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Journal of Clinical Trials

Opinion Article

A Pragmatic Trial on Dietary Intervention for Glycemic Control in Type 2 Diabetes Patients in Primary Care Settings

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DESCRIPTION

Type 2 diabetes is a growing public health concern, particularly in low- and middle-income countries where lifestyle-related factors and limited access to structured care contribute to disease progression. Dietary management plays a central role in glycemic control, yet translating evidence-based dietary practices into everyday clinical care remains a challenge. This pragmatic randomized trial assessed the impact of a simplified, culturally adapted dietary intervention on glycemic outcomes in patients with type 2 diabetes managed in primary care settings.

The dietary intervention was delivered over six months through individual and group sessions led by trained dietitians and primary care providers. The core elements of the intervention included portion control using visual cues, substitution of high-glycemic foods with low-glycemic alternatives, increased intake of non-starchy vegetables and reduced consumption of sugar-sweetened beverages. The education materials were tailored to reflect local dietary habits and food availability. Participants in the intervention group also received monthly follow-up calls to reinforce adherence and answer questions.

The standard care group continued to receive usual medical follow-up, including physician consultations and general advice on lifestyle modifications, without structured dietary counseling. Both groups had HbA1c measured at baseline, 3 months and 6 months. Secondary endpoints included changes in weight, fasting plasma glucose, lipid profile, blood pressure and self-reported dietary behavior. Safety was assessed through adverse event reporting, including hypoglycemic episodes.

At six months, the mean reduction in HbA1c in the dietary intervention group was 1.2%, compared to 0.5% in the standard care group. This difference was statistically significant and consistent across all participating clinics. A greater proportion of participants in the intervention group achieved target HbA1c levels below 7%, with improved glycemic control observed as early as the three-month mark.

Weight loss was modest but greater in the intervention group, with an average reduction of 2.8 kg *versus* 0.9 kg in the standard care group. Participants in the intervention arm also experienced reductions in fasting glucose, triglyceride levels and systolic blood pressure. Improvements in dietary behavior, as measured by food frequency questionnaires, indicated increased vegetable intake, reduced portion sizes and fewer servings of refined carbohydrates per week.

The intervention was well received by participants, who cited the visual tools and food substitution guidance as helpful for daily decision-making. Adherence to the dietary recommendations was high, with over 75% of participants attending at least four of the six group sessions and completing monthly check-ins. Dropout rates were low in both groups and there were no serious adverse events attributed to the intervention. Mild hypoglycemia occurred in 3% of participants in each group, mostly in individuals on sulfonylureas.

Healthcare providers involved in the trial reported that the intervention was easy to implement and did not significantly increase clinical workload. Group sessions were often scheduled during off-peak hours or integrated into routine clinic visits. Providers noted improved engagement from patients who participated in the dietary program, leading to more productive clinical encounters. A few logistical challenges, such as limited space for group meetings and occasional scheduling conflicts, were managed with flexibility and planning.

An important aspect of this study was its pragmatic design, which aimed to assess real-world effectiveness rather than ideal conditions. The diversity of clinic settings, variability in staff experience and differences in patient literacy were accounted for in the design and delivery of the intervention. This allowed the study to capture a broad representation of the population typically seen in primary care.

Long-term follow-up is planned to assess sustainability of glycemic control and whether the initial improvements translate into reduced incidence of complications. However, the short-term results suggest that structured, culturally relevant dietary interventions can yield meaningful clinical benefits when integrated into routine care. The cost of implementing the

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Received: 06-Jun-2025, Manuscript No. JCTR-25-37925; **Editor assigned:** 09-Jun-2025, PreQC No. JCTR-25-37925 (PQ); **Reviewed:** 23-Jun-2025, QC No. JCTR-25-37925; **Revised:** 30-Jun-2025, Manuscript No. JCTR-25-37925 (R); **Published:** 07-Jul-2025, DOI: 10.35248/2167-0870.25.15.596

Citation: Lim S (2025). A Pragmatic Trial on Dietary Intervention for Glycemic Control in Type 2 Diabetes Patients in Primary Care Settings. Clin Trials. 15:596.

intervention was low, relying primarily on existing staff with minimal training and printed materials.

This trial also demonstrated that patients are receptive to practical dietary advice that aligns with their everyday environment and food preferences. Generic recommendations often fail to change behavior, but personalized and community-aware approaches can lead to better engagement. Future studies may explore how digital tools or peer support networks can further support dietary adherence and extend the reach of such programs.

In conclusion, this pragmatic trial showed that a structured, low-cost dietary intervention delivered in primary care settings significantly improved glycemic control in patients with type 2 diabetes. The approach was feasible, acceptable and associated with additional metabolic benefits, including modest weight loss and improved lipid profiles. Integrating dietary counseling into diabetes care through group education and follow-up support represents an effective strategy to enhance chronic disease management.