

Metabolic Syndrome and Periodontal Disease Progression in Men

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Appendix

Appendix Table 1. Baseline Characteristics of Cohort of Dental Longitudinal Study Participants by Number of Positive MetS Components (NCEP-ATP III Criteria).

Characteristic	Number of Positive MetS Conditions at Baseline				
	0	1	2	3	4 or 5
Number of participants	103	166	213	153	125
Age, y ^a	59 ± 8	60 ± 8	62 ± 8	61 ± 9	63 ± 9
Number of teeth ^a	23 ± 5	22 ± 6	21 ± 6	21 ± 7	21 ± 6
Number of teeth with specified conditions					
≥1 decayed/filled surface	13 ± 5	13 ± 5	13 ± 5	12 ± 5	13 ± 5
Bleeding on probing ^a	5 ± 6	6 ± 6	6 ± 6	7 ± 7	9 ± 7
Plaque on interproximal plus at least 1 other surface	1.8 ± 4.3	2.3 ± 5.2	2.2 ± 4.8	2.6 ± 5.7	2.5 ± 5.1
Pocket depth ≥5 mm (n) ^a	0.8 ± 2.4 (103)	1.0 ± 1.9 (164)	1.0 ± 2.0 (212)	1.5 ± 2.9 (152)	2.1 ± 3.6 (120)
Clinical attachment loss ≥5 mm (n) ^a	1.2 ± 3.0 (96)	1.6 ± 3.0 (151)	1.9 ± 3.1 (196)	1.9 ± 3.5 (145)	2.5 ± 3.7 (118)
Alveolar bone loss ≥40% (n)	0.9 ± 2.1 (98)	1.0 ± 2.1 (153)	1.0 ± 1.9 (201)	1.2 ± 2.0 (146)	1.1 ± 1.7 (115)
Mobility ≥0.5 mm ^a	0.5 ± 1.3	0.5 ± 1.4	0.7 ± 1.7	1.0 ± 2.1	0.8 ± 1.6

Data are given as percentages or means ± SDs unless otherwise specified. NCEP-ATP III criteria include the presence of 3 or more conditions: hypertension, impaired glucose tolerance, low HDL, hypertriglyceridemia, or waist circumference ≥102 cm (men). HDL, high-density lipoprotein; IDF, International Diabetes Federation; MetS, metabolic syndrome; NCEP-ATP III, National Cholesterol Education Program Adult Treatment Panel III.

^aLinear trend ($P < 0.05$, from analysis of variance).

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Appendix Table 2. Adjusted Hazards Ratios for Periodontal Disease Outcomes Attributable to MetS Status, from Tooth-Level, Time-Varying Proportional Hazards Regression Models: Comparison of Inclusion versus Exclusion of Appropriate Baseline Periodontal Disease Values.

Disease Outcome	IDF Criteria ^a		NCEP-ATP III Criteria ^b	
	With Baseline Value	Without Baseline Value	With Baseline Value	Without Baseline Value
Pocket depth ≥ 5 mm	1.37 (1.14 to 1.65)	1.46 (1.21 to 1.75)	1.32 (1.08 to 1.60)	1.41 (1.16 to 1.70)
Clinical attachment loss ≥ 5 mm	1.19 (1.00 to 1.41)	1.24 (1.04 to 1.48)	1.12 (0.93 to 1.35)	1.16 (0.96 to 1.39)
Alveolar bone loss $\geq 40\%$	1.25 (1.00 to 1.56)	1.40 (1.09 to 1.78)	1.10 (0.88 to 1.39)	1.26 (0.97 to 1.62)
Tooth mobility ≥ 0.5 mm	1.43 (1.07 to 1.89)	1.47 (1.10 to 1.97)	1.43 (1.07 to 1.90)	1.45 (1.08 to 1.94)

Data are given hazards ratios (95% confidence intervals). All models were also adjusted for baseline age, highest level of education completed (high school, some college, college), and time-dependent values of cigarette use (no/yes), cigar use (no/yes), and plaque on tooth (none/interproximal only versus interproximal plus at least 1 other surface).

HDL, high-density lipoprotein; IDF, International Diabetes Federation; MetS, metabolic syndrome; NCEP-ATP III, National Cholesterol Education Program Adult Treatment Panel III.

^aIDF criteria include the presence of 3 or more conditions: hypertension, impaired glucose tolerance, low HDL, hypertriglyceridemia, or waist circumference ≥ 94 cm (men).

^bNCEP-ATP III criteria include the presence of 3 or more conditions: hypertension, impaired glucose tolerance, low HDL, hypertriglyceridemia, or waist circumference ≥ 102 cm (men).

Appendix Table 3. Characteristics of a Subset of Dental Longitudinal Study Participants at Examination Cycle 7, by Number of Positive MetS Components (IDF Criteria).

Characteristic	Number of Positive MetS Conditions at Baseline				
	0	1	2	3	4 or 5
Number of participants	23	76	156	181	206
Age, y	65 \pm 9	66 \pm 8	67 \pm 8	67 \pm 8	67 \pm 7
Number of teeth	22 \pm 6	22 \pm 6	21 \pm 7	21 \pm 6	20 \pm 7
Whole-mouth mean pocket depth, mm ^a	2.8 \pm 0.6	2.8 \pm 0.5	3.0 \pm 0.7	3.0 \pm 0.6	3.2 \pm 0.8
Whole-mouth mean interproximal pocket depth, mm ^a	2.5 \pm 0.6	2.5 \pm 0.4	2.7 \pm 0.6	2.7 \pm 0.5	2.9 \pm 0.7
Whole-mouth mean attachment loss, mm	3.6 \pm 1.3	3.7 \pm 1.2	3.9 \pm 1.1	3.7 \pm 1.2	4.0 \pm 1.4
Whole-mouth mean interproximal attachment loss, mm ^a	2.7 \pm 1.2	2.9 \pm 1.2	3.2 \pm 1.2	3.1 \pm 1.2	3.4 \pm 1.4

Data are given as percentages or means \pm SDs unless otherwise specified. IDF criteria include the presence of 3 or more conditions: hypertension, impaired glucose tolerance, low HDL, hypertriglyceridemia, or waist circumference ≥ 94 cm (men).

HDL, high-density lipoprotein; IDF, International Diabetes Federation; MetS, metabolic syndrome.

^aLinear trend ($P < 0.05$, from analysis of variance).

Appendix Table 4. Adjusted Hazards Ratios for Periodontal Disease Outcomes Attributable to MetS Status and per Each Additional Positive MetS Component, from Tooth-Level, Time-Varying Proportional Hazards Regression Models, Examination Cycles 7 through 12 at a Mean Follow-up of 11.8 ± 5.1 y.

Disease Outcome	IDF Criteria ^a		NCEP-ATP III Criteria ^b	
	MetS versus No MetS	Per Each Positive MetS Component	MetS versus No MetS	Per Each Positive MetS Component
Pocket depth ≥5 mm ^c	1.28 (1.04 to 1.58)	1.08 (0.98 to 1.19)	1.19 (0.96 to 1.48)	1.08 (0.98 to 1.20)
Interproximal pocket depth ≥5 mm ^d	1.33 (1.08 to 1.65)	1.14 (1.03 to 1.26)	1.20 (0.97 to 1.49)	1.14 (1.03 to 1.25)
Clinical attachment loss ≥5 mm ^e	1.08 (0.92 to 1.28)	1.01 (0.94 to 1.09)	1.06 (0.90 to 1.25)	1.03 (0.95 to 1.11)
Interproximal clinical attachment loss ≥5 mm ^f	1.03 (0.86 to 1.22)	1.02 (0.94 to 1.10)	1.04 (0.87 to 1.25)	1.03 (0.95 to 1.12)

Data are given hazards ratios (95% confidence intervals).

HDL, high-density lipoprotein; IDF, International Diabetes Federation; MetS, metabolic syndrome; NCEP-ATP III, National Cholesterol Education Program Adult Treatment Panel III.

^aIDF criteria include the presence of 3 or more conditions: hypertension, impaired glucose tolerance, low HDL, hypertriglyceridemia, or waist circumference ≥94 cm (men).

^bNCEP-ATP III criteria include the presence of 3 or more conditions: hypertension, impaired glucose tolerance, low HDL, hypertriglyceridemia, or waist circumference ≥ 102 cm (men).

^cAdjusted for baseline age, highest level of education completed (high school, some college, college), pocket depth score, and time-dependent values of cigarette use (no/yes), cigar use (no/yes), and plaque on tooth (none/interproximal only versus interproximal plus at least 1 other surface).

^dAdjusted for baseline age, education, clinical attachment loss score, and time-dependent values of cigarette use, cigar use, and plaque.

^eAdjusted for baseline age, education, alveolar bone loss score, and time-dependent values of cigarette use, cigar use, and plaque.

^fAdjusted for baseline age, education, mobility score, and time-dependent values of cigarette use, cigar use, and plaque.