

Studies on the Associations between Dental Caries, Periodontal Disease and Different Systemic Conditions

Akademisk avhandling

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av

Hani T. Fadel
BDS, MSc

Fakultetsopponent:
Professor Börn Klinge
Department of Dental Medicine,
Karolinska Institutet
Huddinge

Avhandlingen är av sammanläggningstyp och baseras på följande fyra delarbeten:

- I. Fadel H, Al-Hamdan K, Rhbeini Y, Heijl L, Birkhed D. Root caries and risk profiles using the Cariogram in different periodontal disease severity groups. *Acta Odontologica Scandinavica*. 69: 118-124, 2011.
- II. Fadel HT, Al-Kindy KA, Mosalli M, Heijl L, Birkhed D. Caries risk and periodontitis in patients with coronary artery disease. *Journal of Periodontology*. 82: 1295-1303, 2011.
- III. Fadel HT, Flytström I, Calander A, Bergbrant I, Heijl L, Birkhed D. Profiles of dental caries and periodontal disease in individuals with or without psoriasis. Submitted for publication.
- IV. Fadel HT, Pliaki A, Gronowitz E, Mårild S, Ramberg P, Dahlén G, Yucel-Lindberg T, Heijl L, Birkhed D. Clinical and biological indicators of dental caries and periodontal disease in adolescents with or without obesity. In manuscript.

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UNIVERSITY OF GOTHENBURG

Abstract

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Correspondence to: Hani T. Fadel, Department of Cariology, Institute of Odontology, The Sahlgrenska Academy, University of Gothenburg, Box 450, SE-405 30 Gothenburg, Sweden E-mail: hani.fadel@yahoo.com

Background and aims: Dental caries and periodontal disease are the two most common oral diseases in man. Evidence shows that they may be directly or indirectly related to each other and to other systemic conditions. The aims of this thesis were to study: 1) the root caries experience and risk in different periodontal disease severity groups, 2) the experience and risk of dental caries and the experience of periodontal disease in individuals with or without coronary artery disease (CAD), 3) the experience and risk of dental caries and periodontal disease in individuals with or without psoriasis and 4) clinical and biological indicators of dental caries and periodontal disease in adolescents with or without obesity.

Methodology: A total of 437 participants were examined cross-sectionally: 112 individuals with periodontal disease (Study I), 54 individuals with CAD + 73 controls (Study II), 89 individuals with psoriasis + 54 controls (Study III) and 27 individuals with obesity + 28 controls (Study IV). Investigations included questionnaires, saliva sampling, radiographs, oral clinical examinations (Studies I–IV), assessment of plaque-pH changes following a glucose rinse, sub-gingival plaque sampling and the collection of samples from the gingival crevicular fluid (GCF) (Study IV). Two computer programs were used to illustrate the caries risk profiles (Studies I–III) and the periodontal disease risk profiles (Study III) after analysing the related data.

Results and conclusions: In Study I, the participants were grouped into three categories according to periodontal disease severity: gingivitis (n=44), mild to moderate periodontitis (n=33) and severe periodontitis (n=35). The prevalence of root caries or fillings in the three groups was 9%, 15% and 29%, respectively (ns). No significant differences in caries risk were observed between the three groups. Of the caries risk indicators examined, only the number of remaining teeth, gingival recession and the presence of one or more systemic conditions differed between the three groups ($p < 0.05$). The difference in systemic diseases was no longer significant after controlling for confounders. In Study II, the mean number of remaining teeth in individuals with CAD and controls was 22 ± 7 and 26 ± 3 , respectively ($p < 0.001$). No significant differences in decayed or filled teeth or in caries risk were observed in individuals with or without CAD. However, the CAD group had lower salivary secretion, sub-optimal oral hygiene and used less fluoride. Fifty-two percent of the individuals with CAD, as opposed to only 11% of the controls, were regarded as moderate to severe periodontitis cases ($p < 0.05$). In Study III, the psoriasis group included more overweight/obese individuals than controls ($p < 0.05$). The mean number of remaining teeth in individuals with psoriasis and controls was 24 ± 4 and 26 ± 3 , respectively ($p < 0.05$). Psoriasis individuals had lower salivary buffer capacity and radiographic alveolar bone levels than controls ($p < 0.05$). Differences with regard to the latter were no longer significant after controlling for confounders. No significant differences with regard to decayed or filled teeth, periodontal disease severity, or risk of caries and periodontal disease were observed between the groups. In Study IV, more caries and gingival inflammation were observed in adolescents with obesity. Of the clinical and biological indicators examined, salivary secretion rate was lower and sIgA levels were higher in the obesity group compared with controls. No differences between the groups were observed with regard to any of the remaining indicators, including inflammatory markers in GCF and sub-gingival microbial profiles.

Keywords: adipokines, coronary artery disease, dental caries, obesity, periodontal disease, psoriasis, risk assessment

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