

Periodontal treatment needs in a native island community in Colombia determined with CPITN

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Aims: To identify the prevalence and different degrees of periodontal disease in an isolated community (Isla Grande, Colombia) with no dental services and low educational level with the use of CPITN, and to establish periodontal treatment needs in different age groups. **Results:** Of 116 people examined, 0.9% were in periodontal health (CPITN value 0), 18.1% had gingival bleeding (CPITN value 1), 51.7% had supra or subgingival calculus (CPITN value 2), 18.1% presented pockets 3.5–5.0mm deep (CPITN value 3), and 11.2% had pathological pockets of 5.5mm or deeper (CPITN value 4). No clear differences were observed between sexes. **Conclusions:** This study shows that 81% of the sample has some type of periodontal treatment need, with 69.8% of them requiring periodontal treatment that may be supplied by a hygienist and 11.2% requiring specialised treatment. Implementation of oral health education and oral prevention programmes was recommended to the authorities for this community.

Key words: Periodontal disease, CPITN, Colombia

The community periodontal index of treatment needs (CPITN) has been used in different countries since it was developed as an initiative of the World Health Organisation (WHO) to evaluate adult oral health, particularly in non-industrialised countries^{1,2}. In Colombia, the periodontal conditions of the population older than 5 years was evaluated between 1977–1980³, showing that 56% of this population had presence of soft dental plaque and 95% presented some type of periodontal disease.

Although some studies have suggested some additions to CPITN^{4,5}, the validity and relevance of CPITN have permitted its wide use as a helpfully tool for estimating periodontal treatment^{6–10}. Given its geographical conditions, the population of the Rosario Archipelago (Colombia) presents three particular characteristics, which permit classification of them as a native island population. Primarily, they share similar habits, cultural and living conditions; secondly, their educational level is similar throughout; and thirdly, nobody has taught them about oral prevention or tooth brushing techniques because there is no dental service on the island. Thus, the aims of the present study were to identify the prevalence and different degrees of periodontal disease in an isolated community with no dental services and low educational

level with the use of CPITN, and to diagnose the needs of periodontal treatment in this community accordingly to the different age groups.

Material and methods

One hundred and sixteen people out of the 600 living on the island accepted to participate in the research (19.33% of the total population). Four groups were determined according to age with 22 individuals in the group of 14 years or younger, 18 individuals in the group of 14-19 years, 53 individuals 20-34 years, and 23 individuals in the group of 35+ years of age.

No instruction in tooth brushing or oral prevention was given to the participants prior to the start of the research. Each periodontal evaluation was performed using natural daylight as illumination and was performed during morning hours. A dental mirror and a WHO probe with a black band between 3.5 and 5.5mm with respect to the tip and a spherical tip of 0.5mm of diameter were the unique instruments used for examination.

As per the CPITN system, the mouth was divided in sextants. Upper and lower arches were divided and numbered as follows: upper right posterior (I), upper anterior (II), upper left posterior (III), lower left posterior (IV), lower anterior (V), and lower right posterior (VI). The probe was introduced gently into the sulcus in three different sites (mesial, central and distal) on both buccal and lingual aspects in each tooth. Two previously calibrated examiners made measurements of each patient at different times. When a difference in the value for any of the sextants existed between the examiners, the patient was re-examined by both of them at the same time and an agreement in the value was defined. Healthy sites (value of 0) were considered on those sites where the black band of

the probe remained completely visible above the gingival sulcus and no supragingival calculus or bleeding was observed upon probing. Tissues under the same conditions but bleeding observed upon probing were considered value 1. Presence of supra or subgingival calculus was considered value 2. The black band partially submerged in the gingival sulcus, value 3, and, the black band completely submerged into the gingival sulcus, value 4.

The highest value found in each sextant was registered as the value for that sextant. When the highest value (4) was found in one tooth in a sextant, this value was recorded immediately and the remaining teeth in the sextant were not examined¹. If less than two functional teeth were present, the sextant was defined as edentulous⁹. Finally, the whole population was ranked into a general CPITN index depending on the highest CPITN value found within each patient.

Results

One hundred and sixteen individuals, which represented 19.33% of the total population in the island, were examined. The age range was between 7 and 67 years, with a mean age of 25.3 years. Inter-examiner agreement was over 85%.

Thirty-eight (5.45%) out of 696 sextants evaluated were classified as edentulous. Regarding the sextants; 111 individuals were evaluated for sextant I and II, 107 for sextant III, 108 for sextant IV, 116 for sextant V, and 105 individuals for sextant VI. The difference between the number of individuals examined for each sextant and the total of the population (116 individuals) is due to the number of edentulous sextants classified in each individual. The highest number of individuals was classified in a CPITN value 2 (51.7%) and the lowest number was valued as CPITN 0 (0.9%). CPITN values 1 and 3 showed the same percentage of individuals (18.1%), and CPITN value 4 involved 11.2%

Table 1 Results of the numbers of persons and the correspondent percentage in the different CPITN values for the whole population. (n)=number of individuals, (%) corresponding percentage of the whole population for the CPITN value.

CPITN	n	%
0	1	0.9
1	21	18.1
2	60	51.7
3	21	18.1
4	13	11.2
Total	116	100.0

of the whole population examined (*Table 1*).

The population of age 14 years or younger showed a higher number of individuals in the CPITN value 1 (45.4%) and 2 (40.9%). In the 15-19 year age group, the highest numbers of individuals were classified as CPITN value 2 (44.4%), followed by CPITN value 3 (22.2%), while for the 20-34 year group, the highest numbers of individuals were classified as CPITN 2 (64.2%), with value 3 in second place at 18.9%. The oldest group (35 years +) included the highest number of individuals classified as CPITN 2 (39.2%), and CPITN 4 (34.8%). The numbers of individuals examined in each group as well as the correspondent percentage for the different CPITN indexes within each group are shown in *Table 2*.

Discussion

This study evaluates the needs of the periodontal treatment of the population of Isla Grande (Rosario Archipelago, Colombia). This population was chosen as they present particular characteristics, which include a similar environment and living conditions for the whole population. The CPITN index developed by Ainamo¹ and recommended by different authors as a useful tool for the assessment of periodontal needs¹¹⁻¹⁴ was used in order to establish an epidemiological diagnosis of the periodontal

Table 2 Results of the numbers of persons and the corresponding percentage with different CPITN values for the different age groups

Age group	14 or younger		15–19		20–34		35 or older	
	n	%	n	%	n	%	n	%
0	0	–	1	5.6	0	–	0	–
1	10	45.4	3	16.7	6	11.3	1	4.3
2	9	40.9	8	44.4	34	64.2	9	39.2
3	3	13.7	4	22.2	10	18.9	5	21.7
4	0	–	2	11.1	3	5.6	8	34.8
Total	22	100	18	100	53	100	23	100

status of this isolated population. Although the sample from the target population seems to be small, the results show that the needs of periodontal treatment on the island are similar to those observed in Colombia and South America^{3,15}. Therefore, the sample used seems to show data that may be expressed as representative for the target population.

The data show that 81% of the sample has at least some type of periodontal treatment need (CPITN higher than or equal to 2) (Table 1). Most of the individuals (69.8%) require treatment, which includes scaling and/or elimination of overextended margins, and 11.2% of individuals need complex periodontal treatment. Considering that 99.1% of the population require at least oral hygiene instruction, this study shows a high prevalence of periodontal treatment need in this population. This result is similar to that found in the population older than 5 years in Colombia recently reported³. The data also shows that a high number of the population (69.8%) may be treated by hygienists and only 11.2% would require a specialist for treatment.

The results of this study are in agreement with the findings of the WHO Global Oral Data Bank, as most of the patients show some type of bleeding when the different sextants are evaluated (over 90%). This study also shows similar results to those from other countries in South America¹⁵ and Asia¹⁶, where the presence of calculus is observed in over 40% of the population and severe disease

in over 15% of the sample. The current study reports over 39% of the population ranked on CPITN 2, and 8.7% ranked CPITN 3, and 5.7% ranked CPITN 4.

Regarding the age groups, the results show an increase in the periodontal treatment needs in the older group. Relating this to the fact that the highest numbers of edentulous sextants are found also in this group, it could be hypothesised that the progression of periodontal disease is one of the major causes of tooth loss in Isla Grande. This would be in accordance with other studies in South America where periodontal disease is determined as being the cause of extractions in more than 40%¹⁵ or 50+ %¹⁷ of the cases in people over 35 years.

In summary, this study shows that the need of periodontal treatment in the population of a native island in Colombia is as high as it is in most of the areas around the world. However, hygienists may supply most of the necessary treatment and the requirement for specialised treatment is low. Based on these findings, implementation of oral health education and oral prevention programmes was recommended to the authorities for this community.

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