



LEVEL ~~III~~

20

NDRI-PR 81-09
November 1981

DENTAL HISTORY PREDICTORS OF CARIES RELATED DENTAL EMERGENCIES

M. E. COHEN
J. C. CECIL

DTIC
JAN 22 1982
H

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

NAVAL
DENTAL RESEARCH
INSTITUTE

Naval Medical Research and Development Command
Bethesda, Maryland

0120 82030

AD A109944

DTIC FILE COPY

NAVAL DENTAL RESEARCH INSTITUTE
NAVAL BASE, BLDG. 1-H
GREAT LAKES, ILLINOIS 60088

20

DENTAL HISTORY PREDICTORS OF CARIES RELATED
DENTAL EMERGENCIES

M. E. COHEN

J. C. CECIL

DTIC
COPY
INSPECTED

Research Progress Report NDRI-PR 81-09
Work Unit 61152N MR0000101-0027
Naval Medical Research and Development Command
National Naval Medical Center
Bethesda, Maryland 20814

The opinions expressed herein are those of the authors and cannot be construed as reflecting the views of the Navy Department or the Naval Service at large. The use of commercially available products does not imply endorsement of these products or preference to other similar products on the market.

This document has been approved for public release; its distribution is unlimited.

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution	
Availability Codes	
DTIC	
COPY	
INSPECTED	
3	

A

Approved and released by:

D. W. Turner
D. W. TURNER
Captain, DC, USN
Commanding Officer

DTIC
COPY
INSPECTED
3

The occurrence of dental emergencies among naval personnel frequently has ramifications beyond those which would be expected if similar events had occurred in a civilian population. Most significantly, such emergencies can occur when dental services are not readily available which is frequently the case while at sea, in combat, and while a prisoner of war. Although dental emergencies are seldom life threatening, their effects on the psychological well-being of an afflicted individual, as well as on his or her comrades, can be devastating (1). One method of handling such circumstances is to make emergency dental services more available by increasing the number and distribution of dental officers and by giving specialized training in emergency treatment to auxiliary personnel. Although these measures are certainly appropriate, attention should nevertheless be directed to reducing the incidence of dental emergencies since acute conditions are more likely to lead to serious complications, and there are some situations where competent dental services of any kind are simply not available (1).

For many acute conditions, screening methods do not exist which have sufficient sensitivity, specificity, and diagnostic power to be useful as predictive tools. Dental health classification systems are typically only presumptive indicators of the urgency with which dental care must be rendered. However, conditions related to untreated caries, such as pulpitis, can be predicted with some reliability given the intimacy of the relationship and the relatively long duration of the pre-emergency state. The incidence of caries emergencies is substantial and thus predictive information would be useful. In a civilian population caries-related conditions accounted for about 40% of all dental emergencies (2). Among non-Vietnam Pacific based Navy-Marine personnel in 1970, the percentage was about 46% (3). This latter study also provided data to indicate that a conservative estimate of the annual rate of caries related dental emergencies in this group was about 110 per 1000 service personnel. In a study based on Army personnel engaged in field exercises in 1978 (4), 52% of an estimated 167.36 dental emergencies per 1000 troops per year was due to caries.

A carious lesion of such severity that a patient would present himself as an emergency patient typically does not occur unless a patient is negligent in either receiving routine examinations or in seeking treatment (if it is available) when pain or discomfort becomes noticeable, rather than intractable. (A notable exception involves acute conditions which may develop during the course of an extensive restoration.) This being the case, it would be logical to expect that individuals who would be most likely to suffer a caries-related dental emergency would generally have a poor record of periodic examinations, incomplete treatment, poor oral health, and relatively more missing teeth than those individuals who rarely suffer such a caries emergency. Some of these expectations are supported by a study which considered the dental problems of Navy and Marine Corps prisoners of war in North Vietnam (5). Among 111 repatriated aviators who were held for four to eight years "a significantly lower number of dental problems during captivity and at repatriation were found...." in those "....who had: (1) a dental examination within one year of capture; (2) an examination which included radiographs; and (3) had all necessary problems treated." In addition, a recent study on an army population (6) showed a weak ($r^2=.02$) though statistically significant relationship between required restorations and years since completed treatment.

In light of this initial evidence indicating an inverse relationship between periodic examinations and dental problems, a directive by the Secretary of the Navy for Navy and Marine Corps participation in the Navy Preventive Dentistry Program (SECNAVINST 6600.1B, May 1977) is well founded. Although participation in this program is not voluntary, it has been far from universally accepted as indicated from a review of the response rate to a dental recall system at the Naval Regional Dental Center, Great Lakes* (7).

The purpose of this research is to describe, in detail, the incidence and type of dental emergencies at one naval clinic and those features of dental health and historical dental treatment levels which differentiate caries emergency from non-emergency patients. This information will allow for both the consideration of the magnitude of the caries emergency problem and the quantification of risk factors that might allow for the efficient selection of high caries-risk individuals for recall dental examination.

MATERIALS AND METHOD

Subjects in this investigation were staff or students (i.e., non-recruits) stationed at the Great Lakes Naval Training Center, Great Lakes, IL, who were examined either at the Naval Regional Dental Center (NRDC; Building 237 Clinic Facility) during regular work hours (0730-1600) or at the Training Command Dental Clinic (TCDC; Building 1017 Clinic Facility) in the event of an off-hours emergency. The dental officer responsible for initial patient screening and treatment routing at the NRDC categorized each patient on the basis of the reason for presenting at the clinic. There were six main classifications and the patient was assigned to the first category that applied. The categories, in the appropriate hierarchical order, were (1) Emergency - pain, discomfort, interference with oral function; (2) Physical Exam Qualifications; (3) Referral through preventive dentistry class or by non-dental personnel; (4) Response to a dental examination recall notice; (5) Routine Examination; and (6) Other. In addition, if the visit was of an emergency nature, its type was further classified on a special supplement, an example of which is shown in Figure 1. Emergencies treated at the TCDC were similarly classified, but by inspection of log entries and review of patient charts as appropriate, rather than by the attending dentist.

The records of patients whose initial visit fell into one of three category types were selected for detailed study. Emergency cases associated with the presence of caries constituted the group towards which main interest was directed and, in order to provide information regarding the dental history and health status of non-emergency patients, records for individuals seeking routine or recall examinations were also studied. On each occasion of a caries emergency for which a dental record was on file (i.e., not lost or in the possession of the patient), one patient record from each of the other two groups was chosen, with selection based on the date of log entries so that comparability of the time of the visit was maintained. Records were reviewed and data pertaining to 16 patient variables, described in Table 1, were recorded.

*Intensive telephone follow-up procedures implemented in June 1981 have raised the dental recall response rate to nearly 100%.

RESULTS

Data Collection

It had been anticipated that 100 subjects per group would be required to provide reliable group scores for analysis. However, examination of the data as it was being collected revealed that the correlation matrix between variables was stable after only 20 subjects per group had been considered and remained essentially unchanged as additional subjects were included. For this reason, the collection of additional data would not be productive and data collection was terminated with 50 subjects in each group.*

Data collection was accomplished during a 268 day time period which commenced on September 4, 1980. All visits to the Training Command Dental Clinic during this period were subject to review but because of weekends, holidays, and leave taken by the dental officer or his assistant, data was collected at the Naval Regional Dental Center on only 159 days.

Incidence of Emergency and Non-Emergency Visits

In all, 4930 initial visits were recorded during the course of the study. Although the value of these data in the description of the overall utilization of dental services among staff and students is limited, since return visits were not considered, one may legitimately consider the frequencies of the various types of initial visits in total and as a function of the time of day and week. Table 2 shows the average number of visits in the six main categories studied and certain subcategories for the mean weekday during NRDC hours, weekday other than during NRDC hours, and the 24-hour weekend day or holiday. The values for the first time frame may be slightly understated, however, since on rare occasions a second intake officer, who did not participate in data collection, was required because of a particularly heavy patient load. Although firm data is not available regarding the magnitude of such rerouting to a second examiner, discussion with the primary intake officer indicates there might be an undercount of less than one percent.

During the period of data collection the average monthly census of non-recruits at the Great Lakes Naval Training Center was 10,966 persons. Using this value and assuming 104.29 (365 x 2/7) weekend days, ten holidays, and 250.71 weekdays in computations on the data summarized in Table 2, the number of initial visits per 1000 persons per year were calculated and are shown in Table 3. Caries related emergencies include cases where caries are present (either new or recurrent disease; caries emergency) or were once present and the acute condition is related to that past disease or its treatment. For caries related emergencies where a dental record is available for further classification, the ratio of visits where caries were found to all caries related visits was .69 (7.09/[7.09+3.20]). This ratio applied to the caries group where the absence of dental records prevents further classification (unclassified group) results in a value of 6.07. Thus, there is an estimated 13.16 (7.09+6.07) caries emergencies per 1000 persons per year.

*Initial screening of the data revealed two subjects in the caries emergency group which showed exceptional levels of disease. For example, these subjects had 11 and 12 teeth with untreated U-lesions whereas the next highest value in the remaining 148 subjects was six. These outliers were not considered in the analysis and two additional caries-emergency subjects were selected.

The present data differs from that of other reports (3,4) in that the incidence of caries emergencies is substantially less, as well as is the relative proportion of caries emergencies to all emergencies. The decrease in the relative proportion is clearly attributable to the large number of post-treatment complications that occur at the Great Lakes Training Base due to the large number of surgical procedures undertaken (primarily associated with third molar extractions). The low absolute number of caries emergencies may stem from the fact that in other studies (1,2) measures were taken while personnel were either deployed in Southeast Asia or on maneuvers. These types of field settings frequently require the postponement of non-emergency treatment and therefore set the stage for acute disease. At the Great Lakes Naval Base, dental treatment is readily available and persons may be more likely to seek out treatment when they become aware that a tooth is becoming sensitive but before it is painful to the extent that it would be reported as such. In the context of this argument, it is interesting to note that of the 100 patients who made either recall or routine visits, 43 had one or more diseased teeth and 19 had three or more diseased teeth. Given that treatment would be unavailable for three or six months, as might be the case in a field setting, it would not be unreasonable to expect many of these individuals to experience acute pain due to caries. Thus, the low incidence of caries emergencies reported here may reflect the availability of treatment under nonextenuating conditions and would not accurately reflect expected rates in a field setting.

Comparison of Caries-Emergency, Recall and Routine Patients

It had been anticipated that caries emergency patients would exhibit the poorest state of oral health while patients who are not experiencing pain and are seeking dental care at their own request (i.e., a routine visit), would exhibit the best oral health. Within the caries emergency group it was also anticipated that those patients seeking aid during evening, holiday, or weekend hours would exhibit a state of oral health worse than clinic-hours caries emergency patients.

Table 4 provides mean values and standard deviations for the oral health and biographical variables studied for the routine, recall, and the two emergency groups and for combined groups as indicated. While there are substantial differences between caries emergency and non-emergency patients, there are no substantive differences in oral health measurements within emergency and non-emergency categories. For this reason, routine and recall visits were combined as well as were the two emergency groups in further analyses. Examination of the data for combined groups in Table 4 reveals differences which generally conform to expectations with the notable exception that caries emergency patients (CEP) have, in fact, seen a dentist more recently than routine/recall patients (RRP). Since this may have resulted from the fact that CEP were younger and had less time in the Navy, a correlation was computed between last appointment and DT within RRP. It would seem logical that DT would be an appropriate substitute for the emergency/nonemergency classification with regard to dental health. The correlation was $-.02$ or essentially zero. Thus, time since last dental appointment is an ineffective criterion for the identification of patients with high caries risk.

Measurements which differentiate CEP from RRP in Table 4 and which would be available in the patient record prior to the contemporary examination were used in an attempt to generate a prediction model for caries emergency versus routine/recall visits. Eight variables met these criteria; Age, Last Appointment, SRF RQ TRTMNT, SRF TRTD, SRF NT TRTD, % TRTD, TRTMNT INT, and FS/FPT. These variables were subjected to stepwise forward regression (Tolerance = .01; F Enter = 8; F Delete = 7.99). As described in Table 5, two variables were selected, together accounting for 30% of the variation in the binary dependent variable emergency vs. routine/recall visit ($R=.55$).

The caries-emergency non-emergency categorization is appealing since it is patient defined and corresponds directly to treatment demand. An alternative approach, however, would be to consider treatment need as might be approximated here, in the extreme, by using the number of U-lesions present as the dependent variable. There are clearly treatment needs below the level of a U-lesion which should be met but, if one is interested in predicting the type of emergency which could jeopardize a mission, being non-responsive to palliative treatment and having a greater likelihood of developing serious complications, then using the presence of U-lesions as the dependent variable would be useful. This variable, as compared to visit classification, is thus, more directly related to serious risk. Carious lesions which are painful (and result in an emergency classification) but are not extensive would not be included in the serious risk group, whereas U-lesions that are not painful, at least for the present, (and are seen during routine or recall visits) would be included in the high risk designation. Thus, in using the independent variables to predict U-lesions an attempt is made to identify cases most at risk for serious disease apart from treatment demand or other coping strategies a person might be using at any particular time.

Table 6 shows comparisons between values of the 16 variables for subjects with zero or with one or more U-lesions. Excluding DT and DMFT, since they are defined by the contemporary examination, six variables differentiated between the two U-lesion groups. These variables were used in a stepwise regression, described in Table 7, with the dependent variable being number of U-lesions (range: 0-6). A single variable, SRF NT TRTD accounted for 67% of the variations in number of U-lesion ($R=.82$). Figure 2 shows a scatter plot of SRF NT TRT versus U-lesions and the least square regression line. Inspection of the figure seems to suggest some non-linearity and analysis does reveal a significant quadratic trend ($F=9.79$; $df=1/147$) in addition to the linear trend ($F=317.92$; $df=1/147$). However, the increase in R^2 with the inclusion of the former factor (from .67 to .69) does not indicate that the polynomial regression offers a substantial increase in predictive quality.

If one wishes to use the SRF NT TRTD variable as a recall screening device then sensitivity (the extent to which persons who truly manifest a characteristic are so classified) and specificity (the extent to which persons who do not manifest a characteristic are so classified) are appropriate measures of value. Table 8 shows sensitivity and specificity values for four levels of SRF NT TRTD for the criterion variable of one or more U-lesions, generated through calculations based on the data in Figure 1.

DISCUSSION

The data indicate a decrease in both the absolute incidence of caries and caries-related emergencies and the relative proportion of caries-related emergencies among all emergencies, as compared to other incidence studies (3,4). However, the high prevalence of DT in the routine and recall groups would suggest the potential for a much higher rate of dental emergencies given the reduction in available dental services which might take place in certain deployment situations.

Dental health characteristics of patients seen as the result of a recall notice were similar to those patients who made routine visits. In general, these patients were at less risk for a caries emergency having an average 1.48 DT and .13 U-lesions. Caries emergency patients, on the other hand, had 6.52 DT and 1.68 U-lesions, although they had seen a dentist more recently than non-emergency patients. It appears that these individuals only seek treatment at times of acute pain and do not initiate routine visits nor respond to traditional recall notices.

High caries risk individuals would be more likely to begin and complete treatment if they were subject to personal (e.g., telephone) follow-up recall efforts. However, since such procedures require personnel resources which are scarce an effort should be made to direct those methods only towards those individuals who have the greatest prevalence of caries. Most recall systems presently used by the Navy employ as primary criteria the time interval since the last dental appointment and a more or less binary score associated with the necessity, or lack of it, of additional treatment at the close of that appointment (viz 1 or 3 on the Standard Form 603). The number of patients who are recalled who are found to have little in the way of serious disease reaffirms data from the present study indicating that these are not particularly sound predictors. Time since last appointment has little value owing to many individuals who do not develop disease even after extended periods of time and others who make frequent emergency visits but never complete treatment. The binary score related to treatment need is a gross measure which fails to consider quantitative factors. However, if intensive recall efforts were directed on the basis of the SRF NT TRTD measure, the effectiveness of the system would be greatly enhanced. Referring to Table 8, treatment capabilities and other logistical considerations would dictate the level of SRF NT TRTD initiating intensive recall efforts. At the low level (1+) 90% of those individuals with U-lesions would be selected and only 18% of those without disease would be selected. At the high criterion (10+) 50% of those with U-lesions would be selected and only 4% of those without disease would be selected. The accuracy of such a system as well as the smaller number of individuals who would be selected for intensive recall efforts, may result in greater command support. That is, commanding officers may favor a system where only a few persons are required to leave duty for dental treatment but the risk of a dental emergency is substantially reduced. Further research should therefore be directed towards the testing and further development of a U-lesion prediction model and its application in a field setting.

ACKNOWLEDGEMENT

The authors thank Captain Rives, DT3 Huizar, and DN Staab of the Naval Regional Dental Center, Great Lakes, for their invaluable assistance in collecting the clinic data on which portions of this report were based.

REFERENCES

1. Diem, C. R. and Richlin, M. Improvisational dental first aid used by American prisoners of war in Southeast Asia. *Journal of the American Dental Association* 98:535-537, 1979.
2. Sharav, Y., Galili, D. and Sciaky, I. Emergency patients: Source for learning oral diagnosis. *Journal of Dental Education* 37:31-34, 1974.
3. Ludwick, W. E. and Gendron, E. G. Dental emergencies occurring among Navy-Marine personnel serving in Vietnam. *Military Medicine* 139:121-123, 1974.
4. Payne, T. F. and Posey, W. R. Analysis of dental casualties in prolonged field training exercises. *Military Medicine* 146:265-271, 1981.
5. Diem, C. R. and Richlin, M. Dental problems in Navy and Marine Corps repatriated prisoners of war before and after captivity. *Military Medicine* 143:532-537, 1978.
6. Parker, W. A., Mayotte, R. V. and Rauch, T. A short study to determine the optimal frequency for conducting periodic dental examinations. Report #80-003 United States Army Health Services Command, Health Care Studies Division, Academy of Health Sciences, Fort Sam Houston, TX 78234.
7. Peterson, B., CDR DC USN, Preventive Dentistry Officer, Naval Regional Dental Center, Great Lakes, IL. Personnel communication.

TABLE 1

Variables Studied with Abbreviations

1. Age	Age in years
2. Last Appointment	Months since last appointment
3. Type Appointment	Treatment vs non-treatment
4. SRF RQ TRTMNT	Number of surfaces requiring treatment for caries at the last examination for which a treatment plan was prepared.
5. SRF TRTD	Number of surfaces treated within three months of that examination.
6. SRF NT TRTD	SRF RQ TRTMNT - SRF TRTD
7. % TRTD	SRF TRTD/SRF RQ TRTMNT (If SRF RQ TRTMNT = 0 then % TRTD = 100)
8. TRTMNT INT	Mean intertreatment day interval (Number of treatment days)/(days until treatment completed or 90, whichever comes first)
9. DT	Diseased teeth
10. MT	Missing teeth
11. FT	Filled teeth
12. DMFT	Diseased, missing or filled teeth
13. U-lesion	Number of U-lesions (U=urgent; caries have penetrated 3/4 or more through dentin towards the pulp.
14. RT canal	Number of teeth with root canal fillings.
15. FS/FPT	Filled surfaces per filled posterior tooth (if FPT=0 then FS/FPT=1).
16. FS/FT	Filled surfaces per filled tooth (if FT=0 then FS/FT=1).

TABLE 2

Mean Initial Dental Visits per Day by Non-Recruits at the Naval
Training Center, Great Lakes, Illinois

Category	NRDC Hours	Off Hours	Weekend Day and Holiday
Treatment related emergencies			
Post-operative	.01	.05	.01
Post-surgical	.06	.44	1.11
Endodontic	.01	.02	.09
Combined	.08	.51	1.26
Caries related emergencies			
Caries absent*	.14		
Caries present	.31		
Primary	(.20)**		
Recurrent	(.11)**		
Combined	.45	.18***	.45***
Trauma related emergencies			
Recent	.05	.06	.18
>72 hrs	0	0	.01
Combined	.05	.06	.20
Pericoronitis	.29	.04	.11
Periodontally related	.25	.02	.10
Prosthetic complication	.01	0	0
Other	.03	.06	.29
All emergencies	1.16	.86	2.40
Physical exam qual.	11.65		
Referral	.16		
Recall notice	2.30		
Routine	13.48		
Other	.02		

*Caries are not present, but present condition is related to past caries
and/or treatment.

**Subcategory of caries present.

***A substantial number of missing records prohibits subcategorization.

TABLE 3

Initial Dental Visits per 1000 Non-Recruits per Year at the
Naval Training Center, Great Lakes, Illinois

Category	Number*	Percentage*†
Treatment related emergencies		
Post-operative	2.00	8
Post-surgical	23.00	86
Endodontic	1.62	6
Combined	26.62	37
Caries related emergencies		
Caries absent*	3.20	17
Caries present	7.09	37
Primary	(4.57)	(24)**
Recurrent	(2.52)	(13)**
Unclassified	8.80	46
Combined	19.09	27
Trauma related emergencies		
Recent	4.34	95
>72 hrs	.10	2
Combined	4.06	6
Pericoronitis	8.69	12
Periodontally related	7.21	10
Prosthetic complication	.23	0
Other	5.08	7
All emergencies	71.19	10
Physical exam qual.	266.32	38
Referral	3.66	1
Recall notice	52.58	7
Routine	308.15	44
Other	.46	0

*Some totals do not sum due to rounding error.

†Percentages within subcategories refer only to subcategories.

**Subcategory of caries present.

Table 4
Comparisons of Oral Health and Biographical Variables Among Routine, Recall,
and Caries Emergency Groups

Variable	Routine N=50		Recall N=50		Combined Rout/Recall N=100		Combined Caries Emer N=50		Regular Hrs N=37		Caries Emergency Off Hrs N=13		
	\bar{x}	S.D.	\bar{x}	S.D.	\bar{x}	S.D.	\bar{x}	S.D.	\bar{x}	S.D.	\bar{x}	S.D.	
Age	22.90	5.74	T ***	28.68	6.04	25.79	6.54	W **	22.92	5.30	22.08	4.95	T
Last Appointment Type Appointment	5.38	5.36	W ***	14.30	10.34	9.84	9.34	W **	6.16	7.01	5.24	6.54	T
SNP BQ TRT/MT	5.80	8.08	T	4.34	7.18	5.07	7.64	W ***	16.02	12.29	17.43	12.35	T
SNP TRTD	3.42	5.25	T	2.76	5.70	3.09	5.46	T *	5.36	5.90	6.14	6.28	W
SNP MT TRTD	2.38	5.56	T	1.58	4.56	1.98	5.07	W ***	10.66	9.58	11.30	9.27	T
2 TRTD	81.08	33.71	T	83.08	34.87	82.08	34.14	T *	39.68	35.93	36.00	32.71	T
TRT/MT INT	20.74	28.58	T	18.61	28.28	19.68	28.31	T *	43.31	32.90	44.55	31.39	T
DT	1.76	3.03	T	1.20	2.63	1.48	2.84	W *	6.52	4.59	7.16	4.59	T
MT	1.38	1.88	T	1.32	2.04	1.35	1.96	W	1.60	2.70	1.73	3.05	W
PT	9.58	5.09	T	10.32	5.24	9.95	5.15	T	9.26	5.22	9.41	5.23	T
DMFT	11.76	5.98	T	11.88	5.88	11.82	5.90	T *	14.18	5.41	14.41	5.36	T
U-Lesion	.12	.52	T	.14	.40	.13	.46	W *	1.68	1.45	1.78	1.40	T
MT Canal	.36	.60	T	.32	.59	.35	.59	T	.36	.66	.41	.72	W
PS/PT	1.93	.58	T	1.83	.53	1.88	.55	T *	2.11	.56	2.11	.59	T
PS/PT	1.93	.58	T	1.86	.56	1.89	.57	T	2.04	.52	2.05	.54	T

T t-test

W Welch's t-test

C Chi-square

† The number preceding TRT refers to the number of individuals in the respective group of size N whose last appointment was for treatment rather than for an examination or prophylactic procedures. Tests were made by means of a 2x2 Chi-square with rows being groups and columns being number of treatment appointments (TRT) vs number of non-treatment appointments (N-TRT)

TABLE 5

Stepwise Regression of Variables on Caries Emergency
vs Routine/Recall Visit Classification

Variable	Step 0			Step 1			Step 2		
	F	Delete	Corr	F	Delete	Part Corr	F	Delete	Part Corr
Age	7.23		.22	3.33		.15	3.00		.14
Last Appointment	6.05		.20	2.82		.14	2.97		.14
SRF RQ TRTMNT	44.85		.48	1.45		.10	3.81		.16
SRF TRTD	5.45		.19	1.45		.10	3.81		.16
SRF NT TRTD	52.77		.51		52.77			10.82	
% TRTD	49.65		.50	8.36		.23		8.36	
TRTMNT INT	20.81		.35	3.92		.16	.04		.02
FS/FPT	5.75		.19	.82		.08	1.89		.11
R^2				.26			.30		
F regression				52.77; 1/148 df			31.88; 2/147 df		

TABLE 6

Comparisons Between Patients Without and With One
or More U-Lesions

Variable	No U-Lesions N=98		1 or More U-lesions N=52		
	\bar{x}	SD	\bar{x}	SD	
Age	25.14	6.56	24.25	5.76	T
Last Appointment	8.98	9.24	7.92	7.89	T
Type Appointment	58 TRT	30 N TRT	32 TRT	20 N TRT	C
SRF RQ TRTMNT	4.41	6.80	9.65	12.08	W*
SRF TRTD	3.30	5.59	4.88	5.80	T
SRF NT TRTD	1.11	3.07	11.96	9.54	W***
% TRTD	87.66	28.87	30.79	30.62	T***
TRTMNT INT	15.80	25.17	49.70	31.47	W***
DT	1.08	2.01	7.08	4.58	W***
MT	1.32	1.96	1.65	2.66	W
FT	9.66	5.05	9.83	5.43	W
DMFT	11.44	5.63	14.81	5.62	T***
U-Lesion	0.0	0.0	1.87	1.30	--
RT Canal	.29	.56	.48	.70	W
FS/FPT	1.85	.52	2.15	.61	T**
FS/FT	1.86	.53	2.09	.57	T*

T = t-test

W = Welch's t-test

C = Chi-square

* = $p < .05$ ** = $p < .01$ *** = $p < .001$

TABLE 7

Stepwise Regression of Variables on Number of U-Lesions

Variable	Step 0			Step 1		Part Corr
	F Enter	Delete	Corr	F Enter	Delete	
Age	1.82		.11	.52		.06
Last Appointment	.88		.08	1.35		.10
SRF RQ TRMNT	131.10		.69	.33		.05
SRF TRTD	3.04		.14	.33		.05
SRF NT TRTD	300.09		.82		300.09	
% TRTD	82.96		.60	.61		.06
TRMNT INT	29.05		.41	1.01		.08
FS/FPT	6.89		.21	.00		.00
R^2				.67		
F regression				300.09; 1/148 df		

TABLE 8

Sensitivity and Specificity as a Function of the Level of Surfaces
Not Treated. Criterion Is One or More U-Lesions.

SRF NT TRTD	Sensitivity	Specificity
1 or more	.90	.82
3 or more	.79	.85
5 or more	.65	.93
10 or more	.50	.96

EMERGENCY SUPPLEMENT

Patient Name _____

CONSIDER ONLY THE PATIENT'S MOST SEVERE COMPLAINT

COMPLETE ONLY ONE OF THE SECTIONS I, II, III, or IV

- I. This emergency has resulted from a complication of treatment rendered within the past 14 days.
- Postoperative complications: Include all conditions resulting from an insertion of a restoration. Examples: Tenderness and sensitivity to thermal changes.
 - Postsurgical complications: Include all conditions resulting from oral or periodontal surgery. Examples: Pain, swelling, bleeding, and infection.
 - Endodontic complications: Include only teeth that have been treated or are in the process of being treated endodontically. Examples: Pain, periapical involvements, and fistulas.
- II. This emergency has resulted from the effects of past or present caries.
- CHECK ALL THAT APPLY
- Caries absent
 - Caries present
 - Primary
 - Recurrent
 - Restoration failure
 - Pulp or periapical disease
- III. This emergency has resulted from past or recent trauma: Include traumatized teeth, and oral or maxillo-facial injuries treated principally by a dental officer.
- Occurred within the past 72 hours
 - Occurred more than 72 hours before this treatment
- IV. This emergency has resulted from one of the reasons noted below.
- Pericoronitis: Include all conditions resulting from inflammation or infection of the pericoronal tissues surrounding a partially erupted tooth.
 - Periodontal related: Include all conditions resulting from inflammation or infection of the periodontium. Examples: Periodontitis, gingivitis, and periodontal abscesses.
 - Prosthetic complications: Include all patients that cannot masticate food because of prosthetic problems. Examples: Lost or broken dentures, tissue impingements, and problems involving abutment teeth.
 - Other:- (specify) _____

Figure 1. Emergency supplement.

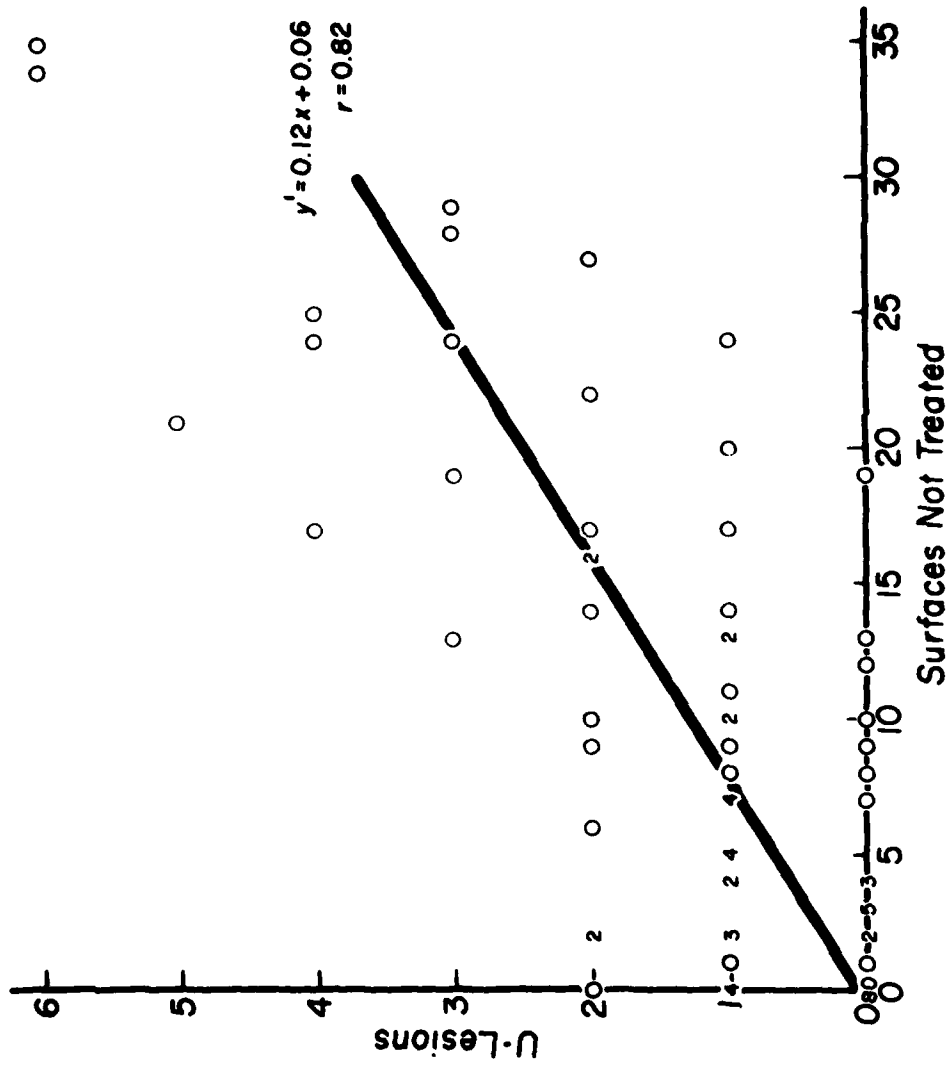
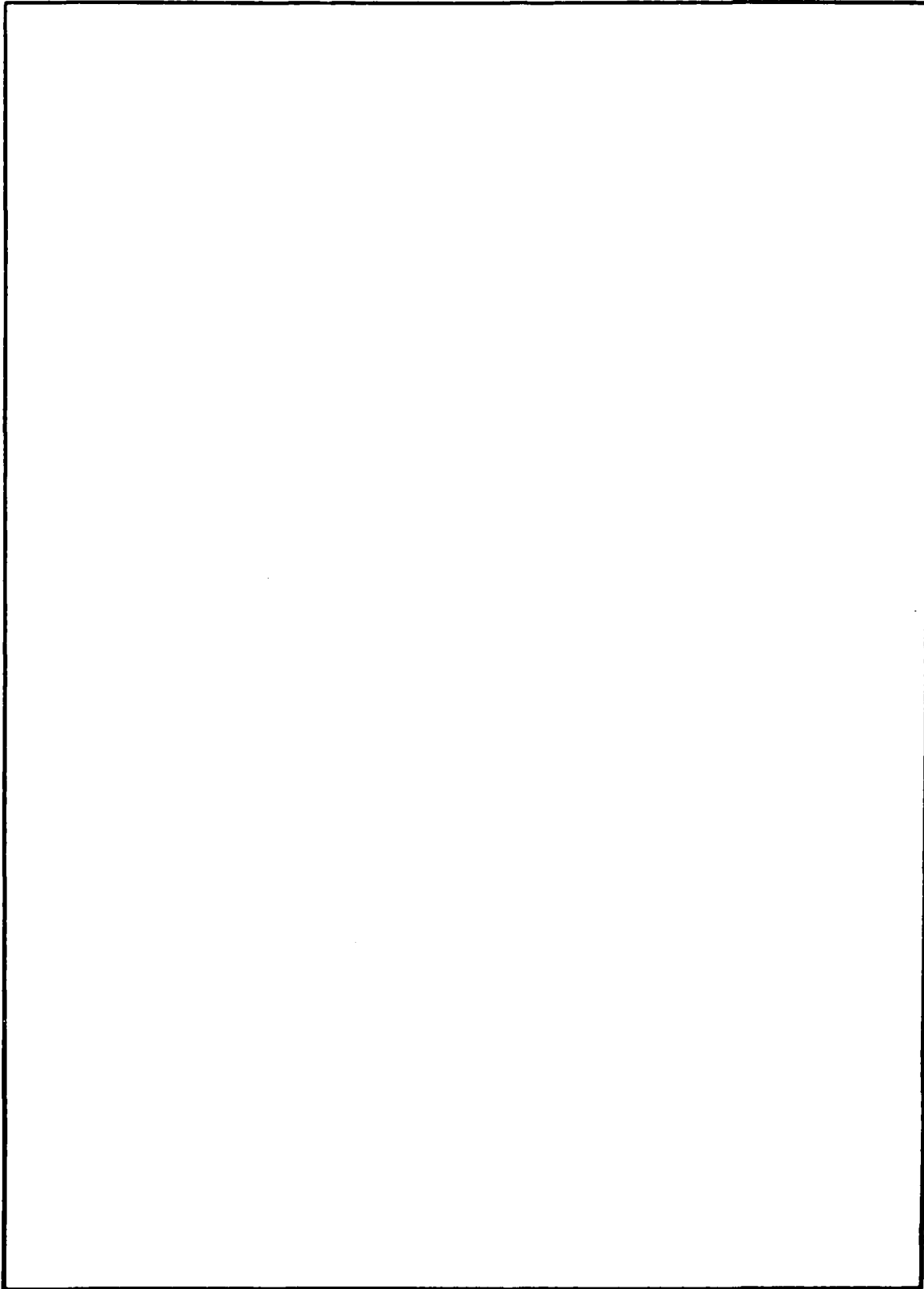


Figure 2. Scatter plot of number of surfaces not treated by number of U-Lesions.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)



S/N 0102- LF-014-6601

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

**LATE
LME**