

Effect of yogic practices on selected physiological variables among hypertensive middle-aged women

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ABSTRACT: The purpose of the random group experimental study was to investigate the effect of Yogic Practices on selected Physiological variables such as Systolic, Diastolic and Body Mass Index (BMI) among Hypertensive middle-aged women. It was hypothesized that there would be a significant difference due to Yogic Practices on selected Physiological variables such as Systolic, Diastolic and Body Mass Index (BMI) among Hypertensive middle-aged women than the control group. Random group experimental design was used. The random sampling design was followed to select the subjects. To achieve the purpose of the study, 30 women between the age 45 and 55 years were selected randomly from Chennai and they were divided into two groups such as Yogic Practices (Group A) and Control Group (Group B). Each group consists of 15 subjects. The pre-test was taken for the two Groups on the selected dependent variables before the start of the training program. Group A was undergoing Yogic Practices for 12 weeks, 6 days a week, One-hour maximum daily and Group B (Control Group) was permitted to undergo their normal lifestyle (active rest) during the course of the experiment. After the experimental period of 12 weeks, Post-tests were conducted for the two groups on selected dependent variables. The selected Physiological variables such as Systolic, Diastolic and Body Mass Index (BMI) were measured through Lab test. Analysis of Co-Variance (ANCOVA) was used to find out the significant difference between experimental group and the Control Group. The test of significance was fixed at 0.05 level of confidence. It was concluded that Yogic Practices improved Physiological variables among Hypertensive middle-aged women than the Control Group. Hence, the hypothesis was accepted at 0.05 level of confidence.

Keywords: Yogic practices, Systolic, Diastolic, Body Mass Index (BMI).

Introduction

Health is the “State of complete physical, mental, and social well-being and not merely the absence of disease and infirmity”- World Health Organization of the United Nations. The disease is an abnormal condition of an organism that impairs bodily functions, associated with specific symptoms and signs. In human beings, “disease” is often used more broadly to refer to any condition that caused pain, dysfunction, distress, social problems, and/or death to the person afflicted, or similar problems for those in contact with the person. Middle aged women the period of age beyond young and adulthood but before the onset of old age. Various attempts have been made to define this age. Which is around the third quarter of average lifespan of a human being. Middle age is not defined solely by chronological age but is a product of biological, social and psychological factors. Women and Yoga have a deep connection as women have a lot of changes going in the body every month and then due to sudden changes in the middle-aged women, their mood disturbed. Hypertension is a

psychosomatic disorder. Hypertension is a state in which Systolic blood pressure is maintained above 140 mmHg or more and diastolic blood pressure more than 90 mmHg. Six out of ten women at 15 crore Indians suffer from Hypertension. Salt intake is double and dangerous of Hypertension risk in India (Delhi – 14.13gm/day, Kolkata – 9.81 gm/day, Mumbai – 10.21 gm/day, Bangalore and Chennai – 9.38 gm/day) (Times of India – Dec-17-2016 Sat.) Yogic practices dilate the blood vessels thus reducing pressure; removes excess water and salt from the body. Set the right sympathetic nervous system to overcome stress.

Objectives of the study

To find out whether there would be any significant difference on selected Physiological variables such as Systolic, Diastolic and Body Mass Index (BMI) among Hypertension middle-aged women.

Purpose of the study

The purpose of the study was to find out the effect of Yogic Practices on selected Physiological variables such as Systolic, Diastolic and Body Mass Index (BMI) among Hypertension middle-aged women.

Hypothesis

It is hypothesized that there would be significant differences on selected Physiological variables among Hypertensive middle-aged women due to yogic practices group than the control group.

Reviews of related literature

Yadav R (2016) et.al, a study conducted by All India Institute of Medical Sciences (AIIMS, New Delhi), India 2Department of Endocrinology and Metabolism. To study the effects of 12 weeks yoga-based lifestyle intervention on cardio-metabolic risk factors and adipocytokines in overweight/obese subjects with pre-hypertension [systolic blood pressure (SBP) 130-139mmHg or diastolic blood pressure (DBP) 85-89mmHg] or hypertension (HTN). This prospective, single-arm, lifestyle intervention study was conducted in overweight/obese (body mass index; BMI 23-24.9/ ≥ 25 kg/m) subjects (n=44), with pre-HTN or previously diagnosed HTN. The subjects underwent pre-tested yoga-based lifestyle intervention including asanas, pranayama, relaxation techniques, lectures, group support, nutrition awareness program and individualized advice under supervision for approx. 2 hrs each day for 2 weeks followed by a continuation of the practices at home for next 10 week. Outcome measures included cardio-metabolic risk factors: SBP, DBP, weight, BMI, waist circumference (WC), hip circumference (HC), waist-hip ratio (WHR), fasting plasma glucose (FPG), serum lipid profile and adipocytokines (plasma leptin and adiponectin levels). These were assessed at baseline, after 2 weeks of intervention and at end of week 12. After the intervention, there were a significant reduction in weight, BMI, SBP, DBP, WC, HC, WHR, total cholesterol, and triglycerides ($p < 0.05$) from baseline to week 12. These findings suggest that yoga-based lifestyle intervention might serve as an important treatment modality in reducing the risk of cardiovascular disease through weight loss, reduction in blood pressure, cardio-metabolic risk factors and adipocytokines in subjects with pre-HTN or HTN.

Wolff M et.al, (2016), proved that yoga impact on blood pressure (BP) and quality of life (QOL) and on stress, depression and anxiety in patients with hypertension in a primary care setting. 12-week intervention completion. Adult primary care patients

diagnosed with hypertension were randomly allocated to yoga or usual care. The intervention group performed a short home-based Kundalini yoga programmed 15 min twice-daily during the 12-week intervention period. At baseline and follow-up, the participants underwent standardized BP measurements and completed questionnaires on QOL, stress, anxiety and depression. Data obtained from 191 patients (mean age 64.7 years, s.d. 8.4) allocated to yoga intervention (n=96) and control group (n=95), with a total proportion of 52% women, showed a significant reduction in systolic and diastolic BP for both groups (-3.8/-1.7 mm Hg for yoga and -4.5/-3.0 mm Hg for control groups, respectively). However, the BP reduction for the yoga group was not significantly different from control. There were small but significant improvements for the yoga group in some of the QOL and depression measures ($P < 0.05$, Hospital Anxiety and Depression Scale, HADS-D) compared with control.

Methodology

To achieve the purpose of the study, 30 Hypertensive middle-aged women between the age 45 and 55 years were selected randomly from Chennai and they were divided into two groups such as Yogic Practices (Group A) and Control Group (Group B). Each group consists of 15 subjects. Random group experimental design was used. The random sampling design was followed to select the subjects. The pre-test was taken for the two Groups (A and B) on the selected dependent variables. Group A was undergoing Yoga practices and Control Group (Group B) was permitted to undergo their normal lifestyle (active rest) during the course of the experiment. Post-tests were also conducted for all the groups on selected dependent variables after the experimental period of 12 weeks. The selected Physiological variables such as Systolic, Diastolic and Body Mass Index (BMI) were measured through Lab test. Analysis of Co-Variance (ANCOVA) was used to find out the significant difference between experimental group and the control group. The test of significance was fixed at 0.05 level of confidence.

Results and discussions

The data pertaining to the variables collected from the two groups before and after the training period were statistically analyzed by using Analysis of Co-Variance (ANCOVA) to determine the significant difference and tested at 0.05 level of confidence. Yoga practices (Group-A), and Control Group (Group-B) on Systolic among of Hypertensive middle-aged women are presented in Table I.

TABLE I
Analysis of co-variance of the means of experimental group and the control group in systolic (mm/Hg)

	Source of Variation	Degrees of Freedom	Sum of Squares	Mean Sum of Squares	F-Ratio
Pre	Between	1	0.13	0.13	0.17
	With in	28	21.33	0.76	
Post	Between	1	512.53	512.53	44.55*
	With in	28	322.13	11.50	
Adjusted Post	Between	1	497.81	497.81	43.15*
	With in	27	311.49	11.54	

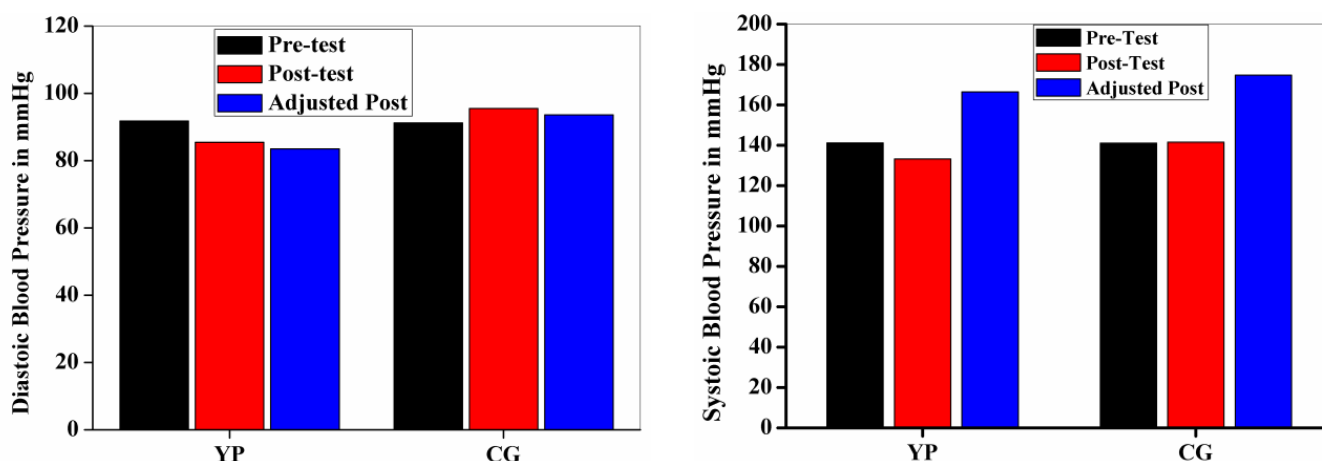
* * Significant at 0.05 level of confidence (Table F ratio at 0.05 level of confidence for df 1 and 28 = 4.20, 1 and 27 = 4.21).

TABLE II
Analysis of co-variance of the means of experimental group and the control group in diastolic (mm/Hg)

Test	Source of Variation	Degrees of Freedom	Sum of Squares	Mean Sum of Squares	F-Ratio
Pre	Between	1	2.70	2.70	2.63
	With in	28	28.80	1.03	
Post	Between	1	760.03	760.03	58.23*
	With in	28	365.47	13.05	
Adjusted Post	Between	1	700.07	700.07	51.74*
	With in	27	365.35	13.53	

* * Significant at 0.05 level of confidence (Table F ratio at 0.05 level of confidence for df 1 and 28 = 4.20, 1 and 27 = 4.21).

Figure I & II
Bar diagram showing ordered adjusted mean post-test of the experimental group and control group for systolic and diastolic (mm/Hg)



The obtained F - ratio value for the Systolic and Diastolic were greater than the table value, it indicates that there was a significant difference among the post-test and adjusted post-test means of Yogic Practices and Control group (Group-B) of hypertensive middle-aged women. The above findings

can also be substantiated by the observations made by renowned experts such as [Yadav R \(2016\), et.al.](#) The pre- test, post-test and adjusted post–test mean values of Yogic Practices (Group-A) and Control group (Group-B) of hypertensive middle-aged women were graphically presented in Figure I and II.

The Analysis of Covariance (ANCOVA) on Body mass index among Yogic Practices and Control group (Group-B) of hypertensive middle-aged women were analyzed and are presented in Table III.

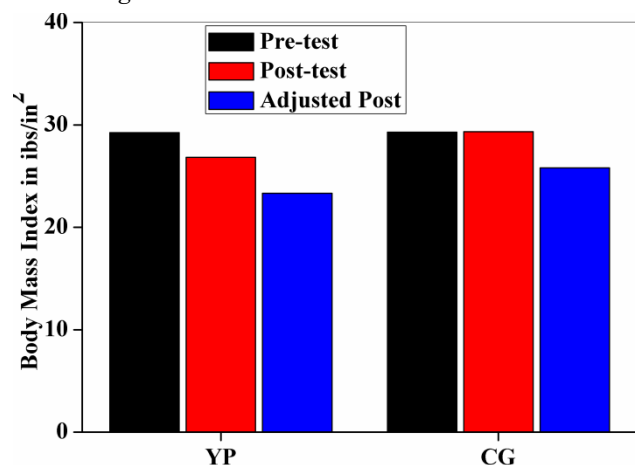
TABLE III

Analysis of co-variance of the means of experimental group and the control group in body mass index (BMI) lbs/in²

Test	Source of Variation	Degrees of Freedom	Sum of Squares	Mean Sum of Squares	F-Ratio
Pre	Between	1	0.03	0.03	0.14
	With in	28	5.53	0.20	
Post	Between	1	47.13	47.13	42.52*
	With in	28	31.03	1.11	
Adjusted Post	Between	1	46.09	46.09	41.05*
	With in	27	30.32	1.12	

* * Significant at 0.05 level of confidence (Table F ratio at 0.05 level of confidence for df 1 and 28 = 4.20, 1 and 27 = 4.21).

The obtained F - ratio value for the body mass index was greater than the table value, it indicates that there was a significant difference among the post test and adjusted post-test means of Yogic Practices (Group-A) and Control group (Group-B) of hypertensive middle-aged women.



The pre- test, post-test and adjusted post–test mean values of Yogic Practices (Group-A) and Control group (Group-B) of hypertensive middle-aged women were graphically presented in Figure III.

Figure III Bar diagram showing ordered adjusted mean post test of the experimental group and control group for body mass index lbs/in².

The above findings can also substantiate by observations of the experts, Yadav (2016). The results of the study on the selected variables showed that due to the influences of Yoga practices was the Physiological variables were significantly decreased than the control group among hypertensive middle-

aged women. Hence, the hypothesis was accepted at 0.05 level of confidence.

Conclusions

From the analysis and discussions of the present study, the following conclusions were drawn. It was concluded that there was decrease on systolic and diastolic blood pressure among hypertensive middle-aged women due to yogic practices. It was concluded that there was decreased on Body Mass Index (BMI) among hypertensive middle-aged women due to yogic practices.

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