

Does Non-Surgical Periodontal Treatment Improve Glycemic Control? A Comprehensive Review of Meta-Analyses

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ABSTRACT

Aims: Periodontal treatment is reported to be associated with an improved periodontal condition in diabetic patients. Therefore, a comprehensive review of meta-analyses was conducted to evaluate whether periodontal treatment can improve glycemic control in patients with type 2 diabetes.

Materials and methods: The search on electronic databases included PubMed-Medline, Cochrane Library, Scopus, and LILACS databases. The methodological quality of the systematic reviews was evaluated using AMSTAR, and primary studies were performed in accordance with PRISMA guidelines. The weighted mean difference (WMD) was calculated, nested in a random-effects model with corresponding Z scores, p-values, and 95% confidence intervals.

Results: A total of 11 meta-analyses were included, and a meta-analysis of 11 primary studies comprising a total of 1341 participants was carried out. All the studies evaluated glycosylated hemoglobin (Hb1Ac), and 6 of the 11 publications evaluated fasting plasma glucose (FPG). The AMSTAR scores ranged between 9 and 11, with a median of 10.3. Statistically significant reductions were observed in HbA1c values [-0.32% (3.5 mmol/mol); 95%CI: -0.50 to -0.15] and FPG values (-11.59 mg/dl; 95%CI: -15.16 to -8.01).

Conclusions: The review of currently available clinical studies concludes that periodontal treatment is associated with improved glycemic control in patients with type 2 diabetes. New guidelines, including periodontal treatment as a routine public health measure to improve glycemic control in diabetic patients, would be of great value.

Keywords: Blood glucose control; Periodontal diseases; HbA1c; Diabetes Mellitus; Periodontal therapy; Overviews.

INTRODUCTION

The prevalence of periodontal disease in adults over 65 years examined in the 2009-2010 United States National Health and Nutrition Examination Survey (NHANES) was 70.1% (Eke *et al.*, 2012). Chronic periodontitis may

lead to the development of severe systemic disease burden (Shangase *et al.*, 2013), and can affect general health (Hung *et al.*, 2013). It has been reported that chronic periodontitis is associated with several systemic diseases such as rheumatoid arthritis (Chen *et al.*, 2013) and cardiovascular disease (Holtfreter *et al.*, 2013). Over the last 20 years, a series of studies have reported on the bidirectional association between periodontal disease and diabetes, and indicated that patients with diabetes have an increased risk of developing periodontal disease

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