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Effect of yogic practices on body mass index and anxiety among middle aged hypertensive women

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Abstract--The present random group experimental study was designed to find out the effect of yogic practices on Body Mass Index and Anxiety among middle aged hypertensive women. To achieve the purpose of the study, 30 middle aged hypertensive women from Chennai city aged between 40 years and 50 years were selected randomly using random group sampling method and were divided into two groups, i.e Experimental group I and control group II of 15 subjects each. It was hypothesized that there would be significant differences due to yogic practices among middle aged hypertensive women on selected dependent variables such as Body Mass Index and Anxiety than the control group. Preliminary test was conducted on selected dependent variable before the start of the training program. Experimental group I underwent yogic practices for 8 weeks, five days a week for a maximum of one hour in the morning. The control group was kept in active rest. Post test was conducted after the training period for the two groups on the same dependent variables such as Body Mass Index and Anxiety. The data collected from the groups was statistically analyzed by using Analysis of Co-variance (ANCOVA) to determine the significant differences. Test of significance was fixed at 0.05 level of confidence. The results of the study showed that the experimental group showed significant differences on selected variables such as Body Mass Index and Anxiety than the control group due to yogic practices. Hence the hypothesis was accepted at 0.05 level of confidence. It is hence concluded that the yogic practices are beneficial to middle aged hypertensive women to maintain Body Mass Index and reduce Anxiety.

Keywords---Yogic Practices, Hypertension, Middle aged women, Body Mass Index and Anxiety.

Introduction

The number of people who suffer from Hypertension is growing rapid now-a -days. It is the main cause of cardiovascular diseases and remains the top cause of global mortality. It is estimated that 1.13 billion people worldwide have hypertension. (World Health Organisation 2019) Women particularly in the middle age suffer from hypertension due to various reasons such as family Obesity, stress, migraine attacks during second half of menstrual cycle, continuous work tensions, food habits, lifestyle etc. For middle-aged women who are dealing with menopausal transition, hormonal changes often cause or contribute to Hypertension (Jeannette Y. Wick 2020).

Yoga is an alternative healthcare practice to improve blood pressure control. Yoga techniques improve physical and mental health by regulating the Sympathetic Nervous System. Yoga has proven effective in managing secondary cardiac complications due to chronic hypertension.

Objective of the study

The objective of the study was to find out whether there would be any significant difference on selected variables such as Body Mass Index and Anxiety among middle aged hypertensive women.

Purpose of the study

The purpose of the study was to find out the effect of yogic practices on Body Mass Index and Anxiety among middle aged hypertensive women.

Hypothesis

It was hypothesized that there would be significant differences due to yogic practices on selected variables such as Body Mass Index and Anxiety among middle aged hypertensive women than the control group.

Delimitations

- The study was confined to middle aged hypertensive women from Chennai City, India only.
- The age of the subject was ranged from 40 to 50 years only.
- The study was confined to yogic practices as independent variable only
- The study was confined to Body Mass Index and Anxiety as dependent variables only.

Limitations

- The Factors like Socio-Economical status were not taken into consideration.

- The climatic conditions were not considered.
- Factors like Life style habits were not taken into consideration.
- Subjects' day to day activities were not taken into account.
- Diet and Medication followed by subjects was not controlled.

Review of related literature

Rujuta S. Hadaye, Shruti Shastri, and Santosh Salagre (May 27th @2021) 1. *Int J Prev Med.* 2021 May 27;12:55. doi: 10.4103/ijpvm.IJPVM_378_19. eCollection 2021. Effect of Yoga Intervention in the Management of Hypertension: A Preventive Trial. Hadaye RS(1), Shastri S(1), Salagre S(2). Author information: (1) Department of Community Medicine, Seth G. S. Medical College and KEM Hospital, Mumbai, Maharashtra, India. (2) Department of Medicine, Seth G. S. Medical College and KEM Hospital, Mumbai, Maharashtra, India. **BACKGROUND:** Noncommunicable diseases are on the rise in India. Hypertension is one of the major risk factors for cardiovascular diseases and also labeled as a chronic lifestyle disorder. Hence, non-pharmacological interventions leading to lifestyle modifications are of utmost importance to control and prevent hypertension. This trial aims to implement yoga intervention to the experimental group in addition to medicines, advice on diet and physical activity and to compare blood pressure and perceived stress scores with the control group. **METHODS:** It was an open-label, two-armed, non-randomized controlled trial, conducted at a tertiary care center on 145 patients with hypertension: 73 in the intervention group and 72 in the control group. The intervention group received yoga intervention for a period of 4 months on a weekly basis along with advice on physical activity, diet, and routine medicines. The control group did not receive yoga intervention. **RESULTS:** The mean age of the participants was 51.3 ± 9.4, females (58.2%) outnumbered males (41.3%). Following the intervention, perceived stress score and blood pressure showed a significant reduction between two groups ($P < 0.001$). Also, perceived stress and blood pressure were found to be reduced significantly within both groups ($P < 0.001$). **CONCLUSIONS:** Yoga proves to be an effective, safe, and less expensive adjunct therapy for hypertension management. Yoga was also found to be effective in reducing the level of stress. Diet modification and physical activity have got an important role to play in the control and prevention of hypertension. Copyright: © 2021 International Journal of Preventive Medicine. DOI: 10.4103/ijpvm.IJPVM_378_19. PMID: 34447497

Int J Prev Med. 2018 Feb 21;9:21. doi: 10.4103/ijpvm.IJPVM_242_16. eCollection 2018.

The Effect of Yoga on Stress, Anxiety, and Depression in Women. Shohani M(1), Badfar G(2), Nasirkandy MP(3), Kaikhavani S(4), Rahmati S(5), Modmeli Y(6), Soleymani A(7), Azami M(8). Author information: (1) Department of Nursing, Faculty of Allied Medical Sciences, Ilam University of Medical Sciences, Ilam, Iran. (2) Department of Pediatrics, Behbahan School of Medicine, Ahvaz Jundishapour University of Medical Science, Behbahan, Iran. (3) Department of Obstetrics and Gynecology, Women's Reproductive Health Research Center,

School of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran. (4)Prevention of Psychosocial Injuries Research Center, Faculty of medicine, Ilam University of Medical Sciences, Ilam, Iran.(5)M.Sc. Student of Epidemiology, Student Research Committee, School of Health, Ilam University of Medical Sciences, Ilam, Iran.(6)M.Sc. Student of Nursing, Student Research Committee, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.(7)M.Sc. in Management, Department of Finance, School of Medicine, Dezful University of Medical Sciences, Dezful, Iran.(8)Medical Student, Student Research Committee, Ilam University of Medical Sciences, Ilam, Iran.**BACKGROUND:** In recent decades, several medical and scientific studies on yoga proved it to be very useful in the treatment of some diseases. This study was conducted to investigate the effects of yoga on stress, anxiety, and depression in women living in Ilam, Iran.**METHODS:** This study is a quasi-experimental study with pre-post test. To collect data, the questionnaire of DASS-21 (Depression Anxiety Stress Scale-21) was used. For eligible samples, hatha yoga exercises and training sessions were held for 4 weeks (3 time/weeks; 60-70 min each) by a specialist. Data were analyzed using SPSS version 20.

RESULTS: 52 women with a mean age of 33.5 ± 6.5 were included for analysis. Depression, anxiety, and stress decreased significantly in women after 12 sessions of regular hatha yoga practice ($P < 0.001$). **CONCLUSIONS:** Yoga has an effective role in reducing stress, anxiety, and depression. Thus, it can be used as complementary medicine.**DOI:** 10.4103/ijpvm.IJPVM_242_16 **PMCID:** PMC5843960 **PMID:** 29541436

Methodology

To achieve the purpose of the random group experimental study, 70 middle age hypertensive women came forward, 45 were screened and 30 subjects were selected at random from Chennai city. The age of the subjects ranged between 40 and 50 years. The subjects were assigned into one experimental group and one control group with 15 subjects each. The pre-test was taken from the subjects before the commencement of the training.

Experimental group was involved in yogic practices for 8 weeks, and the control group kept in active rest. Yogic practices such as Loosening the Joints, Surya Namaskar followed by Asanas such as Tadasana, Katichakrasana, Hastottanasana, Vajrasana, Ustrasana, Gomukhasana, Shashangasana, Vakrasana, Bhujangasana, Makarasana, Savasana and Pranayama practices such as Nadishodana Pranyama, Brahmari Pranayama followed by OM meditation. After 8 weeks, the two groups were retested again on the same selected dependent variables such as Body Mass Index and Anxiety and scores were statistically measured using Analysis of Co-Variance (ANCOVA) to find out the significant differences between the two groups. 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 analysed by using Analysis of Co-variance

(ANCOVA) to determine the significant difference and tested at 0.05 level of confidence. These are shown in the tables below

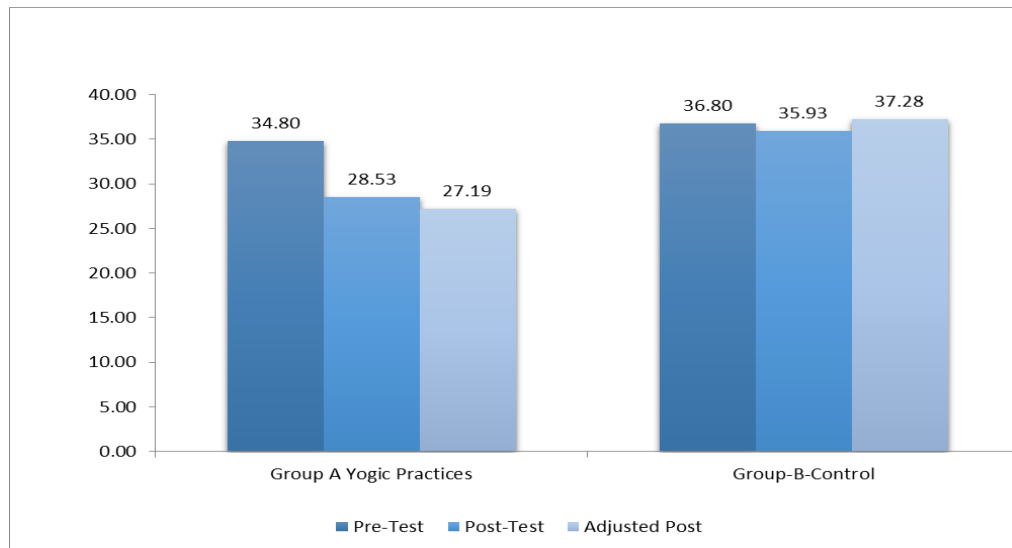
TABLE I
ANALYSIS OF CO-VARIANCE OF THE MEANS OF YOGIC PRACTICES GROUP
AND CONTROL GROUP ON BODY MASS INDEX

TEST	Experimental Group	Control Group	Source of Variance	Degree of Freedom	Sum of Squares	Mean Sum	F Ratio
Pre	34.8	36.8	Between	1	36.80	36.80	2.25
			With in	28	576.80	20.60	
Post	28.53	35.93	Between	1	410.70	410.70	26.03
			With in	28	316.67	11.31	
Adjusted Post	27.18	37.28	Between	1	726.71	726.71	18.72
			With in	27	-731.64	-27.10	
Mean Gain	-6.27	-0.87					

***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 obtained F ratio on pre-test scores 2.25 at 0.05 level of confidence. This proved that there was no significant difference between the groups on Body Mass Index in pre-test and the randomization at the pre-test was equal. The post-test and adjusted post test scores analysis proved that there was significant difference between the groups on Body Mass Index, as obtained F values 26.03 and 18.72 were greater than the required F value of 4.2 and 4.21 respectively *in line with the study conducted by [Rujuta S. Hadaye, Shruti Shastri, and Santosh Salagre \(2021\)](#)* The pre- test, post-test and adjusted post -test mean values of Yogic Practices group and the Control Group on pulse rate were graphically presented in Figure 1.

Figure – 1
ANALYSIS OF CO-VARIANCE OF THE MEANS OF YOGIC PRACTICES GROUP AND CONTROL GROUP ON BODY MASS INDEX



***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 Analysis of Co-variance (ANCOVA) on Anxiety of Yogic Practices Group and Control Group was analysed and presented in Table II

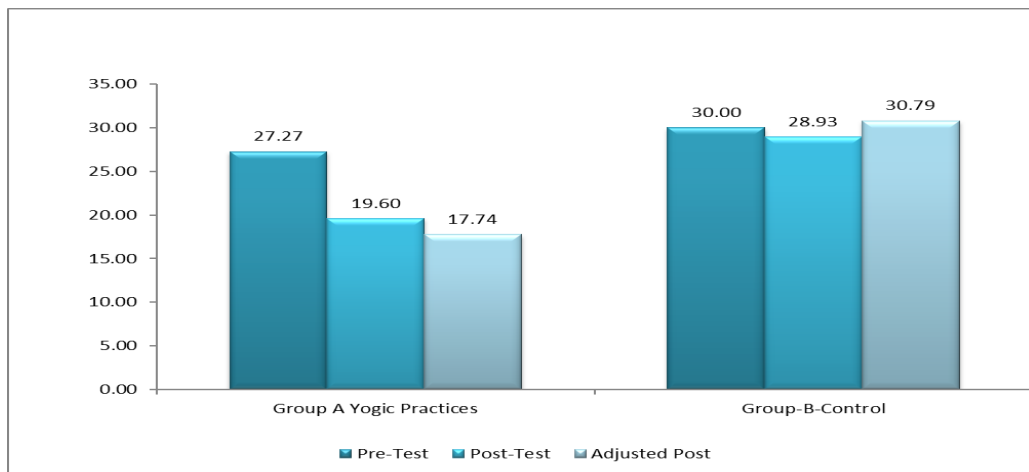
Table II
ANALYSIS OF CO-VARIANCE (ANCOVA) OF THE MEANS OF YOGIC PRACTICES GROUP AND CONTROL GROUP ON ANXIETY

TEST	Experimental Group	Control Group	Source of Variance	Degree of Freedom	Sum of Squares	Mean Sum	F Ratio
Pre	27.27	30	Between	1	30.00	30.00	2.91
			With in	28	288.93	10.32	
Post	19.6	28.93	Between	1	653.33	653.33	54.04
			With in	28	338.53	12.09	
Adjusted Post	17.74	30.79	Between	1	1069.06	1069.06	-
			With in	27	-194.38	-7.20	
Mean Gain	-7.6	-0.87					

***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 obtained F ratio on pre-test scores 2.91 was lesser than the required F value of 4.2 to be significant at 0.05 level of confidence. This proved that there was no significant difference between the groups on Anxiety in pre-test and the randomization at the pre-test was equal. The post test and adjusted post test scores analysis proved that there was significant difference between the groups on Anxiety, as obtained F values 54.04 and 148.49 were greater than the required F value of 4.2 and 4.21 respectively *in line with the study conducted by J Prev Med. 2018 Feb 21*. The pre- test, post- test and adjusted post -test mean values of Yogic Practices group and the Control Group on Anxiety were graphically presented in Figure 2.

FIGURE-2
BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGIC PRACTICES GROUP AND CONTROL GROUP ON ANXIETY



***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 results of the study showed that Yogic Practices group significantly reduced Anxiety than the Control Group. Hence, the hypothesis was accepted at 0.05 level of confidence.

Discussion on hypothesis

It was hypothesized that there would be significant differences on selected variables such as Body Mass Index and Anxiety due to yogic practices among Hypertensive middle-aged women than the control group. The results proved that there were significant differences on Body Mass Index (Decreased) and Anxiety (Reduced) due to yogic practices than the control group among Hypertensive middle-aged women. Hence, the hypothesis was accepted at 0.05 level of confidence.

Conclusion

It was concluded that yogic practices reduced Body Mass Index and Anxiety significantly among Hypertensive middle-aged women. Hence, yogic practices are beneficial to Hypertensive middle-aged women to maintain Body Mass Index and to reduce Anxiety.

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