

# Effect of yogic practices on cardiovascular risk factors in postmenopausal woman

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## Abstract

**Background:** In postmenopausal women Coronary heart disease is one of the most important causes of death. Obesity, hypertension and dyslipidemia are modifiable risk factor of this disease. The yogic practices are important for prevention and treatment of dyelipidemia. Therefore, the present investigation is focused at efficacy of SKY practices on cardiovascular risk factors like obesity, hypertension and lipid profile in postmenopausal woman within 6months. **Aim:** To estimate lipid profile and to measure BMI, WHR and BP in postmenopausal women who are at risk of CAD on 0 day and 6 months after regular SKY yogic practices. **Settings and designs:** This cross sectional study was undertaken in the Department of physiology and Department of Biochemistry of Government Medical College and hospital Akola, Maharashtra. **Material and method Statistical Analysis:** BMI, WHR and BP measured and lipid profile were analyzed and compared between 30 age matched postmenopausal women who are on risk of CAD study group and normal healthy control group of age group 40-55 years using unpaired two-tailed Student 't' test. **Results:** Values of BMI ( $p < 0.05$ ), WHR ( $p < 0.05$ ), Systolic BP ( $p < 0.05$ ) and diastolic BP ( $p < 0.05$ ) were significantly lower in both study and control group. Values of TG ( $p < 0.05$ ), TC ( $p < 0.05$ ), LDL-C ( $p < 0.05$ ), VLDL-C ( $p < 0.05$ ) were significantly lower in control group expect HDL-C which is not significantly increased while all parameters of lipid profile are improved in study group. **Conclusion:** Regular Yogic practices are more effective in postmenopausal women who are at risk of CAD. **Keywords:** (CAD) coronary artery disease; (SKY) sudarshan kriya yoga.

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## INTRODUCTION

Coronary heart disease is one of the most important cause of death in world for postmenopausal women<sup>1</sup>, In India prevalance of CHD is about 10%. Dyslipidemia, obesity, hypertension are major risk factors of this disease. Hypercholesterolemia combined with hyperlipidemia (TG, LDL-C), and hypertriglyceridemia are three important modifiable risk factors for CHD<sup>2,3</sup>. According to National Cholesterol Education Programme yogic

practices are important for prevention and treatment of dyslipidemias. Sudarshan Kriya Yoga (SKY) is a special yogic practice of Art of Living Foundation. It includes rhythmic breathing exercise called Sudarshan Kriya (SK) and pranayama. Therefore we conduct study to see effect of yogic practices on certain cardiovascular risk factors such as obesity, hypertension and dyslipidemia within 6 months.

## MATERIAL AND METHOD

The study was conducted under government medical college, Akola in year 2013-14 and the institutional ethical committee had given clearance to protocol and design. All the subjects of the study were explained aims and objective of the study, also written consent was obtained. The study sample consists of 30 female volunteers of age 40-55 suffering from obesity, hypertension and dyslipidemia either singly or in combination were selected for the study from the yogic package designed by Sri Sri Ravi Shankar, the founder of

Art of Living Foundation, Akola, India and 30 age and sex matched normal healthy volunteers were also included as a control group. At the time of the course, weight, height and Blood pressure were measured and fasting venous blood collected for lipid profile. All the participants underwent the sudarshan kriya yogic practices of Art of Living Foundation by a trained teacher for 6 months. After 6 months weight, height, WHR and Blood pressure were measured and fasting venous blood collected for lipid profile in all subjects. They had no history of liver disease, thyrotoxicosis pulmonary disease, no history of smoking and alcohol consumption and were not involved in heavy physical exercises.

**Methods**

Estimation of serum cholesterol: For the estimation of serum cholesterol and triglyceride and HDL cholesterol fasting blood sample was collected in a sterile plain bulb. The collected samples were analyzed immediately for TC (total cholesterol). This estimation was done with the kit based on cholesterol oxidase peroxidase (End Point) [Accurex Biomedical private limited, Thane, India. Kit]. Triglyceride estimation was done with the kit based on Glycerol 3 phosphate oxidase peroxidase (End Point) [Accurex Biomedical private limited, Thane, India. Kit]. HDL-C estimation was done with the kit based on precipitation method of [Accurex Biomedical private limited, Thane, India. Kit] The estimation was done on

TRANSASIA ERBA CHEM-5 Plus Semi-Automatic Analyzer [Erba Diagnostic Mannheim GmbH, Germany]. LDL-C and VLDL-C was calculated by Friedewald’s formula.

**STATISTICAL ANALYSIS**

All values are reported as mean ± SD. Student ‘t’ test and ANOVA with multiple comparison testing were used to assess the significance of the differences in values of the parameters in cases and controls. Differences were considered statistically significant at a probability value P<0.05. All statistical analyses were performed with IBM SPSS Statistics version 19.0 (IBM Corporation, Somers, NY).<sup>4</sup>

**RESULT**

Measurement characteristics are depicted in **TABLE I, II, III, IV** in study group and control group. BMI, WHR and BP were significantly lowered in both study and control group after 6 months of yogic practices. Laboratory characteristics are depicted in **TABLE V, VI**. TG, TC, LDL-C, VLDL-C were significantly lowered in both study and control group after yogic practices and HDL-C was significantly increased in study group and not increased in control group after 6 months yogic practices.

**Table 1:** Comparison of BMI and WHR of postmenopausal women at 0 day and at 6 months in Study group

Parameter	Pre yogic practice (0day)	Post yogic practices (6 months)	P value
BMI	28.83± 3.98	25.33± 3.50	P<0.05
WHR	0.95±0.14	0.90±0.12	P<0.05

P<0.05= Significant

**Table 2:** Comparison of BMI and WHR of postmenopausal women at 0 day and at 6 months in control group

Parameter	Pre yogic practice (0day)	Post yogic practices (6 months)	P value
BMI	26.92±4.83	25.63±4.59	P<0.05
WHR	0.945±0.047	0.94±0.05	P>0.05

P<0.05= Significant

**Table 3:** Comparison of BP of postmenopausal women at 0 day and at 6 months in study group

Parameter	Pre yogic practice (0day)	Post yogic practices (6 months)	P value
Systolic	132.83± 13.98	126.93± 13.50	P<0.05
Diastolic	85.08±8.14	80.24±4.92	P<0.05

P<0.05= Significant

**Table 4:** Comparison of BP of postmenopausal women at 0 day and at 6 months in control group

Parameter	Pre yogic practice (0day)	Post yogic practices (6 months)	P value
Systolic	129.83± 11.98	127.93± 11.50	P<0.05
Diastolic	83.16±6.14	81.42±3.82	P<0.05

P<0.05= Significant

**Table 5:** Comparison of Lipid profile of postmenopausal women at 0 day and at 6 months in study group

Lipid profile	Pre yogic practices (0day)	Post yogic practices (6 months)	P value
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T. cholesterol	206.32±79.4	200.11±59.7	P<0.05
Triglyceride	170.12±89.6	160.32±58.8	P<0.05
LDL-C	126.94±53.6	120.87±39.7	P<0.05
HDL-C	38.12±10.2	39.22±8.2	P<0.05
VLDL-C	41.26±15.8	40.02±11.8	P<0.05

P&lt;0.05= Significant

**Table 6:** Comparison of Lipid profile of postmenopausal women at 0 day and at 6 months in control group

Lipid profile	Pre yogic practices (0day)	Post yogic practices (6 months)	P value
T. cholesterol	200.62±64.2	196.11±94.7	P<0.05
Triglyceride	166.22±91.4	155.42±88.6	P<0.05
LDL-C	124.06±38.9	119.41±67.9	P<0.05
HDL-C	36.44±12.4	36.88±7.4	P>0.05
VLDL-C	40.12±12.8	39.82±18.9	P<0.05

P&lt;0.05= Significant

## DISCUSSION AND CONCLUSION

In this study post yogic practices BMI and WHR is statistically significantly lowered in both groups. The results of this study are consistent with Manchanda *et al.*, Schmidt *et al.* And Bera *et al.*<sup>5,6,7</sup> also we have observed statistically significant decrease in both systolic and diastolic BP in both groups which is correlated with Murugesan *et al.*, study.<sup>8</sup> In this study lipid profile i.e. total cholesterol triglyceride, LDL-C, VLDL-C, significantly decreased after yogic practices while HDL-C not statistically increased in control group but all of the above parameters in study group after 6 months are significantly improved which is consistent with Manchanda *et al.*<sup>5</sup> It indicates that sudarshan kriya yogic practices are having benefits to cardiovascular system by improving the lipid profile, obesity and hypertension in post- menopausal women. It is believed that yoga reduces stress, anxiety and maintains the balance between sympathetic and parasympathetic system. But in study significant improvement of lipid profile is seen in study group as compare to control group. According to Rashmi vyas<sup>9</sup> it may be because lipid profile increases with age in women except HDLC. It indicates that yogic practices have better effects in postmenopausal women who are at the risk of cardiovascular diseases as compared to normal postmenopausal women. Thus this type of life style modification in the form of yogic practices if properly done for a sufficient time will have benefit in postmenopausal women having coronary risk factors.

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