, the pose being maintained for one 10 seconds
Tadasana	¼ min to one min, adding ¼ min per week
Trikonasana	¼ min to one min for each side, adding ¼ min per week
Sukhasana	¼ min to one min, adding ¼ min per week
Padmasana	¼ min to one min, adding ¼ min per week
Bhastrika Pranayama	5 – 15 min per day
Pashimottanasana	¼ minute to one minute for each side, adding ¼ minute per week
Vajrasana	¼ min to one min, adding ¼ min per week
Naukasana	3-7 turns of each, the pose being maintained for one 10 seconds
Dhanurasana	3-7 turns of each, the pose being maintained for one 10 seconds
Shavasana	2-10 min, adding 2 min per week

Analysis and Interpretations of Data

The data on selected variables are analysed and the obtained results are presented in Table II.

Mean values of pre and post test among men diabetic patients on selected variables are graphically represented in figure I.

Table 2: Summary of Mean and Dependent 'T' Test on Low- and High-Density Lipoprotein between Pre and Post Test of Diabetic Patients

Sl. No	Dependent Variables	Test	Number	Mean	Standard Deviation	't' value
1	High Density Lipoprotein	Pre-Test	12	43.25	4.47	3.46*
		Post Test	12	98.45	15.10	
2	Low Density Lipoprotein	Pre-Test	12	201.13	34.57	11.17*
		Post Test	12	150.30	30.49	

*Significant at .05 level. (Table value required for significance at .05 levels for 't' with 11 is 2.20).

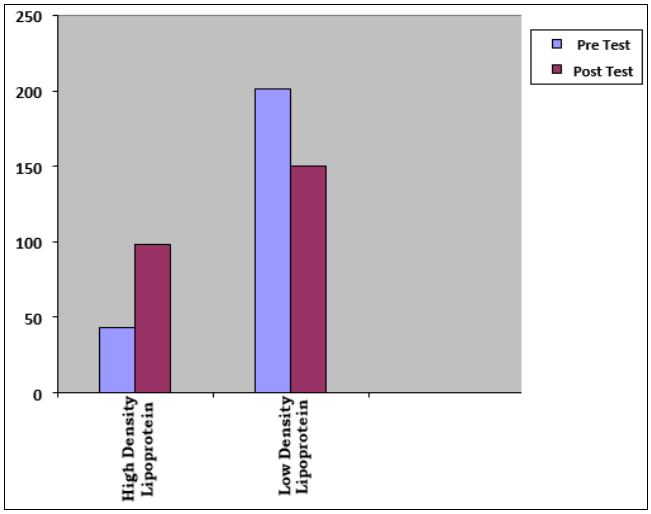

Fig 1: Mean Values of Pre and Post Test among Men Diabetic Patients on Low- and High-Density Lipoprotein

Results and Discussion on Findings

The systematic and scientific exercise will produce desirable effect if administered for a specific period. Here the systematically designed yogasana for a period of 40 days develops the selected dependent variables.

Yoga has thus aroused a hope for the diabetic patients to have complication free life with relatively less medication. The limited recorded evidences show the positive impact of yogic exercises on studying lipid profile levels. The effect on other importance aspects of diabetes mellitus like blood glucose is virtually non-existent. In this paper it is endeavored to scientifically study the role and the effect of yogic exercises on type 2 diabetes mellitus patients by measuring the parameters, serum lipid profile using modern techniques.

The present study also shows a significant improvement in high density lipoprotein (HDL) and low-density lipoprotein (LDL) after forty days of yoga-asana. Due to the yoga asana there was a significant increment in high density lipoprotein and significant reduction in low density lipoprotein because, various yoga-asana 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. Sahay *et al* reported a decrease in the drug requirements by some of the patients in his study. Singh S *et al* also observed the similar findings in their study. Jain *et al* found that there was significant reduction in hyperglycemia with decrease in oral hypoglycemic drugs for maintenance of normoglycemia in response to yoga therapy. These findings suggest improvement in the insulin sensitivity following yogic exercises.

Hanefeld *et al* (1991) [2] examined significant changes have been reported by various yogic regimes over a period of time. The intensity and duration of exercise required to decrease LDL and increase HDL cholesterol are probably beyond those that can be accomplished by most diabetic patients. Rugmini & Sinha, (1975) [6] also justify the similar concept in their study.

Hence it is concluded from the result of the study and also inferred from the above literature cited the lipid profile should be considered properly when the person getting the middle age to lead healthy life.

Conclusions

The following conclusions were drawn from the findings of the present study. They were,

1. There was a significant increment on high density lipoprotein (HDL) among men diabetics due to the effect of yogasana.
2. There was a significant reduction on low density lipoprotein (LDL) among men diabetics due to the effect of yogasana.

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