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DENTAL CONDITIONS AND NEED FOR DENTAL TREATMENT AMONG UNIVERSITY STUDENTS IN TURKU I. OPERATIVE AND ENDODONTIC TREATMENTS

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INTRODUCTION

Epidemiological studies have formed the basis for estimates of the need for dental care. The emphasis in these studies has, however, in most cases been focused on registration of a given pathological condition, such as caries or periodontal changes.

Cross (1951), however, carried out an extensive study for the total estimation of dental treatment needs among the United States naval personnel.

In 1958, the Department of Health Services and Hospital Insurance in British Columbia started a study to check the efficacy of dental therapy by outlining the dental condition of school children, and by making follow-up cross-section studies annually.

Another extensive epidemiological study has been carried out among the Red Indian population of the United States (U.S. Department of Health, Education and Welfare, Public Health Service, 1967). The total number examined was 134,756 (35 per cent of all Red Indian population), recording the numbers not only of intact, filled, carious and missing teeth but also of incipient and advanced disease of the periodontium, fluorosis, malocclusions and the number of teeth which should be replaced prosthetically.

Markén and *Rosenberg* (1964) published a study on student material. They found that in Stockholm the teeth of university students required an

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average of 9 hours treatment per student. This included all possible treatment needed.

Rantanen (1954, 1957, 1959, 1962) has published a number of studies on the dental condition of students in Helsinki, Finland, and *Gummerus-Rytkölä* (1965) studied the dental treatment situation among the freshmen at Tampere. In their estimation of treatment, the need for conservative dental therapy was emphasized.

The purpose of the present study is to give a complete picture of the dental therapy requirements among the university students of Turku.

MATERIAL AND METHODS

The original series comprised the 1656 students who started their studies in the autumn of 1966: 1062 at University of Turku, 340 at Åbo Akademi, 90 at the Teachers Training College, and 164 at School of Economic and Business Administration in Turku. Every fifth student, in alphabetical order, was invited by letter to have their teeth examined. The percentage not answering was very high: only 46.8 per cent of the invited attended. Those who had not answered were re-invited, and a number of them attended after the second invitation. Further invitations were sent starting from the second name on the alphabetical list and then taking every fifth, until the original target of 300 students was exceeded. The representativeness of the sample will be discussed at the end of the »Results» section.

A total of 399 students were examined, and 394 were included in the final series (Table I).

The students born in 1926, 1924, 1917, 1914, and 1910 were excluded from the series (each year of birth was represented by only one student), since their ages differed considerably from the mean age. These excluded students had, moreover, already taken a degree. The oldest age class included was that of students born in 1933 (one student), and the youngest that of those born in 1948 (Table I).

Table I
Distribution of the material
Age in years

Sex	19	20	21	22	23	24	25—34	Total
Girls	6	87	75	11	6	4	6	195
Boys	6	46	53	62	14	11	7	199
Total	12	133	128	73	20	15	13	394

The students' teeth were examined at the University Students Health Center in Turku, by three dentists of the Station, each of whom had a personal clerk. The examination was performed with the customary equipment, and took 15—20 minutes per patient.

The examination was started by taking bite-wing radiographs, and this was followed by a clinical examination.

1. The prevalence of caries was recorded by the commonly used DMF and DMFS indices. Since these, however, provide insufficient information concerning the need for dental treatment, the following additional entries were used to record caries:

DS	cariou surface			
DS ²⁴	cariou approximal surfaces in the area of premolars and molars			
DS _s	a surface damaged by secondary caries			
DS _s ²⁴	secondarily cariou approximal surfaces in the area of premolars and molars			
C ₁	incipient caries of the enamel			
△ Rtg ^{DS}	clinically undetected radiographic finding			
△ Rtg ^{DS24}	»	»	»	»
△ Rtg _s ^{DS}	»	»	»	»
△ Rtg _s ^{DS24}	»	»	»	»
FS	filled surface			
FT	filled tooth			
DT	cariou tooth			
MT	extracted tooth			

All lesions, including incipient caries of the enamel, were recorded. The condition of the wisdom teeth, which will be dealt with in a separate study, was recorded, but not included in the caries index.

2. The type of occlusion was determined according to Angle. Similarly, the relationship of each tooth to its neighbour and to the contact line was determined in order to record malpositions.

3. The state of periodontium was examined, and the patient's gingival index (GI) and plaque index (Pl I) were determined. The presence of dental calculus was also recorded.

4. Treated root canals and teeth obviously requiring root canal treatment were determined and radiographed on periapical films. Bite-wing radiographs were used to supply information on the area of premolars and molars, whereas information on the incisors was obtained from a thorough clinical examination. A total of 660 bite-wing radiographs were taken and the periapical radiographs numbered 444.

5. All prosthetic dental appliances were recorded.

To ascertain the error of the method, all three dentists examined each of 41 patients, recording the caries and determining the patient's GI. The dentists were aware that their patient was one of those examined by all three dentists. The error of the method was calculated according to the following formula:

$$\sqrt{\frac{\sum^K \sum^n (x_{iv} - x_i)^2}{\sum^K n - K}}$$

K = number of examining dentists

x_{iv} = the value obtained by examiner i for patient v

n = number of subjects (constant)

x_i = the mean value obtained by examiner i

After the clinical examination, all dentists together read the radiographs. The carious findings which had not been detected clinically, were added as a special group on the patients' records, and so were the root canal treatments, periapical changes, resorptions, impacted teeth, and horizontal bone loss. In cases which were difficult to interpret the staff of the Department of Roentgenology, Institute of Dentistry, University of Turku was consulted.

For every case of periapical osteitis, a decision was made *in casu* concerning the treatment: extraction, conservative treatment, or root canal filling and apicectomy.

The need for prosthetic treatment was, with the aid of the radiographs, determined separately in every case where one or several teeth were missing.

In the present section of the study, the main purpose was to determine what proportion of the total need for dental therapy was required for the treatment of caries and root canals.

RESULT

The total series of 394 students is classified in Table II according to sex and age. The table also indicates separately the number of damaged teeth (DMF + Δ Rtg^{DMF}) and surfaces (DMFS + Δ Rtg^{DMFS}) per person. The maximum number of DMF teeth and surfaces was seen in the oldest age group. The values for the female students per age group exceeded those for the male students. Since the purpose is, however, to study the need for dental therapy of all students taking up their university studies, the aggregate results will be presented.

Table III shows the mean values and standard deviations of the indices used in the recording of caries, the mean values and standard deviations of

Table II
Distribution of DMF and DMFS indices according to sex and age

Age	Students			DMF + Δ Rtg ^{DMF}			DMFS + Δ Rtg ^{DMFS}			
	M	F	Total	M	F	Total	M	F	Total	
34—25	7	6	13	\bar{x} s	16.71 4.13	21.67 1.97	19.00 4.13	34.86 14.52	55.40 8.06	44.38 15.79
24	11	4	15	\bar{x} s	15.91 3.78	17.75 2.86	16.40 3.65	30.73 12.21	41.25 9.36	33.53 12.43
23	14	6	20	\bar{x} s	17.14 3.81	17.83 3.02	17.35 3.61	37.71 12.61	39.67 12.92	38.30 12.77
22	62	11	73	\bar{x} s	16.79 4.25	17.36 4.07	16.88 4.23	35.65 14.02	37.09 16.47	35.86 14.42
21	53	75	128	\bar{x} s	16.60 3.68	18.29 4.57	17.59 4.30	35.02 14.05	40.48 16.46	38.22 15.74
20	46	87	133	\bar{x} s	17.26 4.73	17.47 4.45	17.40 4.55	35.46 14.27	36.75 14.99	36.30 14.74
19	6	6	12	\bar{x} s	15.17 5.81	19.17 3.25	17.17 5.11	30.17 16.59	44.00 14.47	37.08 17.03
Total	199	195	394	\bar{x} s	16.77 4.25	17.98 4.39	17.37 4.36	35.12 14.09	39.18 15.73	37.13 15.06

the radiographic findings undetected by clinical examination, and the combined result of the clinical and radiographic examinations. The number of carious surfaces per person was 15.1. Carious teeth in need of filling averaged 10.8 per student (standard deviation 4.27).

The study of inter-correlations between certain variables revealed, as indicated above (Table II), that female students had more DMF teeth than the males. The difference was statistically significant (> 99 per cent). Untreated caries, on the other hand, was more frequent among male students. The mean total of carious surfaces among the girls was 14.3 and among the boys 15.9. The difference was statistically almost significant (> 95 per cent). As expected, the correlation between carious teeth and carious surfaces was highly positive. Fig. 1 shows the correlation in the form of a curve which, with the increasing prevalence of caries, inclines markedly to the right.

Figs. 2, 3, 4, 5 and 6 show, in the form of diagrams, the percentage distributions of the totals of intact and filled teeth, of the teeth which require filling, those with primary caries, and extracted teeth.

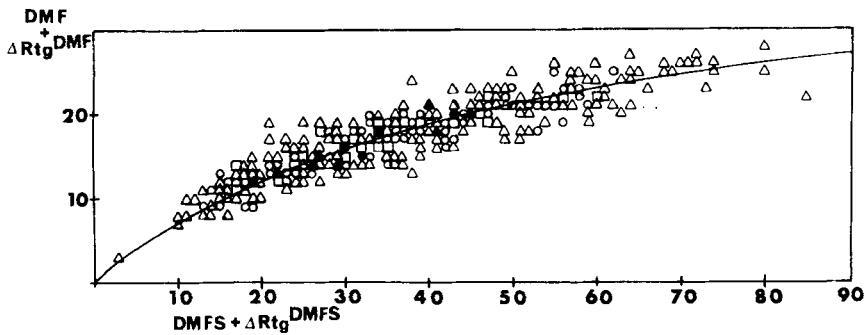


Fig. 1. The correlation of DMF-and DMFS-indices.

- △ 1 observation
- 2 observations
- 3 observations
- ▲ 4 observations
- 5 observations
- 6 observations

Table III

The mean values and standard deviations for the caries indices

Clinically detected findings	Clinically undetected radiographic findings	Combined result of the clinical and radiographic findings
DMF \bar{x} 16.79 s 4.56	ΔRtg^{DMF} \bar{x} 0.57 s 0.99	$DMF + \Delta Rtg^{DMF}$ \bar{x} 17.37 s 4.36
DMFS \bar{x} 34.27 s 15.27	ΔRtg^{DMFS} \bar{x} 2.85 s 2.72	$DMFS + \Delta Rtg^{DMFS}$ \bar{x} 37.13 s 15.06
DS \bar{x} 9.91 s 6.54	ΔRtg^{DS} \bar{x} 2.84 s 2.73	$DS + \Delta Rtg^{DS}$ \bar{x} 12.76 s 6.84
DS_s \bar{x} 2.01 s 2.31	ΔRtg_s^{DS} \bar{x} 0.32 s 0.72	$DS_s + \Delta Rtg_s^{DS}$ \bar{x} 2.35 s 2.55
DS^{24} \bar{x} 4.01 s 3.68	$\Delta Rtg^{DS^{24}}$ \bar{x} 2.72 s 2.64	$DS^{24} + \Delta Rtg^{DS^{24}}$ \bar{x} 6.74 s 4.34
DS_s^{24} \bar{x} 0.54 s 0.99	$\Delta Rtg_s^{DS^{24}}$ \bar{x} 0.30 s 0.71	$DS_s^{24} + \Delta Rtg_s^{DS^{24}}$ \bar{x} 0.85 s 1.32
$DS + DS_s$ \bar{x} 11.92 s 7.32	$\Delta Rtg^{DS} + \Delta Rtg_s^{DS}$ \bar{x} 3.16 s 2.82	1) $(DS + \Delta Rtg^{DS}) + (DS_s + \Delta Rtg_s^{DS})$ \bar{x} 15.11 s 7.71
$DS^{24} + DS_s^{24}$ \bar{x} 4.55 s 4.04	$\Delta Rtg_s^{DS^{24}} + \Delta Rtg_s^{DS^{24}}$ \bar{x} 3.02 s 2.73	2) $(DS^{24} + \Delta Rtg_s^{24}) + (DS_s^{24} + \Delta Rtg_s^{DS^{24}})$ \bar{x} 7.59 s 4.75

1) Total number of decayed surfaces

2) Total number of decayed approximal surfaces of premolars and molars

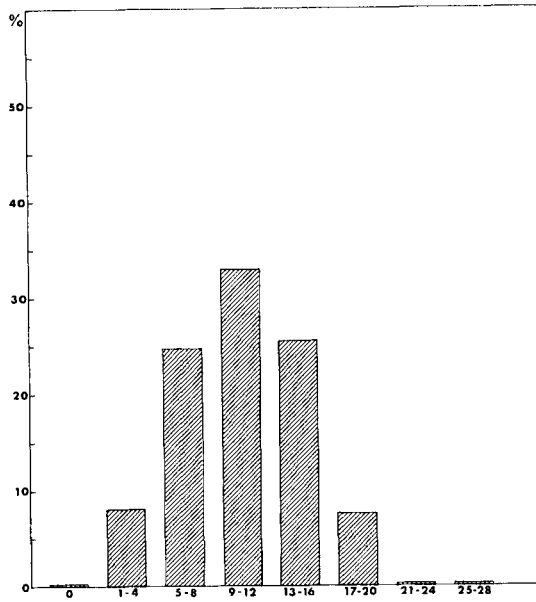


Fig. 2. The percentage distribution of the total of intact teeth.

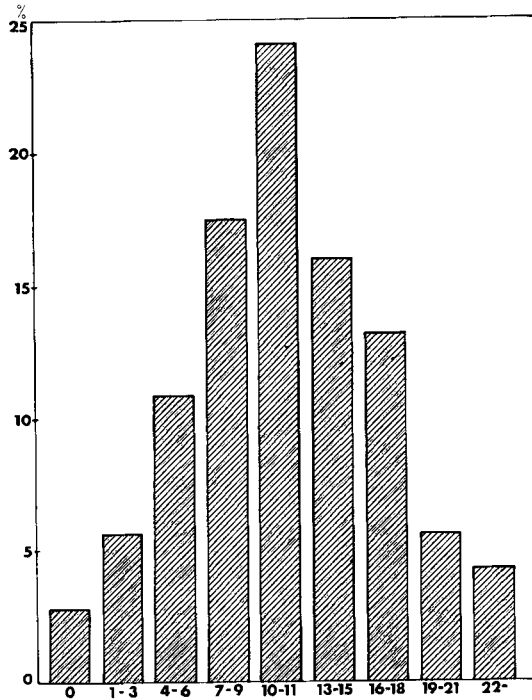


Fig. 3. The percentage distribution of the total of filled teeth.

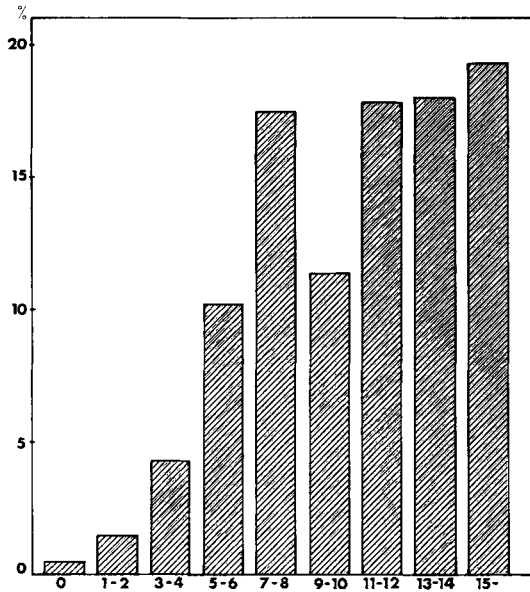


Fig. 4. The percentage distribution of the total of the teeth requiring filling.

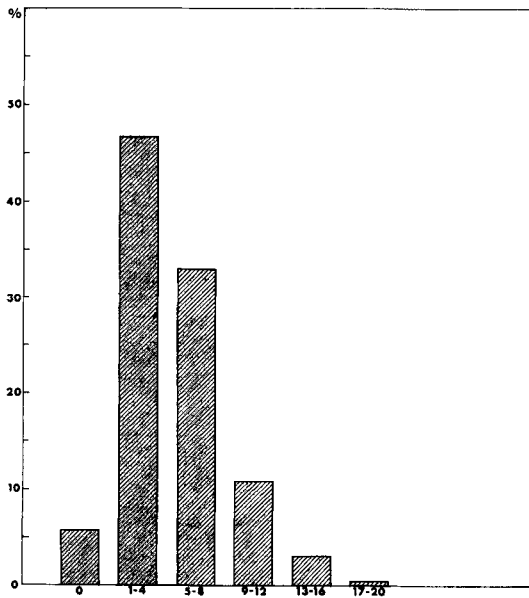


Fig. 5. The percentage distribution of the total of the teeth with primary caries.

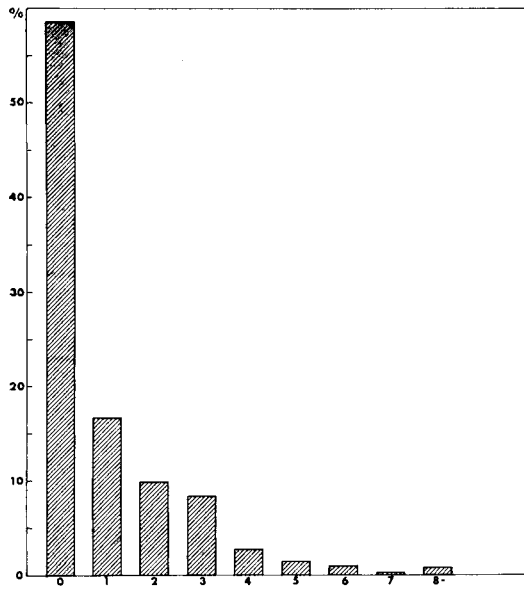


Fig. 6. The percentage distribution of the total of extracted teeth.

Table IV gives the numbers of the students classified according to teeth with filled root canals and partial pulpectomies. The average was 0.63 root canal fillings and 0.56 partial pulpectomies per student. Neither treatment had been performed on 192 students (48.7 per cent).

Table V shows the number of the cases of periapical osteitis and cysts. They occurred in a total of 150 teeth: 39 incisors, 34 premolars and 37 molars.

Table VI shows the incidence of teeth damaged by deep caries.

Table VII presents the need for root canal treatment. The cause of 113 root canal treatments was deep caries in 21, periapical osteitis or cyst in 88, and a new root canal filling required by a prosthetic appliance in 4 cases.

A comparison of the examinations by the three dentists carried out to study the error of the method revealed a statistically significant difference between the examiners in indices DS and DS²⁴ and an almost significant difference in index DS₃. The results of the comparison are presented in Table VIII which also indicates the significance and magnitude of the error.

When the error of the method was further studied by investigating the part played by the approximal caries of the premolars and molars, no significant difference between the examiners remained after the number of carious approximal surfaces was subtracted from the total number of carious surfaces.

Table IV
*The distribution of the material according to teeth with
 filled root canals and partial pulpotomies*

Number of teeth with partial pulpotomy per person	Number of persons	Number of teeth with root filling								
		0	1	2	3	4	5	6	7	
0	257	192	40	12	4	2	4	2	1	
1	85	44	21	14	3	1	1	0	1	
2	32	16	10	3	1	1	1	0	0	
3	11	6	1	2	1	1	0	0	0	
4	6	3	1	1	0	1	0	0	0	
5	3	0	2	0	1	0	0	0	0	

Table V
The distribution of periapical osteitis and cysts

The incidence of periapical osteitis and cysts	Students	The total of periapical osteitis and cysts
1	73	73
2	14	28
3	8	24
4	5	20
5	1	5
Total	101 (25.6%)	150 \bar{x} 0.38

Table VI
The distribution of deep carious lesions (caries profunda)

Number of deep carious lesions per student	Students	Total number of deep carious lesions
1	16	16
2	1	2
3	6	18
4	2	8
Total	25 (6.3%)	44 \bar{x} 0.11

Table VII
The need for endodontic treatment

Number of endodontic treatments per student	Students	Total number of teeth requiring endodontic treatment
1	55	55
2	16	32
7	6	18
4	2	8
Total	79 (20%)	113 \bar{x} 0.29

Table VIII
The results of the triple examinations

	1	2	3	The error of the method
DMF	746 \bar{x} 18.20	669 16.32	709 17.29	4.79 . .
DMFS	1589 \bar{x} 38.76	1309 31.93	1482 36.15	15.48 . .
DS	579 \bar{x} 14.12	331 8.07	424 10.34	5.18 **
DS _s	79 \bar{x} 1.93	101 2.46	140 3.41	2.72 *
DS+DS _s	658 \bar{x} 16.05	432 10.53	564 13.75	6.65 **
DS ²⁴	281 \bar{x} 6.85	92 2.24	165 4.02	2.87 **
DS _s ²⁴	35 \bar{x} 0.85	20 0.49	30 0.73	1.33 . .
DS ²⁴ +DS _s ²⁴	316 \bar{x} 7.70	113 2.73	195 4.75	3.41 **
(DS+DS _s)—(DS ²⁴ +DS _s ²⁴)	342 \bar{x} 8.34	320 7.44	369 8.58	4.76 . .
MT	39 \bar{x} 0.95	35 0.85	46 1.12	1.25 . .
FS	895 \bar{x} 21.83	907 22.12	910 22.20	12.23 . .
C ₁	180 \bar{x} 4.39	197 4.80	157 3.83	2.67 . .

. . Not significant
 * 5 % level almost significant
 ** 1 % level significant

Table IX
*The errors in the clinical recording of dental caries on
 the approximal surfaces of premolars and molars*

Examiner	»Overrecorded surfaces»	»Underrecorded surfaces»
A	100	84
B	29	193
C	54	144

The triple examination was also analysed to see whether carious foci had been recorded on approximal surfaces which in fact had no foci. The results of this study are presented in Table IX. Forty-one bite-wing radiographs were re-read blindly. The traced cases of caries were recorded and the result was compared with earlier observations. Unclear cases attributable to error in projection, and lesions which on the re-reading passed unnoticed although on the first reading they had been interpreted as caries, were excluded from the comparison. Provided the radiographic finding concerning approximal caries is considered correct, the result showed that all examiners did, in fact, record caries on approximal surfaces with no caries. Examiner A had more frequent records than examiners B and C. All missed cases of approximal caries, examiners B and C more often than examiner A. The mean »overrecording» per student was 1.49 surfaces.

The attendance of the students at dental examinations was extremely low. The representativeness of the sample was studied by comparing the condition of the teeth of those attending after the first invitation with that of students

Table X
The representativeness of the sample

	DMF + Δ Rtg ^{DMF}	DMFS + Δ Rtg ^{DMSF}	(DS + Δ Rtg ^{DS}) + (DS ₂ + Δ Rtg _g ^{DS})
Attendance after the first invitation (n 300)	\bar{x} 17.1 ¹⁾ s 4.4	\bar{x} 36.0 ²⁾ s 14.6	\bar{x} 15.2 ³⁾ s 7.7
Attendance after the second invitation (n 94)	\bar{x} 18.2 s 4.2	\bar{x} 40.6 s 15.8	\bar{x} 15.0 s 7.8

¹⁾ 5 % level almost significant

²⁾ 2 % level significant

³⁾ Not significant

not attending until a second invitation. For both groups, the DMF teeth and surfaces, and the total numbers of carious surfaces were counted. The results of this comparison are presented in Table X. Although the DMF and DMFS indices of the group attending examination after the second invitation were somewhat higher, no difference was found concerning the carious surfaces, that is to say, concerning the need for dental treatment of caries.

DISCUSSION

The representativeness of the sample was reviewed under the »Results» section. On the basis of this analysis, the sample could be considered representative.

A review of the final results for caries disclosed clearly that radiography is indispensable for an estimation of the need for treatment and before an individual plan of treatment can be made. In the region of premolars and molars, about 60 per cent of the caries of approximal surfaces was diagnosed clinically. In practice, radiographs also prevent the errors arising from possible »overrecording». In the present study, the mean value 1.49 obtained for this error was utilized in that it was subtracted from the total of carious surfaces, 15.11 per individual, and the resulting value 13.62 surfaces was taken as the basis for estimating the need for treatment. If the duration of treatment is taken to be 15 minutes per surface filled, the time required per person is 3 hours 24 minutes. Ten teeth to be filled per student and 20 minutes of treatment per filling give the same amount of time required for treatment. In complicated fillings, however, 20 minutes is a very short time. For this reason, it is suggested that the time required is 20 minutes per surface to be filled and 4 hours 32 minutes per person.

Concerning root canal fillings and partial pulpectomies, the large facial and lingual amalgam fillings made it difficult to read the radiographs for pulpectomies. Radiographies of the anterior portion were based on the size and form of the filling or darkening of the tooth. It is possible that they were not sufficiently numerous, for the size and form of the filling do not always disclose a root canal treatment which may have been carried out. The medical history was unreliable, since the patients often did not know what had been done to their teeth. The averages of 0.63 root canal treatments and 0.56 partial pulpectomies per patient must therefore be considered slightly below the true values.

For this reason, the frequency of periapical osteitis in the anterior portion may also be below the true figure.

The osteitic teeth which the three dentists unanimously decided were fit only for extraction, were so carious or had such extensive foci that root canal treatment was neither indicated nor was even possible owing to the unfavourable shape of the root canals. The latter included three molars in which the changes in the periapical area were questionable. They were excluded from the list of teeth requiring treatment.

The result of preparation is difficult to predict when deep caries is involved. The need for root canal treatment was recorded only for those teeth in which radiography definitely showed caries extending so close to the pulp that root canal treatment was, after joint consultation, considered to be indicated. Hence the total number of teeth needing root canal treatment may be considered higher than was stated above, especially since no case of acute pulpitis was found in the examination.

Estimates of the time required for root canal treatment were not specified separately for teeth with one, two or three roots, or according to diagnosis. If the average time required for root canal treatment per tooth is assessed at an hour and a half, the time of treatment per student was 26 minutes for the total series. Filling and root canal treatment aggregately, per student, required therefore 4 hours 58 minutes.

Within the framework of the working hours of the Health Station, this would mean that each dentist could treat the teeth of some 160 students during a university year, as long as only fillings and root canal treatments were carried out. If other treatment and the filling of wisdom teeth is also included, the number of students would be considerably lower. In many cases the students starting their university studies have neglected their dental care, often owing to force of circumstances, ever since leaving primary school and the free treatment provided at that level. Without this gap in dental care, the students' need of treatment would naturally be considerably less, both quantitatively and qualitatively.

The development of caries is illustrated by a comparison between the present diagrams (Figs. 2, 3, 4, 6) and those published by *Rantanen* in 1962, which showed the dental condition of freshmen at Helsinki University in 1960—61.

The comparison of the percentage distributions of intact teeth reveals that good dentition — of the three top groups with 25—28, 21—24 and 17—20 intact teeth — was more rare in the Turku series than in *Rantanen's* material. The groups with 1—4, 5—8 and 9—12 intact teeth were larger in the Turku series. Equal percentages of students in both materials had 13—15 intact teeth.

The teeth requiring filling were more numerous in the low groups of *Rantanen's* material, but the group with 7—8 teeth requiring filling was

larger in the present material, as were all the groups with a higher number of carious teeth. The percentages of the teeth requiring filling indicate clearly that the condition of the teeth was poorer in the present series than in the earlier series.

The Turku series was found to have more students with a large number of filled teeth than the Helsinki series.

The distribution of extracted teeth shows that almost 60 per cent of the students had had no extractions. In the *Rantanen* series the percentage was 60.7. The groups with one, two and three extracted teeth were larger in the present series. For the groups with 4 or more extracted teeth, the Turku percentages were lower than those reported by *Rantanen*. Apparently the total of extractions was not higher.

The comparisons revealed, however, that even though the Turku students had a higher number of filled teeth, their dental condition nevertheless was poorer than that of *Rantanen's* series of 1960—61. This is conclusive evidence that serious attention should be paid to the prophylaxis of caries in the dental care programme of the Students' Health Foundation.

Prophylaxis in students' dental care, and an estimation of the need for periodontal, orthodontic, surgical and prosthetic treatment will be discussed in a second section of the present study.

SUMMARY

The purpose of the present study was to discover the need for dental care of the students of the Turku universities. This part of the study deals with the part played by caries and root canal treatments. The series consisted of 394 students who started their studies in the autumn of 1966. Their teeth were examined clinically and bite-wing radiographs were taken. A number of the students underwent additional radiographic examinations of the periapical areas. The result obtained was that the students had an average of 13.62 carious surfaces which required filling and 0.29 teeth requiring root canal treatment. The estimated time of dental care for fillings and root canal treatment per student was 4 hours 58 minutes. The errors of the method in recording caries were also discussed.

RÉSUMÉ

ÉTAT DENTAIRE ET BESOINS EN TRAITEMENTS DENTAIRE PARMIS LES ÉTUDIANTS DE L'UNIVERSITÉS DE TURKU I. DENTISTERIE OPÉRATOIRE ET ENDODONTIE

La présente étude a pour but de mettre en lumière les besoins en soins dentaires existant chez les étudiants de l'universités de Turku. La première partie

de ce travail, présentée ici, concerne le rôle joué par les traitements de la carie et des canaux radiculaires. Le matériel se compose de 394 étudiants ayant commencé leurs études au cours de l'automne 1966. Il a été procédé à un examen clinique de leurs dents et à un examen radiographique par «bite-wings». Un certain nombre d'étudiants subirent de plus un examen radiographique des régions péri-apicales. Les résultats obtenus révélaient que les étudiants avaient en moyenne 13,62 faces dentaires cariées nécessitant une obturation et 0,29 dents demandant un traitement radiculaire. La durée du traitement dentaire par étudiant pour les obturations et les traitements radiculaires a été estimée à 4 heures 58 minutes. Les erreurs liées à méthode lors de l'enregistrement des caries ont aussi fait l'objet d'une discussion.

ZUSAMMENFASSUNG

ZUSTAND DER ZÄHNE UND BEDARF AN ZAHNÄRZTLICHER BEHANDLUNG BEI STUDIERENDEN DER TURKUER HOCHSCHULEN

I. ZAHN- UND ZAHNWURZELFÜLLUNGEN

Der Zweck der Untersuchung war, Auskunft über den Bedarf an zahnärztlicher Behandlung bei Studierenden der Turku-er Hochschulen einzuholen.

In diesem Teil der Untersuchung wurde die Mitschuld der Karies und Wurzelbehandlungen an dem Bedarf erläutert. Das Material bestand aus 394 im Herbst -66 immatrikulierten Studenten, bei denen eine klinische Untersuchung des Gebisses durchgeführt wurde. Dabei wurde bei jedem sog. «bite-wing» Rtg-Aufnahme gemacht. Bei einem Teil des Patientengutes wurden weitere Rtg-Untersuchungen der periapikalen Gebieten durchgeführt.

Es ergab sich, dass die Studierenden durchschnittlich 13.62 zu füllende Zahnoberflächen hatten; Wurzelbehandlungen benötigten durchschnittlich 0.29 Zähne. Die Behandlungszeit betreffend Füllungen und Wurzelbehandlungen wurde auf 4 Studen 58 Minuten geschätzt. Auch die beim Registrieren der Karies entdeckten Methodfehler wurden diskutiert.

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