

Periodontal awareness, health, and treatment need in dental school patients

III. Treatment need

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The need for periodontal treatment in a group of dental school patients was estimated by means of the periodontal treatment need system (PTNS). The findings were related to information about the regularity of dental visits, awareness of own disease, and periodontal treatment experience. All the patients required motivation and oral hygiene instruction (treatment need, class A). All their quadrants needed scaling or adjustment of subgingival restorations (treatment need, class B). As many as 71% of the patients and about 49% of the quadrants needed periodontal surgery (treatment need, class C). The mean periodontal treatment time per patient was 279 min (4 h 39 min). The middle age group (30-59 years) required more treatment time than the oldest group (≥ 60 years). This was probably due to more missing teeth in the oldest age group. There were no significant differences in treatment need between males and females. The regular dental visitors had a greater periodontal treatment need than the individuals visiting their dentist less frequently. This finding emphasizes the responsibility of the general practitioner in diagnosing and treating periodontal disease. □ *Clinical study; oral hygiene; regularity of dental visits; treatment time*

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The need for periodontal treatment in Norway has not been adequately described. No studies have been performed on national representative samples. On the basis of available data one can estimate the mean required periodontal treatment time per adult individual to be somewhere between 2 h and 4 h (1-5). Studies from other Scandinavian countries have estimated the need for periodontal treatment to be within the same range (6, 7). Comparison between studies in this field is difficult, however, owing to the use of different criteria and indices (1-10). It is generally agreed that the need for dental manpower to cope with the treatment of periodontal disease is great (11).

Results from patient interviews showed that 68% of the patients were not aware of their periodontal disease, and 90% had never received any periodontal treatment (12). The periodontal condition does not seem to be considerably different between patients receiving regular yearly dental treat-

ment and those receiving irregular or only emergency treatment (13).

The present study aimed to estimate the periodontal treatment time needed for patients with different regularities of dental visits. The findings were compared with previous information about awareness of own disease and periodontal treatment experience (12).

Materials and methods

Group sample

All 124 patients who participated in this study were scheduled for periodontal treatment at the students' clinic at the Department of Periodontology, University of Bergen. Most of the participants made contact with the Dental School, asking for general dental treatment. After a brief examination at the Clinic for Patient Admission,

these patients were referred to the Department of Periodontology for periodontal treatment. Only four patients had been referred for periodontal treatment by their own dentists. The participants were randomly selected among the new patients entering the students' clinic during a 2-year period. Their distribution with regard to age and sex has been reported previously (12).

Periodontal treatment need

The periodontal treatment need was estimated by means of the periodontal treatment need system (PTNS) (14, 15). This system classifies the need for periodontal treatment into the following levels: class 0: no need for periodontal treatment; class A: need for motivation and hygiene instruction; class B: need for supra- and sub-gingival scaling, including adjustment of restorations (overhangs); and class C: need for surgery.

The need for class-A treatment was recorded for each patient, whereas class-B and class-C treatment needs were recorded for each quadrant. Third molars were included in the calculations, since this tooth is part of the definition of a quadrant in the PTNS.

Estimation of treatment time

As part of the PTNS there is also a system for estimating periodontal treatment time (14). The following time estimations (in minutes) were used for the various treatment

procedures: class A: oral hygiene instruction, 60 min per patient; class B: scaling, 30 min per quadrant; and class C: surgery, 60 min per quadrant.

Statistical analysis

The findings were coded and computerized. The organizing of data, calculations, and statistical testing was performed by means of several statistical programs (BMDP, University of California).

The treatment need data were cross-matched against the independent variables age and sex and against information from the patient interviews.

Statistical testing was performed with the chi-square test (BMDP-4F) and analysis of variance with transformation of discrete variables (BMDP-7D).

Multiple linear regression analysis (BMDP-1R) and stepwise regression analysis (BMDP-2R) were applied to reveal the influence of age, sex, and information from the patient interviews on the calculated treatment need and treatment time.

Results

Periodontal treatment need

All patients participating in this study required motivation and oral hygiene instruction (treatment need, class A). The

Table 1. Distribution of subjects and quadrants needing class-B and class-C periodontal treatment, related to age group and sex (percentage in parentheses) ($n = 123$)

	Subjects		Quadrants*	
	Class B, n (%)	Class C, n (%)	Class B, n (%)	Class C, n (%)
Age group, years				
≤29	14 (100)	5 (36)	56 (100)	10 (18)
30-59	81 (100)	62 (77)	304 (100)	169 (56)
≥60	28 (100)	20 (71)	92 (100)	44 (48)
Sex				
Males	57 (100)	37 (65)	203 (100)	106 (52)
Females	66 (100)	50 (76)	249 (100)	117 (47)

* Significant differences within the age distribution of quadrants needing class-C treatment ($p < 0.01$).

Table 2. Distribution of subjects and quadrants needing class-C periodontal treatment, related to awareness of own periodontal disease ($n = 124$) and regularity of previous dental visits ($n = 123$) (percentage in parentheses)

Treatment need, class C	Awareness of disease		Regularity			Total
	Yes	No	Yearly	Irregular	Emergency	
Subjects	31 (78)	56 (67)	58 (73)	15 (75)	13 (57)	87 (71)
Quadrants	82 (54)	141 (47)	154 (51)	36 (51)	31 (39)	223 (49)

findings also demonstrated that all quadrants needed scaling, including removal of supra- and sub-gingival calculus, elimination of overhanging margins, and so forth (treatment need, class B). Periodontal surgery (treatment need, class C) was required by 71% of the patients. When this estimate was related to quadrants, about half of the 452 quadrants examined (49%) needed periodontal surgery (Table 1).

There was a considerable need for periodontal surgery among the two oldest age groups (Table 1). The middle age group (30–59 years) demonstrated the greatest need for surgery (Table 1). More females (76%) than males (65%) needed surgery. When the estimate was made per quadrant, however,

more male quadrants (52%) than female quadrants (47%) needed class-C treatment.

Individuals who were aware of their periodontal problems had more quadrants needing periodontal surgery than those who were not aware of the disease (Table 2). There were no differences with regard to class-C treatment need between yearly and irregular dental visitors, whereas the emergency group had considerably less surgical treatment need than the others (Table 2). Relating the findings to time since the last dental visit demonstrated a clear tendency toward a reduced need for surgical treatment with increased time since last dental visit (Fig. 1). Within the quadrant distribution this difference was statistically significant ($p < 0.05$). No differences were seen between patients who were informed and those who were not informed about the treatment possibilities for periodontal disease.

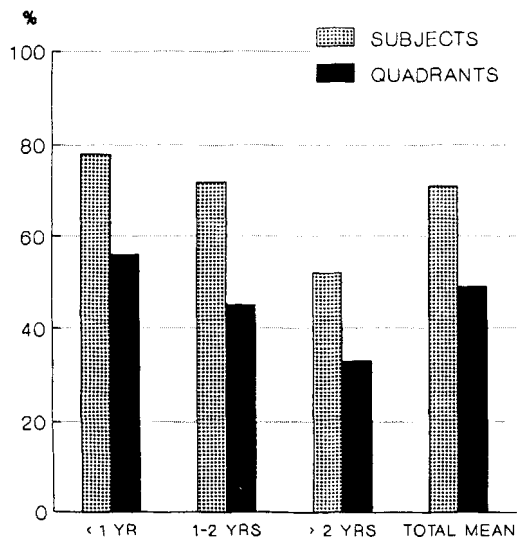


Fig. 1. Percentage distribution of subjects ($n = 123$) and quadrants ($n = 452$) needing class-C periodontal treatment (surgery), related to time since last dental visit. Significant differences for quadrants ($p < 0.05$).

Treatment time

On the basis of the treatment time estimates of the PTNS the mean periodontal treatment needed per patient was 279 min (4 h 39 min) (Table 3). In addition to motivation and oral hygiene instruction (60 min), class-B treatment accounted for 110 min, and class-C treatment for an average of 109 min per patient.

Relating the treatment time estimates to age showed significant differences ($p < 0.01$). The age group 30–59 years required 75 min more treatment time than the group ≤ 29 years and 45 min more than the group ≥ 60 years (Table 3). No difference was demonstrated between men and women. Patients who were aware of their own periodontal disease needed more treatment

Table 3. Estimated periodontal treatment time (PTNS) per individual, related to age, sex, and awareness of own periodontal disease ($n = 123$)

Age, sex, awareness	Treatment time (min)			Total means
	Class A	Class B	Class C	
≤29 years	60	120	43	223 (3 h 43 min)
30-59 years	60	113	125	298 (4 h 58 min)
≥60 years	60	99	94	253 (4 h 13 min)
Males	60	107	111	278 (4 h 38 min)
Females	60	113	106	279 (4 h 39 min)
Aware	60	114	123	297 (4 h 57 min)
Not aware	60	108	102	270 (4 h 30 min)
Total means	60	110	109	279 (4 h 39 min)

Significant differences within the age distribution ($p < 0.01$).

time (27 min) than those who were not aware.

More frequent dental visits resulted in a need for more periodontal treatment time (Fig. 2). Thus, the yearly dental visitors needed 47 min more treatment time than the emergency group. The same tendency was seen when relating the time estimates to 'time since last dental visit' (Fig. 3). The patients attending a dentist during the past year required 72 min more treatment time than those who had not been to a dentist for the past 2 years ($p < 0.01$).

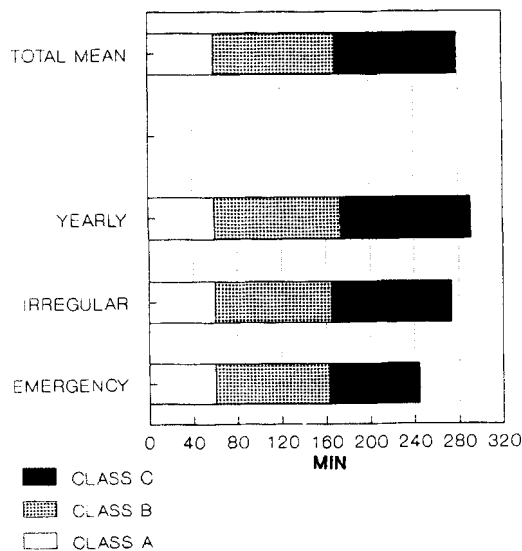


Fig. 2. Periodontal treatment time (PTNS) in minutes related to regularity of previous dental visits ($n = 123$).

Influence from background variables

The multiple regression analysis coefficient ($R = 0.4347$) indicated that 19% of class-B treatment need could be explained by the background information as a whole. Stepwise regression analysis emphasized age ($R = 0.2821$) as the strongest explanatory variable, representing 8% of the variation. Time since last dental visit could explain 6% of the variation. These two variables together were able to explain 14% ($R = 0.3726$) of the variation of class-B treatment need ($p < 0.05$).

With regard to the treatment need in class C all the background information could explain 23% ($R = 0.4795$) of the variation. Time since last dental visit was the single most influential variable, explaining 11% ($R = 0.3296$) of the surgical treatment need.

The total background information could explain 23% ($R = 0.4786$) of the variation of estimated treatment time. Stepwise regression analysis showed that time since last dental visit also in this respect was the most relevant variable, since it alone could explain 13% ($R = 0.3590$) of the variation of estimated treatment time ($p < 0.05$).

Discussion

The participants in this study were all patients in the students' clinic at the Department of Periodontology, University of Bergen. The estimations of treatment need alone were therefore of limited interest. It

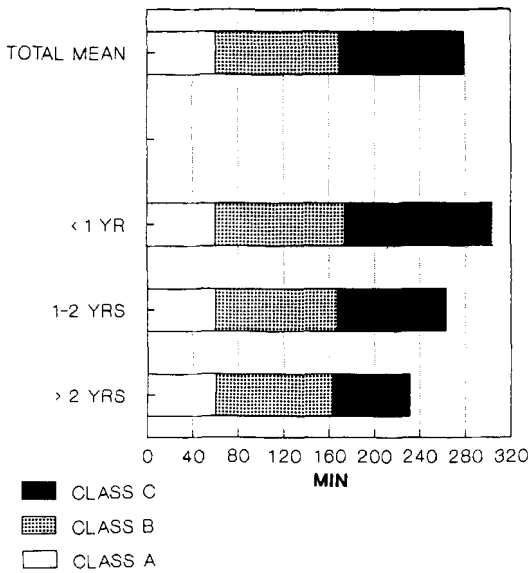


Fig. 3. Periodontal treatment time (PTNS) in minutes related to time since last dental visit ($n = 123$). Statistically significant differences ($p < 0.01$).

was mainly crossmatching of the estimated treatment need with the results from patient interviews with regard to their previous treatment experience that gave some interesting information (12, 13).

The results showed that all patients needed improvement of their oral hygiene and scaling or adjustment of fillings in all quadrants. Serious periodontal disease with need for surgery in one or more quadrants was present in 71% of the patients, and each patient had an average need for 279 min (4 h 39 min) of periodontal treatment time. This treatment need is more extensive than reported in other Norwegian studies (2, 3, 5, 16). Compared with studies in Finland and England (6, 8–10), our patients also seem to have more periodontal disease. Considering the fact that this was a patient sample from a periodontal clinic, however, the findings are more easily explained. Still, since 65% of the subjects reported in interviews that they had visited their dentist annually (12), this great periodontal treatment need was unexpected.

Increasing periodontal treatment need with increasing age has been reported in several studies (2, 7, 8, 17–19). The group

≥ 60 years in this study had in fact a little less treatment need than the group 30–59 years. This might be explained by the higher frequency of missing teeth in the ≥ 60 -year age group (13). Many of the teeth had probably been extracted as a consequence of serious periodontal disease (20).

There were no significant differences in periodontal treatment need between males and females. This is in accordance with some studies (2, 3, 9) but in conflict with others (21, 22).

Crossmatching the variables regularity of dental visits and time since last dental visit with the estimated treatment need indicated a greater need for periodontal treatment in patients visiting their dentist frequently and regularly. This tendency was even more pronounced when the estimated treatment times were compared. Such a connection between dental visits and treatment need was not demonstrated in a Finnish study (9).

The background variables collectively explained less than 25% of the variation concerning scaling and surgery. A similar explanatory value was found with regard to total treatment time. This relatively low value indicated that factors not included in the analysis had a major influence. Time since last dental visit was marked as most significant in relation to the independent variables. However, the relation between time since last dental visit and the periodontal treatment need was opposite to what one would have expected. Patients with less than 1 year since their last dental visit had significantly more need for periodontal treatment than patients who did not visit their dentist for more than 2 years.

The conclusions from this study and from our previous reports (12, 13) indicate that regular 'oral health behavior' or frequent dental visits do not reduce patients' need for periodontal treatment. More likely, the need for periodontal treatment is greater in patients seeking regular dental care. It has repeatedly been shown that it is the operator, the dentist, who determines what type of treatment the patient receives (19, 23). The dentist is therefore also guilty of the serious underdiagnosing and undertreatment of periodontal disease shown in the present

study. The findings seem to support previous documentations of a mainly reparative profile in the treatment of dental diseases (5, 19, 23–27).

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