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TO STUDY THE EFFECT OF YOGA ON HBA1C, SERUM INSULIN LEVEL AND LIPID PROFILE IN DIABETIC PATIENTS IN A TERTIARY CARE CENTRE

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Abstract

Introduction-Diabetes mellitus is a worldwide health problem predisposing to markedly increased cardiovascular mortality and morbidity. Exercise is a major therapeutic modality in the treatment of diabetes mellitus. Regular physical exercise has been reported to be effective in the prevention and delay of onset of type 2 diabetes, increases insulin sensitivity, and ameliorates glucose metabolism. Yoga has become increasingly popular in Western cultures as a means of exercise and training fitness. The aims of the present study were therefore to investigate the effects of Hatha yoga on HbA1c, Serum insulin level & lipid profile after 3 and 6 months of intervention in patients with type 2 diabetes mellitus.

Material and method-Was a prospective study done in LLRM Medical College Meerut in year 2019-20. 200 patients with type 2DM on T1 were assessed thoroughly with proper history, clinical examination and required investigation. Patients were divided in two groups of 100 patients each.

Group A patients took yoga therapy and antidiabetic drugs.

Group B patients were control group they were diabetic patients on routine anti-diabetic treatment who attended our hospital but not practiced yoga.

Both the group were followed for the period of 6 months and were compared in terms of HbA1c, serum insulin levels and lipid profile.

Result- The patients in the yoga group showed a significant improvement in HbA1c level (18.36% reduction from the mean baseline of 10.194; paired t-test p-value=0.001), they also revealed significant improvement in lipid profile. Regarding insulin level also there was significant decrease in both the groups individually (p value <0.001). And although the decrease was more for the yoga group, the mean difference between both the groups was not significant at the end of 6 months (p value =0.86432).

Conclusion- In the present study we found that yoga therapy (in conjunction with conventional drug treatment for diabetes mellitus) is an effective and safe modality for improvement of various clinical and biochemical parameters like HbA1c, total cholesterol serum triglyceride, serum HDL and

LDL- cholesterol in patients of diabetes mellitus.

Table-2
Fasting Blood Sugar at baseline, 3 month and 6 month

Group	Pre study (baseline) Mean FBS(mg/dl)	Post study (at 6 months) Mean FBS (mg/dl)	Mean difference	Difference in percentage	P- value within the group (paired t-test)
Yoga group (Group A)	178.452±35.244	114.762±14.596	63.69	35.69%	<0.0001
Control group (Group B)	175.558± 42.858	122.762 ±43.932	52.796	30.07%	<0.0001
P- value (independent t-test)	0.63088	0.11472			

It is also evident from the result of independent t-test depicted in Table 2 that at baseline, there was no statistically significant difference between the yoga and control groups (independent t-test p- value>0.05), the difference was also insignificant at the end of six months (independent t-test p-value >0.05) so although the Yoga therapy results in a significant decrease in fasting blood sugar of yoga group at the end of six months. But the difference between both groups is not significant.

2.) Post Prandial Blood Sugar (PPBS)

Table 3
Post Prandial Blood Sugar at baseline and 6 months

Group	Pre study (baseline) PPBS (mg/dl)	Post study (at 6 months) PPBS (mg/dl)	Mean difference	Difference in percentage	P- value within the group (paired t- test)
Yoga group (Group A)	294.298±65.283	201.131±32.688	93.167	31.65%	<0.001
Control group (Group B)	285.744±45.889	205.584±20.991	80.16	28.05%	<0.001
P- value (independent t-test)	0.3235	<0.29097			

3.) **HbA1c level**-It can be seen from Table 5 that there is a significant reduction of 18.36% (paired t-test p-value < 0.001) in HbA1c in the patients in the yoga group (Group A) at the end of six months. In the control group patients also there was a statistically significant but a lesser reduction of 13.4% from baseline value (paired t-test p-value <0.001).

INTRODUCTION

Yoga is an ancient system of relaxation, exercise and healing with origins in Indian philosophy.

The philosophy of yoga is sometimes pictured as a tree with eight branches. These eight limbs are: *pranayama* (breathing exercises), *asana* (physical postures), *yama* (moral behavior), *niyama* (healthy habit), *dharana* (concentration), *pratyahara* (sense withdrawal), *dhyana* (contemplation), and *samadhi* (higher consciousness).

Diabetes mellitus is a worldwide health problem predisposing to markedly increased cardiovascular mortality and morbidity. Lipid abnormalities significantly contribute to the increased risk of cardiovascular disease and other morbidity in diabetics. It has been demonstrated that high levels of serum Total cholesterol, triglycerides, LDL, VLDL, glycated haemoglobin (HbA_{1c}), microalbuminuria, hypertension, low concentration of HDL and increased body mass index (BMI) are significantly associated with coronary heart disease. Exercise is a major therapeutic modality in the treatment of diabetes mellitus. Regular physical exercise has been reported to be effective in the prevention and delay of onset of type 2 diabetes, increases insulin sensitivity, and ameliorates glucose metabolism. Yoga has become increasingly popular in Western cultures as a means of exercise and training fitness. It has been used clinically as a therapeutic intervention and its practice includes muscle stretching, breathing exercises, behavioural modification, and dietary control through mental discipline.

A growing number of research studies have shown that yoga can improve strength and flexibility, and may help control physiological variables such as blood pressure, respiration and heart rate, and metabolic rate to improve overall exercise capacity. Studies carried out on medium or long-term effect of yoga exercise on

oxidative stress parameters and antioxidant status in type 2 diabetic patients are sparse.

The aims of the present study were therefore to investigate the effects of yoga on HbA_{1c}, Serum insulin level & lipid profile, oxidative stress parameters and antioxidant status after 3 and 6 months of intervention in patients with type 2 diabetes mellitus

AIM AND OBJECTIVE

To study the effect of yoga on HbA_{1c}, serum insulin level and lipid profile in Diabetic patients.

MATERIAL AND METHODS

This study was conducted on patients attending Medicine/Endocrine OPD and admitted in Medicine/Endocrine ward at LLRM Medical College, Meerut and included patients with type 2 diabetes mellitus on treatment. Study was conducted in a total of 200 patients in two groups of 100 patients each with following inclusion and exclusion criteria.

INCLUSION CRITERIA:

Patients suffering from type 2 DM
Age >30 year of age
Patients who were cooperative
Patients who gave written informed consent
Non-Smoker and Non-Alcoholic

EXCLUSION CRITERIA :

Type 2 diabetes mellitus with malnutrition or severe complications of the disease (cardiovascular, renal, visual and cerebral).
Patients on hyperlipidaemia drug
Age < 30 Years
Uncooperative/Unable to provide informed written consent.

Study Procedure: 200 patients with type 2DM on T/T attending Medicine /Endocrine OPD or admitted in medicine /Endocrine ward were assessed thoroughly with proper history, clinical examination and required investigation. Patients were divided in two groups of 100 patients each. **Group A**

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Semwal R., Sharma S., Verma S., Rajappan R. . To study the effect of yoga on HbA1c , serum insulin level and lipid profile in diabetic patients in a tertiary care centre. International Journal of Yoga and Allied Sciences Vol 13, No:1, Jan-June 2024 pp: 16-24

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FIELD OF INTEREST-