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Effect of Yogic Practices on Blood Glucose Among Middle Aged Type-2 Diabetic Men

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Abstract: A total of 120 middle-aged men with type 2 diabetes were recruited to participate in the Random Group Experimental Study, and 90 of them were screened using lab test findings. From a potential 90 participants, 40 were selected at random using the Random Group Sampling Design. There was a total of forty participants, divided evenly between two groups of twenty (A and B) each. Participants from Group A were subjected to Yogic Exercises, whereas Group B was the control. Members of the Control Group were not participated in any kind of treatment and instead continued with their daily lives as usual. All of the groups were evaluated first using Blood Glucose (Pre-test) as the dependent variable. All groups were given a Post-test on the selected dependent variable at the conclusion of the 12 week period. For twelve weeks, members of Group A received training designed as an experiment, whereas members of Group B received no such treatment. Analysis of Covariance (ANCOVA) was used to analyze the data, it is concluded that the yogic practices group had significantly lower blood glucose levels than the control group throughout the period. The result showed that the hypothesis was correct within a 5% margin of error.

Keywords: Yoga, Type-2 Diabetic Men, Blood Glucose

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Introduction

Many people in middle age or later life tend to be diagnosed with Type 2 Diabetes (T2D). The research found that males are more likely to get diabetes than women even when their BMIs are same. This is because, unlike women, males tend

to gain weight mostly around their bellies (called "visceral fat"). Visceral fat is metabolically active and far more dangerous to health than subcutaneous fat. Drinking alcohol and smoking also increase a man's risk of developing diabetes.

The International Diabetes Federation (IDF) estimates that 425 million individuals throughout the world have T2D based on data from their 8th edition diabetes atlas. According to IDF projections for 2018, India is one of the nations most hit by the global diabetes pandemic, with a total of 72.95 million people living with type 2 diabetes (Budreviciute *et al.*, 2020). When it comes to the total number of diabetics worldwide, India ranks fifth (74.2 million in 2021). In 2021, diabetes was supposed to cause the deaths of 747,000.

By 2045, it is expected that 152 million people will be living with diabetes, a 69% increase from where we are now. Type 2 diabetes mellitus risk factors include fast urbanization, inactivity, high-calorie diet, visceral obesity, and a strong genetic susceptibility. Type-2 diabetics may improve their glycemic control and lower their risk of complications by including yoga into their daily routines.

The purpose of this study was to find out the effect of Yoga therapy on selected bio chemical variables among middle aged type-2 diabetic men. It is hypothesized that there was significant difference due to Yoga therapy on selected bio chemical variables among middle aged type-2 diabetic men than the control group.

Materials and Methods

A total of 120 middle-aged males with Type-2 diabetes were asked to participate in the Random Group Experimental Study; 90 were deemed suitable after being screened using a laboratory test report. The ultimate sample size of 40 people out of 90 were chosen at random using a Random Group Sampling Design. There was a total of 40 participants, divided evenly between two groups (A and B) -- Group A: Yogic Practices; Group B: Control Group (will get no therapy; instead, they will go on as usual).

All the groups were tested for dependent variable, fasting blood glucose. After 12 weeks, all of the groups were tested once again (Post-test)

on the dependent variable. Group A received training for 12 weeks, whereas Group B did not get any experimental therapy.

Yoga Therapy:

Samatvam Yoga Ucchyate is the yoga of equanimity, stability, balance, harmony, and equipoise, as stated in the Bhagavad Gita. Manah Prasanna up ayah yoga, as described by Sage Vashistha, is the ability to quiet the mind. Type 2 diabetics who engage in regular Yoga practice had lower body mass indexes and improved glycemic control. Insulin production from the pancreas may be kept under check with the use of yogic practices. Visceral fat is less likely to be deposited throughout the body when practitioners of yoga maintain a healthy waist size. In a time of pandemic, a decrease in inflammatory cytokines like COVID 19, yoga practice was very useful. Yogic practices lower oxidative stress in people with type 2 diabetes by increasing their antioxidant levels.

Results and Discussion

By using the Statistical Method of Analysis of Covariance (ANCOVA), we found that the Yogic Practices Group considerably decreased their Blood Glucose (Fasting) compared to the Control Group (Table 1, Fig. 1). The resulting degree of confidence in accepting the hypothesis was 0.05.

After calculating post-test and adjusted post-test means and conducting an analysis of covariance, the researchers concluded that the F values of 54.57 and 43.92, respectively, were greater than the minimum required values of 4.20 and 4.21, supporting the conclusion that yogic practices significantly lowered Blood Glucose (Fasting). This is in conformity with observations of Chimkode *et al.* (2015).

With more and more individuals opting for sedentary lifestyles and decreasing treatment efficacy (Kim *et al.*, 2016), it appears that yoga, in particular, may play a helpful and cost-effective role in the management of Type 2 diabetes mellitus (T2DM). Over the course of two years,

Table 1: Analysis of covariance of the means of the experimental group and the control group on blood glucose

Test	Exptl group	Cont group	Source of variance	Sum of Squares	Degree of freedom	Mean Sum of Squares	F-Ratio
Pre-test	132.40	137.07	between	137.07	1.00	137.07	2.98
			within	1286.53	38.00	45.95	
Post test	108.93	132.73	between	4248.30	1.00	4248.30	54.57*
			within	2179.87	38.00	77.85	
Adjusted	109.92	131.74	between	3167.72	2.00	3167.72	43.92*
			within	1947.58	37.00	72.13	
Mean gain	-23.47	--4.33					

*Significant at 0.05 level of confidence. (Table F-ratio at 0.05 level of confidence for 1 and 38 (df) =4.2, 1 and 37 (df) =4.21)

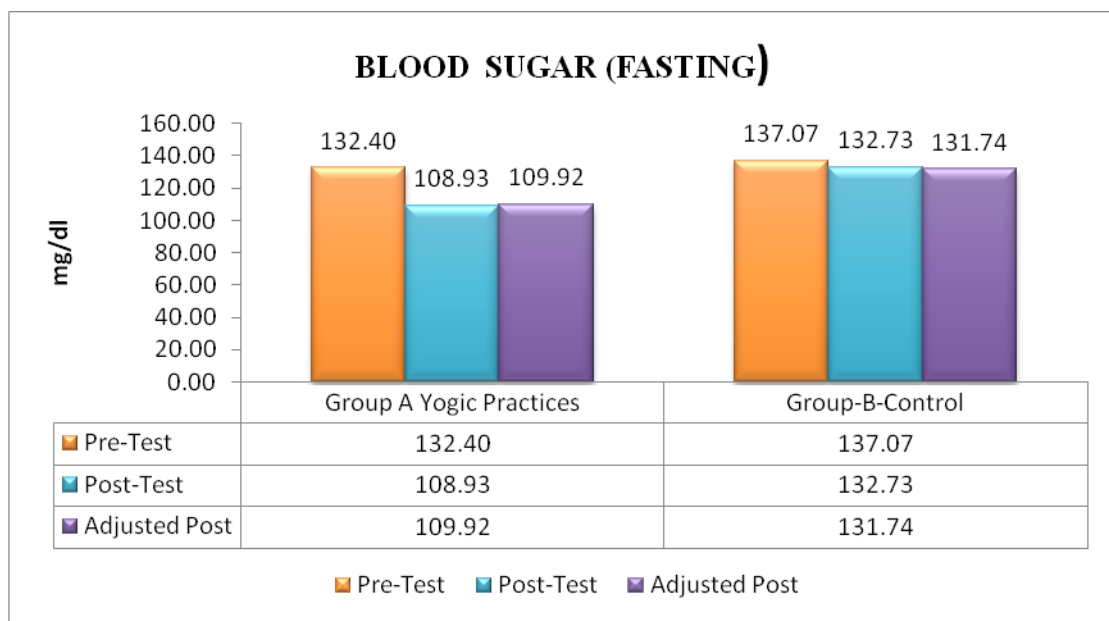


Fig. 1: Analysis of covariance of the means of the experimental group and the control group on blood glucose. Significant at 0.05 level of confidence. (Table F-ratio at 0.05 level of confidence for 1 and 38 (df) =4.2, 1 and 37 (df) =4.21.

researchers in the Physiology Department and the Diabetic Clinic at a large university hospital collected data for a prospective case-control study. Thirty male patients from a diabetic clinic and thirty male volunteers who were not diabetic served as the study's subjects and control group, respectively. Patients were included if they had

type 2 diabetes for at least a year, were already following a diabetic diet, and were using oral hypoglycemic medications. The control group consisted of similarly aged and otherwise healthy male volunteers who had gone to the yoga center to participate in the training program. For six months, everyone in the study received

instruction from yoga teachers and practiced regularly under close observation. Before (3 months), after (6 months), and during (3 months and 6 months) yoga instruction, the participants' fasting (FBS) and post-prandial (PPBS) blood sugar levels were assessed. Paired the difference in averages between the two groups before and after yoga instruction was estimated using the Student t-test. Statistical significance was defined as a p-value less than 0.05. Age distribution, average height, and average weight were all similar across the two groups. When comparing the average FBS and PPBS before and after (3 months) yoga practice, both groups showed a substantial ($p < 0.001$) decrease in FBS and PPBS at the end of 6 months. Three months into yoga, there was a substantial ($p < 0.001$) decrease in these values compared to the mean values before yoga, while there was no significant change ($p > 0.05$) in the control group. Yoga was shown to be beneficial in lowering blood glucose levels in type 2 diabetes patients, according to the findings of the current research.

Among middle-aged men with Type-2 Diabetes, it was expected that there would be statistically significant differences in selected biochemical variables between the Yoga group and the control group. Student's t test findings showed that the Yoga group and the control group had significantly different fasting blood glucose levels. So, the first hypothesis was supported with a probability of 0.05.

Conclusion

Among middle-aged males with Type 2 diabetes, yoga practices were shown to reduce fasting blood glucose. The anti-inflammatory effects of Yoga were especially helpful during the CoVD19 epidemic. Yogic practices lower oxidative stress in people with type 2 diabetes by increasing their antioxidant levels.

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