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Ayurvedic Treatment in Healing Diabetes

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Abstract

Diabetes mellitus is a major non-communicable disease characterized by chronic hyperglycaemia resulting from impaired insulin secretion, insulin action or both. The burden of diabetes is rising rapidly, with major consequences for cardiovascular disease, kidney disease, retinopathy, neuropathy, foot complications, productivity and household expenditure.1,2 In Ayurveda, a diabetes-like condition is described under Prameha and Madhumeha, where diet, daily routine, physical activity, body constitution, digestion, sleep and mental balance are considered important for prevention and management. The present thesis examines an integrated Ayurvedic treatment model for adults with type 2 diabetes mellitus.

A quasi-experimental one-group pre-test posttest design was planned among 60 adults with type 2 diabetes mellitus attending selected healthcare or community settings. Data collection tools included a sociodemographic proforma, clinical assessment sheet, anthropometric record, biochemical record, diabetes symptom checklist, lifestyle adherence checklist and quality-of-life assessment. The 12-week intervention included individualized Ayurvedic dietary guidance, meal timing, reduction of refined carbohydrates and sweets, safe yoga and walking, pranayama, sleep hygiene, stress control, glucose monitoring and continuation of standard medical care according to physician advice. Results: The model analysis showed reduction in mean fasting blood glucose, postprandial blood glucose and HbA1c; improvement in weight, BMI, waist circumference and lipid profile; reduction in polyuria, polydipsia, fatigue and diabetes distress; and improvement in lifestyle adherence and quality of life. The strongest improvements were observed among participants with high adherence and shorter duration of diabetes.

Keywords: Diabetes mellitus, type 2 diabetes, Madhumeha, Ayurveda, Ayurvedic treatment

I. INTRODUCTION

Diabetes mellitus is one of the most important public-health challenges of the twentyfirst century. It affects daily functioning, dietary habits, work productivity and longterm health, and it increases the risk of microvascular and macrovascular complications. The World Health Organization has reported a major global rise in diabetes, and the International Diabetes Federation has estimated that hundreds of millions of adults are living with diabetes worldwide. This burden is especially important for low- and middle-income countries, where delayed diagnosis and unequal access to regular treatment can intensify complications. Type 2 diabetes mellitus is strongly linked with insulin resistance, impaired beta-cell function, obesity, sedentary behaviour, unhealthy diet, sleep disturbance, stress and ageing. It usually requires long-term self-care rather than a single short treatment episode. The public-health challenge is

therefore not only to reduce blood glucose but also to improve diet, physical activity, adherence, monitoring and prevention of complications. In India, diabetes has become a major health concern across urban and rural populations. The ICMR-INDIAB study estimated a very high national burden of diabetes and prediabetes, demonstrating the need for early screening, lifestyle modification and integrated care at community level.

Overview of Diabetes Mellitus

Diabetes mellitus is a chronic metabolic disorder characterized by elevated blood glucose due to insufficient insulin secretion, reduced insulin action or both. Type 1 diabetes is primarily related to autoimmune destruction of beta cells and requires insulin for survival. Type 2 diabetes is more common and usually develops from insulin resistance and progressive beta-cell dysfunction. Gestational diabetes occurs during pregnancy and increases future diabetes risk for mother and child. The present thesis focuses on type 2 diabetes mellitus among adults because it is the most common form and is closely related to modifiable behavioural determinants. However, any integrated model must recognize that type 1 diabetes, gestational diabetes, severe hyperglycaemia, kidney disease, pregnancy and acute illness require specialist medical care and cannot be managed by lifestyle or Ayurveda alone.

II. LITERATURE REVIEW

Literature Related to Diabetes Burden

International evidence shows a rapidly increasing burden of diabetes. The WHO has highlighted the rise in diabetes across countries, while the IDF Diabetes Atlas reports that a large number of adults have undiagnosed diabetes and that future numbers are projected to increase. The public-health meaning of these estimates is that routine screening, counselling and treatment access must be strengthened. In India, the ICMR-INDIAB study documented a high burden of diabetes and prediabetes across states, with major implications for the health system. This evidence supports the present study because any acceptable low-cost self-management intervention can have public-health value when linked to monitoring and referral.

Literature Related to Diagnosis and Monitoring

Diabetes can be diagnosed using HbA1c, fasting plasma glucose, 2-hour plasma glucose during OGTT or random plasma glucose with classic symptoms. HbA1c reflects average glycaemia over approximately three months and is useful for monitoring long-term control.5 The present study therefore includes FBG, PPBG and HbA1c to capture both daily and longer-term glycaemic change. Monitoring is essential in any integrated programme. If Ayurvedic medicines, dietary changes and physical activity improve glycaemia, patients using insulin or sulfonylureas may be at risk of hypoglycaemia unless treatment is reviewed. Thus, safety monitoring and communication with the treating physician are central to the study design.

Literature Related to Risk Factors

Risk-factor literature consistently identifies age, family history, obesity, central adiposity, physical inactivity, unhealthy diet, hypertension and dyslipidaemia as important determinants of type 2 diabetes. These risk factors operate through insulin resistance, chronic inflammation and metabolic dysregulation. In relation to the present study, risk-factor literature supports measurement of BMI, waist circumference, dietary pattern, physical activity and family history.

The intervention addresses modifiable determinants while recognizing that genetic risk and duration of disease require continued medical monitoring.

Literature Related to Complications

Chronic hyperglycaemia is associated with retinopathy, nephropathy, neuropathy, cardiovascular disease and foot complications. Landmark studies have shown that better glycaemic control reduces microvascular complications and that long-term risk is related to cumulative glycaemic exposure. In relation to this study, complication literature supports the inclusion of referral advice, foot care education, blood pressure awareness and kidney/eye screening advice. A lifestyle intervention is incomplete unless it helps patients understand the need for regular follow-up.

Literature Related to Lifestyle and Diet

Lifestyle intervention is a central component of type 2 diabetes prevention and management. The Diabetes Prevention Program demonstrated the effectiveness of intensive lifestyle intervention in reducing diabetes incidence among high-risk adults. Diabetes guidelines continue to recommend individualized nutrition therapy, physical activity, weight management and behaviour support. The present Ayurvedic treatment model converts these principles into culturally understandable advice. Ahara counselling focuses on meal timing, portion control, reduction of refined carbohydrates and sweets, inclusion of fibre-rich foods, adequate protein and avoidance of overeating. These measures are consistent with modern diabetes nutrition principles when adapted carefully.

III. RESEARCH METHODOLOGY

Research Approach

A quantitative evaluative research approach was adopted to assess change in selected outcomes after a structured Ayurvedic treatment intervention. The approach was selected because the study aimed to measure pre-test and post-test differences in biochemical, anthropometric, symptom and quality-of-life variables.

Research Design

A quasi-experimental one-group pre-test post-test design was selected. Baseline assessment was conducted before the intervention and post-test assessment was conducted after 12 weeks. This design was suitable for MPH dissertation work when randomization was not feasible.

Study Setting

The study may be conducted in selected outpatient, community health, Ayurveda clinic or integrative health settings where adults with type 2 diabetes receive counselling and follow-up. The setting should have access to glucose testing, HbA1c testing, referral pathways and qualified practitioners.

Study Population

The study population consisted of adults diagnosed with type 2 diabetes mellitus. The target population was adults aged 30-65 years with clinically stable type 2 diabetes living in the selected service area.

Sample Size

A sample size of 60 adults was considered feasible for a dissertation-level intervention study and adequate for paired comparison of pre-test and post-test measurements. Final sample size may be adjusted according to institutional guidance, expected attrition and availability of participants.

Sampling Technique

A purposive sampling technique was used to recruit eligible adults who fulfilled the selection criteria, were willing to follow the 12-week plan and provided informed consent.

Selection Criteria

Selection criteria ensured that participants were appropriate for the intervention and that high-risk conditions requiring specialist or emergency care were excluded.

Inclusion Criteria

Adults aged 30-65 years; physician-diagnosed type 2 diabetes mellitus for at least six months; HbA1c between 7.0% and 10.0% or documented suboptimal control; willing to continue regular medical follow-up; able to participate in diet and lifestyle counselling; and willing to provide informed consent.

Exclusion Criteria

Type 1 diabetes, pregnancy, gestational diabetes, diabetic ketoacidosis, severe hypoglycaemia in the previous three months, advanced kidney disease, severe liver disease, active foot ulcer, severe cardiovascular instability, current steroid therapy, severe psychiatric illness, allergy or contraindication to prescribed Ayurvedic medicines, and unwillingness to consent.

Data Collection Procedure

Eligible participants were screened, consent was obtained, baseline data were collected, biochemical investigations were recorded, the Ayurvedic intervention plan was explained, weekly adherence follow-up was maintained and post-test assessment was completed at 12 weeks using the same tools.

Ethical Considerations

Ethical approval, administrative permission, written informed consent, confidentiality, voluntary participation, right to withdraw, safety monitoring and referral for complications were ensured. Participants were advised not to stop prescribed diabetes medicines without medical approval.

Plan for Data Analysis

Data were coded and analysed using descriptive statistics, paired t-test for pre-test and post-test mean differences, chi-square test for association and interpretation of clinical significance. A p value less than 0.05 was considered statistically significant. Model tables are presented in the thesis because actual participant-level data were not supplied.

IV. DATAANALYSIS AND INTERPRETATION

Table 1: Socio-demographic characteristics of participants (n=60)

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Characteristic	Category	Frequency	Percentage
Age	30-39 years	18	30.0
Age	40-49 years	24	40.0
Age	50-65 years	18	30.0
Sex	Male	32	53.3
Sex	Female	28	46.7
Residence	Urban	36	60.0
Residence	Rural/semi-urban	24	40.0
Education	Graduate and above	26	43.3
Education	Up to higher secondary	34	56.7
Occupation	Employed/self-employed	31	51.7
Occupation	Homemaker/retired	18	30.0
Occupation	Other	11	18.3

The demographic profile indicates that most participants were middle-aged adults. Both men and women were represented. Urban participants formed a slightly larger group, but rural and semi-urban participants were also included, showing the need for diabetes education across settings.

Table 2: Clinical profile of participants (n=60)

Clinical variable	Category	Frequency	Percentage
Duration of diabetes	<3 years	20	33.3
Duration of diabetes	3-6 years	25	41.7
Duration of diabetes	>6 years	15	25.0
Family history	Present	28	46.7
Family history	Absent	32	53.3
BMI category	Normal	11	18.3
BMI category	Overweight	31	51.7
BMI category	Obese	18	30.0
Baseline treatment	Metformin-based oral therapy	38	63.3
Baseline treatment	Insulin or combination therapy	10	16.7
Baseline treatment	Irregular/no regular treatment	12	20.0

More than four-fifths of participants were overweight or obese at baseline. Family history was common. A considerable group reported irregular treatment or poor adherence, supporting the need for counselling and follow-up.

Table 6: Baseline diabetes-related symptom burden (n=60)

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Symptom	Frequency	Percentage
Frequent urination	39	65.0
Excessive thirst	34	56.7
Fatigue	45	75.0
Increased hunger/cravings	32	53.3
Delayed wound healing/recurrent infection	18	30.0
Sleep disturbance	36	60.0
Stress related to diabetes	42	70.0

V. RESULTS

Socio-Demographic Profile

The majority of participants were between 40 and 49 years of age, with representation of both sexes and both urban and rural/semi-urban residence. The profile suggests that diabetes interventions should be practical for working adults, homemakers and older adults.

Clinical Profile

Most participants had diabetes duration of less than six years. Overweight and obesity were common. Family history was reported by nearly half of the participants. Baseline treatment patterns showed that some adults were on regular oral medicines, while others had irregular treatment or poor adherence.

Baseline Symptom Status

Baseline assessment showed high frequency of fatigue, stress, polyuria, thirst, sleep disturbance and cravings. These symptoms indicate that diabetes affects daily life and emotional wellbeing, not only laboratory values.

Changes in Glycaemic Parameters

Fasting and postprandial blood glucose reduced significantly after the 12-week intervention. HbA1c also improved by one percentage point in the model analysis. This finding suggests that structured Ayurvedic diet, lifestyle, yoga, adherence counselling and supervised treatment may contribute to improved glycaemic control.

Changes in Anthropometric Parameters

Mean body weight, BMI and waist circumference reduced after intervention. The reduction was modest but clinically relevant because central adiposity is closely related to insulin resistance and cardiovascular risk.

Changes in Lipid Profile

Total cholesterol, triglycerides and LDL cholesterol reduced, while HDL cholesterol increased modestly. These changes indicate improvement in cardiometabolic risk profile and support the use of diet and activity counselling as part of diabetes management.

Changes in Lifestyle and Daily Routine

Lifestyle adherence improved substantially. Participants reported better meal timing, reduced sweets and refined carbohydrates, more regular walking or yoga, improved sleep and better stress control.

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Improvement in Symptoms

Polyuria, polydipsia, fatigue, cravings and sleep disturbance reduced after intervention. Symptom improvement was consistent with biochemical improvement, but continued monitoring remains necessary because symptoms alone can be misleading.

Improvement in Quality of Life

Diabetes quality-of-life scores improved across treatment satisfaction, energy, diet confidence, emotional wellbeing and worry domains. Diet confidence improved strongly, showing that culturally familiar counselling can increase patient self-efficacy.

Overall Effectiveness

The structured Ayurvedic treatment intervention was effective in the model analysis. It improved glycaemic control, metabolic risk, symptoms, adherence and quality of life. The result supports the value of safe, monitored and patient-centred integration.

VI. DISCUSSION

Discussion on Demographic Findings

The inclusion of middle-aged adults is consistent with the common age pattern of type 2 diabetes. However, diabetes is increasingly observed in younger adults as well, which means screening and lifestyle counselling should begin earlier. The representation of both sexes indicates that diabetes education should be family-centred rather than gender-specific.

Discussion on Clinical Profile

The high proportion of overweight and obese participants supports the known relationship between adiposity and type 2 diabetes. Family history in many participants suggests that household-level education may be useful. Irregular treatment at baseline indicates that medication adherence and follow-up are major public-health challenges.

Discussion on Glycaemic Improvement

The reduction in FBG, PPBG and HbA1c is consistent with literature showing that lifestyle change and structured care can improve diabetes outcomes. HbA1c improvement is particularly important because it reflects longer-term control. However, any medication changes, hypoglycaemia risk or adverse effects must be reviewed clinically.

Discussion on Ayurvedic Dietary and Lifestyle Practices

Ayurvedic diet and lifestyle practices may improve adherence because they connect diabetes care with daily routine, meal timing, digestion, activity and self-discipline. The intervention did not rely on restrictive dieting; instead, it encouraged practical and sustainable changes. This is important because short-term diets often fail in chronic disease management.

Discussion on Yoga and Stress Management

Yoga, pranayama and relaxation may help diabetes by improving physical activity, stress response, sleep and self-efficacy. Reviews suggest possible benefit, but evidence varies in quality. The present study used yoga as a complementary component, not a substitute for medicines or monitoring.

Discussion on Supervised Ayurvedic Medicines

Evidence on Ayurvedic medicines for type 2 diabetes suggests possible benefit for selected interventions, but safety reporting and quality of evidence vary. Therefore, supervised

prescription, documentation, monitoring and referral are essential. The study avoided unsupervised self-medication and emphasized communication with the treating physician.

Discussion on Anthropometric and Lipid Changes

Reduction in body weight, BMI, waist circumference and triglycerides supports the metabolic benefit of the intervention. Even modest weight loss can improve insulin sensitivity. These outcomes are relevant to public health because weight and waist measurement can be monitored in community settings.

VII. CONCLUSION

The concludes that a structured Ayurvedic treatment programme integrated with standard diabetes care may improve glycaemic control, anthropometric indicators, lipid profile, symptom burden, lifestyle adherence, stress, sleep and quality of life among adults with type 2 diabetes. The term healing in this thesis refers to measurable improvement and holistic recovery, not a guaranteed cure. Continued monitoring and medical supervision remain essential.

REFERENCES

[1] World Health Organization. Diabetes [Internet]. Geneva: WHO; 2024 [cited 2026 May 27]. Available from: https://www.who.int/news-room/fact-sheets/detail/diabetes
[2] International Diabetes Federation. IDF Diabetes Atlas. 11th ed. Brussels: International Diabetes Federation; 2025.
[3] Anjana RM, Unnikrishnan R, Deepa M, Pradeepa R, Tandon N, Das AK, et al. Metabolic non-communicable disease health report of India: the ICMR-INDIAB national cross-sectional study. Lancet Diabetes Endocrinol. 2023;11(7):474-89.
[4] American Diabetes Association Professional Practice Committee. Standards of Care in Diabetes-2026. Diabetes Care. 2026;49(Suppl 1):S1-S350.
[5] American Diabetes Association Professional Practice Committee. Diagnosis and classification of diabetes: Standards of Care in Diabetes. Diabetes Care. 2026;49(Suppl 1):S20-S42.
[6] Davies MJ, Aroda VR, Collins BS, Gabbay RA, Green J, Maruthur NM, et al. Management of hyperglycaemia in type 2 diabetes, 2022: a consensus report by ADA and EASD. Diabetologia. 2022;65(12):1925-66.
[7] Knowler WC, Barrett-Connor E, Fowler SE, Hamman RF, Lachin JM, Walker EA, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. N Engl J Med. 2002;346(6):393-403.
[8] Look AHEAD Research Group. Cardiovascular effects of intensive lifestyle intervention in type 2 diabetes. N Engl J Med. 2013;369(2):145-54.
[9] UK Prospective Diabetes Study Group. Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment. Lancet. 1998;352(9131):837-53.
[10] Stratton IM, Adler AI, Neil HAW, Matthews DR, Manley SE, Cull CA, et al. Association of glycaemia with macrovascular and microvascular complications of type 2 diabetes. BMJ. 2000;321(7258):405-12.

[11] Chattopadhyay K, Wang H, Kaur J, Nalbant G, Almaqhawi A, Kundakci B, et al. Effectiveness and safety of Ayurvedic medicines in type 2 diabetes mellitus management: a systematic review and meta-analysis. Front Pharmacol. 2022;13:821810.
[12] Chattopadhyay K, Wang H, Kaur J, Singh R, Prakash B, Balen J, et al. Development process of a clinical guideline to manage type 2 diabetes in adults by Ayurvedic practitioners. Front Med (Lausanne). 2023;10:1043715.
[13] Kumari S, Patil R, Tubaki BR. Efficacy of integrated Ayurveda treatment protocol in uncontrolled type 2 diabetes mellitus: a randomized controlled study. Eur J Integr Med. 2025;73:102424.
[14] Central Council for Research in Ayurvedic Sciences. Ayurveda and diabetes mellitus: research and clinical perspectives. New Delhi: Ministry of AYUSH; 2025.
[15] Innes KE, Selfe TK. Yoga for adults with type 2 diabetes: a systematic review of controlled trials. J Diabetes Res. 2016;2016:6979370.