

Poor Childhood Dental Care: A Risk Factor for the Development of Coronary Artery Disease and Potential New Target for CAD Prevention

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Poor Childhood Dental Care: A Risk Factor for the Development of Coronary Artery Disease and Potential New Target for CAD Prevention

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Background:

- A growing body of evidence links periodontal disease (PD) with the development of coronary artery disease
- The mechanism of this link is believed to involve the effect of chronic inflammation on CAD development
- Recent studies have shown that aggressive treatment of periodontal disease can improve endothelial dysfunction and markers of CAD severity
- In the present study we investigated whether oral hygiene practices that are associated with reduced development of periodontal disease are also associated with reduced CAD

Methods:

- Patients (n=223) in a general dental office were asked to complete a questionnaire assessing CAD history and risk factors, periodontal disease history, and childhood dental prophylaxis and treatment
- “Regular childhood dental care” was defined as regular dental cleanings (2x/year) during childhood and adolescence
- Associations between CAD and both periodontal disease and childhood dental habits were measured using students t-test and multivariable logistic regression

Results:

- Ninety-one patients (41%) had CAD and 72 (32%) had PD. Significantly more patients with PD reported a history of CAD vs. those without PD (51% vs. 29%, p=0.002) (Figure 1)
- Patients who reported a history of regular dental checkups and prophylaxis as children had significantly less CAD compared to those without regular childhood dental care (24% vs. 54%, p<0.001) (Figure 2)
- There was no difference in prevalence of CAD among patients who reported regular dental brushing in childhood vs. those who did not (33% vs. 40%, p=NS), suggesting that professional dental prophylaxis was required for achievement of a CAD-protective effect (Table2)
- In a logistic regression model, poor childhood dental care remained strongly associated with CAD when the traditional risk factors of smoking, hypertension, family history, and male sex were controlled for (Figure 3)

Table 1. Demographics

Age in years (Average)	36-88 (58)
Gender – Male (%)	116 (53)
Gender – Female (%)	102 (47)
Cigarette or tobacco smokers (%)	89 (41)
Periodontal disease (%)	68 (32)
Family history of CAD (%)	133 (61)
Peripheral vascular disease (%)	74 (34)
Subjects with CAD (%)	89 (41)
Subjects with regular childhood dental visits (%)	122 (56)
Subjects with regular adult dental visits (%)	201 (92)
Subjects who brushed more than twice a day as child (%)	131 (60)
Subjects who brushed more than twice a day as adults (%)	150 (69)
Subjects who floss at least once a day (%)	89 (41)
Subjects who floss more than once day (%)	72 (33)

Table 2. Childhood Dental Care Remains Protective in a Mult. Logistic Regression Model

Variable	Odd Ratio	%5CI Lower	95% CI Upper	P value
Age (yrs)	1.073	1.039	1.107	<0.001
Family History	3.793	1.785	8.061	<0.001
Child Dental Prophylaxis	0.318	0.159	0.635	0.001
Smoking	2.802	1.423	5.519	0.003
Female Sex	0.534	0.272	1.049	0.069
Period Diagnosis	1.646	0.836	3.239	0.149
Current Dental Care	0.663	0.225	1.952	0.455
Child Self Dental Care	1.125	0.560	2.261	0.740

Figure 1. Periodontal Disease is Associated with Increased CAD

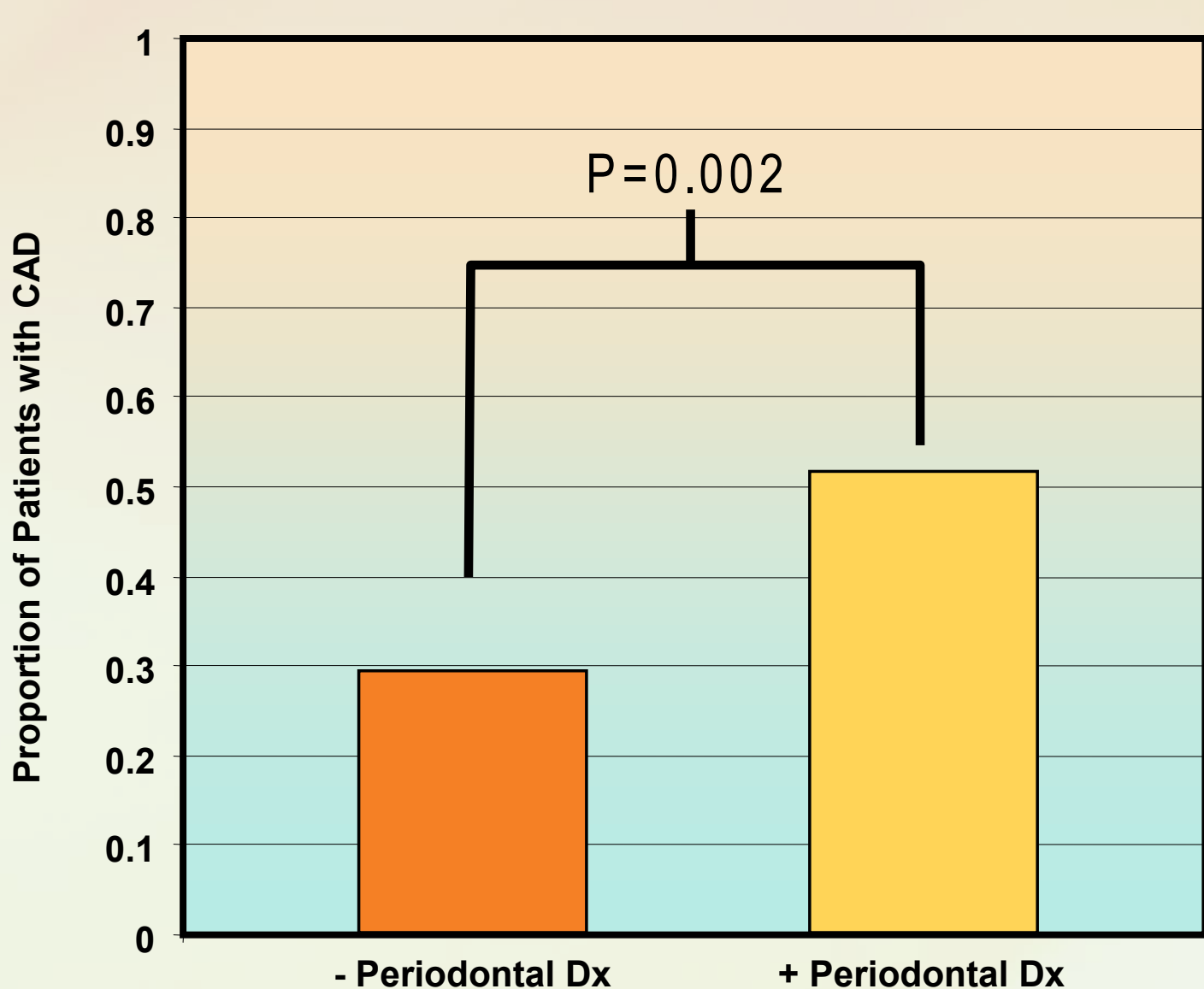


Figure 2. Adequate Childhood Dental Care History Is Associated with Decreased CAD

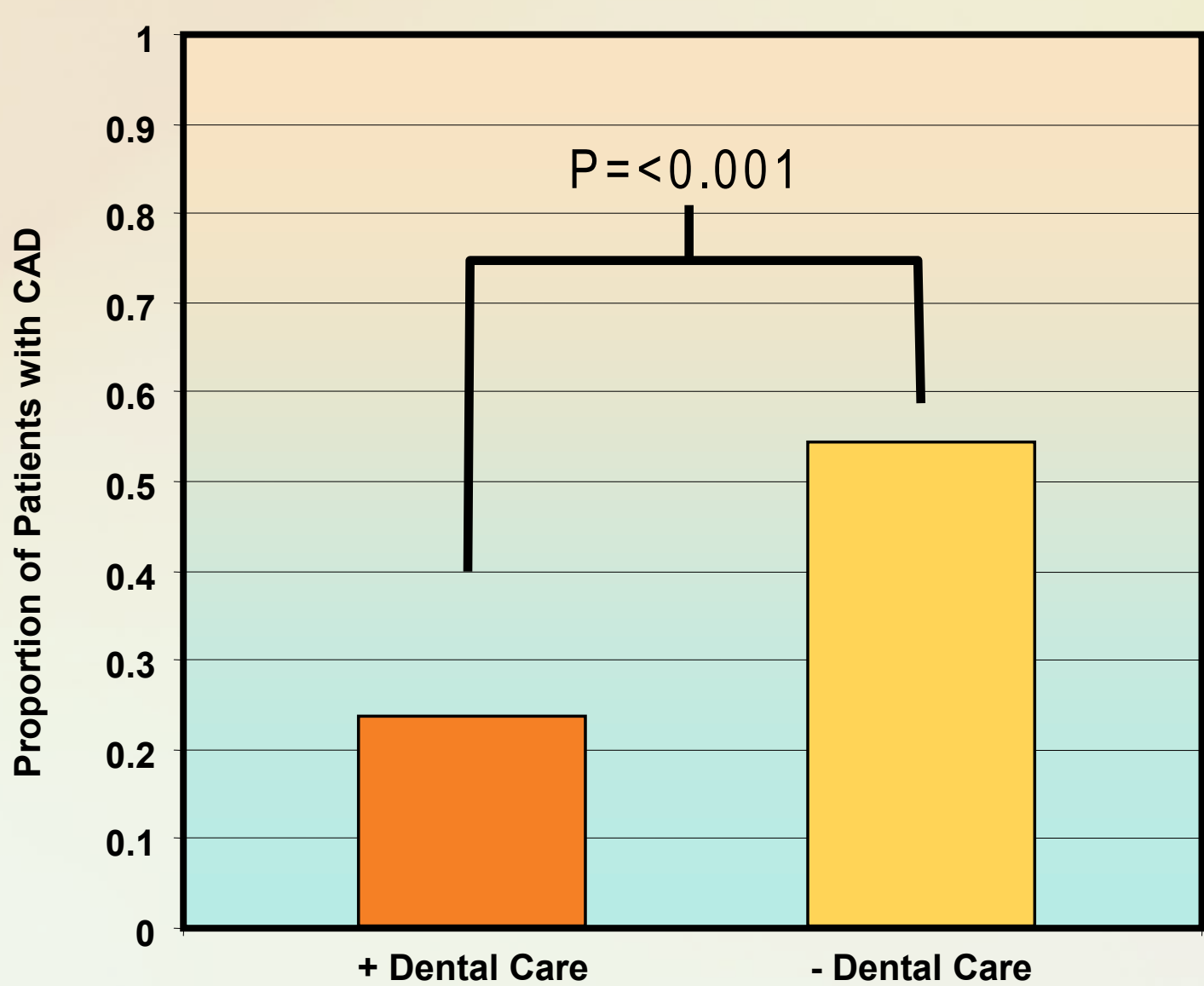
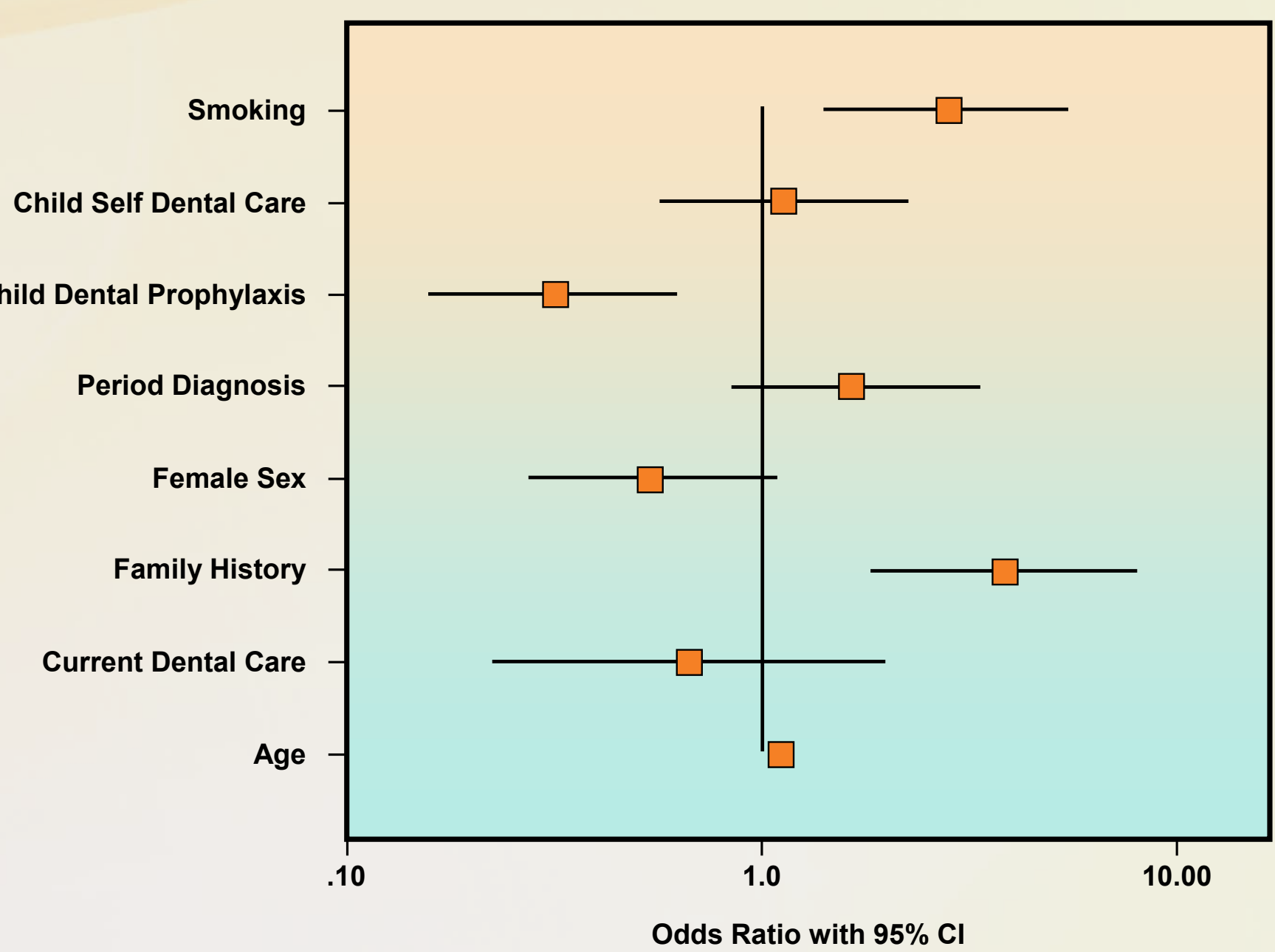


Figure 3. Adequate Childhood Dental Care History Is Associated with Decreased CAD



Conclusions:

- A history of adequate childhood dental care had a strong independent protective influence on the development of CAD
- This effect did not appear to be wholly due to the increased development of periodontal disease
- Further studies will assess the relationship between childhood dental care and the presence of subclinical atherosclerosis in adolescents

Bibliography:

- Friedewald VE, Kornman KS, Beck JD, et al. The American Journal of Cardiology and Journal of Periodontology Editors’ Consensus: Periodontitis and Atherosclerotic Cardiovascular Disease. Am J Cardiol 2009;80:1021-1032
- Taylor GW, Borgnakke WS. Self-Reported Periodontal Disease: Validation in an Epidemiological Survey. J Periodontol 2007;78:1407-1420
- Eleter JR, Champagne CM, Offenbacher S, Beck JD. Relationship of Periodontal Disease and Tooth Loss to Prevalence of Coronary Heart Disease. J Periodontol 2004;75:782-790