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Oral Presentations

Research session | Diagnosis

O001

Self-report assessment of periodontitis: the periodontal screening score development

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Background & Aim: The development of low-cost and low-resource measures for periodontitis would be valuable to facilitate population-based studies, which are necessary for screening and assessing periodontal conditions over time, as well as to investigate the link between periodontitis and other diseases in large scale surveys. The present study aims to derive from a validated questionnaire a periodontal screening score (PESS), intended as an user-friendly tool to identify individuals at risk of periodontitis in epidemiological studies.

Methods: A French 12-item self-reported questionnaire was developed by translating English questions previously used for periodontitis screening and surveillance. A cognitive evaluation of the translated questionnaire was conducted in 80 individuals to improve comprehension and graphics. Then, the questionnaire was validated in a sample of 232 individuals receiving a full-mouth periodontal exam, including the recording of probing pocket depth and clinical attachment level. Case definition was based on the American Academy of Periodontology/Centers for Disease Control and Prevention criteria. Logistic regression analyses and C-statistics were used to assess the validity and accuracy of the questionnaire and to develop the PESS.

Results: The sample was constituted of 109 individuals with severe periodontitis, who were compared with 123 individuals with no/moderate periodontitis. The overall population had a mean age of 46.17 ± 12.6 years; 29.1% were smokers. The majority (58.7%) of the examined individuals had a high level of education (master degree or more). The self-report questionnaire had moderate-to-high accuracy in identifying severe cases; the PESS (calculated on 5 self-report items, age, and smoking) showed a sensitivity of 78.9% and a specificity of 74.8%, with an area under the receiver operating characteristics curve of 0.821.

Conclusion: The PESS might represent a valuable and accurate tool to screen for severe periodontitis at the population level. Further studies are awaited to validate the PESS in larger populations.

O002

Diagnostic judgement and treatment decisions in periodontology by periodontists and general dental practitioners in Sweden – A questionnaire based study

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Background & Aim: To evaluate if periodontists are coherent in their judgement and treatment decisions of patients with different periodontal conditions and to compare to a previous investigation on general dental practitioners' (GDPs).

Methods: Eighty-six periodontists participated in a questionnaire study based on four patient cases: a) Generalized bone loss but minimal signs of inflammation (well-maintained), b) Generalized bone loss and signs of inflammation (periodontitis), c) No bone loss and minimal signs of inflammation (healthy), and d) No bone loss but with signs of inflammation (gingivitis). Periodontists could judge each patient as healthy or diseased, propose a diagnosis, evaluate treatment needs, propose a treatment plan and assess the prognosis. Comparison between periodontists considered: (a) level of experience, and (b) judgement of each patient case as healthy or diseased. Periodontists were additionally compared to a previous sample of GDPs (n = 74).

Results: Periodontists' response rate was 77%. The diagnostic judgement of the four patient cases showed rather large variation both among periodontists and GDPs. Periodontists' intention to treat and prognostic assessment depended on their judgment of each patient, as healthy or diseased ($p < 0.05$). Level of experience did not influence periodontists' judgement, treatment decisions and prognostic assessment. GDPs intended to treat 3 out of 4 patient cases (except periodontitis case) more often and were more pessimistic in their prognostic assessment of patients with no bone loss ($p < 0.05$).

Conclusion: Both periodontists and GDPs are defining periodontal health and disease differently, which affects treatment decisions and prognostic assessment. Therefore, there is a need to clarify the definition of periodontal health and disease to improve the coherence in judgement.

O003

Non-invasive pocket depth measurements with ultrasound imaging and a food-grade squid ink contrast agent

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Background & Aim: Periodontal probing is a useful diagnostic tool to estimate the periodontal pocket depth and assess the status of periodontal disease, but is limited by systematic and random errors. Here, we used photoacoustic imaging in tandem with a food grade cuttlefish contrast agent to measure pocket depths in swine models and then compared this to Williams probe.

Methods: Both photoacoustic and ultrasound image were collected before and after application of the contrast agent to a swine model (n = 27 teeth). Spectral data was collected at both 680 and 800 nm.

Results: The mean size of melanin nanoparticles were first shown to be pH stable. The contrast agent had similar photoacoustic signal at 800 nm and 680 nm, but the signal from endogenous stains decreased 50% at 800 nm. The photoacoustic signal of contrast agent in the pocket started from the gingival margin and extended along the root. We validated the photoacoustic measurements with a gold-standard Williams probe and Bland-Altman analysis. The Bland-Altman plots show that 97% of our samples fell within 1.96 standard deviations of the differences between the depths measured by photoacoustic imaging

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