CAHIERS MAGELLANES-NS
Volume 06 Issue 1
2024

ISSN:1624-1940
DOI 10.6084/m9.figshare.26310655
http://magellanes.com/

EFFECTS OF YOGA POSTURES AND PRANAYAMAS ON BLOOD GLUCOSE , LIPID PROFILE, AND HBA1C IN TYPE 2 DIABETIC PATIENTS

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ABSTRACT
In addition to hyperlipemia and hyperglycemia, decreased insulin secretion and obesity are characteristic symptoms of type II diabetes, which poses a serious risk to one's health. The purpose of this study was to determine whether pranayamas and yoga poses had any bearing on particular variables. Two groups were created out of 100 type-II D.M. patients without problems, ranging in age from 40 to 55. Patients in group B practiced yoga in addition to conventional medicine, while patients in group A only got conventional medicine. The trial lasted for ninety days.
Blood glucose, lipid profile, and HbA1C were measured at baseline during recruiting and again after a 90-day study period. The outcomes revealed a substantial improvement of all biochemical indicators in group B patients, with the exception of TG, while group A patients exhibited no change, indicating the positive impact of yoga program on these parameters in individuals with diabetes.

KEYWORDS: pranayamas, yoga asanas, blood glucose, lipid profile, diabetes mellitus, and HbA1C.

INTRODUCTION
Type II diabetes is a chronic illness that is extremely common and closely linked to fat distribution and obesity.1,7. Several behavioral Interventions such as increased physical activity, dietary changes, and quitting smoking have been proposed as means of avoiding and treating type II diabetes mellitus2.
Mind-body therapies have been proposed as a means of controlling the stress psychology linked to obesity, hypertension, and insulin resistance8.In the present period, yoga is used in the therapeutic realm9. It becomes better oxidative stress and diabetes's glycaemic state via neuro-endocrine mechanisms3, 4. Yogic techniques are intended to cultivate mental equilibrium and relaxation, which in turn is expected to modify one's attitude toward life's circumstances.
Patients with diabetes can benefit from yoga by losing weight, preserving blood flow to different muscles, lowering stress hormones, and enhancing pancreatic insulin release. The aim of this study is to methodically examine and combine yoga therapies intended to prevent and manage type 2 diabetes.

MATERIALS AND METHODS
This study was created using 100 middle-aged males with diabetes mellitus in Chennai who were between the ages of 40 and 55. There were two groups of 50 subjects per in the study design. Group A consists of solely conventional medications, while Group B includes yoga in addition to conventional

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medications.
Participants were non-insulin-using type II diabetics who were opportunistically recruited by staff members in general practices with not more than ten years of diabetes.
Individuals who were unwilling to practice yoga, had pulmonary tuberculosis, cancer, rheumatoid arthritis, or myocardial infarction were not allowed to participate.
HbA1C was the first (Primary) outcome measure. Quality of life, blood glucose, and cholesterol levels were among the secondary outcome measures. in connection with diabetes.

STATISTICS

The expression for each value is Mean + SD. T-test for paired students was used to determine the statistical significance of the change in mean biological parameter values both before and after yoga practice.

RESULTS

Table 1 displays the lipid profile and other diabetes indicators for individuals with type II diabetes receiving traditional antidiabetic medication. found no statistically significant difference between the two groups' mean values for the lipid profile, fasting blood sugar, and hemoglobin A1C (P>0.05). Table 2 demonstrates that compared to the group receiving conventional therapy alone, the yoga and conventional medicine group had better control over diabetes indicators. Aside from triglycerides (P>0.05), P> 0.01.
Pre test value of Bio-Parameters

Table 1

Parameters	Group A	Group B	P Value
Total Cholesterol	188.75±41.21	179.92±35.14	>0.05
LDL	121.6±32.36	112.35±26.45	>0.05
HDL	37.03±3.97	39.83. ±3.94	>0.05
TRIGLYCERIDES	164.60±25.14	169.38±30.09	>0.05
FASTING BLOODGLUCOSE	162.30±30.94	161.03±32.92	>0.05
HbA1C	7.19±1.49	7.07±1.35	>0.05

Post test value of Bio –Parameters

Table 2

Parameters	Group A	Group B	P Value
Total Cholesterol	187.06±33.40	169.95±26.15	<0.01
LDL	117.56±33.83	94.93±26.41	<0.01
HDL	37.48±4.74	42.31. ±3.58	<0.01
TRIGLYCERIDES	159.16±23.90	156.72±31.01	>0.05
FASTING BLOODGLUCOSE	156.77±29.92	139.65±30.88	<0.01
HbA1C	6.85±1.11	6.30±0.94	<0.05

DISCUSSION

This study set out to determine whether yoga could effectively treat type II D.M. The goal is to methodically examine a yoga research. intervention meant to manage diabetes type 2. Yoga significantly improved group II patients' HDL levels and significantly decreased their blood glucose, cholesterol, LDL, and HbA1c levels as compared to standard treatment alone. Group I subjects exhibited no significant change in these parameters. However, there were no appreciable alterations in the TG levels.Two times the parameters were obtained: once at the

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one at the start of the study period and the other after ninety days. After 90 days of yoga intervention, there was a significant drop in blood sugar levels. According to Jain et al. (11, 15), there was a notable decline in response to yoga therapy: hyperglycemia with a reduction in oral hypoglycemic medication for the maintenance of normoglycemia. This study's observation of a lower lipid profile is consistent with some other earlier research.A considerable decrease in LDL and free fatty acid levels and a rise in HDL levels were reported by Sahay et al. and Bajlani et al.12. Furthermore, Sahay et al. have also documented a noteworthy reduction in body fat and an increase in lean body mass following yoga therapies in individuals with type 2 diabetes.

This study found that after 90 days of yoga practice, there was a significant decrease in HbA1c levels. Monro R 13, 14, 15, and others reported the HbA1c levels. The mean differences showed that the levels of HbA1c were decreased by yoga interventions.

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