INTERNATIONAL DIABETES FEDERATION
World Diabetes Congress 2025 | Bangkok, Thailand | Abstract No. BA2025-1469

Effect of Organic Barnyard Millet and Ayurvedic Lifestyle Principles on Glycaemic Control in Type 2 Diabetes Mellitus: A 90-Day Mixed-Methods Study in 200 Patients

Sarita ES | Dr. Mahesh Patil (Co-Author)
Sixth Gear Integrative Health Centre, Maharashtra, India
Nutrition Society of India

TOTAL PATIENTS	HBA1C REDUCTION	PROTOCOL ADHERENCE	STUDY DURATION
n = 200	2 %pts (Mean)	80%	90 Days

Correspondence: research@sixthgear.in
Published 2025 | IDF World Diabetes Congress Proceedings | Vol. 1, No. 1

Abstract

BACKGROUND
Type 2 diabetes mellitus profoundly impacts physical, mental, and financial health. Conventional management addresses glycaemia but not nutritional and psychosocial root causes. Millets and Ayurvedic principles offer a culturally aligned, evidence-based adjunct.

METHODS
Mixed-methods prospective cohort study (n=200). 90-day organic barnyard millet-based nutrition, anti-gravity exercise, Ayurvedic lifestyle guidance, CGM monitoring and daily WhatsApp accountability.

RESULTS
Mean HbA1c reduced by 2 percentage points across all cohorts. 80% protocol adherence. Significant improvements in serum fasting insulin, homocysteine, self-efficacy, quality of life, and emotional wellbeing.

CONCLUSION
Organic barnyard millet with Ayurvedic lifestyle correction delivers clinically significant glycaemic improvement. Diabetes management requires a holistic approach addressing emotional, social, and practical dimensions.

Keywords: *Barnyard Millet; Organic Millet; Type 2 Diabetes; HbA1c; Ayurveda; Glycaemic Index; Anti-Gravity Exercise; Self-Efficacy; Integrative Medicine; Nutrition Society of India; IDF 2025*

1. Introduction

Type 2 diabetes mellitus (T2DM) is a chronic metabolic disorder affecting an estimated 537 million adults globally, with India alone accounting for over 101 million cases -- the second-highest burden worldwide. Beyond its clinical complications -- cardiovascular disease, nephropathy, neuropathy, retinopathy -- T2DM profoundly impairs mental health, disrupts family dynamics, and creates catastrophic financial burden in lower- and middle-income settings. The psychosocial weight of a diabetes diagnosis, including anxiety, depression, and social stigma, is consistently underestimated in conventional management frameworks.

Standard pharmacological management with metformin, sulfonylureas, GLP-1 agonists, and insulin achieves partial glycaemic control but does not address the dietary, behavioural, and psychological drivers of the disease. Furthermore, lifelong medication dependency carries adherence challenges, side effect burdens, and costs that disproportionately affect South Asian populations.

Ayurveda -- India's millennia-old medical tradition -- provides a systematic framework for metabolic correction through personalised dietary prescription (Ahara Vidhi), lifestyle regulation (Dinacharya), and the restoration of digestive metabolic fire (Agni). Critically, Ayurvedic dietary principles align remarkably well with contemporary nutritional science: emphasis on whole unprocessed foods, high dietary fibre, seasonal eating, and time-aligned meals.

Among the dietary interventions explored, organic barnyard millet (Echinochloa frumentacea, locally known as Jhangora or Samak) has emerged as a nutritional cornerstone. Barnyard millet carries one of the lowest glycaemic indices (GI approx. 50-56) among all cereals, provides exceptional dietary fibre (10-13g/100g), delivers meaningful plant protein (6-11g/100g), and is rich in micronutrients including iron, zinc, magnesium, and B-vitamins. These properties make it uniquely suited as a staple replacement in T2DM dietary management.

This study was designed to evaluate the clinical and psychosocial outcomes of a structured 90-day intervention combining organic barnyard millet-based nutrition with Ayurvedic lifestyle guidance, anti-gravity exercise, and continuous digital monitoring across a cohort of 200 adults with T2DM. The study was conducted under the scientific framework of the Nutrition Society of India and the findings were presented at the International Diabetes Federation World Diabetes Congress 2025, Bangkok (Abstract BA2025-1469).

2. Objectives

Primary Objective: To evaluate the effect of organic barnyard millet-based dietary intervention combined with Ayurvedic lifestyle correction and anti-gravity exercise on HbA1c levels in adults with T2DM over 90 days.

Secondary objectives included:

- Assessing changes in serum fasting insulin and insulin resistance indices (HOMA-IR)
- Measuring serum homocysteine as a cardiovascular risk marker
- Evaluating patient adherence to the structured protocol using digital monitoring and self-report
- Exploring patient-reported outcomes including self-efficacy, quality of life, and emotional wellbeing through qualitative interviews
- Identifying psychosocial factors -- family support, peer networks, healthcare team engagement -- that mediate treatment adherence

3. Materials & Methods

3.1 Study Design

This was a prospective observational cohort study employing a mixed-methods design. The quantitative component assessed clinical biomarker changes over 90 days. The qualitative component comprised in-depth semi-structured interviews with a purposively selected subsample (n=40) exploring lived experience, support systems, emotional wellbeing, and adherence determinants. Ethical approval was obtained and all participants provided informed consent. The study was registered with the Nutrition Society of India and presented at IDF World Congress 2025 (Abstract BA2025-1469).

3.2 Eligibility Criteria

Inclusion:

- Adults aged 18-70 years with confirmed T2DM diagnosis (physician-certified)
- Baseline HbA1c >= 7.5%
- Willingness to adopt millet-based diet and participate in daily digital monitoring
- No active concurrent severe complication

Exclusion:

- Type 1 Diabetes Mellitus; pregnancy or lactation
- eGFR <30 mL/min/1.73m2 (advanced renal impairment)
- Active malignancy; unwillingness to modify dietary habits

3.3 Cohort Stratification

Two hundred participants were stratified into three cohorts based on baseline HbA1c severity, as presented in Table 1 below.

Table 1: Participant Cohort Stratification and Demographic Summary

Cohort	n	Baseline HbA1c	HbA1c Day 90	Reduction	% of Total
Cohort 1 (Moderate)	120	**8.0%**	**6.0%**	**2 pp**	60%
Cohort 2 (Elevated)	62	**10.0%**	**8.0%**	**2 pp**	31%
Cohort 3 (Severe)	18	**12.0%**	**10.0%**	**2 pp**	9%
TOTAL / MEAN	200	**9.0% (mean)**	**7.0% (mean)**	**2 pp**	100%

3.4 Barnyard Millet: Nutritional Rationale

The deliberate selection of organic barnyard millet (Echinochloa frumentacea) as the dietary cornerstone was based on its exceptional nutritional profile for T2DM management. Key attributes are summarised in Table 2.

Table 2: Nutritional Profile of Organic Barnyard Millet vs White Rice (per 100g dry weight)

Nutrient	Barnyard Millet	White Rice	Clinical Significance
Glycaemic Index (GI)	**50-56 (Low)**	73 (High)	27% lower glucose spike
Dietary Fibre (g)	**10-13**	0.4	25x higher -- slows absorption
Protein (g)	**6-11**	2.7	Satiety, muscle preservation
Magnesium (mg)	**82**	25	Insulin signalling cofactor
Iron (mg)	**15.2**	0.8	Anti-anaemia, energy metabolism
Glycaemic Load	**~18 (medium)**	~29 (high)	Lower daily glucose burden

3.5 Intervention Protocol -- Four Pillars

Pillar 1: Organic Barnyard Millet Dietary Protocol (Ayurvedic Ahara Framework)

- Low-calorie (1,400-1,800 kcal/day), low-carbohydrate (<100g net carbs/day) dietary framework
- Organic barnyard millet replacing all refined grains (white rice, refined wheat, maida)
- High dietary fibre (>=30g/day) from seasonal vegetables, legumes, and whole foods
- Adequate lean protein (0.8-1.0 g/kg body weight) from lentils, legumes, and dairy
- Ayurvedic spice protocol: bitter melon (Karela), fenugreek seeds (Methi), turmeric (Haridra), cinnamon, Amla
- Elimination of all refined carbohydrates, processed foods, fried snacks, and sugar-sweetened beverages
- Triphala for gut microbiome support and metabolic detoxification

Pillar 2: Anti-Gravity and Functional Exercise

- Anti-gravity workouts (aquatic and suspension-based) 3x/week -- minimises joint stress in obese/deconditioned participants
- Functional resistance training targeting major muscle groups for GLUT-4 upregulation
- Post-meal 15-minute walks to blunt postprandial glucose spikes (CGM-verified effectiveness)
- Yoga-based mobility and Pranayama 2x/week for HPA axis and cortisol regulation
- Progressive intensity scaling based on real-time CGM glucose-to-exercise response data

Pillar 3: Circadian and Lifestyle Alignment

- Time-restricted eating: 10-12 hour daily eating window aligned with circadian insulin sensitivity peaks
- Largest caloric meal before 1 PM; no eating after 7:30 PM
- Structured 7-8 hours sleep; consistent sleep and wake times; sleep diary maintained
- Daily stress management: journaling and evening Pranayama breathing protocol
- Alcohol elimination; social event navigation guidance provided

Pillar 4: Digital Monitoring and Psychosocial Accountability

- Continuous Glucose Monitoring (CGM) worn throughout the 90-day intervention
- Daily WhatsApp check-ins: fasting glucose logs, meal photographs, step counts
- Weekly telemedicine video consultations with Dr. Mahesh Patil's clinical team
- Peer group WhatsApp community matching patients by age, severity, and lifestyle for social accountability

- Patient-centred diabetes education: fortnightly group sessions with family orientation

3.6 Outcome Measures

Primary: Change in HbA1c (%) at Day 90 vs baseline, measured by certified laboratory HPLC method.

Secondary quantitative outcomes: Serum fasting insulin (mU/L); HOMA-IR; serum homocysteine (umol/L); fasting plasma glucose; 2-hour postprandial glucose (CGM-derived); lipid panel; CGM time-in-range (70-180 mg/dL).

Secondary qualitative outcomes: Diabetes Self-Efficacy Scale; EQ-5D-3L quality of life; WHO-5 Wellbeing Index; semi-structured interview thematic analysis for support systems, barriers, and lived experience.

3.7 Adherence Assessment

Adherence was defined as composite compliance across four domains: (i) dietary adherence >=80% of meals as millet-based (verified via meal photographs); (ii) exercise adherence >=80% of prescribed sessions; (iii) digital monitoring engagement >=80% of days with CGM data and WhatsApp check-in; (iv) education session attendance. An 80% composite adherence rate was achieved across the full 200-participant cohort.

3.8 Statistical Analysis

Descriptive statistics were computed for all continuous variables. Paired t-tests assessed significance of pre-post differences within cohorts ($p<0.05$ considered significant). Between-group comparisons used one-way ANOVA with Tukey post-hoc correction. Qualitative data underwent thematic analysis (Braun & Clarke framework). All analyses performed using R v4.3 and NVivo 14.

---

4. Results

4.1 Primary Outcome: HbA1c Reduction

All three participant cohorts achieved a statistically significant and clinically meaningful mean reduction of 2 percentage points in HbA1c at Day 90 compared to baseline ($p<0.001$ for all cohorts). The uniformity of this response across cohorts with widely differing baseline severity is a notable finding, suggesting the barnyard millet-Ayurveda protocol has broad-spectrum metabolic efficacy.

Cohort 1 (n=120, baseline HbA1c 8.0%) achieved a final HbA1c of 6.0%, approaching the pre-diabetic threshold of 5.7-6.4%. Cohort 2 (n=62, baseline 10.0%) reduced to 8.0%, entering the well-controlled range for established T2DM. Cohort 3 (n=18, baseline 12.0%) achieved a reduction to 10.0%, a clinically meaningful improvement for a population with long-standing and severely uncontrolled T2DM.

Table 3: Primary and Secondary Clinical Outcomes by Cohort

Parameter	Cohort 1 (n=120)	Cohort 2 (n=62)	Cohort 3 (n=18)	p-value
HbA1c Baseline (%)	8.0 +/- 0.4	10.0 +/- 0.5	12.0 +/- 0.6	--

Parameter	Cohort 1 (n=120)	Cohort 2 (n=62)	Cohort 3 (n=18)	p-value
HbA1c Day 90 (%)	**6.0 +/- 0.4**	**8.0 +/- 0.5**	**10.0 +/- 0.7**	<0.001
HbA1c Reduction (pp)	**2.0**	**2.0**	**2.0**	<0.001
Fasting Glucose Reduction (mg/dL)	36 +/- 11	58 +/- 16	82 +/- 21	<0.001
Serum Fasting Insulin Change (mU/L)	-4.8 +/- 1.9	-6.2 +/- 2.3	-7.1 +/- 2.8	<0.001
HOMA-IR Change	-1.4 +/- 0.6	-2.1 +/- 0.8	-2.9 +/- 1.1	<0.001
Serum Homocysteine Change (umol/L)	-2.4 +/- 1.1	-3.1 +/- 1.4	-3.8 +/- 1.7	<0.01
CGM Time-In-Range at Day 90	78% +/- 7%	68% +/- 9%	55% +/- 12%	<0.01
Medication Dose Reduction	44% (53/120)	52% (32/62)	50% (9/18)	0.038
Self-Efficacy Score Improvement (Delta)	+3.8	+4.1	+4.4	<0.001
WHO-5 Wellbeing Score (Delta)	+11.2	+12.8	+14.1	<0.001
Overall Protocol Adherence	82%	79%	76%	0.18 (NS)

Key Finding: All three cohorts achieved a consistent 2 percentage-point HbA1c reduction at 90 days, despite variation in baseline severity (8%, 10%, 12%). Cohort 1 achieved HbA1c 6.0%, approaching the pre-diabetic range -- representing near-complete glycaemic normalisation in 120 patients through barnyard millet-centred lifestyle intervention.

4.2 Adherence Outcomes

The 80% overall adherence rate achieved in this real-world 200-patient study is notable. Adherence breakdown by domain: Dietary (millet-based meals >=80%): 82%; Exercise sessions: 78%; Digital monitoring (CGM + WhatsApp): 84%; Education session attendance: 76%. Adherence did not differ significantly between cohorts (p=0.18), indicating the protocol was equally feasible across severity groups.

4.3 Qualitative Findings -- Thematic Analysis

Semi-structured interviews with 40 purposively selected participants revealed four primary themes:

Theme 1: Family as Metabolic Medicine

Family adoption of millet-based cooking was the single strongest predictor of dietary adherence. Participants whose families transitioned to barnyard millet as the household staple reported significantly lower 'dietary temptation' and 'social eating stress.' Family orientation sessions held at the 2-week mark were cited as a turning point: 'When my wife started cooking millet roti for the whole family, it stopped feeling like a disease diet' (Participant 14, Cohort 1).

Theme 2: Peer Community and Digital Accountability

The peer WhatsApp group was cited as the 'most motivating factor' by 68% of interviewed participants. Public sharing of CGM screenshots within the peer group created positive accountability dynamics. Participants in active peer groups showed 12% higher adherence compared to those without peer group engagement. Shared millet recipe exchanges normalised the dietary change as a community practice rather than a medical restriction.

Theme 3: Transformation of Diabetes Identity

A consistent narrative shift emerged: from 'diabetes as a life sentence' to 'diabetes as a reversible condition I can manage.' Real-time CGM biofeedback was central to this transformation -- participants could directly observe glucose responses to specific foods, creating an immediate reward loop for dietary compliance. Self-efficacy scores improved by a mean of 4.1 points across all cohorts, reflecting genuine changes in perceived self-management capacity.

Theme 4: Barriers and Facilitators

Social events and festival foods were the primary reported adherence challenge (cited by 74% of interviewees). Barnyard millet sourcing required advance planning in peri-urban areas. Initial palatability concerns resolved within 2-3 weeks for 88% of participants as cooking methods were adapted. The anti-gravity exercise modality specifically resolved the exercise barrier of joint pain cited by 62% of Cohort 2 and Cohort 3 participants.

---

5. Discussion

The central finding of this study -- a consistent 2 percentage-point HbA1c reduction in 200 adults with T2DM over 90 days -- is clinically significant across all three severity cohorts. The UKPDS landmark demonstrated that each 1% reduction in HbA1c is associated with a 21% reduction in diabetes-related mortality, 14% reduction in myocardial infarction, and 37% reduction in microvascular events. A 2-point reduction therefore confers substantial and immediate risk reduction for all 200 participants.

5.1 Barnyard Millet as Glycaemic Stabiliser

The nutritional mechanism underlying barnyard millet's glycaemic benefits is multifactorial. Its exceptionally low glycaemic index (GI approx. 50-56) -- compared to white rice (GI approx. 73) and refined wheat (GI approx. 70) -- results in a fundamentally flatter postprandial glucose curve, directly observable on CGM data as reduced mean amplitude of glycaemic excursion (MAGE). The high dietary fibre content (10-13g/100g) slows gastric emptying, modulates GLP-1 and GIP incretin secretion, and feeds butyrate-producing gut microbiota -- all contributing to improved insulin sensitivity over the 90-day period.

The protein content of barnyard millet (6-11g/100g) provides satiety, preserves lean muscle mass, and supports gluconeogenic buffering -- preventing hypoglycaemia when reducing carbohydrate intake. The magnesium content is particularly relevant: magnesium is a cofactor for over 300 enzymatic reactions including multiple insulin signalling steps, and epidemiological studies consistently associate higher dietary magnesium with lower T2DM incidence and improved glycaemic control.

5.2 Anti-Gravity Exercise and Insulin Sensitivity

The choice of anti-gravity exercise modalities addressed a practical barrier frequently limiting physical activity in T2DM: musculoskeletal comorbidity and obesity-related joint loading. Aquatic

and suspension-based resistance protocols maintained high exercise volumes (78% adherence) while minimising injury risk. Resistance exercise specifically upregulates GLUT-4 transporter expression in skeletal muscle, providing non-insulin-dependent glucose disposal that acts synergistically with the glycaemic load reduction achieved through barnyard millet substitution.

5.3 Homocysteine Reduction: Cardiovascular Significance

The documented reduction in serum homocysteine levels across all cohorts (mean -2.4 to -3.8 umol/L) has important cardiovascular implications. Elevated homocysteine is an independent risk factor for coronary artery disease, stroke, and peripheral vascular disease -- all substantially more prevalent in T2DM populations. The B-vitamin richness of barnyard millet (B1, B2, B3, B6) combined with folate from accompanying legumes likely explains this observation, suggesting the intervention delivers cardiovascular benefit beyond glycaemic control alone.

5.4 The 80% Adherence Achievement

An 80% composite adherence rate in a real-world dietary intervention study of this scale is exceptional. Published dietary intervention trials typically achieve 60-75% adherence; real-world effectiveness studies report even lower figures. The unusually high adherence here is attributable to: the daily WhatsApp accountability loop creating a lightweight but continuous therapeutic touchpoint; CGM biofeedback translating abstract dietary advice into immediate visual consequences; the cultural familiarity of millet cooking reducing friction of dietary change; and the peer community providing social reinforcement at scale. The interplay of these four factors suggests a self-reinforcing adherence architecture that merits systematic study and replication.

5.5 Comparison with Published Literature

The DiRECT trial (Lean et al., 2018, Lancet) demonstrated T2DM remission in 46% of participants through intensive dietary intervention, with HbA1c reductions of 0.9-1.4% at 12 months. The PREDIMED-Plus trial achieved 0.8% HbA1c reduction over 12 months with Mediterranean dietary intervention. The Indian Diabetes Prevention Programme demonstrated a 28.5% reduction in T2DM incidence with lifestyle modification in South Asian populations. The present study achieved a 2% HbA1c reduction in just 90 days -- a significantly faster and larger effect size, attributable to the very low glycaemic load of barnyard millet combined with the anti-gravity exercise component and robust digital adherence infrastructure.

> **Note on Organic Cultivation:** The deliberate selection of organic barnyard millet eliminates pesticide residue concerns relevant for daily staple consumption over 90 days. Preliminary evidence suggests organic millet may have marginally higher polyphenol content due to soil stress signalling. Among millets, barnyard millet carries the lowest glycaemic index of commonly available varieties, making it the optimal nutritional choice for T2DM management.

5.6 Limitations

This study carries several inherent limitations. As a single-arm observational cohort without a randomised control group, causal attribution of HbA1c reductions exclusively to intervention components cannot be made with the rigour of an RCT. Selection bias cannot be excluded as enrolled participants demonstrated motivation by self-referral. The qualitative subsample (n=40) may not represent the full 200-patient diversity. CGM data quality varied by participant and device. Long-term follow-up data beyond 90 days are not yet reported. Generalisability to populations

without digital access (smartphone, WhatsApp) requires evaluation, as the digital accountability model is integral to the protocol's effectiveness.

6. Conclusion

This prospective 200-patient mixed-methods study demonstrates that a structured 90-day intervention incorporating organic barnyard millet as the dietary staple, Ayurvedic lifestyle principles, anti-gravity exercise, and technology-assisted digital monitoring achieves a clinically significant and statistically robust reduction of 2 percentage points in HbA1c across all baseline severity cohorts in adults with Type 2 Diabetes Mellitus.

Beyond glycaemic outcomes, the study documents meaningful improvements in serum fasting insulin, HOMA-IR, serum homocysteine, CGM time-in-range, self-efficacy, and health-related quality of life. Approximately 48% of medicated participants achieved documented medication dose reduction under physician supervision. The 80% composite adherence rate validates the protocol's real-world feasibility and patient acceptability.

Qualitative analysis reveals that diabetes management is not solely a biochemical challenge but a deeply social and psychological one. Family support, peer community engagement, and the transformation of diabetes identity from passive burden to active self-management represent intervention targets as important as dietary macronutrients. The barnyard millet-Ayurveda framework uniquely addresses both dimensions: delivering metabolic efficacy while remaining culturally embedded in Indian family life.

Presented at the IDF World Diabetes Congress 2025, Bangkok, this study offers a scalable, low-cost, culturally adaptable model for T2DM management particularly relevant to the South and South-East Asian diabetes epidemic. Barnyard millet is a climate-resilient, drought-tolerant crop with a low water footprint, aligning diabetes nutrition strategy with planetary health priorities.

Clinical Implication: A 2 percentage-point HbA1c reduction achieved in 90 days through organic barnyard millet nutrition and Ayurvedic lifestyle intervention -- with 80% adherence and 48% medication reduction in medicated patients -- presents a compelling, culturally aligned, and scalable model for T2DM management. Future randomised controlled trials are warranted to confirm these findings at scale.

How to Cite This Article

Sarita ES, Patil M. (2025). Effect of Organic Barnyard Millet and Ayurvedic Lifestyle Principles on Glycaemic Control in Type 2 Diabetes Mellitus: A 90-Day Mixed-Methods Study in 200 Patients. *Presented at: International Diabetes Federation World Diabetes Congress 2025, Bangkok, Thailand.* Abstract BA2025-1469. Nutrition Society of India.

References

1. Sarita ES. Potential of millets: Nutrients composition and health benefits. J Sci Innov Res. 2016;5:46-50.

2. International Diabetes Federation. IDF Diabetes Atlas, 10th edn. Brussels: IDF, 2021.
3. Lean MEJ, et al. Primary care-led weight management for remission of type 2 diabetes (DiRECT). Lancet. 2018;391(10120):541-551.
4. Stratton IM, et al. Association of glycaemia with macrovascular and microvascular complications of T2DM (UKPDS 35). BMJ. 2000;321:405-412.
5. Mohan V, et al. Type 2 diabetes and its complications in India. Lancet Diabetes Endocrinol. 2018;6(3):213-228.
6. Anitha S, et al. Assessing the protein quality and energy-to-protein ratio of millets for nutritional outcomes. Food Sci Nutr. 2021;9(6):3205-3213.
7. Nambiar VS, et al. Functional food attributes of little millet (Panicum sumatrense) in type 2 diabetes. J Food Sci Technol. 2012;49:246-252.
8. Srinivasan K. Plant foods in the management of diabetes mellitus: spices as beneficial antidiabetic food adjuncts. Int J Food Sci Nutr. 2005;56(6):399-414.
9. Colberg SR, et al. Exercise and type 2 diabetes: ACSM and ADA joint position statement. Diabetes Care. 2010;33(12):e147-167.
10. Sutton EF, et al. Early time-restricted feeding improves insulin sensitivity even without weight loss. Cell Metab. 2018;27(6):1212-1221.
11. Ramachandran A, et al. The Indian Diabetes Prevention Programme (IDPP-1). Diabetologia. 2006;49(2):289-297.
12. Estruch R, et al. Primary prevention of cardiovascular disease with Mediterranean diet (PREDIMED). N Engl J Med. 2018;378:e34.
13. Bandura A. Self-efficacy: toward a unifying theory of behavioural change. Psychol Rev. 1977;84(2):191-215.
14. Rao BD, Bhaskarachary K. Nutritional and health benefits of millets. ICAR-Indian Institute of Millets Research. 2017.
15. Kessler SK, et al. Technology-based diabetes self-management interventions: a systematic review. J Telemed Telecare. 2019;25(2):67-82.