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Literature Abstract

Tooth Loss, Periodontal Disease, and Cognitive Decline in the Atherosclerosis Risk in Communities (ARIC) Study

Growing evidence has linked tooth loss and periodontal disease to a greater age-related cognitive decline and to neurodegenerative diseases, such as Alzheimer's disease. Thus, the objective of this study was to establish if tooth loss and current inflammatory state of periodontal disease predicted 8-year changes in cognitive function among community-dwelling, late-middle-aged adults in the Atherosclerosis Risk in Communities (ARIC) study. Prospective data was obtained from the ARIC study from a group of middle-aged adults aged 52 to 75 years from 1996 to 1998 at two study sites. Oral health measures, consisting of collection of intraoral data such as periodontal probing as per the BGI classification, GCF, dental plaque, and serum were examined in 558 of 785 dentate patients. Cognitive function was also evaluated by means of a delayed word recall (DWR), digit symbol substitution, and word fluency (WF). The generalized estimating equations method was used to analyze repeated measures of cognitive scores with adjustment for sociodemographic characteristics and cardiovascular risk factors, alongside directed acrylic graphs and change-in-estimate procedure. Overall, in a total of 911 study participants, 13.8% were found to be edentulous. Of the dentally examined participants, 13% had periodontal pockets (≥ 4 mm) with severe bleeding. During the subsequent visit, DWR and WF scores were lower in edentulous compared to dentate people, whereas other oral health measures were not associated with cognitive function. Mean values declined over time for all three cognitive measures, although poor oral health conditions were not associated with greater degree of decline in cognitive function. It is then concluded that complete tooth loss was significantly associated with lower cognitive performance. The author listed four possible mechanisms that have been proposed for the relation between poor oral health and lower cognitive function: (i) residual confounding by sociodemographic factors or other environmental factors, (ii) nutritional deficiency resulting from tooth loss (tooth loss is often a consequence of severe periodontal disease), (iii) increased systemic inflammatory response, and (iv) an adverse impact of cognitive decline on oral hygiene. However, neither edentulism, number of teeth, or periodontal disease predicted greater subsequent cognitive decline.

Naorungroj S, Schoenbach VJ, Wruck L, Mosley TH, Gottesman RF, Alonso A, Heiss G, Beck J, Slade GD. *Community Dent Oral Epidemiol* 2015;43:47–57. **References:** 35 **Reprints:** Gary D. Slade, Department of Dental Ecology, School of Dentistry, UNC, Koury Oral Health Sciences Building, Room 4501E, CB#7455, Chapel Hill, NC 27599-7455, USA. Fax: 919-966-5339. Email: gary_slade@unc.edu—Sheralyn Quek, Singapore

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