Case Report

An integrated approach of yoga and naturopathy in the management of type 2 diabetes mellitus: A case report

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ABSTRACT

Diabetes mellitus, a severe metabolic condition and a global health issue causing four million deaths and is one of the top 10 causes of mortality. India has the highest prevalence of type 2 diabetes at 10.4%, with 69.9 million cases predicted by 2025. By 2045, it is expected to have the largest global increase at 84%. Consistent medication adherence and coordination are crucial for health systems. Yoga and Naturopathy is a drugless medical approach that promotes natural healing and it has been shown to reduce weight and improve glycaemic control. Thus, we investigated the effectiveness of this approach towards the T2DM patient. A 47-year-old patient with T2DM, visited the International Institute of Yoga and Naturopathy Medical Sciences in Chengalpattu, Tamil Nadu, on January 10, 2022. He was started on a comprehensive treatment plan; lifestyle modifications with Yoga and Naturopathy interventions. The patient was assessed pre and post for the study, taking data of Blood pressure, Body mass Index (BMI), Fasting Blood Glucose (FBG), Postprandial Blood Glucose (PPBG), HbA1c (Glycated Hemoglobin) and Short Form 12-item Survey (SF12) and the results showed that after 3 months of Yoga and Naturopathy intervention, there was considerable changes in the Systolic blood pressure pre: 140 mm hg; post: 120 mm hg, diastolic blood pressure pre: 90 mm hg; post: 80 mm hg, BMI: 27.7 to 24.2 kg/m^2; FBG pre: 160mgs/dl; post: 86 mgs/dl, PPBG pre: 276 mgs/dl; post: 125 mgs/dl, and HBA1c pre: 11.2 %, post: 8.4 %, and QOL SF-12: from 73 to 97.83. The results suggest that Yoga and Naturopathy interventions are effective in patients with T2DM.

Key words: T2DM, Yoga and Naturopathy, FBS, PPBS, HBA1c.

An elevated blood glucose content is one of the metabolic conditions often referred to as diabetes mellitus [1]. It is a severe, protracted disorder that has a significant influence on people's lives and general wellbeing across cultures. It was estimated to have caused four million fatalities worldwide and is one among the top 10 causes of mortality for people. Since 2000, the International Diabetes Federation has kept track of the prevalence of diabetes and reported on cases at the national, regional, and international levels. In 2017, there were 425 million more T2DM cases [2]. With a prevalence of 10.4% and a total population of around 19 million, India now has the highest number of people worldwide with type 2 diabetes [3,4]. It is predicted that 69.9 million cases of diabetes would exist in India by 2025, the great majority of which will remain undiagnosed [3]. Additionally, by 2045, it is anticipated to have the largest rise in prevalence globally (84% increase) [4]. The main causes of this are changes in food and insufficient or inadequate physical exercise, which affect the body's physiology and cause overweight or obesity as well. Diabetes care poses difficulties due to the requirement for consistent adherence to medication, prevention, or management of related problems. This necessitates health systems ongoing participation in the whole spectrum of care at every level. Coordination of care for diabetes is necessary at all levels of the healthcare system. Most significantly, co-driven by the patient's understanding, perspectives, and attitudes towards awareness, care, and following the guidelines [3].

Yoga and Naturopathy (YN) is a drugless medical approach that uses non-invasive intervention techniques to provide an oasis of healing for the body. It promotes the innate ability of nature to heal. It is safe, has no known adverse reactions, and is useful in the treatment of a number of illnesses [5]. It has been independently

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demonstrated that YN interventions, including yoga, raw foods, calorie restriction (fasting), massage, and steam baths, can reduce weight and improve glycaemic control [4]. In the treatment of diabetes mellitus and its chronic consequences, acupoint therapy has demonstrated a unique therapeutic impact as well as noteworthy benefits [6]. Thus, the purpose of this case study is to investigate how combined yoga and naturopathy can help control type 2 diabetes.

CASE REPORT

A 47-year-old patient came to our Outpatient department (International Institute of Yoga and Naturopathy Medical sciences, Chengalpattu, Tamil Nadu.) on January 10, 2022; with known case of type 2 diabetes mellitus since past 3 years. He reported experiencing increased thirst, frequent urination, and unexplained weight loss over the past three months. The patient was started on a comprehensive treatment plan and lifestyle modifications like following a balanced vegetarian diet, yoga practices, Naturopathy interventions, engaging in physical activity, and monitoring his blood glucose levels regularly. The patient was assessed pre and post for the study with the informed consent and the data were taken; they are Blood pressure, Body mass Index (BMI), Fasting Blood Glucose (FBG), Postprandial Blood Glucose (PPBG), and HbA1c (Glycated Hemoglobin) which provides evidence about an individual's average blood glucose levels during the previous two to three months, which is the predicted half-life of red blood cells (RBCs) [7].

And Quality of Life (QOL) assessed with the Short Form 12-item Survey (SF12) which is a common patient reported instrument to measure physical and mental health related quality of life [8]. An Integrated Yoga and Naturopathy intervention has been given for a period of 3 months. The details of the intervention provided to the subject are given in **(Table 1)**. After 3 months of yoga and naturopathy intervention, the patients showed considerable changes in the Systolic blood pressure pre: 140 mm hg; post: 120 mm hg, diastolic blood pressure pre: 90 mm hg; post: 80 mm hg, BMI: 27.7 to 24.2 kg/m^2; FBG pre: 160mgs/dl; post: 86 mgs/dl, PPBG pre: 276 mgs/dl; post: 125 mgs/dl, and HBA1c pre: 11.2 %, post: 8.4 %, and QOL SF-12: from 73 to 97.83 **(Table 2)** shows improved quality of life, felt lightness of body with reduced symptoms which were there earlier and the patient was instructed for a regular follow-up with intervention & assessments and ensured his regular visits with Diabetologist for monitoring his blood routine and drug alterations.

DISCUSSION

In accordance with the findings of this research, the quality of life of T2DM patients has improved and their blood glucose levels are effectively controlled. According to a recent pilot research, (Mooventhan, A., et al., 2020) participant's blood glucose levels significantly decreased by giving gastro-hepatic pack and suggested, 20 minutes of this pack may help people with type 2 diabetes lower their blood glucose levels [9]. Another study (Yokoyama et al. 2014) reveals that, individuals with type 2 diabetes showed a substantial reduction in HbA1c of 0.4 percentage points when following a vegetarian diet. Studies comparing high-fat and vegetarian diets show that reducing fat intake might improve insulin sensitivity by reducing intracellular fat accumulation [10]. According to a research article (Schellenberg, E. S. et al., 2013), comprehensive lifestyle treatments, such as exercise and dietary modifications, lower the incidence of type 2 diabetes in high-risk individuals; however, it is uncertain if these interventions will affect the outcomes of patients who have already been diagnosed with the disease [11].

Yoga may lessen stress and psychological anxiety, which would lower cortisol levels. It was believed that this cortisol drop would enhance insulin sensitivity and responsiveness, possibly resulting in a decrease in blood glucose levels. Furthermore, it was anticipated that yoga's ability to reduce stress would improve adherence to treatment plans, which would improve glycaemic control [6]. Through enzymatic mechanisms, yoga poses have the capacity to revitalise pancreas cells, increasing glucose metabolism and utilisation in adipose, liver, and peripheral tissues [12]. electroacupuncture can improve pancreatic function and lower insulin resistance in rats when applied to certain points like Zusanli (ST36) and Shenshu (BL23) by affecting gene expression and triggering signalling pathways [13]. It has been discovered that electroacupuncture, influences the release of neurotransmitters. By improving insulin sensitivity and reducing blood sugar levels, it may aid in the treatment of diabetes mellitus. Additionally, it can greatly improve diabetic patient's dyslipidemia [14]. Thus, a combination of these therapies might have significant improvement in the Fasting blood sugar (FBS) and postprandial blood sugar (PPBS) and HBA1c of T2DM patients. The strength of the study shows that there were no adverse effects were reported by the subjects and it is feasible and safe and the patient was comfortable, felt better with the treatment. The limitations may be on the results as it may vary because this is a single case study. Hence, further well-planned clinical studies with larger sample size are suggested to validate our results.

CONCLUSION

The results suggest that yoga and naturopathy interventions are effective in patients with TYPE 2 DM and have notable changes in FBS and PPBS and HBA1C and improvement in the quality of life. However, further clinical studies with larger sample size are recommended to validate the results of the study.

Table 1: A detail of the Yoga and Naturopathy intervention

Name of the therapy	Duration mins	Frequency 3 months
Naturopathy intervention:		
Neutral enema	-	First day
Mud pack abdomen and eyes	20 mins	Alternate day
Gastro Hepatic pack	20 mins	Alternate day
Acupuncture (Points used: LIV 13, GB 26, GB 27, GB 28, ST 36)	20 mins	Thrice a week
Yoga practices:		
Asanas: Tadasana, Ardha katichakrasana, Katichakrasana, Vakrasana, Pavanmuktasana, Uttanapadasana, Shalabasana.	20 minutes	Everyday
Pranayama: Nadishudhi pranayama, Bhramari pranayama.	5 minutes	
Relaxation: Deep relaxation technique.	15 minutes	

Table 2: Results of pre and post assessment

Assessments	Pre data	Post data
Height (cm)	170	170
Weight (kg)	80	72
BMI (kg/m^2)	27.7	24.2
SBP (mm hg)	140	120
DBP (mm hg)	90	80
FBS (mgs/dl)	160	86
PPBS (mgs/dl)	276	125
HBA1c (%)	11.2	8.4
SF-12	73	97.83

*BMI: Body mass Index; SBP: Systolic Blood pressure; DBP: Diastolic Blood pressure; FBS: Fasting blood sugar; PPBS: Postprandial blood sugar; HBA1c: Glycated hemoglobin; SF -12: Short Form 12-item Survey.

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