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Integrated approach of Naturopathy and Yoga in Diabetes Mellitus Management: A Case Series

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Abstract – *Diabetes mellitus is a global health challenge characterized by impaired glucose metabolism and associated cardiovascular risks, with India alone accounting for millions of affected individuals. Conventional management strategies emphasize pharmacotherapy, dietary modification, and self-monitoring of blood glucose, but there is growing interest in complementary and alternative medicine approaches such as yoga and naturopathy. This case series explores the clinical outcomes of a multimodal intervention combining pranayama, yoga practices, and naturopathic therapies in five patients with type 2 diabetes mellitus admitted for intensive inpatient care. The program included hydrotherapy, mud therapy, manipulative therapy, acupuncture, daily yoga sessions incorporating asana, pranayama, meditation, and relaxation, along with a sattvic diet emphasizing fresh, whole foods. Patients were monitored for changes in weight, BMI, blood pressure, pulse rate, fasting blood sugar, and postprandial blood sugar before and after the intervention. The findings revealed consistent improvements in metabolic parameters, particularly reductions in weight, BMI, and fasting blood sugar, with postprandial blood sugar showing borderline improvement. Cardiovascular outcomes such as blood pressure and pulse rate demonstrated mixed responses, highlighting the complexity of managing comorbid conditions in diabetes. Overall, the intervention produced favorable metabolic outcomes and enhanced patient wellbeing, supporting the potential role of integrative therapies as adjuncts to conventional diabetes care. While limited by the small sample size and inherent constraints of case series design, these results provide valuable insights for hypothesis generation and underscore the need for larger randomized controlled trials to validate the efficacy and safety of yoga and naturopathy in diabetes management.*

Key Words: Diabetes mellitus, yoga, naturopathy

1. INTRODUCTION

Diabetes mellitus is a worldwide health issue, which is defined by an abnormality in glucose metabolism and the resultant cardiovascular risks.[1] In India alone, an estimated 46.3 million adults live with diabetes. This substantially contributes to the national disease burden, measured in disability-adjusted life years (DALYs).[2]

The conventional treatment of diabetes mainly focuses on maintaining blood glucose control through a combination of pharmacotherapy, dietary modification and self-monitoring of blood glucose levels. While these approaches are effective, there is growing interest in exploring complementary and alternative medicine (CAM) therapies, such as Yoga and Naturopathy, for their role in stress management, autonomic function, and metabolic regulation in diabetes. Pranayama has been found to decrease stress hormones and increase insulin sensitivity. Naturopathy is a holistic approach to lifestyle changes, which include dietary changes, hydrotherapy, and mind-body therapies.

Yoga is an age-old practice as well as tradition, originated in India, that integrates the body and mind through its variety of practices like Asana (Posture), Pranayama (Breath regulation techniques), Dhyana (Meditation) and various relaxation

techniques.[3] The practice of Pranayama, along with the complementary therapies like hydrotherapy, mud therapy, massage, acupuncture and dietary modifications, has revealed marked changes in the blood glucose levels and the other vital parameters of the patients with diabetes mellitus.

While research on CAM therapies for Diabetes is ongoing, the existing evidence base is primarily derived from small-scale studies. Case series can contribute valuable insights into the potential benefits and limitations of specific CAM interventions in a clinical setting. However, it is important to acknowledge that case series are limited by their inherent inability to establish causality or generalizability due to the limited number of subjects in them. Despite these limitations, case series can provide valuable data for hypothesis generation and inform the design of future controlled trials to further explore the efficacy and safety of CAM therapies for managing chronic conditions like diabetes mellitus.

2. CASE INFORMATION

2.1 CASE 1

A 49-year-old male, silver businessman, presented with frequent urination, sudden weight loss (7 kg in 1 month), and chronic toe pain. Past history was non-contributory; father hypertensive. Lifestyle showed disturbed sleep, no exercise, mixed diet. On Metformin, Telmisartan, and Cholestonil. Examination revealed obesity (BMI 33), hypertension (130/80 mmHg), and poor appetite with constipation. Iris diagnosis showed scurf rim and radii solaris. Daily vitals revealed fluctuating BP (128–144/86–100 mmHg), pulse 68–89 bpm, weight ~100 kg, and elevated FBS/PPBS (198/103 mg/dL; 272/125 mg/dL).

2.2 CASE 2

A 31-year-old male IT professional, presented with chronic indigestion, heaviness of stomach, increased cravings, sweating, and polyuria. Past history included chickenpox and inguinal hernia (2015). Lifestyle: disturbed sleep, no exercise, mixed diet. No medications. Examination showed BMI 25.8, BP 130/90 mmHg, pulse 75 bpm. Appetite decreased, bowel irregular, urine frequency increased. Iris diagnosis revealed scurf rim; pulse diagnosis indicated imbalances in SI, GB, UB, LI, with reduced heart, liver, kidney activity.

2.3 CASE 3

A 59-year-old businessman, known type-1 diabetic and hypertensive for 30 years, presented with shoulder pain. Past history included bypass surgery (2017). Family history positive for diabetes and hypertension. Lifestyle: mixed diet, no exercise, and sound sleep. On insulin degludec, atorvastatin, vastaral, and metformin. Examination revealed pallor, BMI 32.1, BP 150/66 mmHg, pulse 80 bpm. Iris diagnosis showed scurf rim, radii solaris, stress rings. Pulse diagnosis indicated multiple organ imbalances. Clinical picture reflects long-standing diabetes with cardiovascular comorbidity and musculoskeletal complaints.

2.4 CASE 4

A 57-year-old businessman, presented with weakness of right leg and hand for 3 years, history of stroke (2020). Known diabetic and hypertensive. Family history: mother diabetic. Lifestyle: disturbed sleep, constipation, mixed diet. On duloxetine, vildagliptin/metformin, and atorvastatin. Examination: pallor, BMI 31.3, BP 128/80 mmHg, pulse 68 bpm. Iris diagnosis showed stress rings and radii solaris; pulse diagnosis revealed multiple organ imbalances. Daily vitals showed fluctuating BP (110–170/70–100 mmHg), weight reduction (101.3 → 95.7 kg), and variable FBS/PPBS (123–197 mg/dL; 91–110 mg/dL).

2.5 CASE 5

An 82-year-old Tamizh poet, presented with bilateral shoulder pain. Past history: umbilical hernia (25 years), Type 2 Diabetes Mellitus (40 years). Family history: mother diabetic. Lifestyle: vegetarian diet, walking 45 min/day, disturbed sleep. On metformin, glimepiride, telmisartan, atorvastatin, and laxatives. Examination: pallor, BMI 31.9, BP 130/70 mmHg, pulse 82 bpm. Abdomen showed umbilical bulge; locomotor exam revealed shoulder pain. Iris diagnosis: stress rings, radii solaris. Daily vitals showed fluctuating BP (126–154/70–92 mmHg), weight reduction (81.7 → 78.4 kg), and variable FBS/PPBS (100–154 mg/dL; 86–156 mg/dL).

Case	Date of Admission	Date of Discharge	Duration of Treatment underwent
1	05.12.2023	15.12.2023	11 days
2	07.12.2023	14.12.2023	8 days
3	12.12.2023	20.12.2023	9 days
4	30.12.2023	22.01.2024	24 days
5	01.02.2024	09.02.2024	9 days

Table -1: Duration of Treatment of the Cases

3. INTERVENTION

The duration of treatment underwent by the patients is mentioned in Table-1. The patients received a multi-model intervention program designed to address their symptoms and overall health. This program incorporated the following components: Naturopathy therapies like Hydrotherapy typically encompasses the application of water in various forms like baths, compresses, packs and douches. The patients participated in yogic practices, tailored for the management of diabetes mellitus, which includes Asana, Pranayama and Meditation. They have adhered to a sattvic diet, which is a vegetarian diet emphasizing fresh, whole foods and considered to promote physical and mental well-being.

4. RESULTS

The intervention led to significant improvements in weight ($p = 0.008$), BMI ($p = 0.008$), and fasting blood sugar ($p = 0.029$). There was also a borderline improvement in postprandial blood sugar ($p = 0.050$). Cardiovascular parameters showed mixed responses. Systolic blood pressure ($p = 0.426$), diastolic blood pressure ($p = 0.765$), and pulse rate ($p = 0.242$) did not reach statistical significance. The p-values were derived from paired sample tests, ensuring that each patient's pre- and post-intervention values were directly compared to assess the effect of the program.

5. DISCUSSION

This clinical case series of five patients with Type 2 Diabetes Mellitus (T2DM) demonstrated significant short-term improvements in metabolic markers following a structured, intensive multimodal intervention. Participants showed consistent reductions in body weight, Body Mass Index (BMI), and fasting blood sugar (FBS), while postprandial blood sugar (PPBS) improved modestly. The inpatient program integrated pranayama, yoga asanas, hydrotherapy, mud therapy, and acupuncture, alongside a strict sattvic diet and disciplined lifestyle. Unlike conventional outpatient care, this controlled environment enabled rapid stabilization of glycaemic control, highlighting the metabolic plasticity achievable through comprehensive lifestyle realignment.

Compared with existing literature, these findings aligned with reports on yoga's efficacy in metabolic syndrome management. Kumar et al. documented similar improvements in BMI and FBS with intensive yoga therapy, while Raveendran et al. showed HbA1c reductions through yoga-based lifestyle changes. This series differed by incorporating mud therapy and manipulative treatments, which likely enhanced detoxification and circulation. Mechanistically, pranayama and meditation activated the parasympathetic nervous system, lowering cortisol and improving insulin sensitivity. Asanas stimulated GLUT4 translocation, boosting glucose uptake, while hydrotherapy and acupuncture improved microvascular function. Mud therapy contributed thermal and mineral effects, supporting systemic metabolic reset. Together, these modalities targeted both the HPA axis and autonomic nervous system, offering a dual approach to insulin resistance.[4]

Strengths included holistic monitoring, standardized inpatient protocols, and high adherence. Limitations were the small sample size, absence of a control group, and potential selection bias. Despite these, the results suggest yoga and naturopathy as essential adjuncts to pharmacotherapy, with potential to reduce diabetes complications cost-effectively. Future research should expand to randomized controlled trials, assess long-term outcomes, and evaluate cost-effectiveness compared to drug-based care. Integrating traditional therapies into mainstream metabolic wards could provide sustainable strategies for managing T2DM, shifting care toward genuine physiological recovery rather than symptom suppression.[5]

6. CONCLUSION

This series of cases shows that a focused, integrated treatment plan using pranayama, specific yoga postures, a structured healthy yoga diet, and targeted naturopathic treatments can effectively help stabilize metabolic factors in people with type 2 diabetes. Key results include consistent decreases in fasting blood glucose and body mass index, showing the body's quick

response to a combined lifestyle approach within an inpatient environment. These results suggest that doctors should think about using such integrated approaches as powerful non-medication options to complement standard diabetes care, especially for quickly managing blood sugar levels and reducing weight. While the limited number of participants and absence of a control group reduce the ability to apply these results widely, the in-depth long-term monitoring is a major strength that helps develop new theories.

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