

TO STUDY THE EFFECT OF YOGA ON BLOOD SUGAR PROFILE IN DIABETICS TYPE-2 PATIENTS

Dr. B S Gupta¹, Dr. Yogesh Singh²

¹ Professor & Head of Department Physiology, Birat Medical College, Nepal

² Assistant Professor, JNU-IMSRC, Jaipur

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Address for Correspondence: Dr. B S Gupta

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Abstract

Background: Diabetes mellitus is a syndrome complex characterized by impaired carbohydrate, protein and fat metabolism. **Methods:** Prospective study was conducted on 100 type 2 diabetes mellitus patients and 100 normal healthy persons. Cases were recruited from a yoga centre. Control subjects were selected from diabetic patients attending hospital. Alcoholic or smoker subjects were excluded.

Results: The mean value of blood glucose level of subjects was 136.4 ± 9.42 mg/dl and that of controls was 183.2 ± 9.16 mg/dl. The difference between the mean value of fasting blood glucose level determined by unpaired 't' test was statistically highly significant ($p < 0.001$). The mean value of blood glucose level of subjects was 6.32 ± 1.35 % and that of controls was 7.46 ± 1.41 %. The difference between the mean value of HB1Ac level determined by unpaired 't' test was statistically highly significant ($p < 0.001$).

Conclusion: Yoga can be used as an alternate therapy to reduce the blood glucose level along with the drug therapy.

Keywords: Yoga, Diabetics, Drugs.

INTRODUCTION

Diabetes mellitus is a complicated metabolic disorder characterized by hypofunction or lack of function of the beta cells of the islets of langerhans in the pancreas, leading to high blood glucose levels and excretion of sugar in the urine. Diabetes is the commonest among metabolic disorders and its incidence is on the increase all over the world. It affects 2 to 10% of the human population.¹

Diabetes is due to either the pancreas not producing enough insulin, or the cells of the body not responding properly to the insulin produced.²

There are three main types of diabetes mellitus:³

- Type 1 diabetes results from the pancreas's failure to produce enough insulin due to loss of beta cells. This form was previously referred to as "insulin-dependent diabetes mellitus" (IDDM) or "juvenile diabetes". The cause is unknown.
- Type 2 diabetes begins with insulin resistance, a condition in which cells fail to respond to insulin properly. As the disease progresses, a lack of insulin may also develop. This form was previously referred to as "non insulin-dependent diabetes mellitus"

(NIDDM) or "adult-onset diabetes". The most common cause is a combination of excessive body weight and insufficient exercise.⁴

The adoption and maintenance of physical activity are critical foci for blood glucose management and overall health in individuals with diabetes and prediabetes. Recommendations and precautions vary depending on individual characteristics and health status. In this Position Statement, we provide a clinically oriented review and evidence-based recommendations regarding physical activity and exercise in people with type 1 diabetes, type 2 diabetes, gestational diabetes mellitus, and prediabetes.

Yoga is a healthy way of life, originated in India. Now it is believed to be a form of science accepted all over the world. The western culture also is accepting it as a healthy form of scientific exercise.

There is less number of studies on the population of Rajasthan to assess the effect of yoga on type 2 diabetes mellitus. So the aim of this study is to find out the effect of yogic asana and pranayama on various biochemical parameters of type 2 diabetes mellitus patients.

Materials and Methods

Type of study- Prospective study

Sampling methods- Simple random sampling

Sample size- 100 type 2 diabetes mellitus patients and 100 Control subjects

Cases were recruited from a yoga centre.

Control subjects were selected from diabetic patients attending hospital.

Inclusion criteria-Total subjects were grouped into 100 type-2 diabetes mellitus case for yoga practitioners and 100 type-2 diabetes mellitus case for non yoga practitioners.

Exclusion criteria- Alcoholic or smoker person

The eligibility criterion for controls was same as that of subjects but they were not yoga practitioners and did not believe in yoga. The diabetics had complete drug compliance throughout the study period. The experimental subjects were taking 1½ hour session for at least four times a week at a yoga centre. None of the subject engaged in any other out-of-routine physical activity.

The blood sampling was done between 9.00 am to 10.00 am from a forearm vein of all the participants with fasting for more than eight hours.

Data analysis- Student’s T-test and Chi-square test were applied. Results were presented as mean ± SD or no. of patients (percent); P value <0.05 defined statistical significant difference.

Results

Table 1: Socio-demographic variable

Socio-demographic variable	Case	Control	p-value
Age (Years)	56.4±8.46	55.68±9.18	>0.05
Male : Female	89:11	87:13	>0.05
Hindu: Muslim	98:2	99:1	>0.05

Socio-demographic variable in both group were comparable.

Table 2: Shows the mean blood sugar levels in and controls.

Fasting blood sugar level	Case	Control
Mean	136.4	183.2
SD	9.42	9.16
p-value	<0.001	

The mean value of blood glucose level of subjects was 136.4±9.42 mg/dl and that of controls was 183.2±9.16 mg/dl. The difference between the mean value of fasting blood glucose level determined by unpaired ‘t’ test was statistically highly significant (p<0001).

Table 3: Shows the mean HB1Ac levels in and controls.

HB1Ac level	Case	Control
Mean	6.32	7.46
SD	1.35	1.41
p-value	<0.001	

The mean value of blood glucose level of subjects was 6.32±1.35 % and that of controls was 7.46±1.41%. The difference between the mean value of HB1Ac level determined by unpaired ‘t’ test was statistically highly significant (p<0001).

Discussion

In the present study, the mean value of fasting blood glucose was less than that of controls and the difference between the two was statistically highly significant. Our observations were in compliance with the study conducted by Cerranque et al,⁵ in 26 subjects. The experimental group consisted of 16 long-term yoga practitioners and 10 healthy ordinary subjects. The results revealed a decrease in the blood glucose level in yoga practitioners, as compared to controls.

Our findings are also in compliance with the study conducted by Hegde et al.⁶ on the effect of three month yoga practice on oxidative stress in type-2 diabetics. Yoga practitioners achieved significant improvement in body mass index, fasting blood glucose level, postprandial blood glucose, glycosylated haemoglobin, glutathione and vitamin-C at 3 months compared with the standard care group. Gordon et al.⁷ also reported 20% reduction in oxidative stress and decrease in blood glucose level.

Conclusion

Yoga can be used as an alternate therapy to reduce the blood glucose level along with the drug therapy.

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