

## **To Study the Effect of Yoga on Blood Sugar Profile in Diabetics Type-2 Patients**

Dr. Hitendra Gupta<sup>1</sup>, Dr. Anita Motiani<sup>2</sup>

<sup>1</sup>Assistant professor, Physiology, North Delhi Municipal Corporation Medical College  
And Hindu Rao Hospital, Delhi

<sup>2</sup>Senior resident Biochemistry, North Delhi Municipal Corporation Medical College  
And Hindu Rao Hospital, Delhi

\*Correspondence author- Dr. Anita Motiani

### **ABSTRACT**

**Background-** Diabetes mellitus is a syndrome complex characterized by impaired carbohydrate, protein and fat metabolism.

**Methods-** Prospective study was conducted on 50 type 2 diabetes mellitus patients and 50 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 HbA1c was  $6.87 \pm 1.54$  % and that of controls was  $7.98 \pm 1.38$ %. 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.

### **I. 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.<sup>1</sup>

The word Yoga is derived from the Sanskrit word 'Yuj' meaning union of the body, breath and mind. Good health due to Yogic practices could be the effect of right thought and action. Yoga as a way of life is more true to its ancient tenets. It constitutes asanas, regulated breathing (pranayama), and awareness of yoga sutras (principles) that govern the mind. Regular practice of yoga enhances awareness of mind and body, which is needed in the self-management of diet and exercise plan in diabetes.<sup>2</sup>

Meditation is the yogic tranquilliser, natural method to establish harmony and well being throughout the entire system. Yoga is a systemic method of inducing complete mental, physical and emotional relaxation. Relaxation therapy (yogic intervention) might serve to prevent the adverse effects of stress induced sympathetic nervous system activity on the metabolic control of diabetic patients<sup>3</sup> By various yogic practices over a period of time significant physical, physiological, psychological and endocrinal changes have been reported. Complication free life for the diabetic patients has been possible through Yoga.<sup>4</sup>

In present study effect of yogic practices on type-2 diabetes mellitus patients by measuring the parameters like blood glucose, glycosylated haemoglobin is emphasized.

### **II. MATERIALS AND METHODS**

Type of study- Prospective study

Sampling methods- Simple random sampling

Sample size- 50 type 2 diabetes mellitus patients and 50 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 50 type-2 diabetes mellitus case for yoga practitioners and 50 type-2 diabetes mellitus case for non yoga practitioners as control.

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.

### III. RESULTS

Table 1: Socio-demographic variable

Socio-demographic variable	Case	Control	p-value
Age (Years)	54.32±8.13	55.32±8.65	>0.05
Male : Female	39:11	40:10	>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	137.24	154.23
SD	9.19	9.10
p-value	<0.001	

The mean value of blood glucose level of subjects was 137.24±9.19 mg/dl and that of controls was 154.23±9.10 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	6.87	7.98
SD	1.54	1.36
p-value	<0.001	

The mean value of blood glucose level of subjects was 6.87±1.54 % and that of controls was 7.98±1.38%. The difference between the mean value of HB1Ac level determined by unpaired 't' test was statistically highly significant (p=<0001).

### IV. 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,<sup>5</sup> 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.<sup>6</sup> 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.<sup>7</sup> also reported 20% reduction in oxidative stress and decrease in blood glucose level.

### V. CONCLUSION

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

### REFERENCES

- [1]. Wadhvani, R. and Bose, S. Serum lipoproteins and blood sugar levels of person engaged in exercise and yoga (A comparison) (Abstract). Indian J. Physiol. Pharmacol. 1991; 35 (suppl), 36.
- [2]. Bradshaw, C., Eccles, M.P. and Choi, H.Y. Can general practioner assess diabetic controir? Can anybody do any better? Diabet. Med. 1991; 8, 543-546.
- [3]. Patel C., Randomised control trial of yoga and biofeedback in management of hypertension. The Lancet, 1975; 19, 93-95. 21. Dang K.K., Sahay B.K.. Yoga and Meditation. Medicine update; 1999; 9(1); chapters 57 and 58: 502-512.

- [4]. Malhotra V., Singh S., Singh K.P., Madhu S.V., Gupta P., Tandon O.P.. Effects of yoga asanas and pranayama in non-insulin Dependent diabetes mellitus. Indian journal of traditional knowledge. 2004; 3(92): 162-167. 23.
- [5]. Cerranque GA, Maldonado EF, Vera FM, Manzaneque JM, Blanca MJ, Soriano G, et al. Haematological and biochemical modulation in regular yoga practitioners. Biomed Res 2012;23:176-82.
- [6]. Hegde SV, Adhikari P, Kotian S, Pinto VJ, D'Souza S, D'Souza V. Effect of 3-month yoga on oxidative stress in type-2 diabetes with or without complications. Diabetes Care 2011;37:2208-10.
- [7]. Gordon LA, Morrison EY, McGrowder DA, Young R, Fraser YTP, Zamora EM et al. Effect of exercise therapy on lipid profile and oxidative stress indicators in patients with type-2 diabetes. BMC Complement Altern Med 2008;21. doi: 10.1186/1472-6882-8-21

***\*Correspondence author- Dr. Anita Motiani***

***<sup>1</sup>Assistant professor, Physiology, North Delhi Municipal Corporation Medical College  
And Hindu Rao Hospital, Delhi***