PERIODONTAL TREATMENT NEEDS AMONG A GROUP OF AFGHAN NATIONALS: A PILOT STUDY

Da'ameh M. Da'ameh, BDS*, Mohammad A. Al-Omari, BDS**

ABSTRACT

Objectives: The aim of this study was to assess the periodontal treatment needs in relation to age, gender and level of education among a group of Afghan nationals.

Methods: This is a cross-sectional study performed during a three-month period on 210 Afghan nationals who attended the dental clinic of the Jordanian Military Field Hospital in Mazar-el-Sharif city in the North of Afghanistan. For all individuals, age, gender and level of education were recorded. Periodontal treatment needs were assessed according to the criteria of the Community Periodontal Index of Treatment Needs.

Results: Only 1.9% of the sample had healthy gingiva according to the Community Periodontal Index of Treatment Needs while 98.1% required periodontal treatment. Periodontal pockets ≥6mm accounted for 13.8% of the findings. Calculus was the most frequently observed periodontal finding (40.5%). The periodontal treatment needs were found to increase significantly with age. No statistically significant differences in periodontal treatment needs were observed in relation to gender and education level.

Conclusion: There is a need for periodontal treatment among the Afghan population surveyed. Introduction and development of comprehensive periodontal prophylactic programs including therapeutic and preventive measures for the population of Mazar-i-Sharif city and surrounding areas are of paramount importance.

Key words: Afghanistan, CPITN, Periodontal Treatment Needs

Introduction

Inflammatory periodontal diseases (PD) are among the most common diseases affecting human beings and continue to be a major concern for dentists and patients. They are caused by microorganisms and their products and lead to destruction of the supporting structures of the teeth. Numerous epidemiological studies, have appraised the public health significance of PD.

The WHO Community Periodontal Index of Treatment Needs (CPITN) was originally developed to assess periodontal treatment needs of populations.[1] The index had been widely accepted and extensively used in epidemiological studies for periodontal screening worldwide. More than 300 CPITN studies from more than 100 countries are found in WHO's Global Oral Data Bank.[2] Data on periodontal status in Afghanistan, however, are not available yet in the literature. This study was conducted in the North of Afghanistan with aims of

From the Department of Dentistry:
*Prince Rashed Ben Al-Hassan Hospital, Irbid-Jordan
**Prince Hashem Ben Al-Hussein Hospital, Zarqa-Jordan
Correspondec should be addressed to Dr. D. Da'ameh, P.O. Box 107 Rusaifi 13710 Jordan. E-mail: daameh@hotmail.com
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estimating the periodontal treatment needs in relation to age, gender and level of education and production of baseline data in this country. Findings from this study will be useful for future comparison, analysis and the development of strategies for PD prevention.

Methods

This is a cross-sectional study performed at the dental clinic of the Jordanian Military Field Hospital (JMFH) in Mazar-el-Sharif, the largest city and the capital of Balkh Governorate in the North of Afghanistan. People come to Mazar-i-Sharif from various surrounding rural areas, therefore it has a heterogeneous society but with no definitive known demographic profile in terms of population number, age and socioeconomic status. JMFH in Mazar-el-Sharif provides free medical as well as dental care for people of Mazar-el-Sharif city and the area of Balkh Governorate.

The aim of this study was to determine the periodontal treatment needs based on a subset assessment. The study was described for each patient or adult companion attending the clinic. Only two hundred and ten subjects aged 8-62 years agreed to participate in the study and signed a consent form. The subjects were examined between December 2002 and February 2003 and their age, gender and level of education were recorded. The same dentist performed the clinical examination in order to exclude inter-examiner variability.

Assessment of periodontal treatment needs was performed according to the CPITN criteria[1] using a flat dental mirror and WHO periodontal probe. Each of the six dental segments (sextants) (17 - 14, 13 - 23, 24 - 27, 37 - 34, 33 - 43, and 44 - 47) were evaluated for each individual and was assigned a code number. Among adults aged 20 years or more, WHO suggests examining only 10 teeth: 17, 16, 11, 26 and 27 in the maxilla, and 47, 46, 31, 36 and 37 in the mandible and for subjects under 20 years of age only six index teeth (16, 11, 26, 36, 31 and 46) were used.[3] A sextant was examined if at least two functional teeth were present otherwise it was considered as edentulous. If none of the index teeth were present in the sextant, all the teeth remaining in the sextant were examined. For each tooth, six sites were examined: mesial, midline and distal on vestibular and lingual / palatal surfaces. The

condition of the worst affected site in the sextant was recorded. Each sextant was designated as either healthy (score 0), bleeding gingiva but no calculus detected (score 1), presence of supra-or subgingival calculus or other plaque retentive factors (score 2), pockets of 4-5 mm (score 3), or 6 mm pockets or deeper (score 4). According to the highest score recorded, the subjects and sextants were classified into the following treatment need categories:

- 0 = no treatment needed (score 0)
- TN 1 = oral hygiene instructions (scores 1, 2, 3 and 4)
- TN 2 = oral hygiene instructions and prophylaxis (scores 2, 3 and 4)
- TN 3 = oral hygiene instructions, prophylaxis and complex treatment (score 4)

The CPITN codes were analyzed using the individual as the unit of analysis and the CPITN score for the individual was determined as the highest code given to any sextant in that individual.

The collected data were entered on a spreadsheet and analyzed using a standard SPSS® statistical program version 10, software. Descriptive statistics were applied and Chi-square test was used to test variables with the patient as the unit. The level of statistical significance was set to 95%.

Results

The study population consisted of 125 males (59.5%) and 85 females (40.5%) who were divided into eight age groups. There was nearly equal distribution of males but no females within the age bands: 20-24, 25-29, 30-34, 35-44 and 45-54 years. None of the patients examined was edentulous. Age and certain demographic data of patients are shown in Table I.

CPITN findings (Fig. 1) revealed that 98.1% of periodontal pockets ≥6mm that required complex periodontal therapy (CPITN score 4). Table II shows the distribution of the CPITN scores the examined patients required periodontal treatment but only 13.8% of the sample had and within the age groups < 25 years. Gingival bleeding (score 1) was the highest (39.1%) among the age according to different age groups. CPITN score 0 was recorded in 4 patients (1.9%) of the sample group 20-24 years while it was the lowest in patients aged ≥ 55 years where it was totally absent. The greatest age group at risk for deep pockets was 45-54 comprising 16.2% of the whole sample.

Table I. Descriptive data of the study population

Age group:	Gender Female	Male	Total No.	(%)
8 - 14	4	5	9	4.3
15 - 19	10	10	20	9.5
20 - 24	13	20	33	15.7
25 - 29	11	21	32	15.2
30 - 34	14	23	37	17.6
35 - 44	18	22	40	19.0
45 - 54	15	19	34	16.2
55 +	0	5	5	2.4
Level of education:				
Illiterate	50	37	87	41.4
Basic school	30	58	88	41.9
College/ University	5	30	35	16.7
Total	85	125	210	100.0

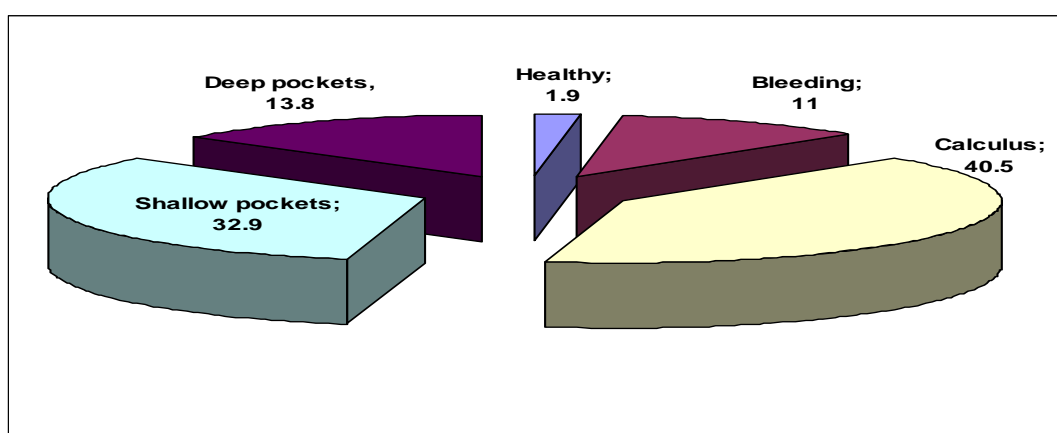**Fig. 1.** Percentage distribution of CPITN scores

Table II. CPITN measurements of Afghan patients by age groups

Age group	Healthy No.	%	Bleeding No.	%	Calculus No.	%	Shallow pockets No.	%	Deep pockets No.	%
8 - 14	2	1.0	3	1.4	4	1.9	0	0.0	0	0.0
15 - 19	1	0.5	4	1.9	8	3.8	6	2.9	1	0.5
20 - 24	1	0.5	9	4.3	16	7.6	7	3.3	0	0.0
25 - 29	0	0.0	2	1.0	11	5.2	12	5.7	7	3.3
30 - 34	0	0.0	2	1.0	20	9.5	8	3.8	7	3.3
35 - 44	0	0.0	2	1.0	17	8.1	17	8.1	4	1.9
45 - 54	0	0.0	1	0.5	7	3.3	16	7.6	10	4.8
55 +	0	0.0	0	0.0	2	1.0	3	1.4	0	0.0
Total	4	1.9	23	11.0	85	40.5	69	32.9	29	13.8

p<0.05, the Chi-square test

It is obvious that periodontal treatment needs increased with age and Chi- square test showed that there was a statistically significant difference in CPITN sores by age (p=0.00).

A comparison by gender based on means and SD of CPITN scores was found to be higher for females compared to males (Table III). Fig. 2 shows that generally, healthy gingivae were found more often in males compared to females who had lower prevalence of gingival bleeding, calculus and shallow pockets, while the prevalence of deep pockets was higher. However, the gender specific differences were not significant (p=0.28). Additionally, female patients have shown higher

Table III. Means and SD of CPITN scores by, age, gender and education

Age group:	No.	(%)	Mean	SD	P-value
8 - 14	9	4.3	1.22	0.83	0.00
15 - 19	20	9.5	2.10	0.97	
20 - 24	33	15.7	1.88	0.78	
25 - 29	32	15.2	2.75	0.88	
30 - 34	37	17.6	2.54	0.87	
35 - 44	40	19.0	2.58	0.75	
45 - 54	34	16.2	3.03	0.80	
55 +	5	2.4	2.60	0.55	
Gender					0.28
Female	85	40.5	2.54	0.97	
Male	125	59.5	2.40	0.90	
Level of education					0.07
Illiterate	87	41.4	2.60	0.90	
Basic school	88	41.9	2.28	0.99	
College/ University	35	16.7	2.54	0.78	

Table IV. Means and SD of CPITN scores in different age groups by gender

Age group:	Females Mean	Females SD	Males Mean	Males SD	P-value
8 - 14	1.00	0.82	1.40	0.89	0.28
15 - 19	2.10	0.74	2.10	1.19	
20 - 24	1.69	0.63	2.00	0.86	
25 - 29	3.27	0.79	2.48	0.81	
30 - 34	2.64	0.84	2.48	0.90	
35 - 44	2.67	0.84	2.50	0.67	
45 - 54	3.20	0.68	2.89	0.87	
55 +			2.60	0.55	
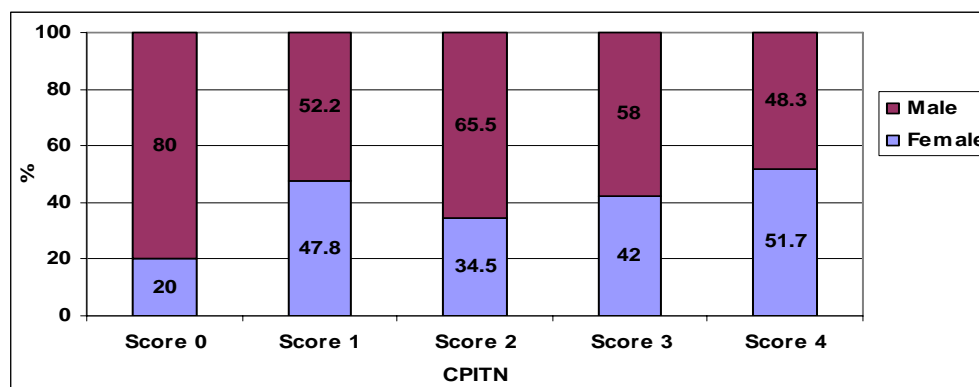
Fig. 2. Percentage distribution of CPITN scores for females and males

mean CPITN scores than males in the age groups 25 years and elder (Table IV), while in younger age groups males have worse periodontal conditions than females but the difference was statistically insignificant (p= 0.28). Moreover, individuals with college/university level of education had less bleeding, calculus, shallow and deep pockets compared to patients with no or basic school education. The difference in the patients' level of education, however, was statistically insignificant (*p*=0.07) (Table III).

Discussion

CPITN has been criticized for overestimating both prevalence and severity of periodontitis among young age groups and underestimating these

parameters among older ones.[4] The value of treatment needs component was criticized too, and it was omitted from the 4th edition of the WHO Oral Health Surveys (1997).[3] Moreover, the changes in CPITN before and after periodontal treatment were mainly found in scores 1, 2 and 3, while other categories (scores 0 and 4) remain approximately unchanged after treatment, with a very low percentage of subjects with completely healthy periodontal tissues.[5] It is worthy of note that in terms of public health, what is more important first is to know that subjects are at risk for developing severe PD, and then, which treatments are effective at preventing these diseases.

Regardless of what has been mentioned previously, the CPITN has been employed as a measure of periodontal treatment needs, in a large number of epidemiological surveys performed in various countries and areas.[2] In addition, the system was most suitable in respect to time available for examining periodontal status in the present study.

This study was carried out on a small sample of Afghan nationals attending the dental clinic at JMFH in Mazar-i-Sharif. It is not obvious whether it is representative of the population of the North of Afghanistan or the entire Afghan people. However, this study was the first study conducted on Afghan individuals using the CPITN index to assess periodontal treatment needs of the rural population in Mazar-i-Sharif and the results of this study reveal the periodontal treatment needs of the examined population. Moreover, the findings are an important step towards reaching the WHO goal of Global Oral Data Bank.

Results presented here confirm other CPITN studies[5-9] showing that most of our subjects (98.1%) need some form of periodontal treatment and subjects with completely healthy periodontal tissues comprised only a minority. Moreover, more subjects here had periodontal pockets of 4mm or more (46.7%) than the 22.2% in the rural areas of Ninevah, Iraq,[10] and lower than the 86.5% in Eastern Germany[7] and 64.8% in Quebec, Canada.[9] Similar to other studies,[10,11] the most frequent periodontal finding was calculus (40.5%).

It is noted that the interpretation of the results of this limited CPITN study regarding calculus should focus on health promotion and education, leading to improved oral hygiene rather than on calculus removal only. After improving oral hygiene,

removal of calculus can be carried out. This approach not only manages the present situation efficiently; but also will lead to lower calculus figures in succeeding generations.

When making comparisons with other studies, for example in the age group 15-19 years, these findings are comparable to those from France (1985),[12] while for the age group 35- 44 years our finding are comparable to those in Hong Kong (1984), and Japan (1984) but are higher than Australia (1984), New Zealand (1981) and Zimbabwe (1986).[13] To compare results to a Mediterranean country, Taani in 2004[14] in North of Jordan had shown that fewer subjects between 20 and 60 years of age have shallow and deep pockets than subjects in the same age band in our study. Our study show higher bleeding and calculus in younger ages while subjects in older age groups have more deep pockets, this may be due to the strong impact of age on the periodontium. This finding is in agreement with many studies showing increased periodontal treatment needs with increase in age.[6-8, 10, 11]

Although, males consistently have a higher prevalence and severity of PD than females,[15] the percentage of males with healthy periodontal tissues (3.2%) was higher in our study than that of females (1.2%). Bleeding, calculus and shallow pockets were observed more in males while deep pockets were more prevalent in females. However, the gender specific differences were not significant (p>0.05).

Our results regarding periodontal treatment needs are similar to those of various international studies, including those carried out in industrialized countries[6,13] that reported high periodontal treatment needs in all age groups. Moreover, treatment needs recorded among individuals living in industrialized countries was higher than those in some developing countries [12] where dental care system is confined virtually to emergency treatment. Our results also indicate that the most frequent periodontal treatment needed was improved oral hygiene practice and scaling as recommended in the CPITN methodology.[1] Therefore, priority should be given to primary preventive programs aimed at improving the periodontal health of the majority of population under study.

According to WHO country profiles,[16] socioeconomic indicators of Afghanistan show that in 1997 literacy was only 16% in adults, 25% in school first level and 15% in school second level.

Literacy was higher for males compared to females in the three levels mentioned. Our results show that educated individuals in this study population, whether in basic school level, or in college or university level, have less need for periodontal treatment than non-educated subjects. This conclusion is drawn from the fact that none of the illiterate subjects had CPITN score 0. This finding is in agreement with Mengel *et al.* 1993[7] and Paulander *et al* 2003[17] who reported low CPITN scores were associated with a higher education level. Higher education was found to have a positive effect on adopting health-promoting measures. For example, highly educated subjects use dental services more than subjects with lower level of education. Additionally, people with higher education were also found to have less dental anxiety, which is one of the cultural factors that was shown, according to Milgrom *et al.* 1985,[18] to have an impact on patients' health behavior.

Conclusion

Periodontal status in Mazar-el-Sharif in the North of Afghanistan was poor in different age groups with most individuals requiring simple periodontal treatment. Therefore, comprehensive prophylactic concepts need to be developed and introduced in childhood and early adulthood life for the population of Mazar-i-Sharif to prevent PD. Further research and larger studies are needed to confirm our results and monitor changes in CPITN over time.

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