



EFFECT OF YOGIC PRACTICES ON HEART RATE AND STRESS AMONG MIDDLE AGED TYPE 2 DIABETIC WOMEN

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ABSTRACT

Diabetes Mellitus 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 Pancreas not produce any or enough Insulin Hormone. Yogic practices are essential for middle aged Type 2 Diabetic Women.

AIM AND OBJECTIVES:

The aim and objectives of the study was to find out whether there would be any significant difference on selected Physiological variable Heart Rate and Psychological variables Stress due to yogic practices among middle aged Type 2 Diabetic Women.

METHODS:

For the random group experimental study, 30 middle aged Type 2 Diabetic Women were selected by using random sampling group design from Chennai between the age group of 35 and 45 years and they were divided into two groups A and B with 15 subjects in each. It was hypothesized that there would be significant differences due to Yogic practices on Heart Rate and Stress among middle aged Type 2 Diabetic Women. Pre-test was conducted for both the two Groups (A and B) on the selected dependent variables before the start of the training program. Group A was given Yogic practices; Group B (Control Group) didn't receive any specific treatment but were in active rest. After the experimental period of eight weeks, the two Groups (A variance (ANCOVA) was used to find out the significant differences between and B) were retested on the same selected dependent variables. Analysis of co- experimental group and the control group.

RESULTS AND CONCLUSIONS:

The results proved that Yogic practices decreased Heart Rate and reduced stress among Middle aged Type 2 Diabetic Women at 0.05 level of confidence. It is concluded that yogic practices are essential for middle aged Type 2 Diabetic Women.

KEY WORDS:Yogic Practices, Diabetes, Heart Rate, Stress, Middle age

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.

In TamilNadu, As per Indian Council of Medical Research. (ICMR), Among the 15 states TamilNadu had the highest number of diabetics (10.4 per cent prevalence), following Chandigarh (UT).

STATEMENT OF THE PROBLEM

The purpose of the study was to find out the effect of Yogic Practices on Heart Rate and Stress among middle aged type 2 diabetic women.

HYPOTHESIS

It was hypothesized that there would be significant differences due to Yogic Practices on selected Physiological and Psychological variables such as Heart Rate and Stress respectively among middle aged type 2 diabetic women

RESEARCH OBJECTIVES

The objective of the study was to find out whether there would be any significant difference on physiological variable Heart Rate among middle aged type 2 diabetic women. The objective of the study was to find out whether there would be any significant difference on psychological variable Stress among middle aged type 2 diabetic women.

DELIMITATIONS

- The study was delimited to the middle-aged women from Chennai city only
- Age of subjects was ranged from 35 to 45 years only.
- The subjects were middle aged Type 2 diabetic women only.
- The dependent variables were restricted to Heart Rate and Stress variable only.
- Independent variables were Yoga Practices only.

LIMITATIONS

- The factors like Socioeconomic 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 were not controlled.

REVIEW OF RELATED LITERATURE

Sivasankaran S, et.al, (2008), examined the effects of yoga and meditation on homeodynamic and laboratory parameters as well as on endothelial function in a 6- week pilot study, Systolic and diastolic blood pressures, Heart Rate, Body Mass Index (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 vasodilation 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 vasodilation 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.

Innes, Kim E et.al., (2007) conducted the research on yoga practices on risk factors in adults with type 2 Diabetes Mellitus. Yoga may be a safe and cost-reduce for Type 2 Diabetes Mellitus (DM 2). They identified 25 eligible research, with 15 Non-controlled trials, 4 randomized controlled sample (RCTs) and 6 non-randomized controlled sample. Overall, these studies showed the beneficial changes in several risk in glucose tolerance and insulin sensitivity, coagulation profiles, lipid profiles. oxidative stress, sympathetic activation and pulmonary function, oxidative stress, coagulation profiles & blood pressure. Yoga may reduce the risk factors in adults with DM 2, and also prevent and management of cardiovascular complications in this population. However, the limitations characterized the major studies preclude drawing from firm conclusions. And also suggest high-quality RCTs are needed to confirm and for further research to elucidate the effects of standardized yoga practices on Diabetes Mellitus.

METHODOLOGY AND SUBSTANCE

To achieve the purpose of the study, 30 middle aged women were selected randomly from Chennai, between the age group of 35 and 45 years and they were divided into two groups A and B having 15 subjects each. Pre-test was conducted for the two Groups (A and B) on the selected dependent variables before the start of the training program. Group A was given Yoga Practices; Group B (Control Group) didn't receive any specific treatment, but in active rest. After the experimental period of twelve weeks, the two Groups (A and B) were

retested again on the same selected dependent variables as Post-test. Analysis of co-variance (ANCOVA) was used to find out the significant differences between experimental group and the control group. The test of significance was fixed at 0.05 level of confidence. The results of the study on selected physiological and psychological variables proved that the Experimental Group showed significant differences on them than the Control Group due to Yoga Practices.

- Group A was Experimental group where Yoga Practices were given.
- Group B was the control group which was in active rest, not involved in any treatment.

DEPENDENT VARIABLES

The following risk factors - physiological and Psychological variables were considered and measured using standard tests.

- Heart Rate
- Stress

INDEPENDENT VARIABLES

The yogic practices given to experimental group include

YOGIC PRACTICES

Prayer

- 1. Loosening the Joints,**
- 2. Surya Namaskar,**
- 3. Asanas**

☐ Trikonasana, Uttanapadasana, Sarvangasana, Halasana, Apanasana, Bhujangasana, Salabhasana, Dhaurasana, Mandukasana, Shashangasana & Marjuriyasana

4. Pranayama

☐ Kalaphati, Bhastrika, Ujjayi & Nadishodhana

5. Mantra Meditation

ANALYSIS OF INDEPENDENT VARIABLES FOR MIDDLE AGED TYPE? DIABETIC WOMEN

Yoga is likely a healthful addition to a treatment plan. However, it is important to remember that yoga may be a complementary therapy. It is not a replacement for treatments and medications that a healthcare professional recommends.

People with high blood pressure should not stop taking their medications to follow an alternative or complementary therapy. It is important to follow the doctor's instructions and discuss any changes with a health professional.

RESULTS

The results of the study on the selected variables showed that Heart Rate decreased and Stress reduced due to the influences of Yoga Practices among aged Type 2 diabetic women. Hence the Hypothesis was accepted at 0.05 level of significance.

**TABLE -I: COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE
 (ANCOVA) OF HEART RATE OF EXPERIMENTAL AND CONTROL GROUP
 (Beat/Minute)**

Mean	Exp. Group	Control Group	Source Of Variation	Sum Of Squares	df	Mean Squares	Obtained F
Pre-Test Mean	112.33	113.60	Between	12.03	1	12.03	0.90
			within	418.93	28	14.96	
Post -Test Mean	96.60	114.07	Between	2288.13	1	2288.13	262.00*
			within	244.53	28	8.73	
Adjusted Mean	96.96	113.71	Between	2046.67	1	258.82	481.96*
			within	112.26	27	0.99	

*Significant at 0.05 level of confidence. (Table F-ratio for df 1 at 28 = 4.2 and for df 1 at 2=4.21)

The obtained F value on pre test scores 0.90 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 262.00 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 481.96 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 in line with the study conducted by **Sivasankaran S, et.al, (2008)**.

The ordered adjusted means on Heart Rate were presented through bar diagram for better understanding of the results of this study in Figure – 1

Figure I

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

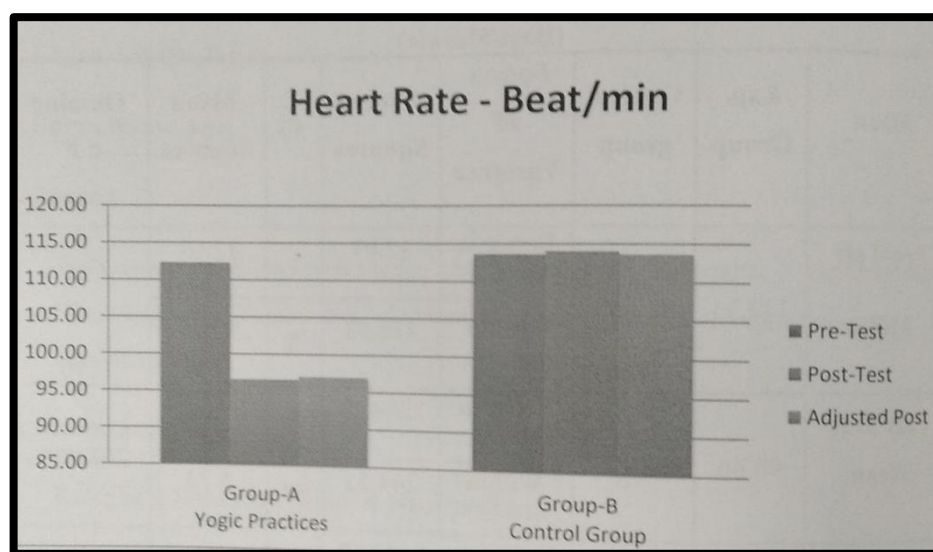


TABLE II

COMPUTATION OF MEAN AND ANALYSIS OF CO-VARIANCE (ANCOVA) OF STRESS OF EXPERIMENTAL AND CONTROL GROUP (SCORES)

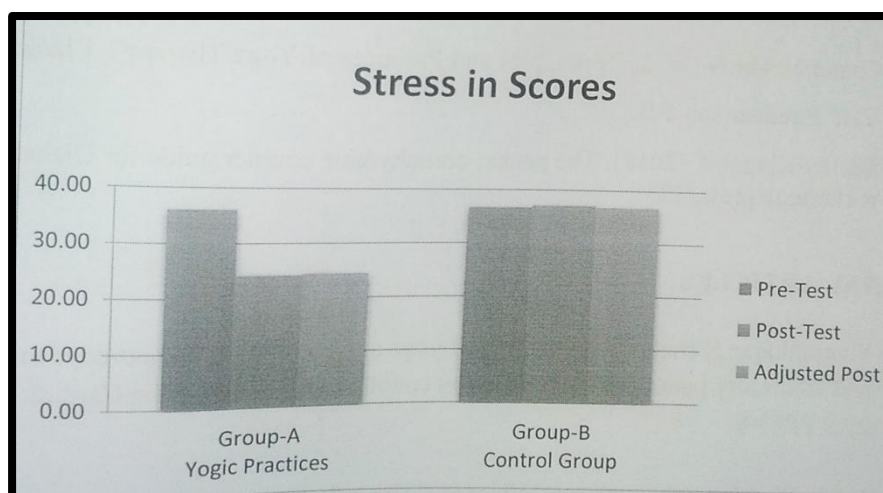
Mean	Exp. Group	Control Group	Source Of Variation	Sum Of Squares	df	Mean Squares	Obtained F
Pre-Test Mean	36.09	36.74	Between	3.14	1	8.22	0.32
			within	277.95	28	11.30	
Post -Test Mean	24.17	37.12	Between	1258.42	1	1210.95	120.66*
			within	292.02	28	10.70	
Adjusted Mean	24.45	36.83	Between	1136.80	1	1029.43	413.99*
			within	74.14	27	3.55	

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

The obtained F value on pre test scores 0.32 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 120.66 was greater than the required F value of 4.21. 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 413.99 was greater than the required F value of 4.20. This proved that there was a significant difference among the means due to eight weeks of Yoga practices on Stress in line with the study conducted by **Innes, Kim E et.al., (2007)**.

Figure II

BAR DIAGRAM SHOWING THE MEAN DIFFERENCES AMONG THE GROUPS ON STRESS
(In Scores)



The results of the study on the selected physiological and psychological variables showed that Group I has significant differences on Heart Rate and Stress, due to Yoga Practices. Hence, the hypothesis was accepted at 0.05 level of confidence.

The above finding were substantiated by the observations made by experts such as **Sivasankaran S, et.al,(2008)** and **Innes, Kim E et.al., (2007)**

DISCUSSION ON HYPOTHESIS

It was hypothesized that there would be significant differences on selected variables Heart Rate and Stress due to Yoga practices among middle aged women suffering from Type 2 Diabetes than the control group. The results proved that there were significant differences on Heart Rate (Decreased) and Stress (Reduced) due to Yoga practices than the control group among middle aged women suffering from Type 2 Diabetes.

CONCLUSION

It was concluded that yogic practices decreased significantly the Heart Rate and reduced Stress on the yoga practices Group A than the Control Group B among middle aged type 2 diabetic women. Thus, Yogic practices are beneficial for middle aged Type 2 Diabetic Women.

REFERENCES

BOOKS

- ❑ Chandrasekar.N (2012) "Principles and Practices of Yoga Therapy", Chennai; VHF Publications. P.3.
- ❑ Shelby Kinnaird, (2018). The pocket carbohydrate counter guide for Diabetes, rockeridge press, 173

JOURNAL ARTICLES

- ❑ Sivasankaran.S.et.al.(2008). "Effect of yoga and meditation on hemodynamic and laboratory parameters as well as on endothelial function" Clin Cardiol. 29:9 PP93-8
- ❑ Innes, Kim E., and Heather K. Vincent. "The influence of yoga-based programs on risk profiles in adults with type 2 diabetes Mellitus: a systematic review." Evidence-Based Complementary and Alternative Medicine 4.4 (2007): 469-486.

❑ WEB SITES

- ❖ www.healthline.com
- ❖ www.pubmed.com
- ❖ www.nih.gov.us
- ❖ www.shodhganga.com
- ❖ www.healthandyoga.com