Title: The Effect of a Low-Carbohydrate Diet on Periodontal Health and Inflammation in Patients with Type 2 Diabetes.

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Abstract: Background: The interaction between type 2 diabetes and periodontal disease underscores the importance of exploring dietary interventions that could mitigate inflammation and improve periodontal health in diabetic patients. Materials and methods: This randomized controlled trial included 100 patients with type 2 diabetes who were equally divided into two groups: Group A (low-carbohydrate diet) and Group B (control group). Patients in Group A followed a low-carbohydrate diet for 12 weeks, while Group B maintained their regular dietary habits. Periodontal health was assessed using clinical parameters such as probing depth (PD) and clinical attachment level (CAL), and inflammation was measured by analyzing levels of C-reactive protein (CRP) and interleukin-6 (IL-6). Statistical analyses were performed using appropriate tests. Results: After 12 weeks, Group A exhibited significant improvements in periodontal health compared to Group B. The mean PD reduction was 0.5 mm in Group A and 0.1 mm in Group B, with a corresponding mean CAL gain of 0.3 mm in Group A and no significant change in Group B. Inflammatory markers also showed favorable outcomes in Group A, with a decrease of 1.2 mg/L in CRP levels and 20% reduction in IL-6 levels. In contrast, Group B demonstrated minimal changes in inflammatory markers. The differences in PD, CAL, CRP, and IL-6 levels between the two groups were statistically significant ($P < 0.05$). Conclusion: The adoption of a low-carbohydrate diet for 12 weeks demonstrated significant improvements in periodontal health and reduction of inflammation in patients with type 2 diabetes.

Keyword: C-reactive Protein, Clinical Parameters, Inflammation, Interleukin-6, Low-Carbohydrate Diet, Periodontal Health, Randomized Controlled Trial, Type 2 Diabetes.

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