Topic

A Study of the Hypoglycemic Effect of African Traditional Fermented Foods Amongst Prediabetic Adults (The Fermented Foods and Prediabetes Study)

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Introduction:

Diabetes and prediabetes are escalating global public health challenges. Effective management of prediabetes is essential to prevent progression to diabetes, yet current strategies remain suboptimal. Traditional African fermented foods are rich in probiotics and bioactive compounds that may improve glycaemic control, but their clinical benefits are not well established.

Aim:

To evaluate the effectiveness of regular consumption of African traditional fermented foods in improving glycaemic control among adults with prediabetes.

Methods:

This was a three-arm, parallel-group, single-blind superiority randomized controlled trial involving 252 adults aged 18–65 years with prediabetes (HbA1c 5.7%–6.4%), recruited from 14 clinics across five Kenyan counties. Participants were randomized (1:1:1) to receive either a 12-week fermented milk intervention, a fermented cereal-based product, or standard lifestyle education (control). The primary outcome was to change in HbA1c from baseline to 3 months. Secondary outcomes included changes in fasting plasma glucose, weight, waist circumference, serum lipids, and C-reactive protein at 4 weeks and 3 months. Monthly data collection and qualitative interviews were conducted to assess acceptability and participant experiences with the interventions.

Results:

The trial is expected to generate the first clinical evidence on the glycaemic effects of African traditional fermented foods in adults with prediabetes. It will provide valuable data on metabolic outcomes and the acceptability of these culturally relevant dietary interventions.

Conclusion:

Findings from this study will inform evidence-based, culturally appropriate nutritional interventions for prediabetes management in Africa and beyond, while also strengthening local research capacity and fostering collaborative networks for future community-led nutrition-based research.

Sub-theme

Diabetes

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Background:

Cardiovascular disease is the leading cause of death in people with type 2 diabetes. Its reported prevalence varies widely across populations, ranging from 16% to 65%. Chronic inflammation is now seen as the key link between diabetes and blood vessel damage. Simple blood-based markers of inflammation — the neutrophil-to-lymphocyte ratio, platelet-to-lymphocyte ratio, and systemic immune-inflammation index — have shown promise for cardiovascular risk assessment in diabetic patients.

Objectives:

To estimate the global burden of cardiovascular disease in type 2 diabetes, assess how well the three inflammatory markers predict this risk, and compare their performance.

Methods:

We followed PRISMA 2020 guidelines for this systematic review and meta-analysis. Five databases (PubMed, Embase, Cochrane, Scopus, and Web of Science) were searched for studies published between January 2010 and December 2024. Study quality was assessed using the Newcastle-Ottawa Scale. A random-effects model was used for meta-analysis, with heterogeneity evaluated using I^2 statistics and publication bias assessed by Egger's test.

Results:

Fifty studies covering over 2.5 million participants from 19 countries were included. The pooled prevalence of cardiovascular disease was 38.4%. All three markers were independently linked to higher cardiovascular risk. The odds ratios were 2.48 for the neutrophil-to-lymphocyte ratio, 2.61 for the platelet-to-lymphocyte ratio, and 2.65 for the systemic immune-inflammation index. The platelet-to-lymphocyte ratio performed best for predicting diabetic retinopathy progression, with an area under the curve of 0.929. Heterogeneity was high across studies (I^2 between 76% and 82%).

Conclusions, Recommendations and Implications:

These three inflammatory markers are reliable, low-cost tools for identifying type 2 diabetes patients at higher risk of cardiovascular disease. Their main advantage is that they can be calculated from a routine complete blood count, making them accessible even in basic healthcare settings. We recommend incorporating them into routine diabetes care, especially where advanced testing is not available. Future research should establish cut-off values that work for African populations, as most existing data come from Asian and European cohorts.

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KENYA DIABETES STUDY GROUP

Title

Culturally Sensitive Psychosocial Assessment in Type 1 Diabetes: Lessons from a Multilingual Camp-Based Intervention in Marsabit, Kenya

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Background:

Effective Type 1 Diabetes (T1D) management extends beyond insulin access to include psychosocial support. In underserved and culturally diverse settings such as Marsabit County, language barriers, stigma, and limited mental health integration complicate care delivery. There is limited documentation on culturally sensitive psychological assessment approaches in such contexts.

Objectives:

To implement and evaluate a culturally sensitive, patient-centered psychosocial assessment model for children and adolescents with T1D in a multilingual camp setting.

Methods:

A camp-based multidisciplinary intervention (Camp Subira) integrated structured psychosocial assessments into routine diabetes care. A total of 89 participants underwent individual psychological assessments (Diabetes Distress) using adapted tools. Due to linguistic diversity, 18 participants required real-time translation into local languages (3 Samburu, 4 Rendille, 2 Gabra, and the remainder Borana). Local interpreters and culturally contextualized communication strategies were used to preserve meaning and enhance engagement. Qualitative observations on emotional expression, stigma, coping, and family dynamics were documented.

Results:

All 89 participants successfully completed psychosocial assessments. Translation needs (20%) highlighted significant linguistic barriers to standardized care. Culturally adapted approaches improved patient engagement, emotional disclosure, and trust. Key psychosocial themes identified included diabetes-related stigma, school-based challenges, caregiver burden, and emerging signs of diabetes distress and burnout. The use of interpreters and culturally responsive techniques minimized information loss and improved assessment accuracy. The integration of mental health into diabetes care was well received by patients, caregivers, and the multidisciplinary team.

Conclusions, Recommendations and Implications:

Culturally sensitive and language-adapted psychosocial care is feasible and essential in T1D management in underserved settings. Standard assessment tools require contextual adaptation to ensure validity across diverse populations. We recommend integrating trained interpreters, culturally relevant frameworks, and mental health services into routine diabetes care programs. This model can inform similar interventions in resource-limited, multilingual settings and supports the expansion of holistic, patient-centered diabetes care in Kenya.

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Title

Diabetes Distress and Its Correlation With Glycemic Control Among Type 2 Diabetes Patients at Moi Teaching and Referral Hospital, Eldoret, Kenya.

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Background:

Type 2 Diabetes Mellitus (T2DM) is associated with significant psychological burden, particularly diabetes distress (DD), which refers to the emotional strain of living with and managing diabetes. Diabetes distress negatively affects self-care, glycemic control and risk of complications. Despite its clinical importance, data on diabetes distress and its relationship with glycemic outcomes remain limited in Kenya and other low- and middle-income settings.

Objectives:

To determine the prevalence of diabetes distress, assess glycemic control and evaluate whether diabetes distress independently predicts poor glycemic control among adults with T2DM attending Moi Teaching and Referral Hospital.

Methods:

A hospital-based cross-sectional study was conducted among 354 adults with T2DM between January and December 2024. Sociodemographic and clinical data were collected using structured questionnaires. Diabetes distress was assessed using the validated Diabetes Distress Scale (DDS-17), while glycemic control was measured using glycated hemoglobin (HbA1c). Data were analyzed using descriptive statistics, Chi-square tests, t-tests, and multivariable logistic regression.

Results:

The prevalence of diabetes distress was 15.8%, with emotional burden and regimen-related distress being the most affected domains. More than half of participants (57.4%) had poor glycemic control (HbA1c ≥8%), with a mean HbA1c of 9.34%. Diabetes distress was significantly associated with combination therapy and coexisting hypertension, while poor glycemic control was associated with insulin therapy and unemployment. Importantly, diabetes distress independently predicted poor glycemic control (AOR 2.31; 95% CI 1.16–4.62; p=0.017), with distressed patients being more than twice as likely to have inadequate glycemic control.

Conclusions, Recommendations and Implications:

Diabetes distress is common among adults with T2DM and is strongly associated with poor glycemic outcomes. Integrating routine screening and management of diabetes distress into diabetes care programs may improve glycemic outcomes and reduce complications. These findings support the inclusion of psychosocial assessment within diabetes management policies and programs in Kenya.

Title

From Prevention to Precision: The Diapsych Integrated Care Model for Behavioral Health in Diabetes Management in Kenya: A Case-Based Approach

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Background:

Global and local diabetes care guidelines, including those from the American Diabetes Association and European Association for the Study of Diabetes, emphasize the integration of psychosocial care into routine diabetes management. Despite this, implementation in many Kenyan settings remains limited, with care predominantly focused on biomedical outcomes, leaving a critical gap in addressing diabetes-related distress and patient experience.

Objective:

To present the Diapsych Integrated Care Model (DICM) as a practical, guideline-informed framework for integrating behavioral health into diabetes care, aligned with the shift from prevention to precision in metabolic health.

Methods:

A case-based descriptive approach was utilized, drawing on clinical encounters, diabetes medical camps, and structured patient feedback sessions conducted in collaboration with DMI. The DICM incorporates early psychosocial screening (prevention), patient-centered education, and tailored behavioral support (precision), guided by established international and local recommendations. Observations focused on patient engagement, emotional well-being, and self-management behaviors.

Results:

Patients commonly expressed diabetes distress, fear of complications, and challenges with adherence. Implementation of the DICM during clinic visits and outreach camps enabled early identification of psychosocial needs, improved patient-provider communication, and enhanced individualized care. Feedback from DMI activities indicated improved patient understanding, increased engagement in care, and greater confidence in self-management practices.

Conclusion:

The Diapsych Integrated Care Model demonstrates that integrating behavioral health into diabetes care is both feasible and impactful in Kenyan settings. By bridging prevention through early psychosocial intervention and precision through individualized care, the model aligns with evolving approaches to metabolic health. Scaling such models may significantly improve patient outcomes and experiences in diabetes care.

Title

Missed Opportunities in Diabetes and Metabolic Syndrome Prevention Among Postpartum Women.a Sytematic Review

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Postpartum period is a critical window of opportunity for prevention of diabetes and metabolic syndrome yet it is under explored.70% of Women with a history of GDM transition to diabetes mellitus at 5 years postpartum. Timely screening, detection, intervention and follow up is necessary to prevent transition to type 2 DM. This systematic review aims to highlight evidence on missed opportunities in prevention of diabetes and metabolic syndrome among postpartum women. A search was conducted on PubMed, research gate, google scholar and Cochrane in April 2026. Out of 58 studies identified 20 studies met the inclusion criteria. Findings revealed gaps in healthcare systems such as fragmented care delivery, untimely and low rates in screening, untimely intervention and follow up, lack of standardized guidelines incorporated in maternal healthcare, lack of coordination among healthcare personnel. To close these gaps, prioritization of screening and follow up should be implemented and continued beyond early postpartum. Additionally, Implementation of Integrated care models that connect primary care givers and specialists, tailored lifestyle interventions. The health care systems should be strengthened through healthcare providers training, resource allocation for follow up in lower- and middle-income countries. Prevalence rates of diabetes and healthcare costs can be embedded through implementation of the preventive strategies in maternal health policies. Strengthening universal screening and leveraging community health structures in rural and peri urban areas in Kenya among other low- and middle-income countries, would also impact on lowering the burden of type two diabetes among women of reproductive age while promoting long term health in their families.

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KENYA DIABETES STUDY GROUP

Title

Prevalence and Factors Associated with Autonomic Neuropathy among Patients with Type 2 Diabetes at Moi Teaching and Referral Hospital, Eldoret, Kenya.

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Background:

Diabetic autonomic neuropathy (DAN) is a common and serious complication of Type 2 Diabetes Mellitus (T2DM), with reported prevalence ranging from 16% to 70%. It significantly affects quality of life and increases morbidity and mortality. Although key risk factors have been identified, the prevalence and contributing factors in our setting remain unclear. Understanding these would help guide better screening, prevention, and management strategies.

Objectives:

To determine the prevalence and factors associated with autonomic neuropathy among patients with (T2DM) at the Moi Teaching and Referral Hospital (MTRH).

Methods:

This study was a cross-sectional analysis conducted at the MTRH diabetes outpatient clinic. The study population included 344 adult patients with T2DM from March to August 2024. Diabetic autonomic neuropathy was assessed using the COMPASS-31 questionnaire. A standard interviewer-administered questionnaire was then used to collect socio-demographic and clinical data. The independent variables were age, sex, marital status, level of education, HbA1C, body mass index, statin use, hypertension, dyslipidemia, and creatinine clearance. Categorical variables were summarized using frequency tables, percentages, and bar graphs. Mean, median, and interquartile ranges were used to summarize continuous variables. The association between diabetic autonomic neuropathy and independent variables was assessed using bivariate and multivariate analysis.

Results.

The mean age of study participants was 61.0 years (SD 9.8). The mean HbA1c was 9.6 (SD 4.5)%. The median duration of diabetes was 8.62 (IQR 4-12years. Females constituted 65.4% of all study participants. The prevalence of DAN was established to be 53.2% based on the COMPASS 31 questionnaire weighted score. Analysis of autonomic dysfunction according to the domains affected revealed that the most affected domains were the gastrointestinal (65.41%), secretomotor (62.41%), and pupillomotor (53.78%). The orthostatic domain had a prevalence of 53.78%, followed by the vasomotor domain at 48.26%, and the bladder domain had 31.40%.

On multivariable regression models, DAN was inversely correlated with the use of lipid-lowering agents. There was a positive association between DAN and kidney dysfunction as measured by estimated glomerular filtration rate (eGFR).

Conclusion.

Our findings revealed a high prevalence of DAN among individuals in outpatient care for T2DM in MTRH. There was an inverse correlation between DAN and the use of lipid-lowering agents. There was a positive association between DAN and kidney dysfunction.

Recommendation.

Assessment of autonomic neuropathy should be integrated in the care of persons with diabetes, given the high prevalence of DAN in this study population and the rising global burden of diabetes

Title

Serum Level of C-Peptide and Oral Hypoglycemic Failure in Type 2 Diabetes

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Background

Managing T2DM often involves oral hypoglycemic agents, the cornerstone of treatment for many patients. However, treatment failure remains a substantial concern, potentially necessitating the transition to insulin therapy—a decision traditionally guided by glycemic control indicators like HbA1c levels without direct assessment of beta-cell function.

Study objective:

This study aimed to assess the predictive value of fasting serum C-peptide levels for oral hypoglycemic failure in patients with type 2 diabetes mellitus at St Francis Hospital Nsambya in Uganda.

Methods:

This prospective cohort study was conducted at St. Francis Hospital Nsambya from January 1, 2023, to October 1, 2023. Eligible participants were individuals aged 40 years and above with an HbA1c measurement above 10.0%, considered poorly controlled on oral hypoglycemic agents, and attending the diabetes clinic at the hospital. After obtaining informed consent, participants were subjected to a semi- structured questionnaire to collect demographic and health-related information. Blood samples were collected for fasting blood sugar (FBS) and C-peptide level determination, among other parameters. Participants were then prescribed a regimen of metformin (2000 mg daily), glimepiride (4 mg daily), and teneglyptine (20 mg daily) and counseled on diet and exercise. They were followed up monthly for three months of FBS measurements and HbA1c at the end of the study period. Data analysis was performed using STATA, focusing on the predictive value of C-peptide levels for oral hypoglycemic failure, treatment adherence, and lifestyle interventions' impact on glycemic control.

Results:

Thirty-five participants with T2DM poorly controlled on oral hypoglycemic agents with an average age of 59.6 years and predominantly female (77.1%) were enrolled. The majority were overweight (42.9%) or obese (45.7%), and 62.9% had a family history of diabetes. Clinical assessments revealed a median diabetes duration of 7 years and high blood pressure in 62.9% of the participants. The primary medications used were Metformin (97.1%), Glibenclamide (28.6%), and Vildagliptin (22.9%). At baseline, the mean fasting serum C-peptide level across all participants was 1.72 ng/ml, with a statistically significant negative correlation between C-peptide levels and HbA1c at three months (Pearson correlation coefficient of -0.5383, p = 0.001). There was a significant reduction in median fasting blood glucose levels from baseline (10.6 mmol/L) to three months (7.8 mmol/L, p=0.003) after the targeted treatments. The Area Under the Curve (AUC) for C-peptide in predicting oral hypoglycemic response was 0.85, suggesting high diagnostic accuracy. An optimal cut-off for C-peptide was determined to be 1.7 ng/ml, with this level accurately identifying individuals with good glycemic control (sensitivity of 89.5%, specificity of 81.2%).

Conclusion:

This study highlight the potential for C-peptide levels as a pivotal marker in guiding treatment decisions, where fasting serum c-peptide levels of T2DM patients who have lived with diabetes for five years and above with a value of 1.7ng/ml and below are less likely to achieve glycaemic control and would benefit with insulin therapy

Recommendation:

Clinicians should consider incorporating fasting serum C-peptide measurement into the management protocols for T2DM patients, particularly those not achieving desired glycemic control with oral agents, to tailor treatment strategies more effectively. Future research should focus on longitudinal studies to further validate the prognostic value of C-peptide levels across diverse populations and explore the mechanistic pathways through which C-peptide influences glycemic control, potentially unveiling new therapeutic targets for T2DM management.

Title

The impact of obesity on blood sugar control among diabetes type 2 clients attending ncd clinic at vtrh, Vihiga county between January 2025 - July 2025

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Background & objective

Obesity is a major risk factor influencing glycemic control among patients with Type 2 Diabetes (T2DM). This study aimed to assess the impact of obesity on blood sugar control among clients with T2DM attending the NCD clinic at Vihiga County Referral Hospital (VTRH), Vihiga County.

Methods

A quasi-experimental study design was conducted over a six-month period between January 2025 and July 2025, involving a sample of 30 adult diabetic clients. Participants were given different management approaches, where some received routine (stationary) care, while others were enrolled in a structured exercise program with intensity gradually increased according to individual tolerance.

Data was collected using structured questionnaires, review of clinical records, and anthropometric measurements including BMI. Glycemic control was assessed using fasting blood glucose levels and HbA1c values.

Results

The findings revealed a high burden of abnormal body weight among participants, with 30% classified as overweight, 25% as obese, and 28% as morbidly obese. Clients in the obese and morbidly obese categories were more likely to have poor glycemic control compared to those with normal BMI.

Participants in the graded exercise group demonstrated an improvement in blood glucose levels compared to those receiving routine care. Overall, the study outcome showed improved glycemic control among clients, particularly those engaged in structured physical activity. Analysis indicated a significant association between increasing BMI and elevated blood glucose levels, with additional contributing factors including physical inactivity and dietary patterns.

In conclusion, obesity negatively affects blood sugar control among patients with T2DM attending the NCD clinic at VTRH. However, incorporating structured, progressive exercise interventions alongside routine care leads to improved glycemic outcomes. The study recommends comprehensive management strategies focusing on weight reduction through lifestyle modification, patient education, and regular monitoring to enhance diabetes care at both facility and community levels.

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Title

A Mediastinal Paraganglioma Originating from the Right Superior Pulmonary Vein

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Background:

Cardiac and mediastinal paragangliomas are exceedingly rare neuroendocrine tumors, with fewer than 160 cases reported worldwide. These catecholamine-secreting lesions pose significant diagnostic and therapeutic challenges due to their atypical location, variable biochemical profiles, and proximity to vital cardiovascular structures.

Case Presentation:

We report a 41-year-old woman with a three-year history of labile hypertension, palpitations, diaphoresis, and weight loss. Ambulatory blood pressure monitoring confirmed sustained hypertension (mean 165/102 mmHg). Biochemical evaluation revealed markedly elevated plasma normetanephrines (>500 pg/mL) and urinary noradrenaline (1,662 µg/24h), with paradoxically normal metanephrines. Adrenal imaging was unremarkable, but chest CT demonstrated a progressively enlarging middle mediastinal mass. Cardiac MRI localized the lesion to the right superior pulmonary vein, extending over the left atrial roof, without invasion. Functional imaging with Ga-68 DOTANOC PET-CT showed unexpectedly low uptake.

Management and Outcome:

After α- and β-blockade optimization, the patient underwent minimally invasive resection. Histology confirmed a well-differentiated noradrenaline-secreting paraganglioma (Ki-67 <1%, GAPP score 1). Immunohistochemistry demonstrated SDHB deficiency, while next-generation sequencing identified an SDHC variant of uncertain significance. Post-operatively, catecholamine levels normalized, antihypertensives were discontinued, and the patient remains in biochemical remission under surveillance.

Discussion:

This case illustrates several endocrinology-relevant diagnostic pitfalls:

Biochemical paradox: isolated norepinephrine excess with normal metanephrines, reflecting absent PNMT activity in extra-adrenal paragangliomas.

Functional imaging discordance: low DOTANOC uptake despite SDH deficiency, underscoring the need for integrated biochemical and anatomical correlation.

Genetic nuance: identification of an SDHC variant of uncertain significance, rarely reported in thoracic paragangliomas, highlighting the importance of cautious interpretation and family counseling.

Conclusion:

A high index of suspicion should be maintained for paragangliomas in patients with unexplained labile hypertension and mediastinal masses. Awareness of atypical biochemical and imaging patterns is critical to avoid misdiagnosis. This case emphasizes the role of multidisciplinary endocrine evaluation, genetic counseling, and long-term follow-up in optimizing outcomes for patients with rare SDH-related paragangliomas.

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Title

Designing a Comprehensive SHA Benefit Package for Type 1 Diabetes in Kenya: An Implementation Framework Informed by Clinical Practice and Lived Experience

Author: Brenda Stawa, MD
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Background:

Type 1 diabetes (T1D) requires continuous, resource-intensive care, yet significant gaps in the Social Health Authority (SHA) benefit package expose patients in Kenya to high out-of-pocket costs and poor outcomes. Households spend up to 50-60% of their income on T1D care, while essential components such as insulin analogues, glucose monitoring supplies, and routine screening remain inconsistently covered. From both clinical practice and lived experience, maintaining recommended regimens-including 4-5 daily insulin injections and frequent glucose monitoring-remains financially and logistically challenging.

Objective:

To develop a comprehensive, implementable SHA benefit design for T1D care that improves continuity, affordability, and clinical outcomes.

Methods:

This study utilizes a policy-informed implementation framework drawing on national guidelines, stakeholder inputs, and existing care models. The proposed package integrates insulin therapy (basal-bolus), glucose monitoring supplies, routine laboratory testing, and multidisciplinary care. A structured costing model (KES) and feasibility considerations were incorporated.

Results (Expected):

The proposed model is expected to:

- Improve access to essential diabetes care components
- Enhance glycaemic control through consistent monitoring
- Reduce acute complications such as diabetic ketoacidosis
- Lower long-term costs by preventing renal and cardiovascular complications
- Reduce catastrophic household health expenditure

Conclusion:

A comprehensive SHA benefit package for T1D is both clinically necessary and economically justified. Integrating lived experience with policy design highlights critical gaps in continuity of care and reinforces the need for patient-centered financing models. Pilot implementation and evaluation are recommended to inform national scale-up.

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Title

A Cross-Sectional Survey on Knowledge and Attitudes of Doctors at The Nairobi Hospital on Cardiorenal Benefits of Sodium-Glucose Cotransporter-2 Inhibitors

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Background:

Sodium Glucose Co-transporter 2 inhibitors (SGLT-2i's) are oral glucose lowering agents (OGLA's) that reduce renal glucose reabsorption resulting in excretion of glucose in urine. They were initially designed to treat Type 2 Diabetes Mellitus but have demonstrated significant benefits against Cardiovascular and Renal disease.

SGLT-2i's have documented clinical underutilization globally. This study presents an original approach to the discussion on how well SGLT-2i's are known and perceived amongst Doctors practicing within The Nairobi Hospital (TNH).

Objectives:

To assess the level of Knowledge and Attitudes of Doctors at TNH, on Cardiorenal Benefits of SGLT-2i's and to evaluate the individual factors associated with knowledge or attitude towards SGLT-2i's.

Methods:

A cross sectional study utilizing a self-administered online questionnaire within a single centre tertiary hospital which only included Doctors who had given informed consent. Simple random sampling was used to attain the minimum sampling size of 134 as calculated using Fisher's formula. The key outcomes of interest were knowledge (good vs poor) and attitude (favorable vs poor)

Results:

The findings revealed that age and an increase in the number of years in clinical practice are associated with better levels of knowledge. There was a significance in one's specialisation.

Registrars in internal medicine had better knowledge than their peers. Consultants in either Internal medicine, Endocrinology, Nephrology or Cardiology had better levels of knowledge compared to their peers.

There was an overall favorable attitude which was significantly associated with age, and recent training on OGLAs.

Conclusion, Recommendations and implications:

This study showed that the level of knowledge on SGLT2i's is poor overall among Doctors in

TNH but varies by age, years in clinical practice, specialty and recent training on OGLAs. Level of attitude is favorable overall and varies by age and recent training on OGLAs.

Recent training on OGLAs is successful at shaping Doctors' awareness and perception towards SGLT-2i's, thus exposure to regular educational events on SGLT-2i's must be encouraged. Internal Medicine, Endocrinology, Cardiology and Nephrology consultants are a knowledge resource and should be utilized in educational events in order to address the intraspecialty disparity in knowledge on SGLT-2i's.

Title

Macros AI: An AI-Powered Nutrition Tracking and Coaching Application for Personalized Dietary Management

Author: Angela Wangechi; Dr. Caroline Mithi

Background

Poor dietary adherence and limited personalized nutrition guidance hinder effective weight management, muscle gain, and control of diet-related conditions such as obesity, diabetes, and hypertension. Many existing nutrition apps rely on manual logging and generic, Western-centric recommendations that are not culturally relevant for Kenyan and other diverse populations. Macros Al was developed to provide automated, culturally adaptive nutrition tracking and real-time coaching.

Objectives

To develop an Al-powered mobile application that clinicians (doctors and nutrition practitioners) can recommend to patients to support self-monitoring, personalized macro- and calorie-based goal setting, and improved dietary adherence, including diabetes-focused guidance.

Methods

Macros Al uses image-based meal logging to estimate calories and macronutrients (protein, carbohydrates, fats). Users set goals, diet preferences, and activity levels. The Al Nutrition Coach provides context- and location-aware meal guidance using locally available foods. For users with diabetes or prediabetes, the app enables diabetes-specific inputs (e.g., diabetes type and glycemic targets) and delivers carbohydrate-focused coaching emphasizing portion control and lower-glycemic options.

Results

Macros Al automated nutrition tracking and delivered immediate macro feedback and personalized recommendations. Early users reported improved awareness of calorie balance and protein intake, more consistent meal logging, and greater confidence in daily food choices. Users with diabetes/prediabetes reported better understanding of carbohydrate intake and improved ability to choose appropriate portions and lower-glycemic meals.

Conclusions and Recommendations

Macros Al shows promise as a scalable, culturally adaptive tool for personalized nutrition support, including diabetes-oriented coaching. Further evaluation is recommended to assess long-term outcomes and clinical integration.

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Title

Prevalence and Correlates of Double Burden of Malnutrition in The Gambia

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Background:

Malnutrition remains a major global public health challenge. In 2015, the United Nations adopted Sustainable Development Goal 2 to end all forms of malnutrition by 2030. However, many low- and middle-income countries now face the co-existence of undernutrition and overnutrition within the same household, a phenomenon referred to as the Double Burden of Malnutrition (DBM). This study examined the prevalence and correlates of DBM in The Gambia.

Methods:

Analysis of prevalence and correlates of DBM was assessed using the 2013 and 2019 Gambia Demographic and Health Surveys. A final sample size of 3,055 (2013) and 3,783 (2019) mother-child pairs was included. Frequencies and percentages were used to describe and summarize the participants' characteristics and prevalence of DBM. Multivariable logistic regression was used to assess the correlates of DBM.

Results:

The overall weighted household prevalence of DBM was 7.1% in both 2013 and 2019; highest among households with male children (7.4%) in both years. Education, child age group, parity, wealth index, and Kerewan region were significantly associated with DBM. In 2013, households with highly educated mothers and from Kerewan region had 90% (aOR=0.1, 95% CI: 0.0-0.5, p<0.05) and 80% (aOR=0.2, 95% CI: 0.1-0.7, p<0.01) lower odds of DBM, respectively. In 2019, households with children aged 12-23 months and those born to mothers with more than four children had 1.9 times (aOR=1.9, 95% CI: 1.1-3.5, p<0.05) and 2.4 times (aOR=2.4, 95% CI: 1.2-5.6, p<0.05) higher odds of DBM than children less than 12 months and mothers with one child, respectively.

Conclusion:

The constant prevalence of DBM over the years among mother-child pairs underscores it as a public health concern in The Gambia. Policymakers should institute empowerment programs that will promote women's education and informed nutritional decisions.

Keywords:

Overnutrition, undernutrition, Gambia, DBM, malnutrition, Sub-Saharan Africa

Title

Self-reported diabetes screening, care cascade and the burden of undiagnosed diabetes in Kenya. Evidence from the 2015 Kenya STEPwise Survey

Author: Catherine Akoth; James Odhiambo Oguta

Background

Diabetes is a growing public health challenge globally, with a disproportionate burden occurring in low- and middle-income countries (LMICs). In Kenya, limited evidence exists on diabetes screening coverage, undiagnosed diabetes, and progression through the diabetes care cascade. This study assessed the prevalence and determinants of diabetes screening, quantified undiagnosed diabetes, and examined the diabetes care cascade in Kenya.

Methods

We analysed data from the 2015 Kenya WH0 STEPwise survey, a nationally representative cross-sectional survey of adults aged 18-69 years. The analysis included 4,167 participants after excluding individuals with missing fasting plasma glucose (FPG) measurements and those outside the eligible age range. Diabetes screening was defined as self-reported prior blood glucose measurement by a health worker. Diabetes was defined as FPG ≥7 mmol/L, previous diagnosis, or prior treatment for diabetes. Weighted prevalence estimates with 95% confidence intervals (CI) were calculated. Univariable and multivariable logistic regression analyses were conducted to identify factors associated with diabetes screening while accounting for the complex survey design.

Results

0verall, 11.9% (95% CI: 9.7-14.5) of participants reported ever being screened for diabetes. The weighted prevalence of diabetes was 2.66% (95% CI: 2.06-3.42), while 53.4% (95% CI:

39.0-67.4) of diabetes cases were previously undiagnosed. Screening prevalence was highest among older adults, individuals with tertiary education, obese participants, and those with hypertension, but lowest among younger adults, individuals with no formal education, and residents of North Eastern region. Among individuals with diabetes, 46.9% were aware of their diagnosis, 40.8% of those aware were on treatment, and only 26.4% of those on treatment had achieved glycaemic control. In multivariable analysis, older age (60-69 years: a0R=6.29, 95% CI:

3.66-10.79), tertiary education (a0R=2.65, 95% CI: 1.33-5.27), poorest wealth quintile (a0R=8.42, 95% CI: 4.11-17.24), obesity (a0R=2.13, 95% CI: 1.41-3.21), and hypertension (a0R=1.64, 95% CI: 1.21-2.23) were significantly associated with increased odds of diabetes screening.

Conclusion

Diabetes screening coverage in Kenya remains low, with more than half of diabetes cases remaining undiagnosed and substantial losses occurring across the diabetes care cascade. These findings highlight critical gaps in early diagnosis, linkage to care, treatment uptake, and glycaemic control. Strengthening integrated diabetes screening and care services, particularly for underserved and high-risk populations, is essential to improve early detection and continuity of care in Kenya.

11th Annual Scientific Conference

KENYA DIABETES STUDY GROUP

Title

Type 1 Diabetes in the Primary Health Care Setting: Early Experience and Patient Characterization at Mariakani Sub County Hospital, Kilifi County 2025–2026

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Background

Type 1 diabetes (T1D) poses a growing burden in sub-Saharan Africa, where limited insulin access and weak health systems drive preventable mortality.1,2 In Kenya, 6,500 children and young people live with T1D; 570 died in 2024 and poor glycaemic control is well documented.3,4 Kenya's universal health coverage drive offers an opportunity to integrate T1D care at primary health care level. Mariakani Sub-County Hospital serves 59,061 people across 17 public and 30 private referral facilities, prompting a dedicated T1D clinic in May 2020.

Objectives

The primary objectives were to describe the clinic's establishment, staffing, training, and resources, and to characterize the enrolled patients' clinical and demographic profile.

Methods

A retrospective review was conducted from May 2020 to April 2026; data were abstracted from clinic registers, patient records, and the Kenya Health Information System (KHIS). Continuous variables were summarized as medians and interquartile ranges, and categorical variables as frequencies and percentages.

Results

The monthly clinic is staffed by a multidisciplinary team spanning clinical, nursing, pharmacy, nutrition, laboratory, health records, and community health cadres, with psychosocial support. Staff received a three-day Ministry of Health-designed training in T1D management. Resources include basal-bolus insulin, glucometers, HbA1c strips, and ketone dipsticks. Patient characteristics are summarized in Table 1.

Table 1 — Patient Characteristics

Characteristic	Value
Total patients, n	25
Median age, years (IQR)	16 (15–18)
Female, n (%)	9 (36%)
Paediatric (<18 years), n (%)	15 (60%)
Median weight, kg (IQR)	44.7 (35.8–52.4)
Median BMI, kg/m^2 (IQR)	18.2 (16.4–19.2)
Insulin regimen — basal-bolus, n (%)	25 (100%)
Median HbA1c, % (IQR)*	14.0 (11.6–14.0)
Any documented complication, n (%)	None
DKA episodes in past 12 months, n (%)	6 (24%)

** HbA1c available for 24 of 25 patients; one value missing.*

Conclusions

A functional T1D clinic is achievable at primary health care level with a trained multidisciplinary team. Most patients are under 18 years (60%), with severely poor glycaemic control (HbA1c 14%, IQR 11.6–14.0%) and a significant DKA burden (24%), confirming substantial unmet need for structured T1D care at this level.

Recommendations and Implications

Operational sustainability requires reliable insulin and consumable supply, ongoing training, and HbA1c monitoring. Advocacy for a T1D benefit package within the Social Health Authority (SHA) framework — covering insulin, supplies, and clinical follow-up — is essential for equitable access. This model offers a replicable framework for primary health care facilities across Kenya.

Keywords: Type 1 Diabetes; Primary Health Care; Kilifi County; Health Financing

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Regional (Sub-Saharan Africa)

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Note: All references should be verified by the authoring team before final submission.

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KENYA DIABETES STUDY GROUP

Title

Data Vaults for Diabetes, A consent-led, patient-owned data model for longitudinal diabetes care in Kenya

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THE CHALLENGE

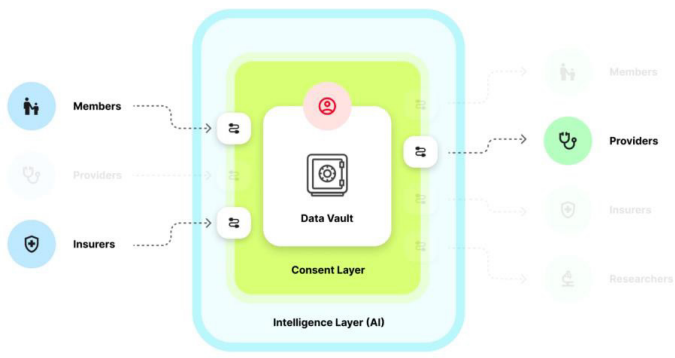
Diabetes care depends on longitudinal review of glucose, history and lifestyle. Across Kenya, care is still fragmented across facilities driving repeated tests, reliance on patient recall, and limited preventive, precision-oriented care.

OUR MODEL: Longitudinal care using health data vaults

- All patient health data is brought together in a patient-controlled digital health repository ("Data Vault") capturing continuous glucose, longitudinal care use and relevant documents
- Any type of data access is governed by explicit, patient-managed consent
- The data is displayed as structured trends, not isolated data points, so health can be tracked over time

IN THE CLINIC:
Clinician and patient review glucose trends alongside care use information, diet logs and the latest lab results and prescription information:
All information together, in one view, with the patient controlling access.

THE DATA VAULT MODEL



Data flows in from members and insurers; a consent layer controls what flows out to providers, insurers and researchers. An intelligence (AI) layer summarizes separate data points as clinical trends.

PHASED ROLL-OUT — EXPANDING ACCESS

PHASE 1
Patient access
foundation

- Onboarding, identity & granular consent
- Aggregates own data: CGM, self-reported glucose/BP, lifestyle, uploaded labs & prescriptions, claims
- Personal trend dashboard

Goal: a complete, patient-owned longitudinal record

PHASE 2
Clinician access
shared care

- Patient grants time- & scope-limited consent
- Consolidated trends reviewed in the consultation
- Collaborative patient–clinician review

Goal: stronger health management & follow-up

PHASE 3
Analytics access
population & system

- Aggregated / de-identified analytics under governance
- Cohort glycaemic & service-delivery insight
- EMR integration only after experimental phases

Goal: population insight and innovation with individual control kept

RESEARCH SET-UP

A design & pre-implementation phase leading to the KeepWell feasibility pilot in real-world diabetes care.

PRE-IMPLEMENTATION

Workflow observation · governance & consent design · diabetes data-pathway definition · DPIA & data-sharing readiness

THE PILOT — (3-month feasibility study)

Who: 15–20 adults aged 40–60 with Type 2 diabetes, insured by AAR
Where: 2 AAR Healthcare clinics, Nairobi (Sarit Centre & George Williamson)
Tools: aQiba Data Vault + Clear.bio app & CGM sensor (free)
CGM: worn weeks 1–4 and final 2 weeks; HbA1c at start & end
Patient: 2-phase consent; daily food/activity/mood logs; uploads labs, scripts & M-TIBA claims
Clinician: enrol, fit CGM, review shared trends each visit
Partners: AAR Healthcare · AAR Insurance · CarePay/M-TIBA · PharmAccess

PILOT EVALUATES

Feasibility | Safety | Acceptability | Clinical utility

TECHNICAL DESIGN

A shared health data platform that is build around the patient, creating the conditions for trusted access to personal data, to move beyond care services to connected health management

DESIGN PRINCIPLES

- Sovereign-by-Design: Individuals control access and use of data
- Privacy-by-Execution: Data and intelligence happen in a secured environment
- Trust-through-Provenance: All access and transformation is tracked and auditable
- Seamless and Transparent ecosystem data flow: Interoperable across the health system
- Collective Value Alignment: Benefitting individuals and society

DATA SOURCES INTO THE VAULT

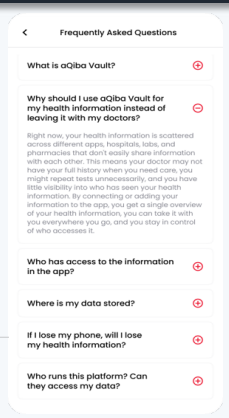
CGM · patient-reported glucose / BP / lifestyle · uploaded labs & prescriptions · insurance claims

PharmAccess

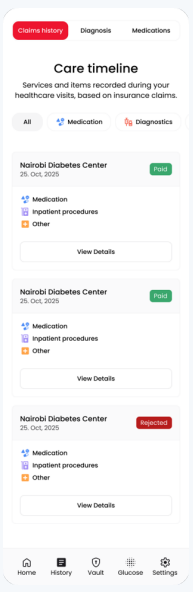
aQiba Vault — the pilot product in patients' hands

aQiba provides trusted and transparent access to personal health data

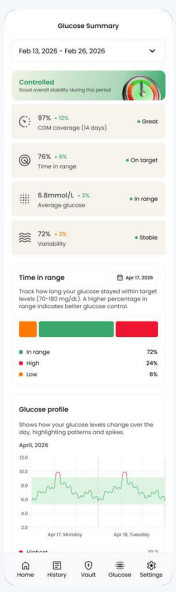
- your own, personal data vault
- automatically connect and combine your health data
- personal health insights and intelligence
- longitudinal health management
- data access control and transparency
- increased access to connected services



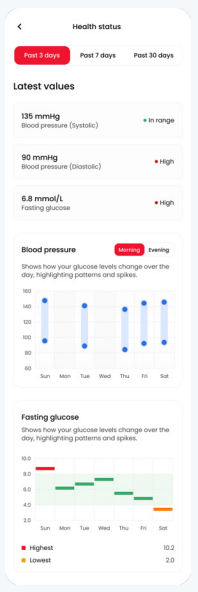
Consent & control
Patients decide data access



Care timeline
Insurance claims & visit history



Glucose summary
CGM coverage & time-in-range



Health status
Self-reported BP & glucose