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EFFECT OF YOGIC PRACTICES ON HEART RATE AND FASTING BLOOD SUGAR AMONG MIDDLE AGED TYPE 2 DIABETIC WOMEN

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ABSTRACT

The purpose of the random group experimental study was to find out the effect of Yogic Practices on Heart Rate and Fasting blood sugar among middle aged type 2 Diabetic Women. For the purpose of the study, 30 middle aged women suffering with Diabetic were selected randomly using random sampling method from Chennai between the age group of 35 and 45 years and they were divided into two groups I, and II with 15 subjects each. It was hypothesized that there would be significant differences among middle aged type 2 Diabetic Women on selected Physiological and Bio-Chemical variables such as Heart Rate and Fasting blood sugar than the control group. Preliminary test was conducted for two Groups on Heart Rate and Fasting blood sugar before the start of the training program. Group I subjects were given Yogic practices for 60 minutes, six days a week for a total period of eight weeks. Group II (Control Group) were in active rest. After the experimental period, the two groups were retested again on the same selected dependent variables. Analysis of co-variance (ANCOVA) was used to find out the significant differences between the experimental group and the control group. The test of significance was fixed at 0.05 level of confidence. The results of the study proved that the Experimental Group showed significant differences on selected Physiological and Bio-Chemical variables such as Heart Rate (decreased) and Fasting blood sugar (reduced) than the Control Group due to Yogic practices among middle aged type 2 Diabetic Women. The hypothesis was accepted at 0.05 level of confidence. Hence it is concluded that Yogic practices are beneficial middle aged type 2 Diabetic Women to Heart Rate and Fasting blood sugar.

Key words: Yogic Practices , Heart Rate, Fasting blood sugar, Diabetes, Middle aged Women**.**

I. INTRODUCTION

MOTIVATION FOR RESEARCH

Diabetes is one of the fastest growing health challenges, with the number of adults living with diabetes having more than tripled over the past 20 years. Diabetes Mellitus is an important public health problem, more simply called diabetes, is a serious, long-term (or 'chronic') condition that occurs when there are raised levels of glucose in a person's blood sugar level and the subsequent excretion of sugar in the urine because their body cannot produce any or enough of the hormone insulin, or cannot effectively use the insulin it produces.

The role of women has also changed in the 21st century. Today women is leading in family, every field, society, Because of this responsible and life style disorder, women's health are highly affect. In that Diabetes is one of the most common disease in women now a day. In 20 million women, 16% of live births had some form of hyperglycaemia in pregnancy. An estimated 84% were due to gestational diabetes.

In Globally, As per IDF Diabetes Atlas – 9th Edition 2019 report state - Global diabetes estimates and projections Total world population 7.7 billion. By 2009 it had grown by 88% to 285 million. Today, Adult population (20–79 years) 5.0 billion and it is calculated that 9.3% of adults aged 20–79 years – a staggering 463 million people (Global Prevalence 9.3%) – are living with diabetes. This number is expected to increase to 578 million (10.2%) in 2030 and 700 million (10.9%) in 2045.

In India, An estimated 60 million people have diabetes-the highest number compared to any one country of the world. China is the country with the highest number of diabetics worldwide, with around 116 million people suffering from the disease.

CAUSES OF TYPE 2 DIABETES

Inadequate or no secretion of insulin by pancreas. Cells and organs may not utilize the insulin to convert glucose into energy to meet their requirements.

Hereditary factor, Metabolic syndrome, Fasting blood sugar, Insomnia, Constipation, Lack of dietary control, Too much glucose from liver , Bad communication between cells , Broken beta cells, Extra weight due to lack of physical exercise are the causes of

diabetes.

SYMPTOMS OF TYPE 2 DIABETES:

The symptoms of type 2 diabetes about 8 million people who have it don't know it. Symptoms include:Frequent urination – Polyuria, Excessive thirst – Polydipsia, Increased hunger/ appetite – Polyphagia, Sudden loss of weight, Tiredness, Lack of interest and concentration, Blurred visionTingling sensation or numbness in hands and feet, Frequent infections, Slow healing wounds and Black patches in skin.

COMPLICATIONS:

Diabetes of all types can lead to complications in many parts of the body and can increase the overall risk of dying prematurely. Possible complications include heart attack, stroke, kidney failure, leg amputation, vision loss and nerve damage. In pregnancy, poorly controlled diabetes increases the risk of fatal death and other complications.

OBJECTIVES OF THE STUDY

- To find out whether there would be any significant difference on Heart Rate due to yogic practices among middle aged type 2 Diabetic Women.
- To find out whether there would be any significant difference on Fasting blood sugar due to yogic practices among middle aged type 2 Diabetic Women.

STATEMENT OF THE PROBLEM

The purpose of the study was to find out the effect of yogic practices on Heart Rate and Fasting blood sugar among middle aged type 2 Diabetic Women

HYPOTHESIS

It was hypothesized that there would be significant differences on Heart Rate and Fasting blood sugar among middle aged type 2 Diabetic Women due to yogic practices than the control group.

DELIMITATIONS

- The study was delimited to the Middle aged women suffering with Diabetes only
- The age group of the subjects was aged between 35 and 45 years only.
- The study was delimited to Middle aged women suffering with Diabetes residing in Chennaionly.
- The study was delimited to the Independent variable Yogic practices only.
- The study was delimited to the following dependent variables only. Heart Rate & Fasting blood sugar

LIMITATIONS

- The factors like life style, body structure, and social activities were not taken in to consideration for this study.
- The factors like family heredity and motivational factors were not taken into consideration for this study.
- Certain factors like environmental and climatic conditions, economical background and also day to day work were not taken into consideration.
- The factors like diet, medication and personal habits were not taken in to consideration for the study.

II. REVIEW OF RELATED LITERATURE

Sivasankaran S, et.al,(2008) conducted the study to find the effects of yoga and meditation on homodynamic and laboratory parameters as well as on endothelial function in a 6-week pilot study. Systolic and diastolic blood pressures, Heart Rate, Heart Rate (BMI), fasting glucose, lipids, C-reactive protein (CRP), and endothelial function (as assessed by brachial artery reactivity) were all studied at baseline and after 6 weeks of yoga practice. A course in yoga and meditation was given to the subjects for three times weekly for 6 weeks and subjects were instructed to continue their efforts at home. This prospective cohort study included 33 subjects (mean age 55 +/- 11 years) both with (30%) and 30 without (70%) established coronary artery disease (CAD). There were significant reductions in blood pressure, heart rate, and BMI in the total cohort with yoga. None of the laboratory parameters changed significantly with yoga. For the total cohort there was no significant improvement in endothelial-dependent vasodilatation with yoga training and meditation compared with baseline (16.7% relative improvement from 7.2-8.4%; p = 0.3). In the group with CAD, endothelial-dependent vasodilatation improved 69% with yoga training (6.38-10.78%; p = 0.09). The conclusion of the study was yoga and meditation appears to improve endothelial function in subjects with CAD.

Shantakumari, Nisha et.al., (2012) Conducted the study on Effect of a yoga intervention on hypertensive diabetic patients. The concept of psychosomatic medicine has gained popularity, with yoga racing ahead in the field. The study was conducted to assess the effectiveness of yoga as an intervention in the management of patients with Type 2 diabetes mellitus complicated with hypertension. This study was carried out in 2005 in Medical College Trivandrum, Kerala, India among 100 hypertensive Type 2 diabetics. They were randomized into control and yoga groups. The yoga group practiced yoga daily for one hour and given oral hypoglycemic drugs for 3 months. The control group did not perform yogic exercises but given oral hypoglycemic drugs. Comparisons were drawn between systolic blood pressure (SBP), diastolic blood pressure (DBP), Fasting blood sugar (FBS) and post prandial blood sugar (PPBS) in both the groups at the start and at the end of 3 months. Paired and unpaired t tests were performed. After intervention with yoga for 3 months the study group showed a significant decrease in SBP from 141.71±9.79 to 132.23±7.89 mm Hg, DBP from 90.57±4.07 to 85.49±5.03 mm Hg and FBS from 155.86±60.53 to 126.63±40.59 mg%. The reduction in PPBS from 240.31±79.42 to 208.74±73.05 mg% was however not proved to be significant statistically. These findings suggest that diabetics may benefit from yoga's ability to improve the disease status.

III. RESEARCH METHODOLOGY

To achieve the purpose of the random group experimental study 90 Middle aged women suffering with Diabetes aged between 35 and 45 years were invited, they were screened into 60 subjects and finally through random group sampling method 30 subjects were selected randomly. They divided into two groups. One group was given yogic practices and the other was taken as control group. The dependent variables chosen are Heart Rate and Fasting blood sugar. Random group experimental design was used. The practice of yoga techniques like Asana, Pranayama, Meditation, Mudra, etc. helps to overcome any imbalances and creates harmony in the physical, mental, Psychologically and spiritual aspects of human personality.

The experimental group underwent training period of Six days per week for the maximum of an hour in the morning for eight weeks and the control group did not undergo any training. The Analysis of co-variance (ANCOVA) was used as a statistical technique to find out the significant mean differences between the groups. The level of significance was fixed at 0.05%.

IV. RESULTS AND DISCUSSIONS

The data pertaining to the variable 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 the hypothesis was tested at 0.05 level of confidence. These are shown in Tables below.

Table I

BAR DIAGRAM SHOWING THE MEAN DIFFERENCES AMONG THE GROUPS ON HEART RATE (Beat/min)

Mean	Exp. Group	Control group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre-Test Mean	76.40	75.33	Between	5.13	1	5.13	1.43
			Within	84.47	28	3.02	
Post Test Mean	64.33	75.80	Between	282.13	1	282.13	433.24*
			Within	78.53	28	2.80	
Adjusted Mean	64.16	75.98	Between	216.55	1	216.55	589.91*
			Within	34.13	27	1.26	

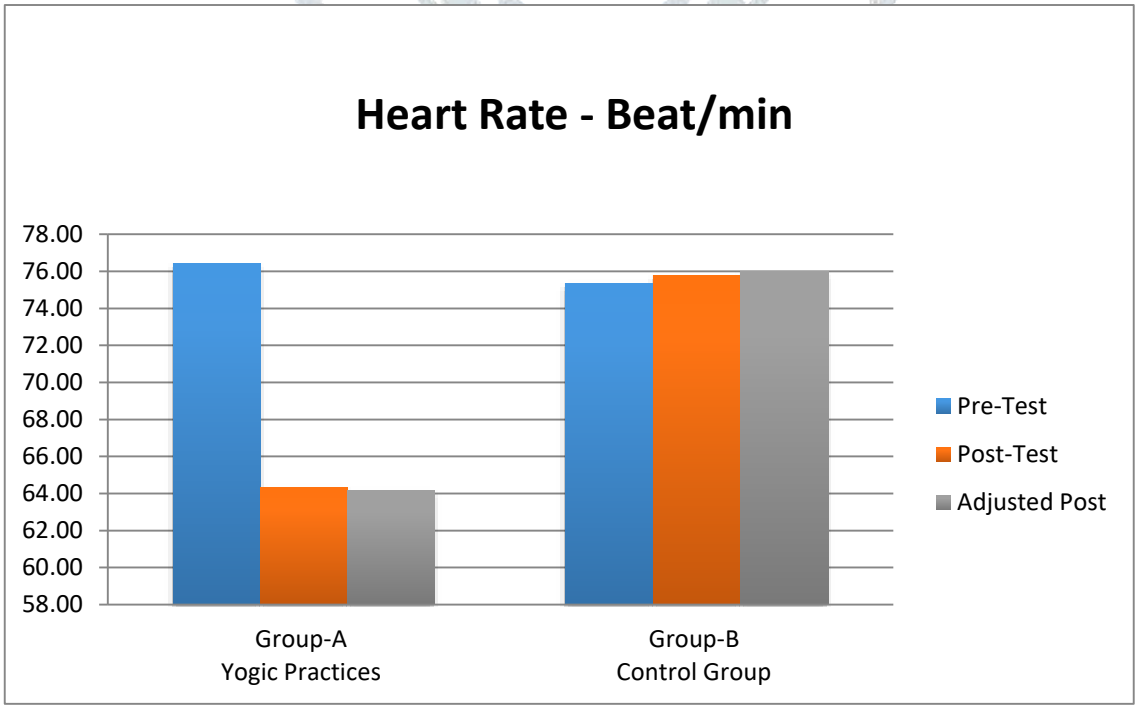
***Significant at 0.05 level of confidence. (Table F-ratio at 0.05 level of confidence for df 1 at 28 = 4.2 and for df 1 at 27 =4.21)**

The obtained F value on pre test scores 1.43 was lesser than the required F value of 4.2 to be significant at 0.05 level. This proved that there was no significant difference between the groups a pre-test and post-test and the randomization at the pre-test was equal. The post test scores analysis proved that there was significant difference between the groups, as obtained F value 433.24 was greater than the required F value of 4.20. This proved that the differences between the post test means of the subjects were significant. Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value 589.91 was greater than the required F value of 4.21. This proved that there was a significant difference among the means due to eight weeks of Yoga Practices on Heart Rate (BMI) in line with the study conducted by **Sivasankaran S, et.al,(2008).**

The ordered adjusted means on Heart Rate (BMI) were presented through bar diagram for better understanding of the results of this study in Figure - I

Figure I

BAR DIAGRAM SHOWING THE MEAN DIFFERENCES AMONG THE GROUPS ON HEART RATE (Beat/min)



***Significant at 0.05 level of confidence.**

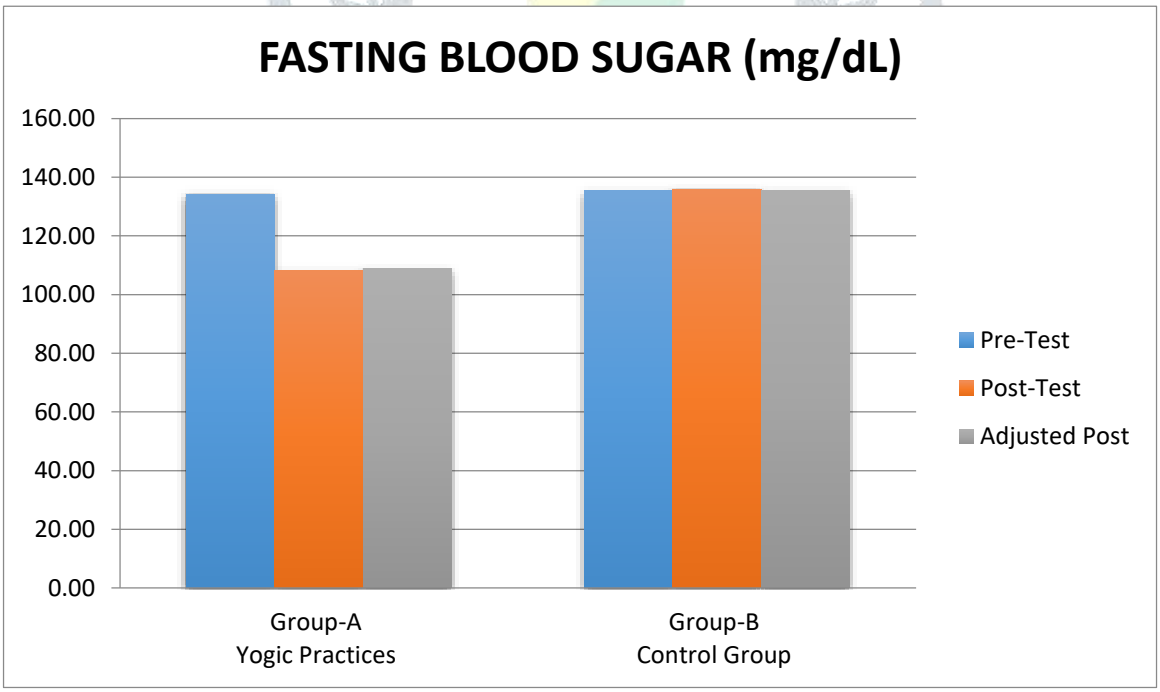
TABLE II
COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF FASTING BLOOD SUGAR OF EXPERIMENTAL AND CONTROL GROUP

Mean	Exp. Group	Control group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre-Test Mean	135.80	134.47	Between	0.65	1	0.65	0.22
			Within	80.31	28	2.87	
Post Test Mean	108.00	136.27	Between	282.13	1	282.13	134.78*
			Within	78.53	28	2.80	
Adjusted Mean	107.52	136.75	Between	258.82	1	258.82	469.26*
			Within	26.83	27	0.99	

***Significant at 0.05 level of confidence. (Table F-ratio at 0.05 level of confidence for df 1 at 28 = 4.2 and for df 1 at 27 =4.21)**

The obtained F value on pre test scores 0.22 was lesser than the required F value of 4.2 to be significant at 0.05 level. This proved that there was no significant difference between the groups a pre-test and post-test and the randomization at the pre-test was equal. The post test scores analysis proved that there was significant difference between the groups, as obtained F value 134.78 was greater than the required F value of 4.20. This proved that the differences between the post test means of the subjects were significant. Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value 498.26 was greater than the required F value of 4.21. This proved that there was a significant difference among the means due to eight weeks of Yoga Practices on Fasting Blood Sugar in line with the study conducted by **Shantakumari, Nisha et.al., (2012).**

Figure II
BAR DIAGRAM SHOWING THE MEAN DIFFERENCES AMONG THE GROUPS ON FASTING BLOOD SUGAR (mg/dL)



***Significant at 0.05 level of confidence**

The outcome of the study exhibits that Heart Rate decreased and Fasting blood sugar reduced significantly due to Yogic Practices for Group-I than Group II. Hence the hypothesis was accepted at 0.05 level of confidence. The above findings were also substantiated by the observations made by the expert **Sivasankaran S, et.al,(2008) and Shantakumari, Nisha et.al., (2012)..**

DISCUSSION ON HYPOTHESIS

It was hypothesized that there would be significant differences on selected Physiological variable such as Heart Rate and Bio-Chemical variable such as Fasting blood sugar due to Yogic Practices among Experimental Group than the control group. The results proved that there were significant differences on Heart Rate (Decreased) and Fasting blood sugar (Decreased) due to Yogic Practices than the control group among middle aged type 2 Diabetic Women at 0.05 level of significance.

V. CONCLUSION

It is concluded that Yogic Practices Heart Rate (Decreased) and Fasting blood sugar (Decreased) due to Yogic Practices among middle aged type 2 Diabetic Women . Hence, Yogic practices are good for middle aged type 2 Diabetic Women to maintain healthy Heart Rate and Fasting blood sugar.

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