

## **A Study on the Effect of Yogic intervention on serum glucose level on Diabetics**

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### **Abstract:**

The present study examined the physiological effect of Yogic intervention (*Surya Namaskar, Paschimottanasana, Dhanurasana, Ardha matsyendrasana, Shavasana, Kapalbhathi and Nadi Shodhan Pranayama*) in Diabetes mellitus patients. Fifty patients suffering with mild and moderate Diabetes were selected from semi - urban areas by accidental sampling for a experimental-control group research study. The subjects in experimental group were exposed to Yogic package daily for half an hour for 40 days. Glucometer was used as the measure, and data collection was done individually in group and best attempts were made to avoid external distractions.

The results of the study show that Yogic intervention was found to reduce (positively lower towards normal) the fasting serum glucose level and post-prandial serum glucose level in patients of Diabetes mellitus in the practice group.

**Keywords:** Diabetes mellitus, *Surya Namaskar, Paschimottanasana, Dhanurasana, Ardha matsyendrasana, Shavasana, Kapalbhathi and Nadi Shodhan Pranayama*

### **Introduction:**

Diabetes mellitus is currently a chronic disease, without a cure and medical emphasis must necessarily be on managing / avoiding possible short term as well as long term diabetes related problems. The number of people with diabetes is rapidly increasing worldwide and has become of major public health concern and of states that according to American Heart Association - Diabetes mellitus killed 73,138 people in the United States in 2004<sup>1</sup>. Final mortality was 48.2 % of total deaths from diabetes in male and 51.8 % of total deaths from diabetes in female.

Diabetes is a disease in which our blood glucose level is too higher than the required level. Glucose is an essential nutrient that provides energy for the proper functioning of the body cells. After meals, food is digested in the stomach and the intestines into glucose and other nutrients. The glucose in digested food is absorbed by the intestinal cells into the blood stream, and is carried by blood to all the cells in the body. However, glucose cannot enter the cells alone. It needs assistance from insulin in order to penetrate the cell walls. Insulin, therefore, acts as a regulator of glucose metabolism in the body<sup>2</sup>.

The rapid socioeconomic development which started in the 1970s has led to proliferation of educational establishments, health centers, hospitals and other medical facilities. These social advances have been accompanied by the characteristic cultural changes that are observed in rapidly developing societies. Alterations in lifestyle, unhealthy nutritional habits and a more sedentary life have led to an increase in obesity. A cure for Diabetes has not been found yet. However, it can be controlled. Ways to control diabetes are: maintaining blood glucose levels, blood fat levels and weight<sup>3</sup>. According to World Health Organization, Ad hoc diabetes reporting group (1997), after eight decades of research, there have been few steps as significant in the battle against this disorder. The prevalence of diabetes mellitus among the general population has increased year upon year without fail<sup>4</sup>.

The subjects on Yoga Nidra with drug regimen had better control in their fluctuating blood glucose and symptoms associated with diabetes, compared to those were on oral hypoglycaemics alone<sup>5</sup>. Exercise as a part of diabetes mellitus prevention and therapy has gained in popularity over the past two decades as more research has become available. However, its use is definitely not a novel approach in the management of this disease. According to the American College of Sports Medicine, indications of the effectiveness of exercise in reducing glycosuria have been evident since 600 B.C. when an East Indian text, the Shushruta noted the reduction in the sweetness of urine from diabetic patients following exercise<sup>6</sup>.

In the ensuing decades opponents to exercise therapy would change their attitudes due to some of the first research in the area of exercise physiology. A group of French researchers has measured the uptake of glucose by working muscle and found it to be higher than resting muscle. In addition, a reduction in blood glucose levels with muscular exercise was apparent. With this new scientific evidence, the therapeutic benefits of exercise, so long held by Bouchardat, became common practice in other clinics for diabetics<sup>7</sup>.

It has been observed the effect of Yoga asanas and pranayama in non-insulin dependent diabetes mellitus and suggests that Yoga asanas have a beneficial effect on glycaemic control and lipid profile in mild to moderate Type 2 diabetecs<sup>8</sup>. It is also observed that the effect of pranayamas and yoga-asanas on serum insulin, blood glucose and lipid profile in type 2 diabetes was significant<sup>9</sup>. Yoga practice in Diabetes improves physical and psychological outcomes plays a vital role in metabolic syndrome and related disorders<sup>10</sup>.

In this study, it is endeavored to significantly study the effect of Yogic practices on fasting serum glucose level and post-prandial serum glucose level of diabetics.

### **Methodology**

Fifty patients of Diabetes mellitus (mild to moderate diabetics) in the age group of 30-60 years were diagnosed. The sample consisted of 50 subjects as experimental group, were selected from Haridwar and Dehradun district through the method of accidental sampling and the study was control group research design. The subjects of experimental group used to visit the center for Yogic therapy sessions for 40 days daily under the supervision of a Yoga expert.

The glucometer was used to measure diabetes. A glucose meter (or glucometer) is a medical device for determining the approximate concentration of glucose in the blood. It is a key element of home blood glucose monitoring (HBGM) by people with diabetes mellitus or with proneness to hypoglycemia. A small drop of blood obtained by pricking the skin with a lancet is placed on a disposable test strip, which the meter reads and uses to calculate the blood glucose level. The meter then displays the level in mg/dl or mmol/l.

Each subject was tested individually. The subjects in experimental group were give Yogic package daily for half an hour for 40 days. Yogic package includes *Surya Namaskar, Paschimottanasana, Dhanurasana, Ardha matsyendrasana, Shavasana, Kapalbhati and Nadi Shodhan Pranayama*. It is advisable to take a light meal during this practice.

### **Results**

Table 1- showing the result over fasting serum glucose level

<b>Group</b>	<b>Mean</b>	<b>SD</b>	<b>T-value</b>	<b>Significance level</b>
Control	156.56	18.97	6.44	0.01
Experimental	116.84	17.16		

Table 2- showing the result over post-prandial serum glucose level

<b>Group</b>	<b>Mean</b>	<b>SD</b>	<b>T-value</b>	<b>Significance level</b>
Control	214.80	15.90	5.09	0.01
Experimental	157.28	19.35		

The results reported in Table 1 clearly reveal that the main effect of yogic package was statistically significant for fasting serum glucose level ( $t=6.44$   $p<0.01$ ). So the hypothesis that yogic package significantly effect (positively lower towards normal) the fasting serum glucose level in patients of DM has been proved.

The results reported in Table 2 clearly shows that the main effect of yogic package was statistically significant for post-prandial serum glucose level ( $t=5.09$ ,  $p<0.01$ ). So the hypothesis that yogic package significantly effect (positively lower towards normal) the post-prandial serum glucose level in patients of DM has been proved.

## **Discussion**

In the present study, there occurred a significant reduction in fasting serum glucose level and post-prandial serum glucose level of diabetics. The findings are consistent with the findings of Dandona<sup>11</sup>, Notiya<sup>12</sup>, Souto.<sup>13</sup>, reported that there was a significant fall in plasma glucose, serum fructosamine, serum cholesterol values in NIDDM group, practicing Yoga.

The practice of Yoga works biochemically and biomechanically on human physiology. Biomechanically, the practice of Yoga, gives a feeling of wellbeing which reduces the stress and ultimately regulates the metabolic activities<sup>14</sup>, hence reflect into biochemical changes as normal functioning of

Pancreatic glands. Researchers have observed the significant effect of pranayamas and yoga-asanas on serum insulin, blood glucose and lipid profile in type 2 diabetes<sup>15</sup>, and Yoga practice in Diabetes improves physical and psychological outcomes plays a vital role in metabolic syndrome and related disorders<sup>16</sup>.

It can be radiated that regular Yogic practices not only bring a harmony between body and mind but also act as preventive and supportive system of therapy for metabolic disorders like diabetes. Several other studies suggest that diabetes is best controlled and prevented by simple alterations of diet and physical activities like Yogic practices.

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