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Periodontal treatment needs of a rural population of North East India

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Abstract

In the recent times, health care professionals are giving much importance to the oral hygiene and oral health. This is because of the fact that a number of systemic diseases are interconnected with dental and periodontal diseases. Our rural population is not much aware about the importance of oral health and is still indulging various harmful oral habits. The present study was carried out to assess the periodontal treatment needs of a rural Assam population of North East India to find out the treatment requirements with greater precision and international uniformity by using a WHO index, "Community Periodontal Index of Treatment Needs (CPITN)". The collected data were analyzed which shows that majority of the population are suffering from gingival and periodontal diseases and their treatment need increases with their advancing age. The findings in the present study indicates that only extensive Dental Health Education through the grass root level workers of the primary health care system can play a major role in the promotion of periodontal health of our rural community.

Keywords: CPITN, Periodontal disease, Rural population, WHO.

1. Introduction

Oral health is an integral part of the general heath of a person. Good oral health is considered as an important component of overall health and well being of an individual. The World Health Organization (WHO, 1978) endorses oral health as part of the total health and is essential to quality of life. Periodontal disease which affects the supporting and investing tissues of the teeth has been recognized as a major global public health problem. Almost all people, in all over the world do suffer from some degree of periodontal disease and is responsible for a substantial number of teeth losses in the adult population. In view of the widespread prevalence of periodontal diseases in all over the world, World Health Organization recognizes periodontal disease as a public health problem. WHO (Geneva, 1978) recognizes gingival bleeding as the most common oral health problem. Periodontal disease is now considered to be a public health problem because of the large number of persons are affected by this disease and therefore emphasis is given both in the educational phase and in the prevention and cure. It is also observed that there is a higher prevalence of periodontal disease in developing countries. (Marshall D *et al.*,) In view of the shortage of technical manpower and socio-economic considerations in developing Countries, it has become necessary to concentrate on large scale preventive and affordable treatment measures of periodontal diseases.

David E. Barmes (1970) explained dental epidemiology programme of the WHO dental health unit, Geneva, in terms of development of standard method, collection of information on national prevalence of dental diseases and collaborative research programmes. As global data on periodontal diseases both in relation to describing prevalence and as guidelines for the development of appropriate counter measures were not adequate, WHO adopted a new survey method for rapidly gathering more reliable data on periodontal diseases which is known as community periodontal index of treatment needs (CPITN). CPITN was developed for the joint working Committee of the WHO and Federation Dentaire Internationale (FDI) by Ainamo J. *et al., (1982*). This

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survey method CPITN (Cutress T.W., *et al.*, 1987) is based on separate recording of pockets, calculus and bleeding for a restricted number of teeth and helps to plan preventive and other services for the global population with greater precision and international uniformity. Also, the survey using CPITN entails study of both prevalence of periodontal disease in a population and assessment of treatment needs for the same.

2. Objectives

In this study, a survey was done to find out the prevalence of periodontal disease in a rural Assam population of North East India and also to assess the treatment needs for the same sample group of population. The study aims to evaluate the present and future requirements for preventive and curative measures for improvement of the oral health of the community.

3. Materials and methods

The present study was conducted in a rural area on the northern bank of the mighty river Brahmaputra and is located in and around the greater Abhoypur village and is under the jurisdiction of Kamrup district, Assam of North East India. The permission to conduct the survey was obtained from the District Health Authority as per survey protocol (Oral Health Surveys-Basic Methods, WHO, Geneva, 1999)

4. Sample of the Study

A total number of 438 subjects within the age group of (15-64) years and above participated voluntarily in this study. The samples for this survey were selected at random without any consideration of sex, religion, ethnic groups, education, socio-economic condition and systemic health. The subjects were categorized into five groups as (15-19), (20-29), (30-44), (45-64) and 65 years and above. The division of subjects according to age groups was considered important for the provision of information of variations in the development of periodontal disease with age.

5. Study Design

Prior intimation and communication were made so as to enable the people to gather at the examination camp. The importance of the survey was explained to the study population with a request to take active participation before starting of the actual examination. The examination was done by the investigator himself with the help of a mouth mirror and a CPITN probe to examine all the six sextants of each individual beginning from the maxillary right sextant in a clockwise direction in both maxillary and mandibular region.

5.1 Index Teeth

For examination of adults aged 20 years or more only ten teeth known as the "Index Teeth" were examined. The ten Index teeth which have been identified as the best estimators of the worst periodontal condition of the mouth are – 17, 16, 11, 26, 27, 47, 46, 31, 36 and 37. The molars were examined in pairs and only one score i.e. the highest score was recorded. For examination of the young adults aged between (15-19) years only six index teeth were examined for scoring. As per the CPITN methodology second molars were excluded as Index teeth at these ages because of the high frequency of false pockets (Non inflammatory pockets associated with tooth eruption). The six Index teeth are – 16, 11, 26, 46, 31, and 36

CPITN Chart (W.H.O.)

Periodontal Status Code		Treatment Need Code	
Code-0:	No periodontal disease	TN-0 :	No treatment needed
Code-1:	Bleeding observed during or after probing.	TN-1 :	Motivation and oral hygiene instruction is needed
Code-2:	Calculus or other plaque retentive factors either seen or felt during probing.	TN-2:	Need for professional cleaning of teeth and removal of plaque retentive factors along with oral hygiene instructions.

Code-3:	Pathological pocket (4-5mm) in depth. Gingival margin situated on black band of the probe.	TN-2 : Same as for Code-2	
Code-4:	Pathological, pocket of 6 mm or more in depth. Black band of the probe is not visible.	TN-3 :	Same as Code-2 and complex treatment involving deep scaling, root planing and more complex surgical procedures.
Code- X:	When only one tooth or no teeth are present in a sextant.		

5.2 Recording of findings

All the data, which were obtained from taking history and examination of a subject, were recorded in the proforma prepared for the study.

5.3 Probing procedure

The probing was done on the Index teeth by gently inserting the tip of the probe between the teeth and the full depth of the sulcus or pocket. The probing was done on each Index tooth by walking the probe with the tip remaining in the sulcus on the mesial, midline and distal of facial and lingual / palatal surfaces. The probing depth was read by observation of the position of the black band. The direction of the probe during insertion was kept parallel with the long axis of the tooth and the ball was kept in contact with the surface of the examined tooth.

6. Result and Observations

The study population, which consisted of 438 subjects, was divided into five age groups to analyze the data of the periodontal status and also to assess the treatment needs of each age group separately. The survey results are described in respect to.

1. Highest CPITN scores for each groups (Table -1)

2. Treatment needs scores of each age group (Table-2)

Table-1 : Highest CPITN Scores for each age group of both sexes.

Age group	No. of Samples	No. and percentage of persons having the highest score									
		0		1		2		3		4	
A. (15-19) years	66	6	9.09%	36	54.55%	24	36.36%	0	0.0%	0	0.0%
B. (20-29) years	93	0	0.0%	9	9.68%	78	83.87%	6	6.45%	0	0.0%
C. (30-44) years	144	0	0.0%	0	0.0%	96	66.67%	45	31.25%	3	2.08%
D. (45-64) years	99	0	0.0%	0	0.0%	24	24.24%	69	69.70%	6	6.06%
E. (65 years & above)	36	0	0.0%	0	0.0%	6	16.67%	27	75.00%	3	8.33%
	438	6	1.37%	45	10.27%	228	52.05%	147	33.56%	12	2.74%

The survey findings show that out of the 438 subjects, only 6 subjects (1.37%) scored CPITN code-0, 45 subjects (10.27%) scored code-1, 228 subjects(52.05%) scored code 2, 147 subjects (33.56%) scored code-3 and only 12 subjects (2.75%) scored code-4. Statistical analysis of the data recorded in the table no.-1 is done by using Chi-square (λ^2) test to find out the statistical significance between the increase in the prevalence and severity of periodontal disease and the advancing age of the study population. By pulling the cell frequencies of the table No.-1, the degree of freedom (d.f.) is found to be 4. After calculation, λ^2 value for 4 d.f. is found to be 176, which is much higher than the table value 18.47, at 0.001 level. Therefore, a highly significant association is found ($P<0.001$) between the increase in the prevalence and severity of Periodontal disease and the advancing age of the study population.

Table -2 : Treatment need scores of each age group in accordance with the highest CPITN score.

Age group	No. of Samples	TN-0		TN-1		TN-2		TN-3	
A. (15-19) years	66	6	9.09%	36	54.55%	24	36.36%	0	0.0%
B. (20-29) years	93	0	0.0%	9	9.68%	84	90.32%	0	0.0%
C. (30-44) years	144	0	0.0%	0	0.0%	141	97.92%	3	2.08%
D. (45-64) years	99	0	0.0%	0	0.0%	93	93.94%	6	6.06%
E. (65 years & above)	36	0	0.0%	0	0.0%	33	91.67%	3	8.33%
	438	6	1.37%	45	10.27%	375	85.62%	12	2.74%

The treatment need scores of each age group are evaluated separately and are recorded in the table No.-2. After analyzing the data of 438 subjects, 375 subjects (85.62%) were assigned to the treatment need code TN-2 followed by (10.27%) to TN-1, 12 subjects (2.74%) to TN-3 and 6 subjects (1.37%) to TN -0.

Statistical analysis of the recoded data is done by using Chi-square test, to evaluate the statistical significance between the increase in number of subjects with higher treatment need score and the advancing age of the study population. After pulling the cell frequencies of the Table No.-2, degree of freedom (d.f.) is calculated and is found to be 4. After calculation, we found that (λ^2) value for 4 d.f. is 202, which is much higher than the table value 18.47 at 0.001 level (i.e. $P< 0.001$). Therefore, a highly significant association is found ($P<0.001$) between the increase in the number of subjects with higher treatment needs and the advancing age of the study population.

7. Discussion

In spite of the fact that a regional level survey involving a greater number of samples was needed to generalize the findings and observations of this study, we may assume that the periodontal status of the rural population of North East India will not be of much

different than this present study samples and we may expect that a similar pattern of periodontal treatment needs is existing in the rural North Eastern population of India which accounts for more than 80% of the total population of the region.

In view of the amount of time that is required for the periodontal treatment of each subject and poor dentist population ratio, it is quite impractical to treat the rural population by the conventional method of treatment.

In the present deficient contexture of dental health manpower, it will be more beneficial and cost effective to utilize the already existing health infrastructure and manpower for promotion of oral health at the community level. Basic knowledge of the oral hygiene and periodontal health can be given to the grass root level workers along with the training of general health and will be advantageous for promotion of periodontal health of the rural community since these workers are directly in contact with the masses. The oral health education can be made part and parcel of all other general health education projects. It is indeed the need of the hour for the health planners of our region to formulate appropriate preventive and curative measures for the underprivileged rural community. Promotion of oral hygiene measures at community level will definitely help to achieve our goal of a disease free mouth which will contribute a long way for the achievement of good overall health of our people.

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