Original Article

Effect of Rajayoga Meditation on Serum Cholesterol and HDL

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ABSTRACT

Background: *Meditation has a number of positive effects on physiology of human body. It has shown to reduce blood pressure, heart rate and serum cholesterol levels thus reducing the risk of coronary artery disease.*
Objectives: *The present study is contemplated to highlight the hemodynamic and biochemical effects of Rajyoga meditation by studying its impact on serum cholesterol and serum HDL levels of the individuals.*
Materials and methods: *The study was conducted on 100 healthy people selected from Brahma Kumari Ashram Amritsar. Group I included 50 subjects meditation regularly for at least 1 hour a day for last 2-5 yrs, Group II included 50 subjects in the same age group who did not perform any meditation technique. Serum cholesterol and HDL were measured by the respective kits. Results were analysed statistically*
Results: *This data shows that mean value of serum cholesterol in case of meditator males and females was significantly lower than in non meditators Also, the mean values for the S.Cholesterol/HDL ratio were also significantly lower in meditators and non meditators.*
Conclusions: *Persons practising Rajayoga Meditation regularly are at a lower risk of developing cardiovascular diseases as compared to those who do not perform any meditation at all. So it can be safely conclude that meditation has a positive effect on cardiovascular system and with regular practice of meditation reduces the risk of developing cardiovascular diseases.*
Key Words: *Meditation, lipid profile, cardiovascular disease*

Introduction

The man cannot rest contented without knowing. To know and to understand seems to be the most virulent appetites man is ever suffering from. His mind is always busy fluttering from one object to the other. The flow of thoughts is ceaseless. In meditation the mind is made to withdraw its attention from all the sense objects. By assiduous practice the mind learns to think of only one thing at a time. Meditation is a technique of achieving a harmony between the physical, mental intellectual and spiritual personalities of man. Mediation is highest spiritual discipline through which man comes to experience peace within and without. Internecine wars between desires are ended, conflicts between duties no longer wreck a mediator 's nerves and the mind grows up to view life as a whole (Meditation and life, Swami Chinamayananda)

Meditation is a practice in which an individual trains the mind and/ or induces a mode of consciousness to realize some benefit, although it can be argued that meditation is a journey, a goal in and of itself.

A technique of meditation is Rajayoga meditation. Rajayoga meditation does involve concentration but no physical object is involved. The object of concentration is the inner self. Instead of repeating one word or a phrase as in a mantra, a flow of thoughts is encouraged thus using the mind in a natural way. The positive flow of thoughts is based on an accurate understanding of the self and so acts as a key to unlock the treasure trove

of peaceful experiences lying within. According to Raja yoga, if the mind becomes peaceful, there will be peace within and the world will become a better place. (Practical Meditation, Brahma Kumaris, Iswariya Vishwa Vidyalaya)

Increasing materialism in society is resulting more wide spread nervous tension in all the age groups while some degree of tension in all age group is necessary in everyday living. Its adverse effects require that we must learn to bring it under control. Total tension is shown to have two components: controllable elements, arising from the factors in the environment and in built uncontrollable residue which is basic in the individual's temperament. The effect of excessive or uncontrolled stress can be emotional reactions such as neurotic behaviour like anxiety, hypochondria, hysteria, phobia, obsessions, depression or psychotic behaviour and psychosomatic reactions like nervous asthma, headache, insomnia and even heart attacks. Relaxation is the only way to control undesirable nervous tension and its techniques requires to be learned. [1]

Coronary heart diseases remain the major cause of mortality and morbidity in western world and also in developing countries like India. It accounts for more deaths annually than any other disease including all forms of cancers combined. The enormous toll has focused attention on possible prevention of coronary heart disease by various means. [2]

A number of risk factors have been identified as strongly associated with coronary heart disease. Obesity, hypercholesterolemia and hypertension in addition to physical inactivity, stress and behaviour pattern, male sex hormones and untreated menopausal status are the risk factor for coronary heart disease. In the developing countries, where people are adopting western lifestyle the mortality due to coronary heart disease is increasing. [3]

A number of drugs have been discovered but drugs are accompanied by side effects and so there is an extensive back to nature movement for prevention and treatment of coronary artery disease. Meditation has a number of positive effects on physiology of human body. It has shown to reduce blood pressure, heart rate and serum cholesterol levels thus reducing the risk of coronary artery disease. Meditation has a number of positive effects on physiology of human body. It has been shown to reduce blood pressure, heart rate and serum cholesterol levels. Observational and epidemiological studies have shown that the higher the total plasma cholesterol the greater is the risk for development of coronary heart disease and there is a strong relationship between HDL cholesterol concentration and risk factor for coronary heart disease. So meditation help in the management and prevention of coronary artery by reducing the risk factors associated with the same. [4]

The present study is contemplated to highlight the hemodynamic and biochemical effects of Rajyoga meditation by studying its impact on serum cholesterol and serum HDL levels of the individuals in this part of the country so that these findings could help the people lead a healthier life by adopting this non pharmacological and not so much difficult technique in their life style.

Materials and Methods

The study was conducted on 100 healthy people selected from Brahma Kumari Ashram Amritsar. The subjects were categorised into two groups. Group I included 50 subjects (36 males and 14 females) in the age group of 25-50 years who were performing Rajyoga meditation

regularly for at least 1 hour a day for last 2-5 yrs, Group II included 50 subjects in the same age group who did not perform any meditation technique. In this group also, 36 were males and 14 females.

The subjects having history of Hypertension, Diabetes Mellitus, Ischemic Heart Disease, jaundice, alcoholism and smoking were not included in the study. Each subject was subjected to a detailed physical examination.

A detailed cardiovascular examination was done in all subjects. Heart Rate was counted with the stethoscope kept over the apex for full one minute. Blood Pressure was checked using standard mercury sphygmomanometer and three consecutive readings were taken and mean of the three readings was calculated. The readings were taken at an interval of 8 minutes. A standard 12 lead ECG was recorded in all the subjects and all the necessary precautions were taken. ECG was studied for rate, rhythm, P wave, axis, ST segment and T wave.

Urine sugar and blood sugar levels were calculated in each case. Blood samples were collected in both meditators and non meditators in the morning between 8:00 to 9:00 am. Serum cholesterol and HDL were measured by the respective kits. [5, 6]

Descriptive statistics of mean, standard deviation were used to display the continuous and categorical variables of both groups. One way analysis of variance was applied to compare quantitative data in intragroup ie I, II and III in meditators to find the significance. Unpaired t test was used to compare the mean values. SPSS software version 16 was used. Intergroup comparison of quantitative data i.e. meditators and non meditators was done using unpaired t test and P values were calculated.

Results

A total no of 100 subjects were involved in the study. 50 used to meditate regularly and 50 had never practised meditation. Mean values of age, height and weight in the meditators (group I) and non meditators (group II) are 36.4±7.9 years, 160.15±6.22, 60.30±8.73 and 37.0±7.8, 159.74±5.98, 63.10±9.11 respectively. (Table1) No statistical difference was found between the two groups.

The mean age for meditator males was 36.1±7.6 years and in meditator females it was 37.0±8.9. The mean value of height (in cms) in meditator males and females was 162.22±5.98 and 154.82±2.69 respectively and for weight the mean values in meditator males and females was 59.53±8.66 and 62.69±8.93. In the non meditator group the mean values for age, height and weight in males and females was 37.4±7.9, 161.18±5.64, 64.25±8.43 and 35.8±7.2, 154.43±2.68, 60.14±10.39 respectively. (Table1) No statistical difference was observed between the males and females of the two groups regarding age, weight and height.

Meditator subjects were divided in three groups depending upon the no. of years of meditation. Group I included subjects who were regularly doing meditation for 2-3 years and included 16 subjects. Group II with 3-4 yrs of meditation had 18 subjects and Group III with 4-5 yrs of meditation had 16 subjects. The anthropometric measurements are shown in the table. (Table 2) No significant difference was found between the anthropometric measurements in the subgroups.

Table 1: Table showing anthropometric data of meditators, non meditators, Males and Females of two groups

Group	Age	Height	Weight
Meditators	36.4±7.9	160.15±6.22	60.30±8.73
Non Meditators	36.9±7.7	159.74±5.98	63.10±9.11
Meditators (M)	36.1±7.6	162.22±5.98	59.53±8.66
Meditators (F)	37.0±8.9	154.82±2.69	62.29±8.93
Non meditators (M)	37.4±7.9	161.81±5.64	64.25±8.43
Non meditators (F)	35.8±7.2	154.43±2.68	60.14±8.39

M=Male F= Female

Table 2: Anthropometric measurements of meditators divided into three groups

Groups	Age	Height	Weight
Group I (16)	34.9±8.5	159.65±5.66	59.69±7.41
Group II (18)	33.1±5.5	157.13±4.76	62.13±9.09
Group III (16)	40.4±6.6	162.47±7.18	60.38±10.81

Table 3: Comparison of S.Cholesterol and S. HDL in meditators and non meditators

Parameters	Meditators	Non Meditators	t-value
S. Cholesterol	161.76±12.49	188.87±7.67	13.15***
S. HDL	48.99±2.85	43.01±2.97	10.33***
Chol/HDL	3.31±0.24	4.41±0.31	19.94***

p-value < 0.001,* Very highly significant**

Table 4: Comparison of S. Cholesterol, S. HDL , Chol/HDL in meditator and non meditator males and females

	Males			Females		
	Meditators	**Non meditators**	**t-value**	**Meditators**	**Non meditators**	**t-value**
S.Cholesterol	**160.12±11.90**	**189.52±7.53**	**12.62*** **	**165.97±13.45**	**187.17±8.03**	**5.16*** **
S. HDL	**48.92±3.12**	**43.02±3.11**	**8.09*** **	**49.18±2.15**	**42.98±2.66**	**6.19*** **
Chol/HDL	**3.28±0.19**	**4.43±0.34**	**17.84*** **	**3.38±0.32**	**4.36±0.21**	**9.76*** **

***** p value<0.001, very highly significant**

The mean value for serum cholesterol in meditator males was 160.12±11.90 and in meditator females was 165.97±13.45. In case of non meditators, in males it was 189.52±7.53 and in females it was 187.17±8.03. This data shows that mean value of serum cholesterol in case of meditator males and females was significantly lower than in non meditator males and females.

Similarly, the mean value of serum HDL in meditator males and females was 48.92±3.112 and 49.18±2.15 respectively. In contrast their values in non meditator males and females were 43.02±3.11 and 42.98±2.66 respectively and these values were significantly lower than those in meditators. (Table 4)

Also, the mean values for the S.Cholesterol/HDL ratio were also significantly lower in meditators and non meditators. Mean values of S. Cholesterol /HDL in meditator males was 3.28±0.19 and in non meditators was 4.43±0.34. The difference was found to be statistically significant ($p<0.001$). Similarly, on comparing meditator females and non meditator females (3.38±0.32 and 4.36±0.21), it was found to be statistically significant. ($p<0.001$)

In meditators heart rate was 67.72±3.95, Systolic blood pressure was 114.78±4.95 and diastolic blood pressure was 77.67±3.72 whereas in non meditators, heart rate was 82.17±3.29, systolic blood pressure was 126.67±6.20 and diastolic blood pressure was 84.22±3.23, it was found to be statistically significant. ($p<0.001$)

Discussion

Coronary heart disease remains the major cause of mortality and morbidity in India. A number of risk factors have been identified as strongly associated with coronary heart disease. Obesity, hypercholesterolemia and hypertension in addition to physical inactivity, stress and behaviour pattern, male sex hormones and untreated menopausal status are the risk factor for coronary heart disease. In the developing countries, where people are adopting western lifestyle the mortality due to coronary heart disease is increasing.[3]

In the present study, the mean value of serum cholesterol was significantly lower and HDL was significantly higher in meditators than in non meditators. The practice of meditation brings about a significant reduction in serum cholesterol levels. This was attributed to a reduction in the sympathetic nervous activity which has been implicated as a factor capable of lowering and maintaining low serum cholesterol levels independent of dietary measures. [7]

Behavioural interventions specifically the transcendental meditation technique, reduces levels of major coronary risk factors including hypercholesterolemia and also blood pressure. These findings are also supported by several other studies on meditation. [8, 9, 10]

High density lipoprotein is a protective factor against coronary heart disease and it had an inverse relationship with the incidence of coronary heart diseases in both men and women. [11] Low HDL levels predict coronary heart disease mortality and occurrence of new coronary heart disease events in persons older than 70 years. Higher values of serum HDL cholesterol in meditators lower the risk of developing coronary heart disease than non meditators. [12]

In the present study the ratio of total cholesterol and HDL was significantly lower in meditators than in non meditators. It has been reported that the lower values of cholesterol/ HDL ratio are associated with reduced risk of

cardiovascular disease and persons with even elevated total cholesterol levels may not be at high risk for cardiovascular disease owing to the favourable cholesterol/HDL ratio. [13] Various other studies also support this. [12, 14]

Meditation causes alteration in autonomic balance and well being. There is a trend of gradual shift of autonomic equilibrium towards relative parasympathodominance because of the reduction of sympathetic activity. This modulation of autonomic nervous system activity might have been brought about by the conditioning effects of yoga on autonomic functions. Yoga and Omkar meditation has positive effect on cardiorespiratory performance, psychological profile and melatonin secretion. [15]

The improvement in lipid profile parameters after yoga could be due to increased hepatic lipase and lipoprotein lipase at cellular level, which affects the metabolism of lipoprotein and thus increase uptake of triglycerides by adipose tissues. [16] Better ability to overcome stress can be cited as possible mechanism for improvement in lipid profile. [17] Because of ability of HDL to retard the oxidation of LDL,it can prevent the proinflammatory effects of oxidized LDL on the endothelium. Thus HDL can prevent oxidized LDL induced production of monocyte chemotactic protein I, this retards monocyte endothelium interaction, the first stage in the inflammatory process in atherosclerosis. [18, 19]

Lower values for mean serum cholesterol and total cholesterol/ HDL ratio and higher value for mean HDL cholesterol in meditators indicate that persons practising Rajayoga Meditation regularly are at a lower risk of developing cardiovascular diseases as compared to those who do not perform any meditation at all. So it can be safely conclude that meditation has a positive effect on cardiovascular system and with regular practice of meditation reduces the risk of developing cardiovascular diseases.

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