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The link between oral health and glaucoma in the Finnish population

Glaucoma is the leading cause of irreversible blindness worldwide. The disease is characterized by damage to the optic nerve, resulting in distinct visual field deficits corresponding to the damaged areas. Local inflammatory responses are implicated in the pathology of glaucoma. One such area of current research is the role of the oral microbiome and the effect of dental conditions on the development and progression of glaucoma. FinnGen is a research project that collects genomic and health record data to better understand the genetic basis of disease using multiple Finnish biobanks. The information is publicly available on the web. Using Ristey's R10 to view FinnGen electronic health record data, we examined the relationship between having certain dental billing codes and then developing glaucoma at a later time. We obtained hazard ratios (HRs) for developing primary open-angle glaucoma (POAG) measured at two different time intervals, (1) between 1-5 years and (2) any/all years, after meeting criteria for inclusion in the following Ristey's R10 endpoints: chronic periapical parodontitis; chronic periodontitis; dental caries 1 and operation codes, only avohilmo; dental caries 2 and operation codes, only avohilmo; dental caries 3 and operation codes, only avohilmo; dental pulpitis 1, only avohilmo; dentinal caries, gingivitis and periodontal disease, parodontitis or operation codes. For both time horizons and all dental conditions endpoints, we observed HRs ≥ 2 with low p-values, the largest HRs being dental pulpitis (HR = 5.05, $p = 5.15 \times 10^{-179}$) for any/all years and dental caries 2 (HR = 4.70, $p = 1.03 \times 10^{-26}$) for incidence between 1-5 years, respectively. Overall, this data suggests that dental conditions, specifically diseases of tooth, gingiva, and periodontium, are associated with an increased risk of developing primary open-angle glaucoma.