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DENTAL CARIES AND GINGIVITIS IN MALES 17 TO 20 YEARS OLD (AT THE GREAT LAKES NAVAL TRAINING CENTER)

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A LARGE number of enlistees from various parts of the United States were examined at the Great Lakes Naval Training Center. It was felt that the analysis of dental disease in this group would provide a good cross sectional sampling of young adult American men. These young men came predominantly from the Central, Northeastern, and Southeastern states with a few from scattered areas west of the Mississippi River. All enlistees were males between the ages of 17 and 20 years and all were white.

METHODS AND MATERIALS

Naval enlistees entering the Great Lakes Naval Training Center during 1949 to 1950 were examined for dental decay and gingivitis without selection. All examinations were made by the same examiners—two for caries and one for gingivitis. The teeth and gingivae were examined using only a mouth mirror and explorer under excellent lighting conditions.

Caries.—The caries rate was determined according to the method outlined by Klein, Palmer, and Knutson.² Results were tabulated as the number of DMF (Decayed, Missing, Filled) teeth and tooth surfaces.

Gingivitis.—Gingivitis was assessed according to the method outlined by Schour and Massler;⁷ Massler, Schour and Chopra;⁶ and Massler and Savara.⁵ The results were tabulated as the number of papillary (P), marginal (M), and attached (A) gingival areas affected in each mouth. For statistical convenience, the results were also tabulated as the sum of P+M+A.

FINDINGS

Dental Caries Experience.—Table I and Fig. 1 show that the dental caries experience in this sample is fairly close to the averages previously reported by Klein and Palmer³ and by Hollander and Dunning.¹ The distribution of different degrees of caries is shown in Fig. 2.

The opinions and assertions of the authors are not to be construed as official or reflecting the views of the Navy Department or the Naval Service at large.

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TABLE I

DENTAL CARIES EXPERIENCE (DMF) AND GINGIVITIS (PMA) IN MALES 17 TO 20 YEARS OF AGE AT THE GREAT LAKES NAVAL TRAINING CENTER

AGE IN YEARS	NUMBER EXAMINED	AVERAGE NUMBER DMF* TEETH OR SURFACES PER PERSON*		% PERSONS AFFECTED BY GINGIVITIS	AVERAGE NUMBER GINGIVAL UNITS AFFECTED PER PERSON**				CORRELATION (r) BETWEEN DMF SCORE AND P+M+A SCORE
		TEETH	SURFACES		P	M	A	P+M+A	
17	1515	9.8	21.3	65	4.0	1.1	0.0	5.1	0.098
18	1485	12.0	27.2	66	4.0	1.1	0.0	5.1	0.17
19	696	11.7	25.1	66	4.1	1.3	0.0	5.4	0.13
20	347	12.5	27.8	68	4.6	1.2	0.0	5.8	0.127
17-20	4043	11.3	25.2	66	4.05	1.15	0.0	5.2	0.127

*D = number of decayed teeth or tooth surfaces

M = number of missing teeth or tooth surfaces

F = number of filled teeth or tooth surfaces

**P = number of gingival papillae affected

M = number of gingival margins affected

A = number of attached gingival areas affected

TABLE II. DISTRIBUTION OF GINGIVITIS IN MALES 17 TO 20 YEARS OF AGE AT THE GREAT LAKES NAVAL TRAINING CENTER

AGE (IN YEARS)	NUMBER EXAMINED	NO GINGIVITIS	SOME GINGIVITIS	DEGREE OF GINGIVITIS* (IN PERCENTAGE OF PERSONS AFFECTED)				
				VERY MILD	MILD	MODERATE	SEVERE	VERY SEVERE
17	1515	35.3%	64.7%	13.9%	14.9%	17.0%	9.8%	9.1%
18	1485	33.9	66.1	18.4	17.9	13.7	7.6	8.6
19	696	34.2	65.8	16.1	16.8	15.1	8.2	9.6
20	347	32.3	67.7	20.2	13.5	17.6	8.4	8.1
17-20	4043	34.3	65.7	16.5	16.2	15.5	8.6	8.9

*Very Mild = 1/2 Average or less (P+M+A; 1-2)

Mild = 1/2 to 1x Average (P+M+A; 3-5)

Moderate = 1x to 2x Average (P+M+A; 6-10)

Severe = 2x to 3x Average (P+M+A; 11-15)

Very Severe = More than 3x Average (P+M+A; 16+)

TABLE III. AVERAGE CARIES EXPERIENCE (DMF TEETH AND TOOTH SURFACES) IN PERSONS WITH DIFFERENT DEGREES OF GINGIVITIS

DEGREE OF GINGIVITIS*	NUMBER IN EACH CATEGORY	AVERAGE NUMBER DMF TEETH OR TOOTH SURFACES PER PERSON	
		TEETH	SURFACES
None	1387	11.01	24.27
Very Mild	666	11.56	26.10
Mild	655	12.25	27.67
Moderate	627	11.54	25.64
Severe	347	11.18	25.09
Very Severe	361	10.66	22.78
All	4043	11.3	25.2

*See Table II for more complete explanation.

Gingivitis Experience.—Table I and Fig. 1 show the average number of gingival units affected at each age level. The findings in this group compare very closely with the findings by Massler, Cohen, and Schour.⁴ The frequency distribution of different degrees of gingivitis is shown in Table II. Fig. 3 indicates that the distribution of different degrees of gingivitis is hyperbolic in contrast to the “normal” distribution of caries as shown in Fig. 2.

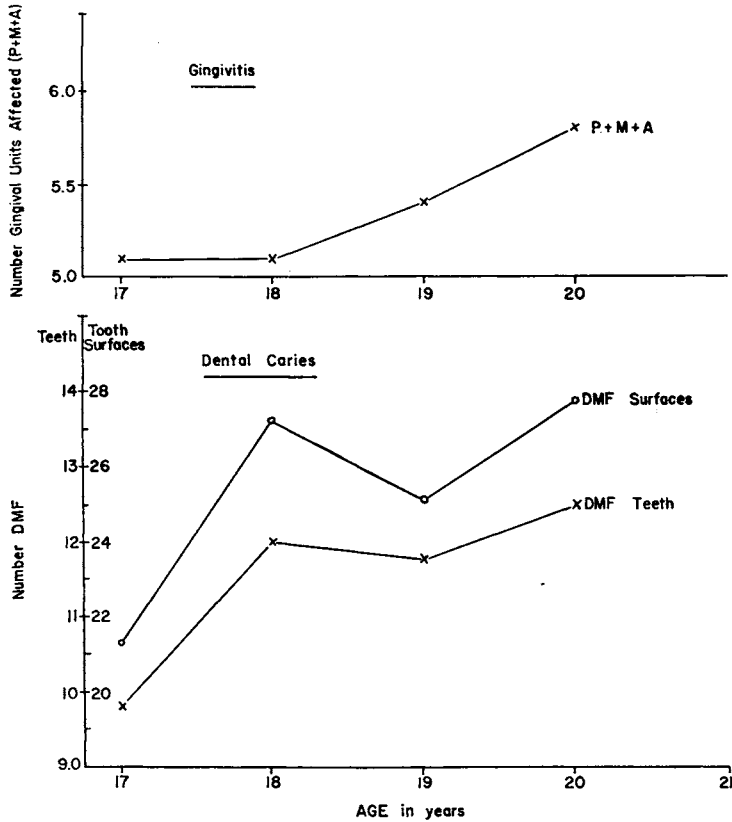


Fig. 1.—Incidence of dental caries (number of decayed [D], missing [M] and filled [F] teeth and tooth surfaces per person) and of gingivitis (number of papillary [P], marginal [M] and attached [A] gingival units affected per person) in 4,043 males, 17 to 20 years of age.

The Relation of Caries Experience and Gingivitis.—The relation between periodontal disease and dental caries has always been an intriguing clinical question. Clinical opinion holds that caries and periodontal disease are mutually exclusive. However, this does not mean that the same is also true in the relation between caries and gingivitis. Massler and Savara⁵ investigated the correlation between caries experience and gingivitis in teen-age children (aged 14 to 18 years) and discovered neither a positive nor negative relationship. The relationship was tested by (a) computing the coefficient of correlation between the average DMF score and P+M+A score (as in Table I), and (b) by computing the average DMF score in groups with none, mild, moderate and severe gingivitis

Distribution of Dental Caries (DMF Teeth)
in Males 17-20 Years of Age

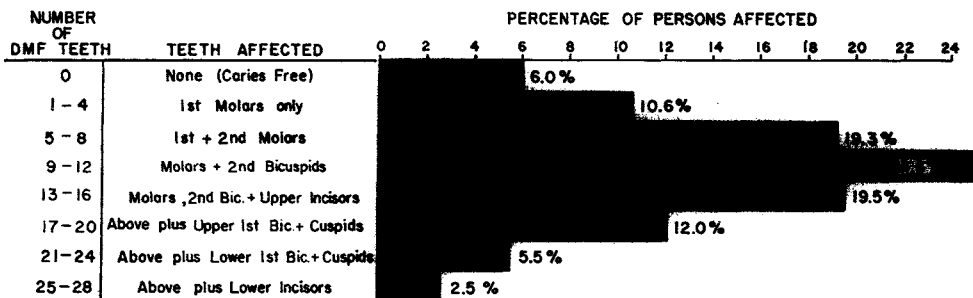


Fig. 2.—Distribution of dental caries (DMF teeth) in 4,043 males, 17 to 20 years of age, examined at the Great Lakes Naval Training Center.

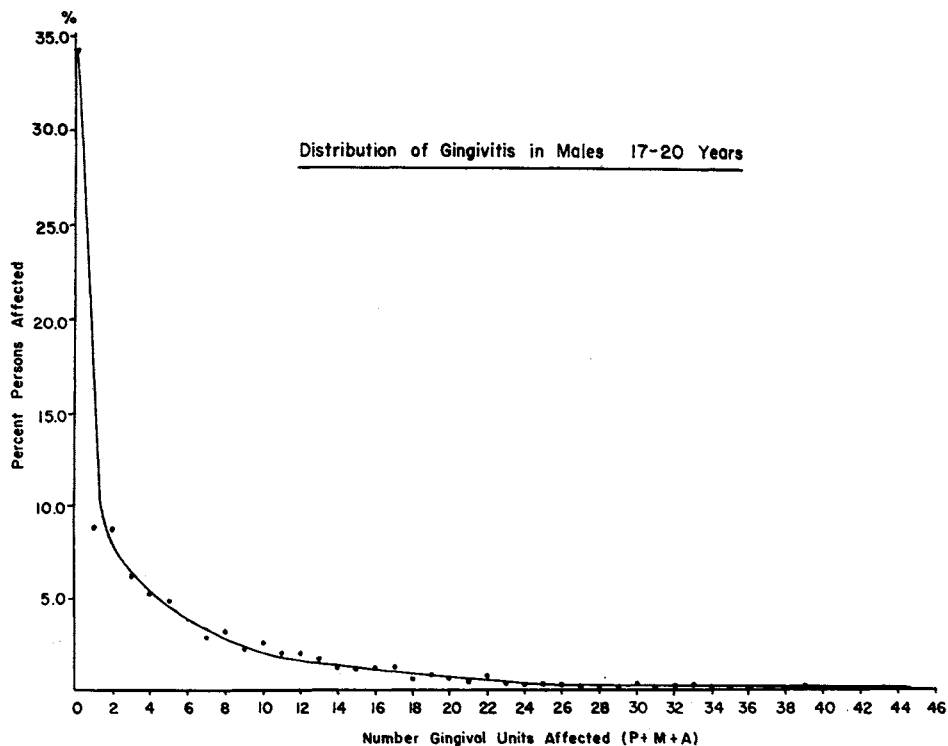


Fig. 3.—Distribution of gingivitis (P+M+A) in 4,043 males, 17 to 20 years of age.

(as in Table III). A similar analysis in this large group of males, 17 to 20 years of age, showed that no relationship existed between dental caries experience and gingivitis (Tables I and III).

DISCUSSION

The opportunity presented itself to study the prevalence of dental caries and gingivitis in a fairly large cross sectional sample of the young adult male population of the United States entering the Great Lakes Naval Training Center. The findings substantiate previous reports on the average caries attack rates in the United States. The present group represented an adequate sample of young adult males living east of the Mississippi River and coming from rural, village, city, and metropolitan areas. We feel therefore that these data represent an accurate cross section of dental caries and gingivitis experience in the young adult American male.

SUMMARY AND CONCLUSIONS

Examination of 4,043 white male naval inductees, 17 to 20 years of age, from various areas in the United States showed them to experience an average of 11.3 DMF teeth and 25.2 DMF tooth surfaces per person and an average of 5.2 P+M+A gingival units affected per person. No correlation either positive or negative could be demonstrated between gingivitis and dental caries experience in this sample of young adult males. This does not negate the necessity for further study of the relationship between caries and periodontal disease in persons in older age groups.

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