Effect of Yogic Practices on High Density Lipoprotein and Low Density Lipoprotein among Pregnant Women

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Abstract

In India, in 1999, Maternal Mortality Rate (MMR) was 437 per one lakh live births; in 2012, MMR in the country was 212 only. The country's Millennium Development Goal (MDG) is 109 in 2015. United Nations report says that India is likely to miss the goal. The present study was designed to find out the effect of yogic practices on High-density lipoprotein (HDL) and Low-density lipoprotein (LDL) among pregnant women (age: 25 to 35 years) during their second trimester. It was hypothesized that there would be significant difference in HDL and LDL among pregnant women due to yogic intervention. The study was delimited to the following factors only: only 30 pregnant women in their 2nd trimester were selected at random from Pondicherry; selected subjects were divided into two groups: one Experimental Group (n=15) and one Control Group (n= 15). The range of ages of subjects was from 25 to 35 years only. The biochemical variables HDL and LDL only were selected for this study. The yogic practices were considered as independent variables. The duration of the training was 12 weeks only. Women in the Experimental Group had practice on six days in a week; Control Group did not get any treatment and was in active rest; Experimental group was trained for 60 minutes in a day. The data collected during and after the training period were statistically analyzed using Analysis of Covariance (ANCOVA) to determine the significant difference and tested at 0.05 level of significance. The results showed that the levels of HDL and LDL significantly increased and decreased respectively due to yogic intervention. Hence the hypothesis was accepted at 0.05 level of confidence. The conclusion is that the yogic practices helped to increase HDL and reduce LDL among pregnant women.

Keywords: Pregnant women, yoga, High Density Lipoprotein, Low Density Lipoprotein and yogic practices.

Introduction

In India, in 1999, Maternal Mortality Rate (MMR) was 437 per one lakh live births; in 2012, MMR in the country was 212 only. The country's Millennium Development Goal (MDG) is 109 in 2015. United Nations report says that India is likely to miss the goal. The UN Secretary General states that although progress has been made on improvements in maternal health, actual targets remain far from sight.

Yoga can share the right knowledge, positive attitude and beliefs about safe delivery. Yoga provides improved holistic healthcare to pregnant women, and significantly empower them during their pregnancy. Yoga is the way to constructive outcome: holistic childbirth, now and ever.

Statement of the Problem

The present study was designed to find out the effect of yogic practices on high-density lipoprotein and low-density lipoprotein among pregnant women

Hypothesis

It was hypothesized that there would be significant differences in biochemical variables such as HDL and LDL among pregnant women due to the influence of yogic practices.

Delimitations

The study was delimited to the following factors:

1. To achieve the purpose of the study, 30 pregnant women only were selected at random from Pondicherry state.
2. Selected subjects were divided into two equal groups (n = 15) namely Experimental Group I (YG) to undergo Yogic Practices and Group II to serve as Control Group (CG).
3. The age of the subjects were-ranged between 25 and 35 years only.
4. The following dependent variables only were selected for this study: HDL and LDL.
5. The yogic practices only were considered as independent variables.
6. The duration of the training period was restricted to twelve weeks only and the number of sessions per week was confined to six days only, an hour in the morning daily.
7. The level of significance was fixed at 0.05 level which was considered to be appropriate.

Review of Related Literature

Kasundra, Thumar, and Mungra, (2010). The objective of their study was to assess the impact of Pranayama training on selected components of blood. It was hypothesized that there would be no significant effect of Pranayama training on selected components of blood. For the present study subject selected were students of Bachelor of Arts studying in Mahadev Desai Gram Seva Mahavidyalaya. Randomly 30 students were selected for the study and then subjects were divided into two equal groups randomly consisting of 15 subjects each belonging to one experimental (Group A) and one control group (Group B). Group A was exposed to Pranayama and group B was kept as control group. Experimental group

participated in Pranayama training for eight weeks. The variables and test items selected for the present study were cholesterol, blood glucose, hemoglobin, WBC, RBC, platelets. For analyzing the data, t-test was used to find out the significant difference between pre-test and post-test. This study revealed significant difference in pre-test and post-test of experimental groups of selected blood components: cholesterol, blood glucose, hemoglobin, WBC, RBC, platelets. This shows that Pranayama training has an impact on selected components of blood.

Mahajan, et al., (1999), studied the effect of yogic lifestyle on the lipid status in angina patients and normal subjects with risk factors of coronary artery disease. The parameters included the body weight, estimation of serum cholesterol, triglycerides, HDL, LDL and the cholesterol - HDL ratio. A baseline evaluation was done and then the angina patients and risk factors subjects were randomly assigned as control (n = 41) and intervention (yoga) group (n = 52). Lifestyle advice was given to both the groups. An integrated course of yoga training was given for four days followed by practice at home. Serial evaluation of both the groups was done at four, 10 and 14 weeks. An inconsistent pattern of change was observed in the control group of angina (n = 18) and risk factor subjects (n = 23). The subjects practicing yoga showed a regular decrease in all lipid parameters except HDL. The effect started from four weeks and lasted for 14 weeks. The conclusion of the study was the effect of yogic lifestyle on some of the modifiable risk factors could probably explain the preventive and therapeutic beneficial effect observed in coronary artery disease.

Methodology

To achieve the purpose of this study, 30 pregnant women in their second trimester were selected at random from Pondicherry. Their age ranged from 25 to 35 years. The selected subjects were divided into two groups: Experimental Group (YG) subjected to yogic practices and Control Group (CG), which was not subjected to yogic practices. Experimental Group alone had yogic training for 12 weeks, an hour in the morning for six days in a week. Blood tests were made in the thirty women; levels of biochemical variables: HDL and LDL, were noted two days before and after the training duration.

Results and Discussion

The data collected from the two groups before and after the training period were statistically analyzed for significant improvement if any. In order to find out the significant difference, if any, between pre test and adjusted post test means, the Analysis of Covariance (ANCOVA) was used. The criterion for statistical significance was set at 0.05 level of confidence ($P<0.05$).

The Analysis of Covariance of HDL in Experimental Group (YG) who had yogic training and the control groups CG were analyzed and are presented in table 1:

Table-I

Analysis of Covariance of Data on HDL-C between YG and CG

Tests/ Groups		YG	CG	SOV	Sum of Squares	df	Mean Squares	"F" Ratio
Pre Test	$\bar{X}$	46.67	44.87	B	24.3	1	24.3	0.69
	σ	6.06	5.76	W	977.067	28	34.895	
Post Test	$\bar{X}$	50	45.4	B	158.7	1	158.7	4.61*
	σ	6.09	5.63	W	963.6	28	34.414	
Adjusted Post Test	$\bar{X}$	49.12	46.28	B	58.684	1	58.684	76.32*
				W	20.762	27	0.769	

$F_{(0.05)}$ (1,28 and 1, 27) = 4.20, 4.21 respectively. *Significant at 0.05 level of confidence

Table 1 shows that the pre-test means in HDL-C of the YG and the control groups (CG) were 46.67 and 44.87 respectively, resulted in an "F' ratio of 0.69, which indicates statistically no significant difference between the pre test means at 0.05 level of confidence. The post test means of HDL-C of the YPG and the control groups (CG) were 50 and 45.4 respectively, resulted in an "F' ratio of 4.61, which indicates statistically significant difference between the post test means at 0.05 level of confidence. The adjusted post test means of HDL-C of the YG and the control groups (CG) were 49.12 and 46.28 respectively. The obtained F-ratio value was 76.32, which was higher than the table value 4.21 with df 1 and 27 required for significance at 0.05 level. It indicates that there was a significant difference among the adjusted posttest means of HDL-C of the YG and the control group (CG).

The Analysis of Covariance on LDL of the combination of asana and pranyama (YG) training and the control group (CG) were analyzed and are presented in table 2:

Table-II

Analysis of Covariance of Data on LDL-C between YG and CG

Tests/ Groups		YG	CG	SOV	Sum of Squares	df	Mean Squares	"F" Ratio
Pre Test	$\bar{X}$	96.6	97.6	B	7.5	1	7.5	0.49
	σ	4.10	3.64	W	421.2	28	15.043	
Post Test	$\bar{X}$	93.07	96.93	B	112.133	1	112.133	8.48*
	σ	3.58	3.69	W	370.367	28	13.227	
Adjusted Post Test	$\bar{X}$	93.49	96.5	B	66.639	1	66.639	30.39*
				W	59.246	27	2.194	

$F_{(0.05)}$ (1,28 and 1, 27) = 4.20, 4.21 respectively. *Significant at 0.05 level of confidence.

Table 2 shows that the pre-test means in LDL-C of the YG and the control groups (CG) were 96.6 and 97.6 respectively, resulted in an "F' ratio of 0.49, which indicates statistically no significant difference between the pre test means at 0.05 level of confidence. The post test means of LDL of the Experimental (YG) and the Control Group (CG) were 93.07 and 96.93 respectively, resulted in an "F' ratio of 8.48, which indicates statistically significant difference between the post test means at 0.05 level of confidence. The adjusted post test means of LDL of the YG and the control groups (CG) were 93.49 and 96.5 respectively. The obtained F-ratio value was 30.39, which was higher than the table value 4.21 with df 1 and 27 required for significance at 0.05 level. It indicates that there was a significant difference among the adjusted posttest means of LDL-C of the YG and the control groups (CG).

Discussion on Findings

The result of the study on HDL and LDL reveals that the experimental group namely yogic practice groups (YG) had significantly improved after the twelve weeks of training. The result of this study on HDL and LDL was in line with the study conducted by Sayyed et al., (2010), who stated that the Sudarshan Kriya Yoga practice decrease the TC, LDL and increase the HDL. The present research findings also suggested that yogic practice increases the HDL and reduces the LDL in pregnant women.

Discussion on Hypotheses

It was mentioned in the hypothesis that there would be significant changes in biochemical variables such as HDL and LDL among pregnant women due to the influence of yogic practices. The results of the study showed that HDL and LDL significantly improved as a result of yogic practices i.e. asanas, pranayama and meditation practice. Hence, the hypothesis was completely accepted at 0.05 level of confidence.

Conclusion

In the present investigation, as a result of training program the following improvements occurred on performance variables.

1. Due to the influence of twelve weeks yogic practices, HDL level among the pregnant women has increased.
2. Twelve weeks of asana, pranayama and meditation training decreased the LDL-C among the pregnant women.

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