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Research Paper

Effect of Yogic Practices on Selected Bio-Chemical and Psychological Variable Among Male Hypercholesterolemia Patients

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ABSTRACT:
Asana is a very ancient practice of yoga. It plays an important role in every field of yoga sadana. "Asanas" in Sanskrit means posture. To achieve the purpose of the study forty male hypercholesterolemia patients were randomly selected as subjects from Tamil university department of siddha medicine OPD in the Thanjavur district and their age ranged between 30 and 40 years. They were randomly divided into 2 groups of twenty each, in which Group I acted as control did not undergo any training, and Group II acted as an experimental underwent selected Yogic practices for a period of eight weeks. In the present study the following factors were selected as variables biochemical variables[1] lipid profile and psychological variables[2] stress and anxiety. Selected yogic practices reduced a significant decrease in the level of LDL, VLDL, TGL and total cholesterol values and also significantly reduced anxiety and stress.
Keywords*: Yogic practices, LDL, VLDL, TGL, Total cholesterol, Stress, Anxiety.*

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I. INTRODUCTION

Yoga is a science of right living and such is intended to be incorporated in daily life. It works in all aspect of human being Physical, mental, emotional and spiritual. Swami Sivananda explained yoga as an "integration and harmony between thought word and deeded, or integration between head, heart and hand". Today, as we prepare to enter the 21'st century a spiritual heritage, is being claimed of which yoga is very much important part. Physical and mental therapy is one of yoga's most important achievements, what makes it so powerful and effective is the fact that it works on the holistic principles of harmony and unification[3]. Yoga has succeeded as an alternative form of therapy in diseases such as asthma, Diabetes, Hypertension, Arthritis, Digestive disorders and other ailments of a chronic constitutional nature where modern science has not possessing[4]. According to medical scientist, yoga therapy is successful because of the balance created in the nervous and endocrine systems which directly influences all other systems and organs of the body. Yoga not only a simply, being physical exercises, rather it is an aid to establishing a new way of life, which embrace both inner and outer realities[5]. For today's life style yogic practices need for everyone.

A yogic practice also helps in reducing the levels of serum cholesterol level. Doing yogic practice properly and regularly will reduce the level of LDL, and TGL. In yogic practices especially asanas can be helpful in reducing lipid profile. These asanas can be divided into two main groups. Meditative postures, and Cultural postures. Posture can be defined as it is the position in which we hold our body when we stand sit and erect. Patanjali the well-known author of the yoga sutra, has defined as "Sthiram sukham asanam" that is stable

and comfortable posture. He has also mentioned that it is characterized by absence of unnecessary effort and awareness of stability[6].

Hypercholesterolemia

Hypercholesterolemia is the presence of high amount of Cholesterol in the blood. It is not a disease but metabolic derangement that can be secondary to many diseases and can contribute too many forms of disease, most notably cardiovascular disease[7]. It is closely related to the terms "Hyperlipidemia" (elevated levels of lipids) and "Hyperlipoproteinemia" (elevated levels of lipoproteins)

Metabolism of cholesterol

Lipids or fats are greasy material widely nature. They are generally insoluble in water, their transportation in aqueous media, in blood plasma becomes a problem. This is made possible by formation of water miscible lipoproteins, that are combination of lipid with water miscible proteins[8]. Digestion of lipids mainly takes place in small intestine. Absorption of lipid takes place in the brush border of the intestinal lumen. There are five main classes of lipoproteins are namely chylomicron(CM), Very low density lipoprotein(VLDL), intermediate density lipoprotein(IDL), Low density lipoprotein(LDL), and High density lipoprotein(HDL) [9].

Signs and Symptoms

Elevated cholesterol in the blood is due to abnormalities in the levels of lipoprotein, the particles that carry cholesterol in the bloodstream. Elevated cholesterol does not lead to specific symptoms unless it has been longstanding. The specific physical findings are Xanthoma(deposition of cholesterol in patches on the skin or in tendons), Xanthelasma palpebrum(yellowish patches around the eyelids), Arcus senilis(white discoloration of the peripheral cornea), and also longstanding elevated hypercholesterolemia leads to accelerated atherosclerosis will developedvarious cardiovascular diseases, stroke and peripheral vascular diseases

Causes

There are number of secondary causes for high cholesterol. They are Diabetes mellitus, kidney diseases, hypothyroidism, Cushing syndrome, anorexia nervous, sleep deprivation, family history, body weight, physical activity, diet etc.

Risk factors

Some factors increase a person's risk of having high cholesterol. The most important risk factors for high cholesterol are being overweight, eating a diet high in saturated fat and trans fatty acids, not getting enough exercise, family history of heart disease, high blood pressure, smoking and diabetes mellitus

Diagnosis

Most people don't have any symptoms of high cholesterol. A blood test is the only way to check levels of cholesterol in your body, which is lipid profile. This test must be performed after 9- 12hrs fasting. Although cholesterol levels above 200 are generally considered high.

Total cholesterol levels;

Desirable; below200mg/dl Borderline high; 200-239mg/dl High; above240mg/dl

LDL cholesterol levels;

Optimal for people at risk of heart diseases;
Below 100mg/dl
Optimal; 100-129mg/dl
Borderline high; 130-159mg/dl High; 160-189mg/dl

HDL cholesterol levels;

Poor; Below40mg/dl
Acceptable; 40-59mg/dl
Optimal; 60mg/dl

Triglyceride levels;

Optimal; below 150mg/dl
Border line high; 150-199mg/dl
High; above 200mg/dl

II. Methods And Materials

To achieve the purpose of the study forty**(40)** hypercholesterolemic male patients were randomly selected as subjects from Tamil university department of Siddha medicine OPD in the Thanjavur district and their age ranged between 30 and 40 years. They were randomly divided into two groups of twenty each. In which Group I act as control group. It will not receive any practices. Group-II experimental group. During the training period the experimental group underwent 8 weeks training of selected yogic practices in the morning and evening session for about 30-40 minutes daily. The subjects involved in the training programme were

questioned about their state throughout the training period. None of them reported any injures. Some of them got muscle soreness in the earlier weeks but it was subsides later.

Selection of variables

The available scientific literature pertaining to the effects on yogic training on hypercholesterolemia from books, journals, periodicals, magazines and research papers were reviewed for analysis. Taking into consideration to the study feasibility criteria the following factors were selected as variables.

Dependent variables

Biochemical Variables[10]

Lipid profile – Test: Tc-auto analyzer

Psychological Variables

Stress & Anxiety – Tested by Questionnaire

Independent variables

Asanas[11]

Supine: Uttana padasana, Pavanamukthasana.
Prone: Ardha salabasana, Bujangasana.
Standing: Tadasana, Trikonasa

Statistical procedure

Experimental design used in the present study was similar to random group design which involves two groups namely one control group and another experimental group were selected randomly from the same patients. The experimental group underwent yogic practice for 8 weeks whereas control group did not undergo any training. The pre-test and post- test data of control and experimental group were analyzed by using Analysis of Co-variance (ANCOVA). The level of significance was fixed at 0.05 level to significance[12].

TABLE -1

Table I shows that the adjusted post-test mean value of LDL on experimental and control group are 176.41 and 181.74 respectively. The obtained F ratio of 73.72 for adjusted post-test mean is morethan the table value of 4.10 for df 1 and 37 required for significant at 0.05 level of confidence.

The result of the study indicates that there existed significant difference among the adjusted post-test mean of experimental group on lowering the LDL level. Hence it is concluded that effect of yogasana on experimental group lowers the LDL level of cholesterol.

TABLE-II

Table II shows that the adjusted post test mean value of VLDL on experimental and control group are 44.08 and 48.72 respectively. The obtained F ratio of 96.47 for adjusted post test mean is more than the table value of 4.10 for df 1 and 37 required for significant at 0.05 level of confidence.

The result of the study indicates that there existed significant difference among the adjusted post test mean of experimental group on lowering the VLDL level. Hence it is concluded that effect of yogasana on experimental group lowers the VLDL level of cholesterol.

TABLE-III

Table III shows that the adjusted post test mean value of HDL on experimental and control group are 45.26 and 42.44 respectively. The obtained F ratio of 22.46 for adjusted post test mean is more than the table value of 4.10 for df 1 and 37 required for significant at 0.05 level of confidence.

The result of the study indicates that there existed significant difference among the adjusted post test mean of experimental group on lowering the HDL level. Hence it is concluded that effect of yogasana on experimental group lowers the HDL level of cholesterol.

TABLE -IV

Table IV shows that the adjusted post test mean value of TGL on experimental and control group are 166.44 and 171.46 respectively. The obtained F ratio of 35.55 for adjusted post test mean is more than the table value of 4.10 for df 1 and 37 required for significant at 0.05 level of confidence,

The result of the study indicates that there existed significant difference among the adjusted post test mean of experimental group on lowering the TGL level. Hence it is concluded that effect of yogasana on experimental group lowers the TGL level of cholesterol.

TABLE- V

Table V shows that the adjusted post test mean value of Total cholesterol on experimental and control group are 219.97 and 224.93 respectively. The obtained F ratio of 78.04 for adjusted post test mean is more than the table value of 4.10 for df 1 and 37 required for significant at 0.05 level ofconfidence.

The result of the study indicates that there existed significant difference among the adjusted post test mean of experimental group on lowering the Total cholesterol level. Hence it is concluded that of yogasana on experimental group lowers the Total cholesterol level.

TABLE -VI

Table VI shows that the adjusted post test mean value of Anxiety on experimental and control group are 7.07 and 12.13 respectively. The obtained F ratio of 11.8 for adjusted post test mean is more than the table value of 4.10 for df 1 and 37 required for significant at 0.05 level of confidence.

The result of the study indicates that there existed significant difference among the adjusted post test mean of experimental group on lowering the Anxiety level. Hence it is concluded that effect of yogasana on experimental group lowers the Anxiety level.

TABLE -VII

Table VII shows that the adjusted post test mean value of Stress on experimental and control group are 9.47 and 13.28 respectively. The obtained F ratio of 11.54 for adjusted post test mean is more than the table value of 4.10 for df 1 and 37 required for significant at 0.05 level of confidence. The result of the study indicates that there existed significant difference among the adjusted post test mean of experimental group on lowering the Stress level. Hence it is concluded that the effect of yogasana on experimental group lowers the Stress level.

III. Discussion on findings

The current study examined the effect of Yogic practices on selected biochemical and physiological variables among male hypercholesterolemia patients. The result of the study showed that there existed significant difference between yogic trained group and control group on biochemical and psychological variables. It is understood from the result of the study that yogic practicing over a period of eight weeks had significantly shows improvement in selected biochemical and psychological variables when compared to the control group. Above represented tables from I to VII clearly shows the difference between the experimental and control group. The results from the table I, II, IV and V clearly indicated that the LDL, VLDL, TGL and Total cholesterol level of lipid profile were very much decreased by practicing selected Yogasanas.

IV. Conclusions

Based on the results of the study the following conclusions were drawn:

- The result of the study medicates that there existed significant difference among the adjusted post test mean of experimental group lowering the LDL level. Hence it is concluded that asanas helps to reduces to LDL level of cholesterol of the hypercholesterolemia patients.
- The result of the study shows that the significant difference among the adjusted post test mean of the yoga practice group. So it is concluded that yoga asana helps to reduce the VLDL level of cholesterol.
- The experimental group showed after 8 weeks of yogic training the TGL(triglycerides) values significantly decreased for the hypercholesterolemia patients,.
- Total cholesterol values significantly decreased after 8 weeks of the yogic training for the hypercholesterolemia patients.

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TABLE -1
ANALYSIS OF COVARIANCE FOR THE DATA ON LDL OF EXPERIMENTAL GROUPAND CONTROL GROUP

Adjusted Post-test mean		Sources Variance	Sum ofSquares	df	Mean Square	'F' Ratio
Yogic practicegroup	Control group					
		Between	214.08	1	214.089	
176.41	181.74					73.72
		Within	107.48	37	2.9	

*Significant at 0.05 level of confidence.

(The table value required for significance at 0.05 level with df 1 and 37 is 4.10)

TABLE -II
ANALYSIS OF COVARIANCE FOR THE DATA ON VLDL OF EXPERIMENTALGROUP AND CONTROL GROUP

Adjusted Post-test mean		Sources Of Variance	Sum ofSquares	Df	Mean Square	'F' Ratio
Yogic practice group	Control group					
		Between	192.6	1	192.6	
44.08	48.72					96.47
		Within	73.87	37	2	

*Significant at 0.05 level of confidence
(The table value required for significance at 0.05 level with df 1 and 37 is 4.10)

TABLE –III
ANALYSIS OF COVARIANCE FOR THE DATA ON HDL OF EXPERIMENTALGROUP AND CONTROL GROUP

Adjusted Post-test mean		Sources Of Variance	Sum ofSquares	df	Mean Square	'F' Ratio
Yogic practicegroup	Controlgroup					
		Between	66.19	1	66.19	
45.26	42.44					22.46
		Within	109.05	37	2.95	

Significance at 0.05 Level of confidence
(The table value required for significance at 0.05 level with df 1 and 37 is 4.10)

TABLE –IV
ANALYSIS OF COVARIANCE FOR THE DATA ON TRIGLYCERIDES OFEXPERIMENTAL GROUP AND CONTROL GROUP

Adjusted Post-test mean		Sources Of Variance	Sum ofSquares	df	Mean Square	'F' Ratio
Yogic practice group	Control group					
		Between	212.73	1	212.73	
166.44	171.46					35.55
		Within	221.44	37	5.98	

Significant at 0.05 level of confidence

(The table value required for significance at 0.05 level with df 1 and 37 is 4.10

TABLE –V
ANALYSIS OF COVARIANCE FOR THE DATA ON TOTAL CHOLESTEROL OFEXPERIMENTAL GROUP AND CONTROL GROUP

Adjusted Post-test mean		Sources Of Variance	Sum ofSquares	Df	Mean Square	'F' Ratio
Yogic practice group	Control group					
		Between	241.44	1	241.44	
219.97	224.93					78.04
		Within	114.47	37	3.09	

(The table value required for significance at 0.05 level with df 1 and 37 is 4.10)

TABLE –VI
ANALYSIS OF COVARIANCE FOR THE DATA ON ANXIETY OF EXPERIMENTALGROUP AND CONTROL GROUP

Adjusted Post-test mean		Sources Of Variance	Sum ofSquares	Df	Mean Square	'F' Ratio
Yogic practice group	Control group					
		Between	241.44	1	241.44	
219.97	224.93					78.04
		Within	114.47	37	3.09	

*Significant at 0.05 level of confidence (The table value required for significance at 0.05 level with df 1 and 37 is 4.10)

TABLE –VII
ANALYSIS OF COVARIANCE FOR THE DATA ON STRESS OF EXPERIMENTALGROUP AND CONTROL GROUP

Adjusted Post-test mean		Sources Of Variance	Sum ofSquares	Df	Mean Square	'F' Ratio
Yogic practicegroup	Control group					
		Between	72.02	1	73.02	
9.47	13.28					11.54
		Within	230.99	37	6.24	

Significant at 0.05 level of confidence (The table value required for significance at 0.05 level with df and 37 is 4.10)