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Preventive Approach to Type II Diabetes Mellitus: A Case Study

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Abstract: *The escalating prevalence of Type 2 Diabetes Mellitus (T2DM) in India necessitates effective preventive strategies, particularly for individuals at high risk of developing the condition. This case study examines the application of an integrative Ayurvedic approach to prevent the progression of prediabetes in a 48-year-old male, identified as high-risk using the Indian Diabetes Risk Score (IDRS). The treatment protocol focused on addressing Kapha and Meda imbalances, incorporating Shamana therapy along with tailored dietary recommendations, lifestyle modifications, and stress management strategies. Significant clinical improvements were observed, including a reduction in symptoms such as fatigue, polyuria, and polydipsia. Objective metabolic parameters, including fasting and postprandial blood glucose, HbA1c, and IDRS score, showed notable improvement over six months. This case highlights the potential of Ayurveda to provide effective, personalized, and evidence-based preventive care, supporting the management of prediabetes and mitigating the risk of T2DM progression.*

Keywords: Type 2 Diabetes Mellitus, prediabetes, Ayurveda, Indian Diabetes Risk Score, Kapha, Meda, Shamana therapy, lifestyle modification, preventive healthcare

I. INTRODUCTION

The increasing prevalence of Type 2 Diabetes Mellitus (T2DM) in India is a growing concern, with a significant portion of the population at risk due to sedentary lifestyles, unhealthy dietary habits, and genetic predisposition. Identifying individuals in the prediabetic stage is crucial for effective prevention, as timely interventions can halt or reverse the progression to diabetes.[1] The Indian Diabetes Risk Score (IDRS) serves as a valuable tool for early identification of individuals at high risk, enabling a proactive approach to diabetes prevention.

In Ayurveda, the prediabetic stage can be correlated with the early manifestations of Prameha, characterized by metabolic imbalances involving Kapha and MedovahaSrotasDushti.[2] Preventive strategies focus on restoring balance through personalized dietary recommendations, lifestyle modifications, and simple herbal interventions, aimed at strengthening Agni (digestive fire) and regulating metabolism.

This case study highlights the Ayurvedic preventive approach for a middle-aged individual identified as prediabetic using IDRS. By integrating dietary corrections, lifestyle changes, and evidence-based herbal formulations, this case underscores the efficacy of Ayurveda in addressing the root causes of metabolic disturbances and promoting long-term health.

II. MATERIALS AND METHODS

Assessment Criteria:

The Indian Diabetes Risk Score (IDRS)[3]:

Table 1 Showing IDRS Assessment

PARTICULARS	SCORE
Age	
• **<35 years**	0
• **35-49 years**	20

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• **>49 years**	30
Waist Circumference	
• **Waist < 80 cm (female), < 90 cm (male)**	0
• **Waist ≥80-89cm(female), ≥90-99cm (male)**	10
• **Waist ≥90 cm (female), ≥100 cm (male)**	20
Physical Activity	
• **Regular vigorous exercise**	0
• **Regular moderate exercise**	10
• **Regular mild exercise**	20
• **No exercise**	30
Family history of diabetes	
• **No diabetes in parents**	0
• **One parent is diabetic**	10
• **Both parent is diabetic**	20

IDRS of <30 is categorized as low risk, 30-50 as medium risk and those with > 60 as high risk for diabetes.

Case

A 47-year-old male presented at the OPD of Swasthavritta, Shri K.R. Pandav AyurvedHospital,Nagpur, with concerns about increased fatigue, unexplained weight gain, and frequent thirst over the past six months. Upon detailed history-taking, he reported a sedentary lifestyle, irregular dietary habits, and a strong family history of diabetes. No significant medical history of chronic illness or medication use was noted.

He refused Shodhana (cleansing therapies) or intensive Panchakarma and preferred a preventive approach through internal Shamana (palliative treatments). The treatment focused on dietary modifications, lifestyle adjustments, and Ayurvedic interventions to regulate metabolism and prevent progression to Type 2 Diabetes Mellitus.

Patient Demographics:

- Age: 48 years
- Gender: Male
- Occupation: Office Worker
- Residence: Urban area

Presenting Complaint:

- The patient presented with the following symptoms:
- Polyuria (frequent urination)
- Polydipsia (excessive thirst)
- Generalized weakness and fatigue for the past six months
- Difficulty concentrating at work
- Heaviness in Body
- Mild weight gain over two years.

Clinical History:

- Family history: Father diagnosed with Type 2 Diabetes Mellitus at the age of 52.
- Lifestyle: Sedentary, with no regular physical activity, Sitting job.
- Dietary habits: High intake of sugary snacks and regular intake of fast-food.
- Mental History: Stressful Job

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General Examination:

- Weight: 65 kg
- Built: Moderate, with central obesity
- BP: 126/84 mmHg
- Pulse Rate: 76/min
- Respiratory Rate: 18/min
- Temperature: Afebrile

Physical Examination:

- Koshtha: Madhyam (moderate bowel tendency)

Ashtavidh Parikshan:

1. Nadi: Kapha-Vataja
2. Mala: Sticky
3. Mutra:Prabhut
4. Jivha: Saam
5. Shabda:Samyaka
6. Sparsha: Snigdha
7. Drika: Avila
8. Akriti:Sthoola

Investigations:

- Fasting Blood Glucose: 104 mg/dL
- Postprandial Blood Glucose: 132 mg/dL
- HbA1c: 5.9%

The Indian Diabetes Risk Score (IDRS):

Table 2 Showing IDRS Score Of Patient

Parameter	Score
Age: 48 years	30
Abdominal obesity: Waist circumference >90 cm	20
Physical activity: Sedentary lifestyle	20
Family history of diabetes: Positive	20
Total IDRS	**90 (High Risk)**

Diagnosis:

Excessive Kapha, Ama, and Meda accumulation obstruct MutravahaSrotas, leading to Prameha symptoms. If untreated, this could progress to Madhumeha (Diabetes Mellitus).

Based on clinical findings and the IDRS, the patient was categorized as prediabetic with a high risk of developing Type II Diabetes Mellitus.

Intervention and Management:

1. Treatment Plan:

Shamana Therapy:

- Chandraprabha Vati: 2 tablets twice daily After Food.
- NishamalakiChurna: 5 grams at bedtime.

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2. Pathya-Apathya

Dietary Modifications[4]:

Table 3 Showing Dos and Don'ts of Diet Advocated

Pathya (Dos)	Apathya (Don'ts)
Old harvested cereals: Barley (Yava), sorghum (Jwar), and whole wheat atta. Bitter vegetables: Bitter gourd (Karela), fenugreek leaves (Methika), and Indian blackberry (Jambu Phala). Lean proteins: Kulattha (horse gram), Mudga (green gram),	Sugar, jaggery, processed foods, and fried items. Dairy products: Milk and puddings made of jaggery or sugar.

Physical Activity:

- Daily brisk walking for 45 minutes
- Weekly yoga sessions focusing on asanas such as Surya Namaskar, Vajrasana, and Bhujangasana[5].

Behavioral Changes:

- Avoid daytime sleeping and sedentary behavior.

Stress Management:

- Regular yoga and mindfulness meditation sessions

Periodic Monitoring:

- Monthly fasting blood sugar checks
- Quarterly lipid profile and HbA1c testing

III. RESULT

Clinical Outcomes:

- Reduction in symptoms: The patient reported a marked decrease in fatigue, thirst (polydipsia), and frequency of urination (polyuria) within the first month of intervention.
- Improved energy levels and concentration: By the third month, the patient experienced better focus at work and reduced heaviness in the body.
- Weight stabilization: The patient observed a slight reduction in central obesity and maintained a consistent weight of 63 kg by the sixth month.

Objective Outcomes:

Table 4 Showing Objective Outcomes of Treatment

Parameter	Baseline	After 6 Months
Fasting Blood Glucose (mg/dL)	104	92
Postprandial Blood Glucose (mg/dL)	132	118
HbA1c (%)	5.9	5.4
Waist Circumference (cm)	94	90
IDRS Score	90 (High Risk)	50 (Moderate Risk)

The Ayurvedic intervention led to a significant improvement in both clinical symptoms and metabolic risk factors, with a notable reduction in the patient's IDRS score from high risk (90) to moderate risk (50). The results underscore the efficacy of an integrative preventive approach in managing prediabetes by addressing its root causes through dietary, lifestyle, and herbal interventions.

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The patient has been advised to continue the current regimen and monitoring to maintain metabolic health and prevent progression to Type 2 Diabetes Mellitus.

IV. DISCUSSION

This case study demonstrates the effectiveness of an integrative Ayurvedic approach targeting Kapha and Meda imbalances linked to Prameha. Through dietary modifications, lifestyle adjustments, and Shamana therapies, significant improvements were observed in clinical symptoms and metabolic parameters.

Key Outcomes:

Table 5 Showing Key Outcomes of Treatment

Symptom Relief	Fatigue, polydipsia, and polyuria improved significantly within one month, highlighting the efficacy of Kapha-Vata balancing and Agni-strengthening measures.
Metabolic Improvements	Reductions in fasting/postprandial blood glucose, HbA1c, central obesity, and IDRS score (from 90 to 50) underscore the success of the intervention in mitigating diabetes risk.
Holistic Lifestyle Changes	Compliance with physical activity, yoga, stress management, and dietary guidelines supported overall health and well-being.

Ayurveda's focus on root cause management—via Chandraprabha Vati, NishamalakiChurna, and pathya-apathya—offers sustainable, non-pharmacological benefits. This approach contrasts with conventional methods by emphasizing lifestyle transformation and long-term prevention.

V. CONCLUSION

This case highlights Ayurveda's potential in effectively managing prediabetes through personalized, evidence-based interventions. Significant improvements in glycemic control, IDRS scores, and overall health underscore its value as a preventive strategy. Regular monitoring and adherence to prescribed regimens are essential for sustained outcomes.

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