summary

No convincing evidence of a causal association between periodontal disease and CHD risk

Hujoel PP, Drangsholt M, Spiekerman C, DeRouen TA. Periodontal disease and coronary heart disease risk. *JAMA* 2000; 284:1406–1410

Objective To evaluate the risk of coronary heart disease (CHD) in people with periodontitis, gingivitis or periodontal disease.

Design Prospective cohort study.

Setting The first National Health and Nutrition Examination Survey (NHANES) follow-up study, conducted in 1982–1984, 1986, 1987 and 1992.

Outcome measures First occurrence of death or hospitalisation due to CHD or revascularisation procedures, obtained from death certificates or medical records, by baseline periodontal status.

Results There were 468 CHD fatalities, 1022 hospitalisations with CHD diagnosis and 155 cases of coronary revascularisation among 1265 individuals who suffered at least one CHD event. Hazard ratios are shown in the table below.

Adjustment	Hazard ratio (95% CI)	
	CHD events	CHD fatalities
Unadjusted	2.66 (2.34–3.03)	3.09 (2.50–3.81)
Demographics, socio-economic status	1.24 (1.08–1.43)	1.28 (1.02–1.61)
Demographics, socio-economic status, cardiovascular risk factors	1.14 (0.98–1.33)	1.19 (0.91–1.55)
Demographics, socio-economic status, cardiovascular risk factors, sample design	1.14 (0.96–1.36)	1.20 (0.90–0.61)

Conclusion This study did not find convincing evidence of a causal association between periodontal disease and CHD risk.

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Commentary

This well-executed study examines the putative relationship between periodontal disease and CHD, and is the third in a series of new studies by different investigators, examining different populations, using different analytical techniques. All three come to the same conclusion: there is little evidence to support a causative relationship between periodontal disease and CHD. All three studies are reviewed and commented on in this issue of *Evidence-Based Dentistry*.

The three studies are comforting in that they all come to similar conclusions and confirm an early, controver-

sial (at the time) study by Joshipura *et al.*¹ The three studies also raise philosophical, educational and emotional issues. From a Western viewpoint we use, perhaps unknowingly, Sir Karl Popper's philosophy. That is, science cannot prove that a theory is true, but it can show that a prediction is false. If the scientist tests a prediction and finds it to be false, the scientist uses *modus tollens* to conclude that the theory cannot be true. This is what is occurring in the evolution of thought on the relationship of periodontal disease and CHD.

From an educational and emotional viewpoint, the stance whereby clinical scientists cannot prove cause-effect

unnerves both students and patients. With a little reflection at the outset, downplaying initial low-level evidentiary results will ultimately better serve the public interest.

1. Joshipura KJ, Rimm EB, Douglass CW, Tirichopoulos D, Ascherio A, Willett WC. Poor oral health and coronary heart disease. *J Dent Res* 1996; 75:1631–1636.

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