

# EFFECT OF YOGIC PRACTICES ON LOW DENSITY LIPOPROTEIN (LDL) AND HIGH DENSITY LIPOPROTEIN (HDL) AMONG HYPERTENSIVE MIDDLE AGED WOMEN

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**ABSTRACT:** *To access the influence of the yogic behaviours of Low density lipoprotein (LDL) and High Density Lipoprotein random group laboratory study was accessed which is the aim. Using the Chennai random sampling group method 30 middle aged hypersensitive women were randomly selected in the age group of 35-45 years which were further divided into two groups of 15 participants, I and II. In hypertensive middle aged women than in control group low density lipoprotein (LDL) and high density lipoprotein (HDL) have been predicted for important differences in selected biochemical variables. Before the launch of the training programme a preliminary test for two types of low density lipoprotein (LDL) and high density lipoprotein (HDL) was performed. Yogic practice for 60 minutes, 6 days a week for a total period of eight weeks were given to Group I subjects. For group II (Control Group) there was an active resting place. On the same selected dependent variables after the experimental period the two groups were retested again. Between the experimental group and the control group to determine the important discrepancies the study of (ANCOVA) was used. The significance test was set at a degree of confidence of 0.05. Due to the Yogic behaviours among hypertensive middle aged people such as Low Density Lipoprotein (LDL) and High Density Lipoprotein (HDL) the experimental group showed important differences on selected biochemical variables which was revealed by the study.*

**Key words:** *Yogic practices, Middle aged Women, Hypertension, Low Density Lipoprotein, High Density Lipoprotein.*

## INTRODUCTION

In Middle age group, body metabolism starts to slow down and they become more fragile towards food intake, stressful atmosphere and any kind of unfavorable circumstances. The body slowly starts to witness chronic health issues and ailments especially Diabetes Mellitus, Hyper tension, Cardio Vascular Disorders, Cholesterol and Cancer. Middle aged women are more commonly diagnosed with Hypertension.

Hypertension is the condition where the pressure of blood against the artery wall are above the recommended level of 140/90(Systolic and Diastolic) and is considered critical if the pressure is above 180/120. With the increasing age, High Density Lipoprotein slowly starts to degrade with increased systolic blood pressure resulting in the thickening of artery walls

which may lead to serious Cardiovascular Disorders and need to be treated as early as possible.

### **Indications**

Extreme headache, exhaustion or confusion, difficulties with vision, pain in the stomach, difficulty breathing, rapid pulse, blood in the urine, beating in the chest, throat or ears

### **Reasons**

Cigarettes, being overweight, lack of physical exercise, too much salt in the diet, too much alcohol intake, depression, older age, biology (more than 1 or 2 drinks a day),

### **Hypertension Implications**

Aneurysm, heart attack, blood arteries in your liver weakened and blocked, blood vessels in your eyes thickened, shortened or torn, metabolic syndrome, memory or comprehension issues, epilepsy, heart attack or stroke

### **Yogic Practices for Hypertension**

Yoga Asana and Surya Namaskar increases body metabolism and aids in weight loss. It also regulates the heartbeat, soothes the nervous system, and improves the elasticity of artery walls. Pranayama regulates the breathing pattern and also reduces anxiousness, agitation and stress. Om meditation calms down the activities of mind alleviating the psychological disturbances. Hence, Yogic practices are an integrated method of practise to treat hypertension.

### **Objectives of the Study**

Due to Yogic practices among middle aged hypertensive women the goal of this research was decided that if there exists a difference which has a meaning on biochemical variables such as (HDL) High Density Lipoprotein and (LDL) Low Density Lipoprotein.

### **Declaration of the Issue**

On hypertensive middle-aged people (HDL) the effect of yogic practice on biochemical variable vide Low Density Lipoprotein (LDL) and High Density Lipoprotein which was the aim to determine.

### **Hypothesis**

Because of Yogic activities, it was suspected that there will be major variations in biochemical variables such as low density lipoprotein (LDL) and high density lipoprotein (HDL) among hypertensive middle-aged women than in the control group.

### **Delimitations**

- The research was restricted only to women living in Chennai.
- The subject age range was just between 35 and 45 years of age.
- The dependent variables are only low density lipoproteins (LDL) and high density lipoproteins (HDL) selected under the biochemical component.
- The selected independent variable was just Yogic activities.

### **Limitations**

- In this analysis, considerations such as diet, body composition, and social interactions were not taken into account.

- Factors such as family history and motivational factors were not taken into account in this analysis.
- Certain aspects were not taken into account, such as environmental and climate conditions, economic history and even day-to-day jobs.
- Factors such as diet, medicine and personal habits were not taken into account in the study.

## REVIEWS ON RELATED LITERATURE

**Ajay pal et al.**<sup>[3]</sup> observed the effect of daily yogic exercises and self-discipline in reducing body fat and elevated lipids in CAD patients (2011). In this research, one hundred and seventy (170) participants from both sexes with coronary heart disease were randomly chosen by the Department of Cardiology. The subjects in the yoga group and the non-yoga group were arbitrarily divided into two classes, eighty-five (85) in each group. Out of these (170 subjects), one hundred and fifty four (154) completed the research protocol. In the Department of Physiology CSMMU UP Lucknow, the yogic intervention was 35-40 min/day, five days a week prior to six months. In the yoga culture and without yogic intervention in the non-yoga school, body fat testing and lipid profile estimation were performed between the two groups at zero and six months after yogic intervention. In the present study, substantial improvements have been observed in BMI ( $p<0.04$ ), fat ratio ( $p<0.0002$ ), fat free mass ( $p<0.04$ ), SBP ( $p<0.002$ ), DBP ( $p<0.009$ ), heart rate ( $p<0.0001$ ), total cholesterol ( $p<0.0001$ ), triglycerides ( $p<0.0001$ ), HDL ( $p<0.0001$ ) and low lipoprotein density ( $p<0.04$ ). For cardiac and hypertensive patients during regular yogic exercises, lowering of SBP, DBP, heart rate, body fat ratio, total cholesterol, triglycerides and LDL is beneficial. For coronary heart attack patients, yogic exercises used in this study are also helpful.

A review on hypertension and mind-body treatments, i.e., yoga and transcendental meditation, was performed by **Jayaram Gadham et al. (2015)**<sup>[4]</sup>. The goal of the research is to study the influence on BP, BMI & lipid profile of Pranayama and some Yogic Asana. 50 male participants were randomly picked on the basis of exclusion criteria in the age range of 35-55 years. BP, BMI, and lipid profiles were calculated prior to any intervention. They were introduced to pranayama and other Asana for a period of 3 months. The BP, BMI and lipid profiles were calculated after 3 months of Yoga intervention. Results: A statistically meaningful decrease in Systolic BP, Diastolic BP and BMI was found after 3 months of training in Yoga. We have also reported a drop in total cholesterol, VLDL, triglycerides, and a non-statistically important increase in HDL cholesterol. There has been a significant rise in systolic and diastolic blood pressure for subjects who have learned Yoga, Asana along with pranayama technique for a period of 3 months.

## METHODOLOGY

60 were submitted, 45 were screened and 30 hypertensive middle-aged women were randomly selected from Chennai, between the age range of 35 and 45 years, and were split into two groups I and II, with 15 participants in each group, to accomplish the purpose of the random sample experimental sample. Before the start of the training programme, a preliminary evaluation for the two classes (I and II) on the selected dependent variables was performed. For a cumulative duration of eight weeks, Group I subjects were given Yogic practises for 60 minutes, six days a week.

Yogic practices such as Loosening the Joints, Surya Namaskar followed by Asanas such as Tadasana, Pawanmuktasana series-1, Katichakrasana, Hastottanasana, Vajrasana, Ustrasana, Gomukhasana, Shashangasana, Vakrasana, Bhujangasana, Makarasana, Savasana and Pranayama practices such as Nadishodana Pranyama, Brahmari Pranayama followed by OM meditation.

Group II (Control Group) subjects were permitted to undergo their routine and normal lifestyle during the course of experiment without any specific training.

After eight weeks, the two classes were retested on the same selected dependent variables, such as Low Density Lipoprotein (LDL) and High Density Lipoprotein, once again (HDL). In order to classify the significant differences between the control group and the study group, Co-Variance Analysis (ANCOVA) was used. At a degree of confidence of 0.05, the significance test was set.

## RESULTS AND DISCUSSIONS

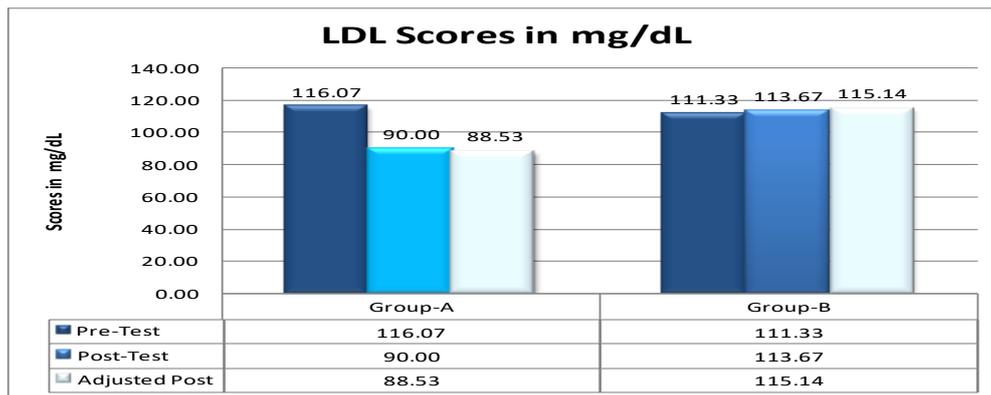
To access the relevant difference using Analysis of Covariance (ANCOVA), the results concerning the variables obtained before and during the training cycle, the two classes were objectively analysed and analysed at a degree of significance of 0.05.

Table I Covariance of training group analysis computationally and control group on low density lipoprotein (LDL) (mg/dL)

Test	Group 1 Yoga Therapy	Group2 Control group	Source of Variance	Degrees of Freedom	Sum of Squares	Mean Sum of Squares	F- Ratio
Pre	116.07	111.33	Between	1	168.03	168.03	1.02
			With in	28	4602.27	164.37	
Post	90.00	113.67	Between	1	4200.83	4200.83	36.49*
			With in	28	3223.33	115.12	
Adjusted Post	88.53	115.14	Between	1	5123.56	5123.56	95.80*
			With in	27	1443.96	53.48	

0.05 level of confidence which is significant. (Table F-ratio at 0.05 level of confidence for 1 and 28 (df) =4.2, 1 and 27 (df) =4.21)

The F value obtained from the 1.02 pre-test scores was lower than the 4.20 F value needed for the 0.05 mark to be significant. This showed that the pre-test and post-test groups did not vary significantly, and the pre-test randomization was identical. As the F value of 36.49 was higher than the F value of 4.20 demanded, the post-test scores review revealed that there was a substantial difference between the classes. This revealed that the variations were important between the subjects' post-test approaches. Updated mean scores, taking into account the pre and post test scores of the categories, have been measured and subject to statistical care. The F value of 95.80 received was better than the F value of 4.20 demanded. This showed that due to 12 weeks of yogic practise among hypertensive middle-aged people, there was a significant difference in low density lipoprotein lipoproteins (decreased). The outcome of this low density lipoprotein analysis is in line with the study performed by Ajay pal et.al. (2011)<sup>[3]</sup>. the ordered modified means for low density lipoprotein were presented in Figure -1 via the bar diagram to help understand the outcomes of this study.



\* Significant at 0.05 level of confidence

Figure 1 Bar diagram showing the mean differences among the groups on body mass index (Scores in mg/dL)

Table-II Computation of analysis of covariance of training groups and control group on high density lipoprotein (HDL) (Scores in mg/dL)

Test	Group I Yoga Therapy	Group 2 Control Group	Source of Variance	Degrees of Freedom	Sum of Squares	Mean Sum of Squares	F- Ratio
Pre	83.33	86.00	Between	1	53.33	53.33	1.15
			With in	28	46.19	46.19	
Post	60.33	82.67	Between	1	4440.83	4440.83	62.69*
			With in	28	1983.33	70.83	
Adjusted Post	107.50	82.17	Between	1	4622.71	4622.71	69.28*
			With in	27	1801.46	66.72	

Significant at 0.05 level of confidence. (Table F-ratio at 0.05 level of confidence for 1 and 28 (df) =4.2, 1 and 27 (df) =4.21)

The F value obtained was smaller than the necessary F value of 4.20 on pre-test scores 1.15, to be significant at level 0.05. This showed that the pre-test and post-test groups did not vary significantly, and the pre-test randomization was identical. Although the F value of 62.69 was higher than the F value of 4.20 demanded, there was a substantial difference between the classes in the comparison of the post-test scores. This revealed that the variations were important between the subjects' post-test approaches. Updated mean scores, taking into account the pre and post test scores of the categories, have been measured and subject to statistical care. The F value of 69.28 obtained was greater than the F value of 4.20 required. This reveals that among middle-aged hypertensive individuals there was a significant gap in high density lipoprotein lipoproteins due to 12 weeks of yogic activities (increases). The outcome of this High Density Lipoprotein analysis is in line with the study carried out by **Jayaram Gadham et al. (2015)** <sup>[4]</sup>.

In order to better understand the findings of this analysis, the ordered modified means for high density lipoprotein is provided in Figure -2 by means of a bar diagram.

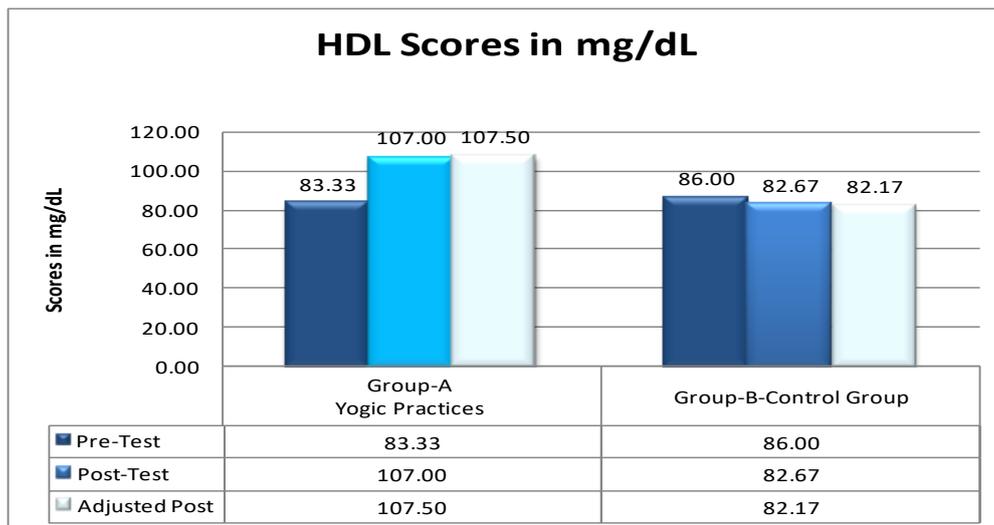


Figure 2 Showing the mean difference among the bar diagram experimental and control groups on high density lipoprotein (mg/DL)

\* Significant at 0.05 level of confidence

### DISCUSSION ON HYPOTHESIS

In the population performing Yogic rituals, it was predicted that there will be major variations between low density lipoprotein (LDL) and high density lipoprotein (HDL) in the control group among middle-aged hypertensive people. The findings of the research on low density lipoprotein (LDL) and high density lipoprotein (HDL) are presented above (HDL) have been substantiated with the observations also made by the experts **Ajay pal et.al.,(2011)** [3] and **Jayaram Gadham et.al., (2015)** [4].

### CONCLUSION

It is concluded that there were substantial variations in the experimental group I between low density lipoprotein (decreased) and high density lipoprotein (increased) relative to the control group due to yogic activities among hypertensive middle-aged people. Yogic activities are also ideal for middle-aged females with hypertension.

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