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The oral health implications of changes in the diabetic oral microbiome

Jessica Gonzva [1], Beatriz Loibl [2,*], Maria Inês Guimarães [3,4,5,6], Beatriz Lopes [2], Hugo Ferraz [2], Augusta Silveira [3,4,5,6] and Ricardo Magalhães [3,7]

[1] FCS-UFP, Fernando Pessoa University, 4240-004, Porto, Portugal
[2] FCS-UFP, Fernando Pessoa University, 4240-004, Porto, Portugal; Research Group DELEQOL: Health-UFP
[3] RISE-Health, Fernando Pessoa School of Health
[4] FP-I3ID, FP-BHS, Fernando Pessoa Teaching and Culture Foundation, Rua Carlos da Maia 296, 4200-150 Porto, Portugal
[5] CEISUC, Centre of Investigation in Technologies and Centre for Health Studies and Research of the University of Coimbra, 3004-512 Coimbra, Portugal
[6] INMLCF, I. P., North Delegation - National Institute of Legal Medicine and Forensic Sciences, I. P., Jardim Carrilho Videira 4050-167 Porto, Portugal
[7] FP-I3ID, Fernando Pessoa Education and Culture Foundation, Rua Delfim Maia 334, 4200-253 Porto, Portugal

* Correspondence: 42806@ufp.edu.pt

Abstract

Background: Diabetes mellitus (DM) significantly impacts oral health by modulating periodontal microbiota, impairing salivary defense mechanisms, and altering gingival fluid dynamics [1]. Evidence suggests a bidirectional relationship between DM and periodontitis, characterized by dysbiosis and exacerbated inflammatory responses [2], underscoring the need for precision-targeted therapeutic strategies. **Objective:** The present investigation aims to ascertain the impact of DM on alterations in the oral microbiome, and its clinical ramifications for oral health, particularly with regard to periodontal complications and xerostomia. **Methods:** A rigorous bibliographic search was conducted in scientific databases, namely PubMed, Google Scholar, Web of Science, B-on, and Scielo. The PICO method was applied to formulate a precise clinical question by establishing clear inclusion and exclusion criteria. Observational, case-control, cross-sectional and descriptive studies published after 2004 and written in Portuguese, English or French were considered. A total of 1254 articles were previously identified, and after a strict application of the criteria and a complete reading of the texts, only 8 studies were considered eligible and included in this review. **Results:** Research consistently demonstrates that individuals with diabetes exhibit a higher prevalence and greater severity of periodontal disease, as evidenced by increased clinical periodontal parameters [2,3]. These include mean periodontal probing depth (PPD), clinical attachment loss (CAL), a higher gingival bleeding index and higher gingival crevicular fluid volume (GCF-V), in comparison to individuals without DM. With regard to xerostomia, the prevalence was found to be significantly higher among diabetic patients, as well as a marked reduction in salivary flow and an increase in salivary glucose levels, with a positive correlation with inadequate glycemic control as assessed by glycated hemoglobin (HbA1c) [1]. **Conclusions:** The analysis of the scientific literature demonstrates that DM is associated with significant changes in the oral microbiome that increase the risk and severity of oral complications, particularly periodontal disease and xerostomia [1-3]. These complications are caused by multiple factors, including altered inflammatory responses, reduced salivary flow and specific metabolic deregulation, which severely compromise oral health and consequently the quality of life of diabetic patients.

Keywords: diabetes; oral microbiome; periodontal disease

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