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EFFECT OF SELECTED YOGIC PRACTICES ON BLOOD PRESSURE, HEART RATE, BODY WEIGHT, AND BODY MASS INDEX ON WOMEN AGED 30-45 YEARS

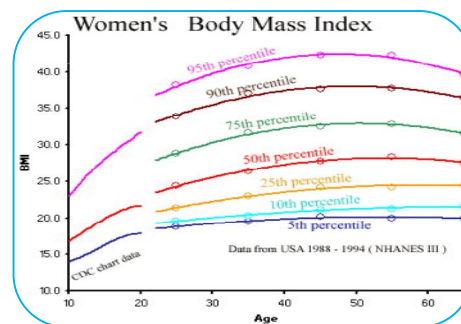
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ABSTRACT

The importance of Yoga has well known in modern life. The yogic practices leads to healthy way of life. The present study aimed to assess and compare the body weight, body mass index, heart rate, systolic blood pressure, and diastolic blood pressure between regular yogic partakers and control groups. Total 30 women were selected randomly. Out of 30 women, 15 were regular yogic partakers and 15 were control women. The age of the subjects were ranging from 30 years to 45 years. Data was gathered using weighing machine, and digital blood pressure monitor. One way analysis of variance (ANOVA) was applied to analyse the data. Result showed significant effects of Yoga on body weight, body mass index, systolic blood pressure, and diastolic blood pressure. In conclusion, Yoga was found to be effective in the present study.



KEYWORDS : body weight, body mass index, heart rate, systolic blood pressure, diastolic blood pressure.

INTRODUCTION

The importance of practicing yoga is well known. Yoga is an ancient technique practiced getting into healthy way of life. The primary aim of yoga is to achieve a balance within the internal and external environment. Through yoga mental, spiritual, and physical well-being can be achieved. The effect can be achieved with the help of "Pranayama" or breathing exercises, "Asana" or specific postures, and Meditation (Taimini, 1961). It is thought that practicing yoga over a period leads to a decrease in respiratory rate, muscular relaxation along with calming of the mind, which might be interpreted at least partly as a decreased state of arousal (Maharishi Mahesh Yogi, 1969, Nagendra and Nagrathna; 1977). Many acute studies have demonstrated that Transcendental Meditation, Zen Meditation, Om Meditation, and Yogic Relaxation reduce the resting oxygen consumption rate, respiratory rate, heart rate, and the spontaneous galvanic skin response (Hoffman et.al.; 1982; Wallace et.al.; 1971; Wallace and Benson; 1972, Telles et.al; 1994, Telles et.al.; 1995).

In contrast to the reduced physiological and metabolic activity observed during meditation and relaxation posture types of asanas, pranayama and other specific asanas could acutely increase the metabolic rate. An increase of 19% in oxygen consumption has been observed during the practice of one type of pranayama called the Ujjayi Pranayama (Miles WR; 1964). Breathing through a particular nostril, while performing the Surya Anuloma Viloma (right nostril breathing), has been shown to increase oxygen consumption by 28% (Telles et.al.; 1994). Other specific asanas can also increase the

metabolic rate transiently over the short term (Rai and Ram; 1993' Rai et.al.; 1994). The increase in oxygen consumption during these yogic practices is due the muscular activity associated with the posture assumed during the asana, or due to an increase in voluntary deep inhalation and exhalation during the pranayama (Miles WR; 1964).

Obesity is a big challenge all over the world. It is associated with many noncommunicable diseases. Yoga known to be add-on treatment may be effective for obesity control (Rshilkesanet.al.; 2017). The acute effect of this yogic practices has well been documented. The chronic effect of yogic practices such as pranayama, asana as well as meditation was given least importance. Different procedures practiced in yoga have stimulatory or inhibitory effects on the basal metabolic rate when studied acutely. In daily life however, these procedures are usually practiced in combination. The purpose of the present study is to investigate the net change in the systolic blood pressure, diastolic blood pressure, heart rate, body weight, body mass index of individuals actively engaging in a combination of yoga practices (asana or yogic postures, meditation and pranayama or breathing exercises) for a minimum period of six weeks, at Raipur, Chhattisgarh.

METHOD

The study was conducted at Raipur. Total fifteen (15) obese women age range of 30–45 years, were recruited for this study after their informed consent. Apart from the selected study group total fifteen control (non-practitioner group) subjects were assessed at the beginning and end of session to see the effect of extraneous variables. The yoga group practiced a mixed set of yoga techniques daily, in the form of asana (postures) and deep relaxation technique, pranayama (breathing techniques) and meditation, for at least the past 6 weeks or more. The asana postures started with stretching techniques followed by standing, supine, prone and sitting postures. The standing postures were the side bending triangle posture (trikonasana), forward bending (padahastasana), backward bending (ardhachakrasana) and side lateral bending (ardhakatichakrasana) techniques. The supine postures were straight leg raising and shoulder stand posture (sarvangasana), while the prone postures were locust (shalabhasana), serpent (bhujangasana) and bow (dhanurasana) postures. The sitting postures were the moon (shasankasana), hardy (vajrasana), and the half matsyendra (ardhamatsyendra) postures. The asanas were followed by a deep relaxation technique, which was performed for 6 minutes with closed eyes with specific instructions relating to awareness and relaxation of different parts of the body. The pranayama phase consisted of fast breathing techniques such as forceful exhalation (kapalabhati), and breathing through the mouth with tongue folded (shithali and shithkari), sectional breathing addressing the lower, middle and upper lobes of the lungs (vibhagiya pranayama), and a slow breathing technique or alternate nostril breathing (nadishuddhi pranayama). At the end of the pranayama, the practitioner assumed the supine posture in a totally relaxed state with closed eyes (also called the corpse posture or shavasana) for 3–6 minutes, in which the aim was to achieve an awareness of relaxation of every part of the body. Meditation practices were performed in the sitting position starting with breath awareness and relaxation.

Menstruating women performed only pranayama and meditation. The non-yoga group did not practice any asana, pranayama, meditation or special techniques, but otherwise lived a life that was similar to that of the yoga group. Control subject were vegetarian and did not drink or smoke.

SELECTION OF VARIABLES

The BMI – Body mass index, body weight, systolic blood pressure, diastolic blood pressure, heart rate was studied in the study. Total body weight was measured by using weighing machine and the score was recorded in Kg. The systolic blood pressure, diastolic blood pressure, heart rate was measured using digital blood pressure monitor. The data pertaining to this study was collected by administering the above-mentioned tests on the selected subjects just before, and after the training program.

STATISTICAL TECHNIQUES

To draw the meaningful conclusion descriptive (measure of central tendencies such as mean, and standard error) and inferential (ANOVA) was adopted.

RESULT

Table 1: showing the prevalence statistics of systolic blood pressure amongst the yoga group and control groups.

Systolic Blood Pressure Stage	Yoga	control
Normal	10	0
Prehypertension	5	7
Stage 1	0	7
Stage2	0	1

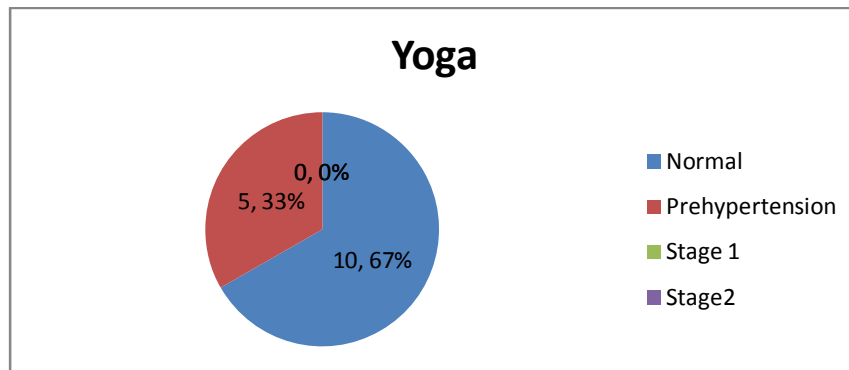


Figure 1: Showing the prevalence of distribution of systolic blood pressure amongst the female practicing Yoga.

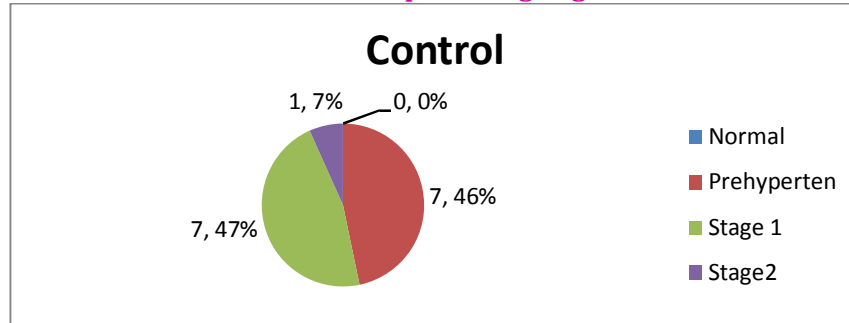


Figure 2: Showing the prevalence of distribution of systolic blood pressure amongst the control female group.

Table 1 and figure 1 & 2 demonstrated the distribution of characteristics of systolic blood pressure. In Yoga group majority of subject (67%) lying under normal category and remaining 33% of Yogic female fall under prehypertension stage. While it is seen for control subjects none of them fall under normal stage of blood pressure. 46% female fell under prehypertension stage, 47% female fell under hypertension stage 1 stage of high blood pressure, and 7% control subjects fell under hypertension stage two stage.

Table 2: Showing the comparison of systolic blood pressure between yogic group and control subjects.

Yoga Group	Control Group	t-test	
Mean \pm SE	Mean \pm SE	t-value	sig
107.67 \pm 2.88	138.80 \pm 2.66	7.93	$p < 0.01$

Table 2 depict the summary of systolic blood pressure belonging to Yoga group and control subjects. The Comparative analysis (ANOVA) shows statistically significant ($p < 0.05$) difference between regular Yoga practicing group and control subjects. The effect of yoga practice is seen in the result of the study. The systolic blood pressure of Yoga group female is significant lower as compare to that of control subjects.

Table 3: showing the prevalence statistics of diastolic blood pressure amongst the yoga group and control groups.

Diastolic Blood Pressure Stage	Yoga	control
Normal	12	1
Prehypertension	3	6
Stage 1	0	8
Stage 2	0	0

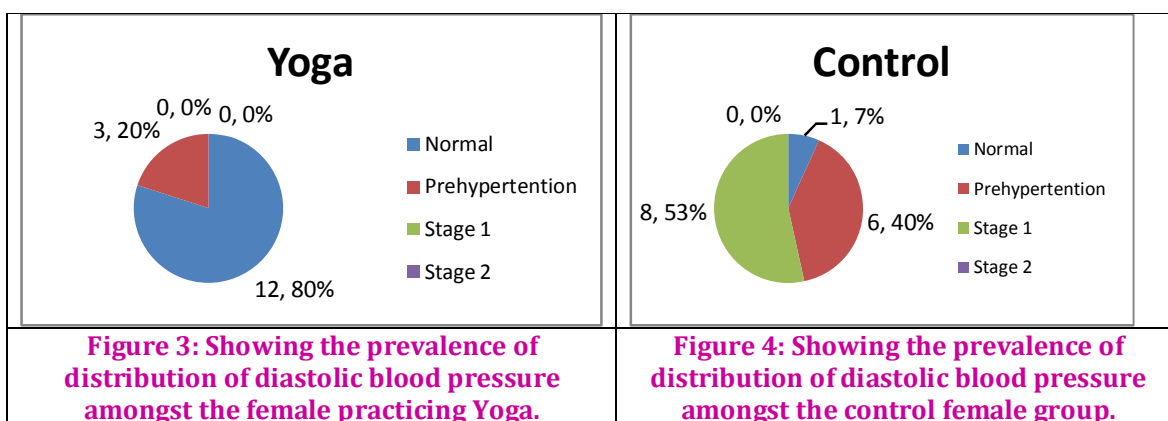


Table 3 and figure 3 & 4 demonstrated the distribution of characteristics of diastolic blood pressure. In Yoga group majority of subject (80%) lying under normal category and remaining 20% of Yogic female fell under prehypertension stage. While it is seen for control subjects 7% subject fall under normal stage, 40% female fell under prehypertension stage, and 53% female fell under hypertension stage 1 stage of high blood pressure.

Table 4: Showing the comparison of diastolic blood pressure between yogic group and control subjects.

Yoga Group	Control Group	t-test	
Mean \pm SE	Mean \pm SE	t-value	sig
71.87 \pm 1.38	87.27 \pm 1.45	7.70	$p < 0.01$

Table 4 depict the summary of diastolic blood pressure belonging to Yoga group and control subjects. The Comparative analysis (ANOVA) shows statistically significant ($p < 0.05$) difference between regular Yoga practicing group and control subjects. The effect of yoga practice is seen in the diastolic blood pressure of Yoga group female in the present study. The diastolic blood pressure (71.87 \pm 1.38) of Yoga group female is significant lower as compare to that of control subjects (87.27 \pm 1.45).

Table 5: Showing the comparison of heart rate between Yogic group and control subjects.

Yoga Group	Control Group	t-test	
Mean \pm SE	Mean \pm SE	t-value	sig
72.20 \pm 1.48	71.53 \pm 1.87	0.28	NS

Table 5 depict the summary of heart rate belonging to Yoga group and control subjects. The Comparative analysis (ANOVA) shows statistically insignificant ($p>0.05$) difference between regular Yoga practicing group and control subjects. The heart rate of Yoga group female (71.20 \pm 1.48) of Yoga group female is significantly not differ from that of control subjects (71.53 \pm 1.87).

Table 6: Showing the comparison of body weight (Kg) and body mass index between (Kg) Yogic group and control subjects.

Variable	Yoga Group	Control Group	t-test	
	Mean \pm SE	Mean \pm SE	t-value	sig
Body Weight	59.80 \pm 1.18	70.53 \pm 2.74	3.59	$p<0.01$
Body Mass Index	22.95 \pm 0.49	27.06 \pm 0.82	4.30	$p<0.01$

Table 6 depict the summary of body weight and body mass index belonging to Yoga group and control subjects. The Comparative analysis (ANOVA) shows statistically significant ($p<0.05$) difference between regular Yoga practicing group and control subjects. The regular Yoga exercise effect is seen in the treatment group. The body weight of Yoga group female (59.80 \pm 1.18) kg of Yoga group female is significantly lower than that of control subjects (70.53 \pm 2.74). Similar result is witnessed in body mass index. The body mass index of Yoga group female is significantly lower as compare to that of control subjects.

FINDINGS

The collected data was analysed to draw meaningful result of the present study. The result of the present study demonstrated significant difference systolic blood pressure, diastolic blood pressure, body weight, and body mass index between Yoga group female and control subjects. In contrast, insignificant difference was found in heart rate between the studied groups.

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