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INTEGRATING AYURVEDA FOR COST-EFFECTIVE TYPE 2 DIABETES CONTROL: A CASE STUDY

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ABSTRACT

Type 2 Diabetes Mellitus (T2DM) is a chronic, lifestyle-related metabolic disorder imposing significant health and financial burdens globally. This case study evaluates a Lifestyle Intervention Holistic (LIH) model incorporating Ayurvedic principles in a T2DM patient. Over 12 months, the intervention led to marked improvements in glycaemic control, reduced medication reliance, and enhanced quality of life, alongside a 96% reduction in medication costs. These results support the potential of Ayurveda-based LIH models as sustainable and cost-effective alternatives for diabetes management.

Keywords: Type 2 Diabetes Mellitus, Ayurveda, Holistic Approach, Lifestyle Medicine, Cost-Effectiveness, Quality of Life

1. INTRODUCTION

T2DM is a global health crisis, with the International Diabetes Federation (IDF, 2017) reporting 451 million affected individuals, projected to rise to 693 million by 2045 International Diabetes Federation. (2017). India, home to over 72.9 million diagnosed diabetics, is often termed the 'Diabetic Capital of the World' International Diabetes Federation. (2017). Current management relies heavily on pharmacotherapy, which, while effective, often leads to side effects and financial strain. In contrast, holistic systems like Ayurveda offer individualized care through detoxification, herbal supplementation, and personalized lifestyle guidance.

Landmark studies, such as the Diabetes Prevention Program, have shown that lifestyle interventions can significantly reduce T2DM risk and improve outcomes in diagnosed patients Knowler et al. (2002), International Diabetes Federation. (2017). Ayurveda's comprehensive approach - combining diet, exercise, herbal remedies, and stress management- aligns with these findings and is increasingly recognized for its role in diabetes care Hartley et al. (2014) International Diabetes Federation. (2017)

2. CASE PRESENTATION

A 76-year-old male from Pune, India, with a 19-year history of T2DM and a 2-year history of hypertension, presented at the Diabetes Free Forever (DFF) Clinic.

2.1. KEY COMPLAINTS

- Sweet taste in the mouth, burning feet,
- Excessive appetite and thirst,
- Frequent nocturia,
- Sleep disturbances,
- Emotional distress following spouse bereavement.

2.2. BASELINE PARAMETERS

- BMI: 27.2 kg/m^2
- Blood Pressure: 145/83 mmHg
- HbA1c: 7.7%
- Medications: Multiple oral anti-diabetics and anti-hypertensive.

2.3. PATIENT CONSENT

Written informed consent was obtained for participation and publication, with confidentiality and ethical guidelines strictly followed.

3. MATERIALS AND METHODS

The patient participated in a 12-month LIH program integrating Ayurvedic, nutritional, psychological, and physical activity components.

Ayurvedic and Nutritional Protocol:

- **Detoxification:** Gandharva Haritaki (1 tablet, 500 mg at bedtime with warm water) for 30 days; basti (Medicated enemas)
- **Diet:** Plant-based meals supplemented with vegetable and fruit juices
- **Fasting:** Intermittent fasting (16–18 hours daily)
- **Supplements:** Omega-3 (Cap. Omega18), Vitamin D3 (VD-60 chewable)
- **Herbal Detox Water:** Amla juice (10 ml) with turmeric (2 pinches) and cinnamon (2 pinches) in water

Lifestyle and Mental Health Support:

- **Counseling:** Grief therapy using DSM-5-based methods.

- **Exercise:** 45+ minutes daily walking and yoga.
- **Stress Relief:** Meditation, breathing exercises, motivational sessions

Monitoring Schedule:

- Follow-ups at 3, 6, 9, and 12 months assessed:
- Biochemical markers: HbA1c, random blood sugar
- Anthropometric data: BMI
- Economic indicators: Monthly medication costs
- Quality of Life: Patient-reported outcomes

4. RESULTS

Biochemical and Clinical Outcomes:

- Random Blood Sugar: 229 → 109 mg/dL
- BMI: 27.2 → 25.4 kg/m^2
- HbA1c: 7.7% → 5.7%
- Medication Cost: ₹1500/month → ₹60/month

Table 1

Table 1 Quality of Life (QoL) Improvements

Symptom	Initial Status	After 12 Months	Improvement (%)
Excessive Appetite	Frequent	Occasional	80
Frequent Urination	Frequent (Nocturia)	Rare	70
Sleep	Disturbances	Severe Minimal	90
Energy Levels	Low (Fatigued)	Energetic	100

Figure 1

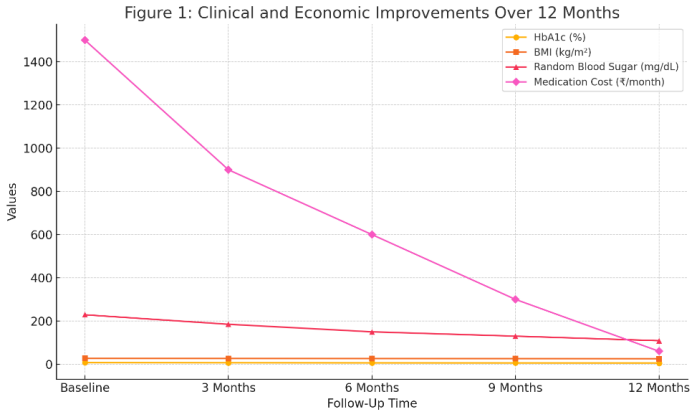

Figure 1 Clinical and Economic Improvements Over 12 Months—Steady Decline in HbA1c, BMI, Blood Sugar, and Medication Cost across four quarters

5. DISCUSSION

This case study demonstrates that Ayurveda-integrated lifestyle interventions can significantly improve glycemic control, reduce medication reliance, and lower healthcare costs. The 96% reduction in medication expenses highlights the economic benefit, especially for low-resource populations. The improvements in

HbA1c and QoL align with literature supporting multi-domain, non-pharmacological care in diabetes. American Psychiatric Association. (2013), Knowler et al. (2002), Lambrinou et al. (2019)

Ayurveda's individualized, constitution-based interventions—such as detoxification, dosha-balancing herbs, and mindful lifestyle adjustments—synergize with modern health practices. Recent studies confirm that Ayurvedic interventions, including herbal supplements and lifestyle modifications, are effective in reducing HbA1c and minimizing complications Lambrinou et al. (2019), Wee et al. (2005),Bindu et al. (2024). The acceptability and perceived benefits of Ayurveda are high, particularly among older and rural populations. International Diabetes Federation. (2017), American Diabetes Association. (2016)

6. CONCLUSION

The LIH model, incorporating Ayurvedic therapies, provided significant clinical and economic improvements in a T2DM patient. This case underscores the importance of culturally rooted, integrative care models for diabetes reversal and prevention. Wider adoption of such approaches could alleviate the public health burden of diabetes, especially in developing nations.

CONFLICT OF INTERESTS

None.

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