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COMBINED EFFECT OF YOGA AND NATUROPATHY TREATMENTS ON LIPID PROFILE AMONG TYPE 2 DIABETES MELLITUS – A RANDOMISED TRAIL

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ABSTRACT

Background: Diabetes Mellitus comprises of a group of common metabolic disorders that share the phenotype of hyperglycemia. The combined effect of Naturopathy and Yoga therapies was less understood on diabetes mellitus. Hence, this study was conducted to evaluate the combined effect of Naturopathy and Yoga therapies on lipid profile among diabetic individuals. **Materials and Method:** Sixty (n=60) individuals with diabetes were selected for the study after proper screening according to diagnostic, inclusion and exclusion criteria. Subjects were recruited from SDM Yoga and Nature Cure Hospital Shantivana, Dharmasthala. After a thorough and detailed case history. The lipid profiles were checked at the 1st day before we start with the Naturopathic and Yogic interventions and the post-data was collected on the 10th day. This procedure is done along with the Naturopathic Diet. Data were collected for the statistical analysis. Lipid profiles were checked. **Result:** After intervention with naturopathy and yoga there was a significant reduction in total cholesterol, triglycerides and LDL cholesterol, apart from it, there was a non-significant elevation in HDL. **Conclusion:** Yoga and Naturopathy, being a lifestyle incorporating exercise and stress management training, targets the elevated blood glucose levels and lipid levels in patients with diabetes with integrated approaches.

KEYWORDS: Diabetes Mellitus, Yoga and Naturopathy, Lipid profile.

INTRODUCTION

Though India has emerged out as super power in the last decades and has come out as a great democratic country and a great technical cyber hub in the world it is very sad to say it has also emerged out as a worst diabetic hub in the whole world. It is because of sedentary lifestyle, without regular exercises and intake of more Carbohydrate rich diets, unwanted stressed life style, leads the present Indian a diabetic at his 30's in general. In the last decade, the incidence of diabetes mellitus has tremendous increase among the Indian population.[1] Use of drugs has its own drawbacks, such as drug dependency, drug resistance, and adverse effects, if used for a long time. Hence, in recent years there has been an intense search for nonmedical measures not only to manage T2DM, but also to prevent its complications. The effect of diabetes has increased because of worsening obesity, global papulation aging and decrease in physical activity.[2] Diabetes mellitus (DM) refers to a group of common metabolic disorders that share the phenotype of hyperglycemia. Several distinct types of DM exist and are caused by a complex interaction of genetics and environmental factors. The metabolic dysregulation associated with DM causes secondary pathophysiologic changes in multiple organ systems that impose a tremendous burden on the individual with diabetes and on the health care system.[3]

Diabetes is a chronic metabolic disease that adversely affects quality of life. Psychological stress and negative mood have a bidirectional effect in the control of diabetes.[4] One of the most significant pharmacological diabetic management is that almost every drug that is used for diabetes cause some undesirable effects such as lower blood sugar level, stomach upset, weight gain, constipation, tiredness or dizziness, risk of liver disease, etc.[5] Several complementary and alternative medicine modalities like naturopathy, acupuncture, therapeutic massage, reflexology, dietetics are found to be effective in the management of T2DM.[6]

Several complementary and alternative medicine modalities like yoga, naturopathy, acupuncture, therapeutic massage, reflexology, dietetics are found to be effective in the management of T2DM.[6] Although yoga has been practiced since ancient times, yoga as therapy is still a relatively new and emerging trend in the healthcare field. Extensive research has explored changes in biochemical, electrophysiological, cellular, genetic, neuromuscular, and radiological parameters related to

yoga practice. This has facilitated the practical application of yoga in various diseases, and it is now being recognized worldwide as a clinically viable treatment. Traditionally a mind-body practice with the ultimate goal of spiritual enlightenment, yoga is a science of health management, rather than a therapy for treating specific diseases.[7] Yoga practice is a complex intervention with various components, including cleansing processes (kriya), postures (asana), controlled breathing (pranayama), meditation, relaxation, chanting mantras, yogic diet, code of conduct, philosophy, and spirituality. Many yoga practices have been found to be beneficial in the management of type 2 diabetes; however, their judicious use is recommended after a careful assessment of a patient's overall health, individual requirements, associated risk factors, and contraindications. By considering the person as a whole, including physical inactivity and poor health behaviors, yoga practices of high or low intensity may be prescribed.[7]

METHODOLOGY

60 Subjects who were diagnosed with type 2 Diabetes individuals were recruited for the study. Subjects who fulfilled the inclusion and exclusion criteria were apprised about the purpose of the study and their rights as a research subject. The subjects were from Shri Dharmasthala Manjunatheshwara Yoga and Nature Cure Hospital, Dharmasthala. An informed consent was obtained from the subjects by explaining the following both orally and in writing: study objectives, study methods, withdrawal of participants at any time and protection of privacy. Data were collected at baseline and post interventions. An ethical clearance was obtained from the institutional ethics committee. The study was executed in the hospital and the pre-data is collected on the 1st day of the admission to the nature cure hospital and post data on the 10th day (lipid profile) is checked on both the days.

Criteria for diagnosis: Laboratory reports of lipid profile.

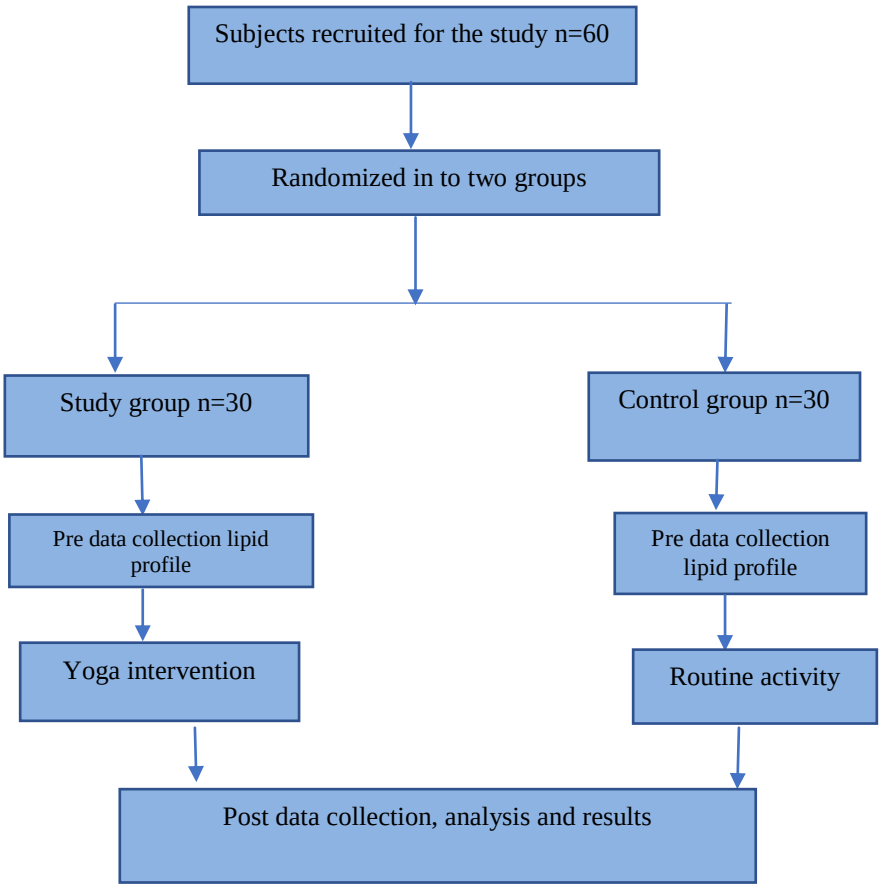
Inclusion criteria

- Subjects with Type II diabetes mellitus.
- Both males and females.
- Age group between 30-65 years' old.
- Patient on medications.
- Type II diabetes mellitus with Obesity.

Exclusion criteria

- Subjects with Type I diabetes mellitus.
- Subjects under Anti-psychotic drugs along with Type II diabetes mellitus.
- Patients with other complication of diabetes like diabetic neuropathy, nephropathy and Retinopathy.
- Liver and kidney dysfunction.

Study Design: A Randomized control trial.



Daily yoga Protocol for 10 days

Name of the practice	Details	Duration
Sheethalikarana Vyayama	All the joints movements	10 minutes
Suryanamaskara	5 rounds	10 minutes
Asana practices	Mandukasana Ardhamatsyendrasana Bhujangasana Vakrasana Pawanamukthasana	20 minutes
Pranayama	Nadishuddhi Kapalabhati	5 minutes
Deep relaxation technique		5 minutes
Kriyas	Vamana dhouti Jalaneti Trataka	First 3 days Daily once from each nostril 20 minutes
Meditation	Yoga nidra Om-meditation	Daily before sleep 15 minutes

Data extraction and analysis: The data was collected by checking the pre and post blood lipid profile. The assessments were done prior and immediately after the intervention. The data was further scored using respective scoring keys and statistical analysis. The paired t tests were employed to compare measures P value < 0.05 was considered as significant.

RESULTS

The statistical paired t-test was done using the SPSS version 20.0. After intervention the study showed a decrease in total cholesterol, triglycerides and LDL levels.

Statistical assessment of lipid profile in study group

	Variables	Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	pre_cholesterol - post_cholesterol	74.333	49.443	9.027	55.871	92.796	8.234	29	.000
Pair 2	pre_TG - Post_TG	84.600	118.275	21.594	40.436	128.764	3.918	29	.000
Pair 3	PRE_HDL - Post_HDL	4.333	3.772	.689	2.925	5.742	6.292	29	.000
Pair 4	PRE_LDL - Post_LDL	68.967	63.506	11.595	45.253	92.680	5.948	29	.000
Pair 5	PRE_VLDL - Post_VLDL	11.700	13.819	2.523	6.540	16.860	4.637	29	.000

The study showed that naturopathy and yogic intervention resulted in a significant reduction in total cholesterol, triglycerides and LDL cholesterol.

Statistical assessment of lipid profile in control group

	Variables	Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	pre_cholesterol - post_cholesterol	84.433	69.433	19.027	65.812	82.796	9.234	39	.064
Pair 2	pre_TG - Post_TG	84.600	118.275	21.594	40.436	128.764	3.918	35	.057
Pair 3	PRE_HDL - Post_HDL	44.333	23.772	.689	42.925	5.742	6.292	35	.070
Pair 4	PRE_LDL - Post_LDL	68.967	63.506	11.595	45.253	82.680	5.948	35	.065
Pair 5	PRE_VLDL - Post_VLDL	11.700	13.819	2.523	16.540	26.860	4.637	35	.070

DISCUSSION

The study resulted in a decrease in total cholesterol, triglycerides and LDL cholesterol. The effect of exercise on blood lipid profiles has been widely reported.[8,9] The Physical activity raises HDL levels and decreases the concentration of very low-density lipoprotein cholesterol and triglycerides.[10] Physical activity and HDL appear to be linked via HDL's role in triglyceride metabolism.[11] It

is, however, seen that diabetic patients usually cannot sustain the levels of recommended physical activity for them due to varied reasons like age, obesity, cardiovascular disease and other complications. Compliance and motivation for performing activity at 50–70% of maximum aerobic capacity regularly is quite poor.[12] Various studies have reported physical, physiological, psychological and endocrinological changes with yoga. The beneficial effect of yoga in the management of hyperlipidemia and obesity cannot just be attributed alone to the simple excess calorie expenditure as there is no rapid muscle activity and energy generation involved in yoga.

Elevated cortisol is also linked to dyslipidemia, and higher blood pressure.[13] Yoga has been reported to lower levels of sympathetic hormones and reduce cortisol. Pranayama reduces sympathetic tone, increases parasympathetic activity and also helps an individual reduce stress.[14,15] Meditation also brings about a hypo-metabolic state and reduces stress induced sympathetic over activity.[16] Dyslipidemia is usually associated with the abnormalities in lipolysis; triglyceride metabolism and free fatty acid turn over in a case of insulin resistance. Impaired lipoprotein lipase and increased hepatic lipase activity is thought be a resulting from insulin resistance in diabetes. Chronic exposure to elevated free fatty acids has been associated with impaired insulin secretion.[17] The improvement in lipid profile with practice of yoga could be due to increased hepatic lipase and lipoprotein lipase. This would increase the uptake of triglycerides by adipose tissue and affect the lipoprotein metabolism.[18] Yoga and Naturopathy is also proved to affect mental balance of an individual allaying apprehension, stress and bringing about hormonal balance and feelings of wellbeing. This sense of wellbeing is attributed to its ability to increase endogenous melatonin secretion.[19]

Limitations: The intervention was limited only for short period of 10 days and smaller sample size.

Conclusion: The present study has shown an efficacy of improving the Lipid Profile and lowering blood glucose levels of type 2 diabetic individuals. Yoga being a lifestyle intervention and stress management training, targets the elevated lipids through integrated approaches resulting in improved lipid profiles.

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