

Assesment of periodontal disease using the CPITN index in a rural population in Ninevah, Iraq

T.Y. Khamroo¹

تقييم أمراض ما حول الأسنان باستعمال مَنسَب الاحتياجات العلاجية في مجتمع ريفي بمحافظة نينوى في العراق
طارق يوسف خمركو

خلاصة: من أجل تقييم مدى انتشار أمراض ما حول الأسنان في مجتمع ريفي، وتقدير الاحتياجات العلاجية لهذه الأمراض، تم فحص 1418 فرداً تتراوح أعمارهم بين سبع سنوات وبين سبعين سنة، من أهالي ثلاث قرى في محافظة نينوى، حيث استعمل لهذا الغرض المنسب المجتمعي للاحتياجات العلاجية لأمراض ما حول الأسنان، سعياً إلى تقدير حالة أنسجتهم حول السنية. وتبيّن أن 12.5% فقط من أفراد العينة كانوا أصحاب الأسنان واللثة، بينما كانت اللويحات السنية هي أكثر الحالات التي شوهدت في أنسجة ما حول الأسنان. إن هناك احتياجاً إلى وقاية الأسنان، والتوعية بكيفية تطبيق إجراءات الحفاظ على صحة الفم. ولم يُلاحظ فرق جوهري بين الذكور والإناث فيما يتعلق بصحة ما حول الأسنان.

ABSTRACT To estimate the prevalence of periodontal disease in a rural population and to assess the periodontal treatment needs, a sample of 1418 individuals aged between 7 years and 70 years, from three villages in Ninevah Governorate was examined using the community periodontal index of treatment needs to assess their periodontal condition. Only 12.5% of the sample had healthy teeth and gums, and calculus was the most frequently observed periodontal condition. There is a need for dental prophylaxis and instruction in the use of oral hygiene procedures. There was no significant difference between males and females in periodontal health.

Evaluation des parodontopathies à l'aide de l'indice CPITN dans une population rurale à Ninevah (Iraq)

RESUME Afin d'estimer la prévalence des parodontopathies dans une population rurale ainsi que les besoins en traitements parodontaux, un échantillon composé de 1418 individus âgés de 7 à 70 ans, originaires de trois villages du Gouvernement de Ninevah, a été examiné en utilisant l'indice des besoins de la collectivité en matière de traitement des parodontopathies (CPITN) pour évaluer l'état de leur parodonte. Parmi les personnes incluses dans l'échantillon, 12,5% seulement avaient des dents et des gencives saines et le tartre était le problème parodontal le plus fréquemment observé. Une prophylaxie dentaire et une instruction concernant l'utilisation des méthodes d'hygiène bucco-dentaire sont nécessaires. Il n'y avait aucune différence significative entre les hommes et les femmes en ce qui concerne la santé du parodonte.

¹Community Dentistry Department, Dental College, University of Mosul, Mosul, Iraq.
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Introduction

Within the past 15 years the community periodontal index of treatment needs (CPITN) has become widely accepted as the method of choice for epidemiological and screening studies of periodontal disease [1,2] and for estimating periodontal prevention or treatment needs [3,4].

Periodontal disease is one of the most widespread diseases in the world [5] and is more prevalent in developing countries [6-8], particularly in rural areas [9-11]. The disease has been reported to appear at an early age in developing countries (as with gingivitis) and progress with age to periodontitis.

The dental services in Iraq are characterized by a curative approach. However, the increased prevalence of periodontal disease as a result of poor oral hygiene is increasing demands on these services. This increased demand and a lack of dentists in rural areas require a new approach capable of bringing about meaningful improvements in community dental health.

The purpose of this study was to estimate the prevalence of periodontal disease in a rural population in Ninevah Governorate using CPITN to assess the periodontal treatment needs.

Subjects and methods

The study was conducted in three randomly selected rural villages in the province of Ninevah Governorate. A sample of 1418 individuals, aged 7-70 years was selected using random cluster sampling from the population of three villages. Each village was divided into eight zones; two zones were then randomly selected and their whole population was examined. The examinations were carried out in the village

school using a portable dental chair and adequate light.

The World Health Organization (WHO) community periodontal index of treatment needs [12] was used to assess levels of periodontal condition and treatment needs, and the specially designed WHO periodontal probe was used for the examinations [5]. Each sextant was assigned a code number and the condition of the worst affected site in that sextant was recorded. The subjects were classified into treatment needs categories according to the highest code number assigned to any sextant of their mouth.

The index teeth examined for adults aged 20 years and over were the ten index teeth (17, 16, 11, 26, 27, 37, 36, 31, 46 and 47) and for subjects under 20 years only six index teeth (16, 11, 26, 36, 31 and 4) were used [13]. This difference avoided scoring the deepened sulci associated with eruption as periodontal pockets. For the same reason, when children under 15 years were examined, pockets were not recorded, only bleeding and calculus.

The statistical analysis of the data included the classification of data and calculation of frequencies. The differences between age groups, and between males and females were tested statistically using the chi-squared test at a level of 0.05 significance.

Results

The sample comprised 619 (43.7%) males and 799 (56.3%) females and was divided into six age groups (Table 1).

Table 2 shows the number and percentage of individuals according to their highest score. The results show that only 177 people in all age groups (12.5%) had healthy teeth and that the highest percentage of those was in the age group 7-14

years. The chi-squared test showed significant differences by age (except between the age groups 25–34 years and 35–44 years) indicating that periodontal disease increased with age. The periodontal condition most frequently found was calculus.

Table 3 shows the mean number of sextants scoring in each category per person in the different age groups. The mean number of healthy and bleeding sextants decreased with increasing age, while the mean number of sextants with calculus and pockets increased with age. The mean number of sextants excluded because there were fewer than two teeth was 0.2 in the age group

35–44 years; this increased with age to 0.6 for the age group 55 years and over.

Periodontal treatment needs are shown in Table 4. The results indicate that for all age groups only 12.5% needed no treatment, 87.5% needed oral hygiene and only 6.6% required surgical treatment.

A comparison by sex based on the percentage of the mean number of sextants (Table 5) indicated that healthy gingiva was found more often in males compared to females (35.2% versus 28.9%). Males were also found to have a slightly higher prevalence of bleeding and deep pockets than females, while the prevalences of calculus formation and shallow pockets were higher in females than males. However, the sex-specific differences were not found to be significant.

Table 1 Distribution of individuals by sex and age

Age group (years)	Male	Female	Total
7–14	380	343	723
15–24	79	178	257
25–34	48	113	161
35–44	48	55	103
45–54	24	60	84
55+	40	50	90
Total	619	799	1418

Discussion

This study was the first to be conducted on a large sample of individuals using the CPITN index to estimate the prevalence of periodontal disease and to assess the periodontal treatment needs of the rural population in Ninevah.

Healthy gingiva was found in only 12.5% of individuals. A high percentage of

Table 2 Number and percentage distribution of individuals according to their highest score

Age group (years)	Healthy		Bleeding		Calculus		Shallow pockets		Deep pockets	
	No.	%	No.	%	No.	%	No.	%	No.	%
7–14	145	20.1	319	44.1	259	35.8	0	0.0	0	0.0
15–24	26	10.1	84	32.7	91	35.4	48	18.7	8	3.1
25–34	5	3.1	20	12.4	73	45.4	52	32.3	11	6.8
35–44	1	1.0	11	10.7	42	40.7	38	36.9	11	10.7
45–54	0	0.0	4	4.8	15	17.8	42	50.0	23	27.4
55+	0	0.0	0	8.0	8	8.6	41	45.7	41	45.7
Total	177	12.5	438	30.9	488	34.4	221	15.6	94	6.6

Table 3 Mean numbers of sextants per person, per category

Age group (years)	Healthy	Bleeding	Calculus	Shallow pockets	Deep pockets	Excluded
7-14	2.8	2.3	0.9	0.0	0.0	0.0
15-24	1.5	2.3	1.7	0.4	0.1	0.0
25-34	0.8	2.0	2.2	0.9	0.2	0.0
35-44	0.4	1.8	2.4	0.8	0.4	0.2
45-54	0.2	1.0	2.4	1.6	0.5	0.3
55+	0.2	0.3	1.7	2.3	0.9	0.6
Total	1.8	2.0	1.4	0.5	0.2	0.1

Table 4 Number and percentage distribution of persons according to treatment needs

Age group (years)	Healthy		Oral hygiene		Prophylaxis		Surgery	
	No.	%	No.	%	No.	%	No.	%
7-14	145	20.1	578	79.9	259	35.8	0	0.0
15-24	26	10.1	231	89.9	139	51.1	8	3.1
25-34	5	3.1	156	96.9	125	77.6	11	6.8
35-44	1	1.0	102	99.0	80	77.6	11	10.7
45-54	0	0.0	84	100	57	67.8	23	27.4
55+	0	0.0	90	100	49	54.3	41	45.7
Total	177	12.5	1241	87.5	709	50.0	94	6.6

Table 5 Percentage of the mean number of sextants in each category, by sex, for the total sample

Category	Male %	Female %	Total %
Healthy	35.2	28.9	31.6
Bleeding	35.5	34.1	34.8
Calculus	19.4	25.6	22.9
Shallow pockets	7.6	9.2	8.5
Deep pockets	2.3	2.1	2.2

these were in the age group 7-14 years and less than 1% in the age group 35 years and over. This finding is in agreement with many studies that have reported the prevalence of periodontal disease to be nearly 100% in adults 35 years of age and older [14-19].

Calculus was the most frequently observed periodontal condition for the population as a whole and in the age groups 15-24 years, 25-34 years and 35-44 years. In the age groups 45-54 years and 55 years and over, the periodontal condition most fre-

quently observed was shallow pockets. The findings suggest that periodontal disease prevalence ranged from moderate to high. When making comparisons with other studies, for example in the age group 35–44 years, these findings are comparable to those in Hong Kong, Hungary and Japan, but are higher than Australia, New Zealand and Zimbabwe [20]. They are also comparable to another study conducted in a rural area in Ninevah Governorate [11].

The mean number of sextants excluded for the age group 35–44 years was 0.2 and increased to 0.6 for the age group 55 years and over. The mean number of sextants excluded in this population was similar to some countries in Africa and South-East Asia, while less than in America and Europe [2].

The findings of the study indicate that periodontal disease is prevalent in this population and that the cumulative effect of past periodontal breakdown increases with age. For the majority of subjects the progress of periodontal disease is slow and would allow the retention of natural dentition.

The results also indicated that the treatment needed for periodontal disease was improved oral hygiene procedures and scaling as recommended in the CPITN methodology. Therefore, priority should be given to primary prevention programmes aimed at improving the periodontal health of the majority of the population.

Instruction in oral hygiene and prophylaxis, although not yet used in Iraq, could be developed by dental hygiene staff and would provide an improvement in public oral health in a more cost-effective way than the current approach.

Males showed slightly less periodontal disease than females, but the difference was not statistically significant. This con-

curs with the findings of other studies in developing countries that showed no difference between the sexes in gingival health [21–24] because their practice of oral hygiene was the same. However, studies in industrialized countries have recorded better gingival health in girls than boys [25,26] because they tend to practise better oral hygiene.

Conclusions

- Periodontal disease is widespread in the rural population of the Ninevah areas and appears at an early age.
- The data on periodontal conditions presented in this study are similar to data available from WHO on global oral health, with a small percentage of children and young adults with healthy teeth and gums but good oral health virtually absent in adults [20].
- Our results showed poor periodontal status in all age groups, with most of the population requiring simple therapy. This indicates that comprehensive oral hygiene instruction and dental prophylaxis need to be initiated
- The most efficient way to prevent periodontal disease is to control it in childhood and in young adult life. It is especially important to take advantage of the school setting where it is possible to reach large numbers of school-children with well planned, preventive measures.
- The availability of estimates of periodontal disease prevalence would greatly improve the calculation of needs estimates. These estimates are important for the future planning of dental services in rural areas in Iraq.

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The collaborative programme in oral health continued to focus on promoting national capacities to develop oral health preventive programmes, particularly those targeting children. This direction is in accordance with the regional strategy to prioritize programmes for both pre-school children and schoolchildren as the principal activity to combat rising regional trends in oral health morbidity.

Source: The Work of WHO in the Eastern Mediterranean Region. Annual Report of the Regional Director, 1 January–31 December 1998, page 79. World Health Organization, Regional Office for the Eastern Mediterranean, Alexandria, 1999.