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Oral Inflammation and Cardiovascular-Related Outcomes in a Nordic PopulationR. Bertelsen^{1,2}, A. Røsland¹, T. Gislason⁴, M. Holm⁸, C. Janson³, R. Jogi⁵, L. Modig⁶, V. Schlünssen⁷, A. Johannessen¹

¹University of Bergen, Bergen, Norway, ²Oral Health Center of Expertise Western Norway, Bergen, Norway, ³Uppsala University, Uppsala, Sweden, ⁴University of Iceland, Reykjavik, Iceland, ⁵University of Tartu, Tartu, Estonia, ⁶Umeaa University, Umeaa, Sweden, ⁷Aarhus University, Aarhus, Denmark, ⁸University of Gothenburg, Gothenburg, Sweden

Objectives Bleeding gums can be an indication of ongoing inflammation in the oral cavity and may develop into periodontitis if left untreated. Inflammatory bacteria from the oral cavity have been found in cardiovascular plaque and poor periodontal health has been associated with cardiovascular events. We aimed to explore in a general population-sample whether self-reported gum-bleeding and periodontitis were associated with cardiovascular-related conditions.

Methods The Respiratory health in Northern Europe (RHINE) study had data on self-reported gum-bleeding frequency from baseline in 2010-12 (RHINE III) and periodontitis status and cardiovascular outcomes reported 10 years later (RHINE IV) for 9622 participants (median age 62 years). Associations were explored with logistic regression, adjusted for sex, age, smoking, BMI, and study centre.

Results Reporting to “always” or “often” bleed from the gums during toothbrushing at baseline was associated with doctor-diagnosed atrial fibrillation (7.6%): aOR=1.32 (95% CI: 1.21, 1.45) and leg oedema (18.9%): aOR=1.82 (1.37, 2.41) 10 years later. No associations were seen for stroke or angina. Overall, 44% and 31% of those reporting “always or often” (n=339) or “sometimes” (n=1601) gum-bleeding at baseline reported dentist-diagnosed periodontitis at follow-up in RHINE IV. Periodontitis was reported by 20.1% of the participants in RHINE IV, similar for men (20.7%) and women (19.6%). A cross-sectional exploration of RHINE IV data, found periodontitis to be associated with diagnoses of hypertension (36.8%) aOR=1.07 (1.00, 1.14), atrial fibrillation aOR=1.16 (1.01, 1.32) and leg oedema aOR=1.17 (1.02, 1.35).

Conclusions Frequent gum-bleeding (as a marker of gingival inflammation), was associated with increased risk of atrial fibrillation and leg oedema 10 years later. Self-reported gum-bleeding at baseline was a strong predictor for periodontitis at follow-up 10 years later. Poor oral hygiene is an easily modifiable risk factor and therefore crucial for public health. Our results support a major preventive potential for improved dental care.