

Original research article

Effect of Yoga Asan and Pranayam in Type 2 Diabetes Mellitus Patient in Jhalawar District, Rajasthan, India

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Abstract

Aims: To study the effect of yoga asan and pranayam in type 2 diabetes mellitus patient in jhalawar district, rajasthan.

Objectives: To determine the effect of manduk asan and kapalbhati in type 2 Diabetes mellitus patients and compare the effect of this asan and pranayam to the control group, who are not practicing any type of asan and pranayam.

Material and Methods: This prospective study was conducted by the Department of Physiology, Jhalawar Medical College & Hospital, Jhalawar (Rajasthan) and Yoga OPD in collaboration with the Department of Medicine, the Department of Pathology and the Department of Biochemistry. There were 50 subjects in the study group and 50 in the control group. The goal of this research was to assess the effect of 3-month practice of yoga in subjects with type 2 diabetes mellitus.

Results: In the present study, the difference in mean age, sex, height, blood pressure between cases and controls was not important ($p > 0.05$). Whereas mean fasting glucose levels, HbA1c, BMI were found to be significantly lower in the study group taking the medicine (Oral Hypoglycaemic Drug) with pranayam and yoga compared to control taking the medicine (Oral Hypoglycaemic Drug) without practicing pranayam and yoga ($p < 0.05$).

Conclusion: Yoga is a beneficial supplement to the treatment of a number of conditions that are effective in behavioural lifestyle disorders, including diabetes mellitus. Yoga therapy also improves the status of diabetics in terms of lowering insulin doses, physical and mental alertness, and preventing complications.

Keywords: Yoga, Diabetes mellitus, Yoga asana, Pranayama

Introduction

Type 2 diabetes mellitus is one of the most widely seen metabolic syndromes in the world [1]. The most recent meta-analysis found that the total prevalence (9.1%) of inland residents in China has increased and increased steadily since the 1970s [2]. Efficient blood glucose control is particularly important for the treatment of type 2 diabetes mellitus to reduce the risk of multiple complications, including diabetic foot, diabetic neuropathy, cataract, and cardiovascular disease [3,4]. Type 2 diabetes mellitus is one of the most common components of diabetes care with eMedication, diet, and physical activity or exercise. Recent evidence-based clinical study has suggested training activities as cardinal non-pharmacotherapy [5]. A variety of training programs have been developed, such as jogging, cycling, swimming, housework and other outdoor exercises. However, given the increasing prevalence of obesity and sedentary lifestyle-related disabilities and complications [6,7], few patients are involved in traditional physical activity.

Yoga originated as a traditional forms of mind-body training in India over 4,000 years ago, which seeks to reconcile the person with the transcendental self [8]. Yoga asanas (postures) and pranayama (breath control) have recently become very popular and the role of yoga has been studied in a number of chronic diseases, including hypertension, asthma, chronic obstructive pulmonary disease and diabetes [9]. Traditionally a mind-body practice with the ultimate objective of spiritual liberation, yoga is not a medicine for the treatment of specific diseases, but a science of health management [10].

Yoga participation was associated with the consumption of fruit and vegetables, as well as healthier dietary habits and thoughtful eating practices [11]. Meditation and the desire to enhance consciousness may be effective in controlling binge eating habits. Increased food intake, mild weight loss and glycaemic control have been shown to support healthy eating in diabetes [12].

Current yoga studies have reported beneficial effects in the treatment of chronic obstructive pulmonary disease, diabetes mellitus, low back pain, psychosomatic stress disorders, coronary artery disease, gastrointestinal anomalies, posture defects, and joint pain [13].

Materials and Methods

The current prospective research was carried out on subjects with type 2 diabetes mellitus in the age group (30-50 years) in the Enhanced Department of Physiology and Yoga OPD at Jhalawar Medical College and Hospital, Jhalawar (Rajasthan), in collaboration with the Department of Medicine and the Department of Biochemistry and the Department of Pathology. A detailed history and a general physical examination have been carried out. Medicine (Oral Hypoglycaemic Drug) and diet have been administered to the subjects. The research obtained written informed consent. Subjects were clinically diagnosed with SRG Hospital and Jhalawar Medical College OPD.

Out of 100 subjects of type 2 Diabetes mellitus, 50 patients were split into two subgroups in the research group 1 and 50 patients in the control group 2. In **Yoga** study group patients were taking medicine (Oral Hypoglycaemic Drug) with practicing pranayam and yoga. In the control group patients were only taking medicine (Oral Hypoglycaemic Drug) without practicing pranayam and yoga. Patients with type 2 diabetes at the time of study, Patients between 30 and 50 years of age, Patients with oral hypoglycemic medications were included. Less than 30 years or more than 50 years of age, Athletes, frequent practitioners of Pranayam and patients undertaking some other type of exercise, pregnant women, participants with history of tobacco chewing, smoking and alcohol use, history of tuberculosis, chronic obstructive airway disease and respiratory tract infections over the last 6 weeks History of renal failure, coronary artery disease, and musculoskeletal chest deformity. Diabetes Mellitus and its complications such as diabetic nephropathy, retinopathy, neuropathy, Patients with both hypertension and diabetes mellitus, who were doing pranayam less than five days a week were excluded from the study. Age, sex, weight, height, body mass index measured by standard methods. The basic criteria used in biochemical investigations are Blood Collection, Serum Sample, and Glycaemic Parameters.

Subjects were required to perform Asan and Pranayam while sitting on the floor of a carpet. In sitting posture, all procedures were performed and the pranayam warm-up session (yoga stretching) was performed before the start. After participants assumed the right pose, they were advised to obey the yoga instructor for the yoga postures.

Using SPSS 18 for windows, statistical analysis was performed. Unpaired t-test to find out change both the groups. Paired t-test to find out the change before and after in both the groups (study and control) and to determine the p-values

Results

Table 1: Distribution of Weight, Height and BMI among Study and Control Group

	Group	N	Mean	Std. Deviation	t-value	p-value
Weight (Kg) Before	Yoga Group	50	64.7200	11.41658	1.588	0.115
	Control Group	50	67.9180	8.50771		
Weight (Kg) After 3 Months	Yoga Group	50	63.7300	11.09201	2.118	0.037*
	Control Group	50	67.9180	8.50771		
Height (cm) Before	Yoga Group	50	162.5600	8.62403	1.273	0.206
	Control Group	50	160.3800	8.50424		
Height (cm) After 3 Months	Yoga Group	50	162.5600	8.62403	1.273	0.206
	Control Group	50	160.3800	8.50424		
BMI Before	Yoga Group	50	24.2860	2.44313	2.721	0.008*
	Control Group	50	26.2132	4.37217		
BMI After 3 Months	Yoga Group	50	23.9264	2.38539	3.247	0.002*
	Control Group	50	26.2132	4.37217		

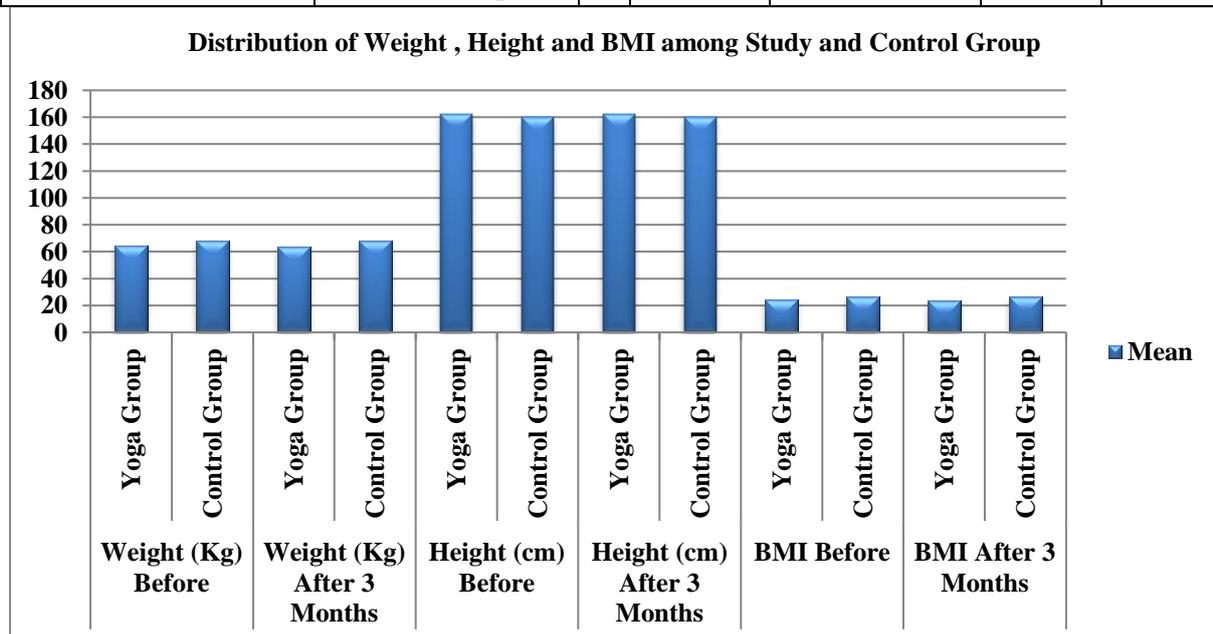
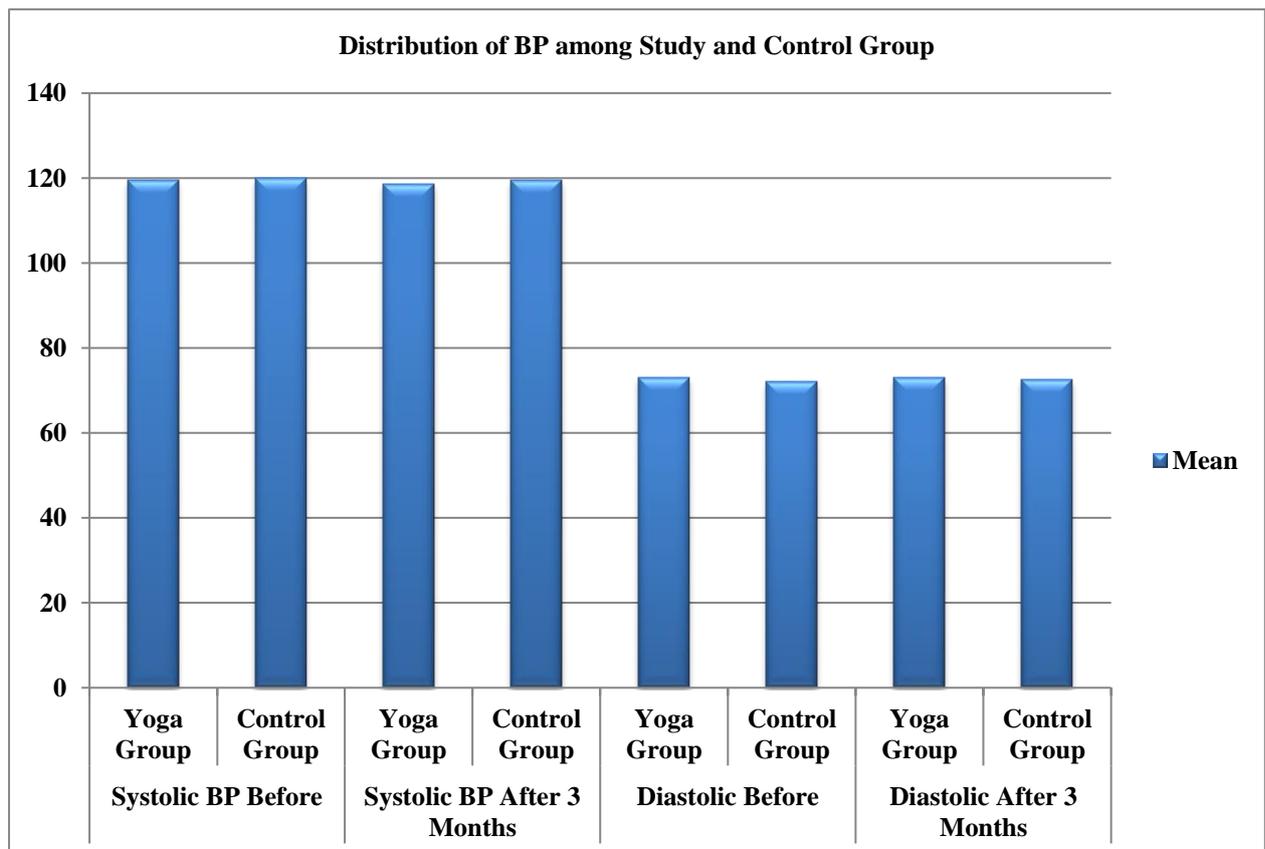


Figure 1: Distribution of Weight, Height and BMI among Study and Control Group

In the present study difference in means of height between cases and controls were not significant ($p > 0.05$). In the present study mean BMI was found significantly less in the study group which was taking medicine (Oral Hypoglycaemic Drug) with practicing pranayam and yoga as compared to control which were only taking medicine (Oral Hypoglycaemic Drug) without practicing pranayam and yoga ($p < 0.05$).

Table 2: Distribution of BP among Study and Control Group

	Group	N	Mean	Std. Deviation	t- Value	p- value
Systolic BP Before	Yoga Group	50	119.4400	1.56701	1.238	0.219
	Control Group	50	119.8800	1.96542		
Systolic BP After 3 Months	Yoga Group	50	118.7200	2.24099	1.596	0.114
	Control Group	50	119.4600	2.39225		
Diastolic Before	Yoga Group	50	73.0400	3.48150	1.733	0.086
	Control Group	50	72.0000	2.42437		
Diastolic After 3 Months	Yoga Group	50	73.0000	3.46410	0.774	0.441
	Control Group	50	72.5000	2.97781		

**Figure 2: Distribution of BP among Study and Control Group**

In the present study difference in means of blood pressure between cases and controls were not significant ($p > 0.05$).

Table 3: Distribution of FBS among Study and Control Group

	Group	N	Mean	Std. Deviation	t- Value	p- value
FBS Before	Yoga Group	50	148.1000	26.56471	0.854	0.395
	Control Group	50	152.8000	28.41170		
FBS After 3 Months	Yoga Group	50	131.3600	23.84967	3.214	0.002*
	Control Group	50	148.2200	28.40831		

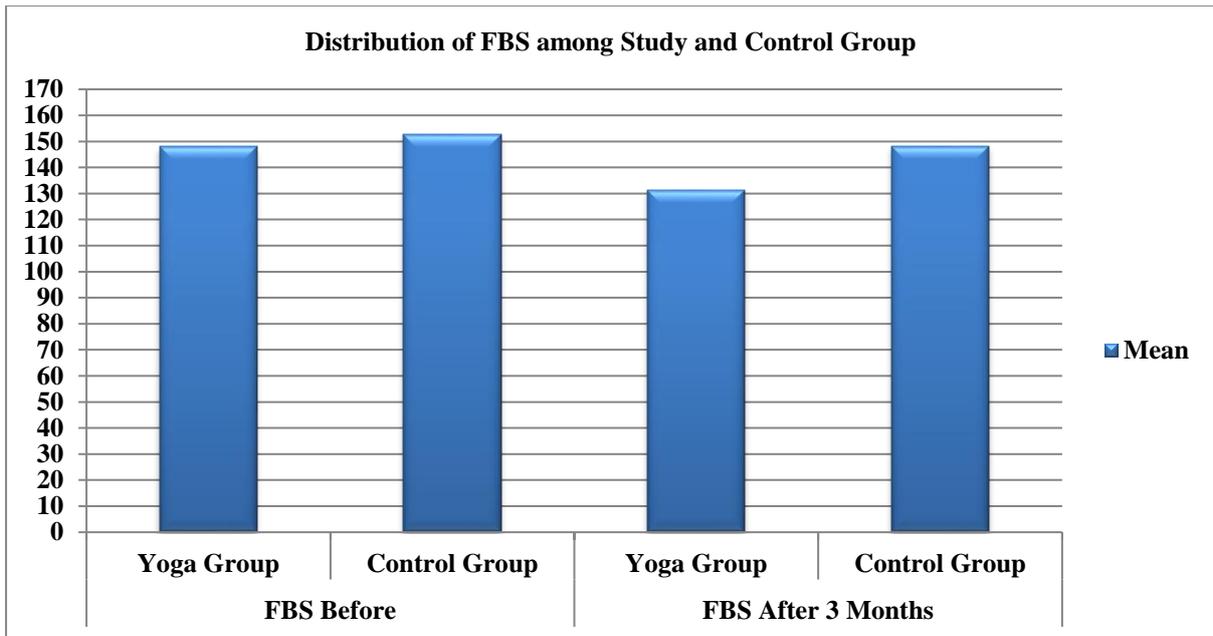


Figure 3: Distribution of FBS among Study and Control Group

In the present study mean fasting glucose levels was found significantly less in study group as compared to control group ($p < 0.05$).

Table 4: Distribution of HbA1C among Study and Control Group

	Group	N	Mean	Std. Deviation	t- Value	p- value
HbA1C Before	Yoga Group	50	8.0860	.90486	2.509	0.014*
	Control Group	50	8.5400	.90486		
HbA1C After 3 Months	Yoga Group	50	7.8820	.85134	3.069	0.003*
	Control Group	50	8.4240	.91352		

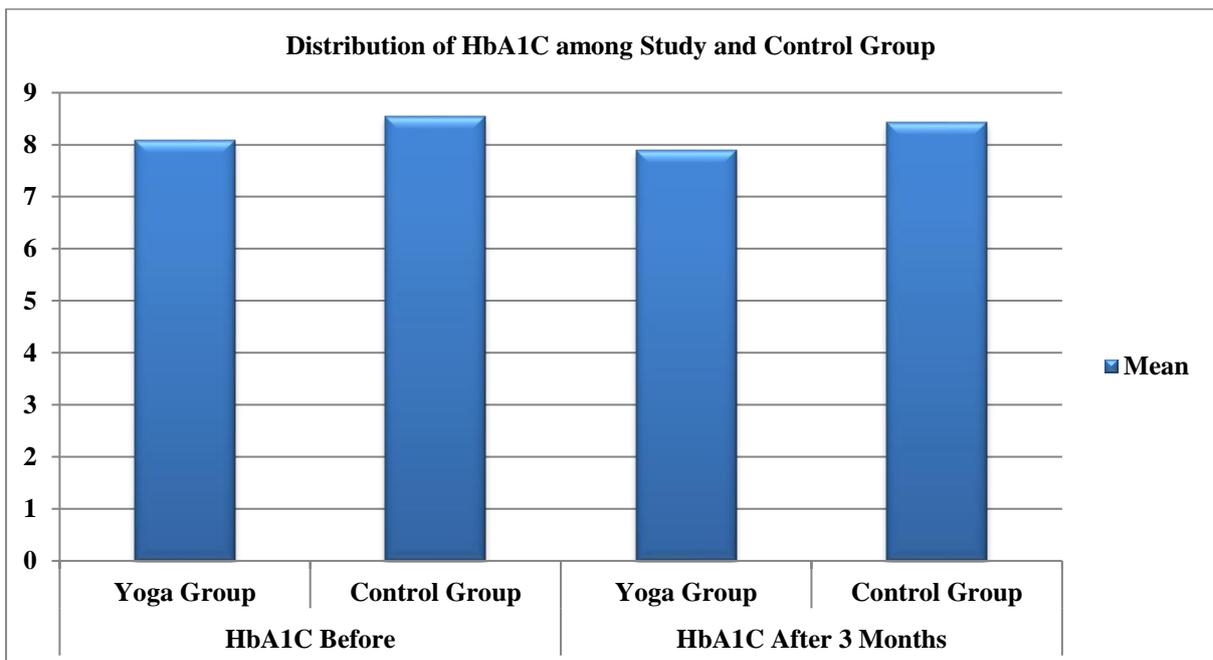


Figure 4: Distribution of HbA1C among Study and Control Group

In the present study HbA1C was found significantly less in study group as compared to control group ($p < 0.05$).

Discussion

In this study, there was a substantial decrease in fasting blood glucose (FBG) and postprandial blood glucose (PPBG) levels in those practicing yoga for three months. After reviewing the results of this report, it can be mentioned that our findings were consistent with the results of Singh S. et al. [14]. Sahay BK. has reported, "An important drop in fasting and post-prandial blood glucose within 3 months of type-2 DM yoga exercise. Improved insulin sensitivity and decreased insulin resistance in subjects practicing yoga have been documented." [15] Manjunatha et al. studied, "The effect of four sets of asanas in random order and stated that asana success leads to increased sensitivity of the pancreatic beta cells to glucose signals." [16] While Chaya M.S. et al. reported that "A significant decrease in fasting plasma insulin in yoga practitioners. Along with these studies, the present study also found that long-term yoga practice is associated with insulin sensitivity." [17] Cohen B.E. et al. concluded in their study "The trend of reduces blood pressure, a significant increase in energy level, and trends to improvement in the feeling of well-being in the yoga versus control group." [18]

Glycosylated haemoglobin is elevated in patients with diabetes mellitus with chronic hyperglycemia and represents their metabolic regulation. The same findings have also been stated by Bijlani RL, et al. [19]. Statically important reductions in Glycosylated hemoglobin were observed in non-insulin-dependent diabetes mellitus subjects undergoing three months of yoga practise in this study. The exact cause of the reduction of HbA1C is not known. However, the decrease of Glycosylated Hemoglobin protects patients from the early development of multiple microvascular and macrovascular complications of diabetes mellitus.

The findings of this study indicate that there is a substantial difference in the amount of HbA1C relative to the type 2 diabetic subjects of those who practice yoga who do not practice yoga. Some research considered the effect of yoga practice on glycosylated hemoglobin (HbA1c), which would suggest a long-term impact on diabetes management. Aljasir and colleagues and other studies indicated a lowering of HbA1c [20]. Innes and Vincent reported a 10.5% to 27.3% reduction in HbA1c [21].

Conclusion

Yogapathy is a stable, quick, systematic (pathy) approach that has a major impact on Diabetes Mellitus type 2. And the researcher got a positive result after the experiment. So if we adopt yogapathy techniques we can get relief from the diabetes mellitus type 2 diseases. Yogapathy has no side effect because it's a natural process that why this is the best technique. Yoga is an ancient discipline aimed at bringing harmony and wellness to the physical, mental, emotional and spiritual aspects of the person. A comprehensive yoga therapy program has the ability to improve the beneficial effects of traditional medical management of DM and can be used in an efficient supportive or integrative treatment program. Improving various biochemical indices and minimizing stress by practicing yoga can allow a healthy person to live better. From the beneficial effects of yoga on diabetes as seen in this study, it can be concluded that long-term adoption of yoga in combination with traditional therapy would provide proper control of glycosylated hemoglobin, blood sugar and lipid profile in elderly subjects with long-term diabetes.

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