Assessment of Prevalence of Periodontal Disease and Treatment Needs in the General Population: A Hospital Based Study

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ABSTRACT

Background: The periodontal diseases is a chronic inflammatory disease resulting in destructions of tissues and structures surrounding the teeth thus, if left untreated causes loss of teeth It is most prevalent oral disease especially in developing countries like India. The objective of cross-sectional survey was to determine the prevalence of periodontal diseases and treatment needs (TNs) in a hospital- based population.

Materials and methods: Totally, 1000 men and women was recruited and periodontal status subject and sextant was evaluated on the basis of community periodontal index of TNs and thereafter TN for each subject and sextant was categorized on the basis of the highest code recorded during the examination.

Results: A total of 1000 subjects (60% males and 40% females) was divided into five age groups that is, 12-24, 25-36, 37-48, 49-60, 61-72,years and sextants were included from the 1000 subjects. Healthy periodontium, bleeding on probing, calculus shallow pockets, and deep pockets were found in 7.0% 22.6%, 50.00%, 20.98% and 17.90% subjects, respectively. Males were affected with shallow and deep pockets as compared to females. Periodontal diseases in the early stages were more prevalent in the younger age groups, whereas advanced stages were more prevalent in older age groups. 29.90% subjects need complex treatment. About 63 %subjects and require either oral hygiene instructions or oral hygiene instructions and oral prophylaxis. Only 7.0% subjects and were healthy and needed on treatment.

Conclusions: Periodontal diseases were found be 93.00% in the study population and the results indicate that majority of the population need periodontal and secondary level of preventive program to reduce the chances of initiation or progression of periodontal diseases thereby improving their systemic health overall.

Key words: Periodontal index of treatment needs, Prevalence, Periodontal Disease.

INTRODUCTION

Periodontal disease is a chronic inflammatory resulting in destruction of tissue structures surrounding the teeth and manifest as a wide variety of inherited conditions affecting the periodontium, gingival diseases and destructive periodontal diseases. [1] It is most prevalent oral diseases worldwide especially in developing countries like India. General unawareness, infrequent dental visits, lower socioeconomic status, and illiteracy to its high prevalence. [2] Plaque induced gingivitis is confirmed to the gingival tissues, whereas the various forms of periodontitis affect all components of periodontium i.e. gingival periodontal ligament, cementum. [3]

The prevalence of periodontal disease dates back to early human civilization as it was indicated by paleopathological studies and recently the global epidemiological data suggests periodontal disease to be one of a major burden on oral diseases. [4]

The current demographic data of India shows a population of over 1.2 billion people making it the second most popular country in the world contributing around 17.5% of the total world population. [5] An array of cultural, ethnic, and demographic diversities is found amongst the people inhabiting here. Owing to this blending of

cultural, ethnic, and geographic factors there has been development of various pathologic differentiation and oral pathologies and the individuals. [6] Also the difference in socioeconomic pattern midst the masses creates entirely different strata of healthcare exposure among the population of India.

The studies on the prevalence of periodontal disease in different populations are useful for not only determining the extent and severity of the disease, but also describe the rate of progression of the underlying condition and identifying the possible etiological factors of the disease.

MATERIALS AND METHODS

In the Present cross sectional study, 1000 peoples from Anugrah Narayan Magadh Medical College and Hospital in the age group ranging from 12 to 75 years of any gender were recruited from dental O.P.D. This is hospital serving the large population of South Bihar and Jharkhand.

Inclusion Criteria:
- Age 12-75 years of any gender.
- Systemically Healthy patients.
- No Periodontal therapy in the last 9 months.

Exclusion Criteria:
- Acute Gingival and Periodontal Disease.
- Antimicrobial therapy for 1 –month prior to study.

Structure Pretested Schedule included the age, gender, address, and medical history, history of periodontal therapy and history of antimicrobial therapy. Periodontal status and Treatment of each study subject and sextant were evaluated with the help of CPITNs probe that was recorded by single trained examiner. Mouth mirror and WHO probe were used for examination. The WHO probe has the working tip (ball) of 0.5 mm in diameter and markings at interval of 3.5, 2.0, 3.0 and 3.0 mm (total 11.5) form the working tip with black coding between 3.5 and 5.5 mm. The ball helps in the detection of calculus, rough margins of restoration, or any other irregularities on the tooth surface and reduces the chances of false measurement of the pocket depth. The WHO probe tip is inserted between the tooth surface and lateral wall of the gingival sulcus and walked around the tooth to determine the pocket initiation and distal on both facial and lingual or palatal surfaces. The dentition was divided into six sextants. The third molars were not included except where they function in place of second molars. Ten index teeth, that is, 17, 16, 11, 26, 27, 37, 36, 31, 46 and 47 were examined in subjects aged 20 years or above. Under the age of 19 years, six index teeth, that is, 16, 11, 26, 36, 31, 46 were examined. Second molars were excluded as index teeth in young subjects upto the age of 19 years to eliminate the false scoring due to pseudo pocket formation during eruption of teeth.

A code was given to each sextant, but only highest code was recorded among examined teeth in individual sextant. After evaluating the periodontal status, TN for each subject was categorized on the basis of the highest code recorded during the examination of all sextants in that subject. The examined sextants were also categorized into the TN groups according to their highest code number. Subjects and the sextants were categorized into the different TN groups such as TN -0= no treatment (code 0), TN -1= oral hygiene instructions (code 1), TN -2 =oral hygiene instructions +oral prophylaxis and removal of plaque retentive factors (code2 and 3) and TN -3= oral hygiene instructions +oral prophylaxis and removal of plaque retentive factors + complex treatment (code 4). [7,8]

Statistical Analysis:
Hospital-based clinical data were presented in the form of number and percentage through tables. Statistical analysis was done by SPSS Version 16.0 which is manufactured by IBM Corporation New York, Unite States

RESULTS

Among the 1000 subjects recruited in the present study, 600 males and 400 females were divided into five age groups,

that is, 12-24, 25-36, 37-48, 49-60, 61-72, and years. [Table 1 and Graph 1]

Table 2 and Graph 2 shows the age-wise distribution of subjects according the highest code of CPITN index among the examined sextants in a person of 1000 subjects. Only 70 subjects in all age groups had healthy teeth with the highest percentage in 12-24 years age group. 91 subjects had bleeding on probing. 540 subjects had calculus on the teeth. 177 persons had shallow pockets that were increased as the age increases. 122 subjects had deep pockets.

Table 3 shows the gender-wise distribution of subjects according to CPITN index. Males were more affected with shallow and deep pockets as compared to females who had higher scores of healthy teeth, bleeding on probing and calculus conditions. Table 4 and Graph 3 show the distribution of included and excluded sextants in different age groups. 5396sextants were included, and 604 sextants were excluded from 1000 subjects in the study. Maximum sextants were excluded in the age group of 61-72 years Negligible sextants were excluded in the age group of 12-24.Subjects were distributed in TN group on the basis of highest code of CPITN index. 299 subjects need oral

hygiene instructions, oral prophylaxis, and complex treatment (TN3).540 subjects need oral hygiene instructions and oral prophylaxis (tn2). 91 subjects need oral hygiene instructions. Only 70 subjects were healthy and needed no treatment, were healthy and needed no treatment [Table 5 and Graph 4]

Table:-1 Age Group and Gender wise Distribution

S. No.	Age Groups (In Years)	Numbers of Subjects	Gender Male Female	
1	12-24	104(10.4%)	54(51.9)	50(48.0%)
2	25-36	226(22.6%)	160(70.7%)	66(29.20)
3	37-48	280(28.0%)	170(60.71%)	110(39.28)
4	49-60	240(24.0%)	136(56.67%)	104(43.33%)
5	61-72	150(15.0%)	80(53.34%)	70(46.66%)
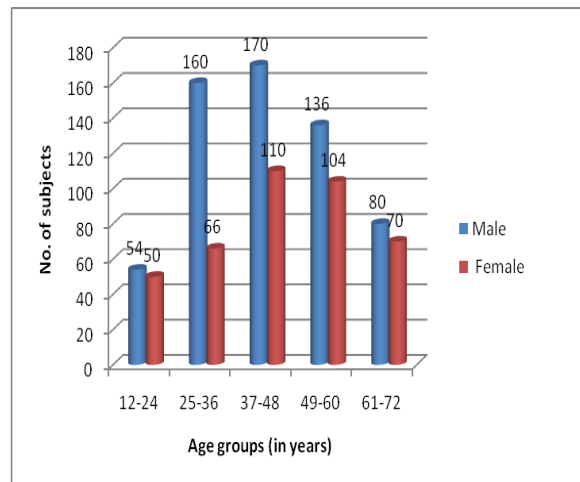
Graph-1

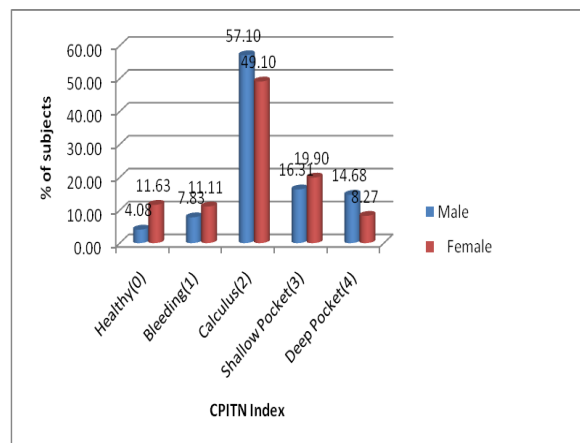**Table: 2 Age Wise distribution of Subjects according to the highest code of CPITN index**

S.No.	Age Groups in Years	No. Of Subjects	Healthy	Bleeding	Calculus	Shallow Pocket	Deep Pocket
1	12-24	104(10.4)	20(19.23)	30(28.84)	40(38.46)	12(11.5)	02(1.9)
2	25-36	226(22.6)	30(13.27)	25(11.06)	120(53.09)	25(11.0)	26(11.5)
3	37-48	280(28.0%)	15(5.35%)	30(10.71%)	140(50.0)	60(21.4)	35(12.5)
4	49-60	240(24.0%)	03(1.25%)	05(2.08%)	160(66.66)	42(17.5)	30(12.5)
5	61-72	150(15.0%)	02(1.33%)	01(0.06%)	80(53.33)	38(25.3)	29(19.3)

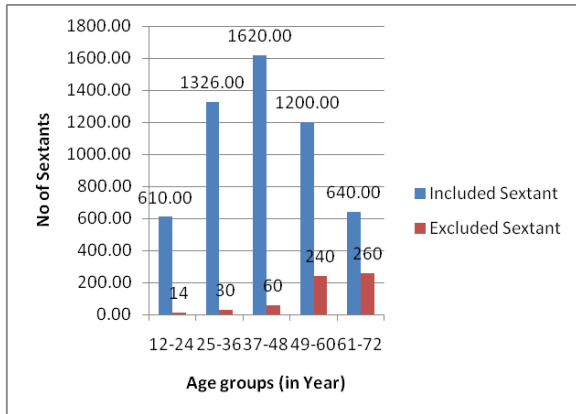**Table:-3 Gender Wise Distribution of Subjects According to Highest code of CPITN Index.**

S.No.	CPITN Index	Gender Male Female	
1	Healthy	25 (4.08)	45 (11.63)
2	Bleeding	48 (7.83)	43(11.11)
3	Calculus	350 (57.10)	190(49.10)
4	Shallow Pocket	100 (16.31)	77 (19.90)
5	Deep Pocket	90 (14.68)	32 (8.27)

Table:-4 Distribution of Included and Excluded sextants in different age Groups.

S.No.	Age Groups in Years	Included Sextant	Excluded Sextant
1	12-24	610	14
2	25-36	1326	30
3	37-48	1620	60
4	49-60	1200	240
5	61-72	640	260

Graph -2

Graph-3

Table:-5 Distribution of Subjects according to Treatment needs

	TN 0	TN 1	TN 2	TN 3
Subjects	70(7%)	91(9%)	540(54%)	299(29.9%)
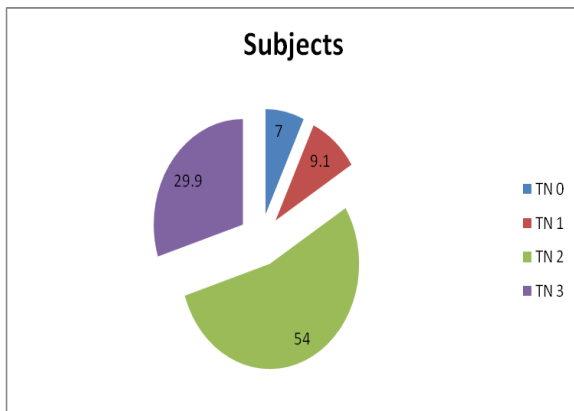
Graph-4

DISCUSSION

The present cross-sectional prevalence study aimed to assess the prevalence of periodontal disease and the TNs of the subjects those visited to the dental OPD, Anugrah Narayan Magadh Medical College and Hospital, Gaya, India, Of the 1000 subjects, Healthy periodontium was found in 70 subjects. In the present study, the prevalence of periodontal disease was found to be 96.30% periodontal diseases in the early stages were more prevalent in the younger age groups as compared to advanced stages that were more prevalent in older age groups. Calculus was present in 540 subjects that is most frequently observed periodontal condition. Deep pockets were found in 122 subjects .The reason behind this finding might be that CPITN index is based on the

measurement of pocket depth and does not record the gingival recession. [9] Therefore, it may not provide the true extension of periodontal disease. Although it is most frequently used index in the assessment of periodontal disease being a simple, easy, and having international uniformity for screening the population at large scale. [9] Overall, prevalence and severity of periodontal disease increases with age that is similar with other published studies which have shown that increasing severity of periodontal diseases is to the untreated cumulative effect of disease process over a period of time instead of ageing process. [10] Males were more affected with moderate and severe periodontitis as compared to females that is also consistent with the other reported studies. [11] The factors responsible for this finding may be that males are less health conscious and have poor oral hygiene than females and heavy deposition of plaque and calculus. [12] there is difficulty in comparing the data of such observational studies because the results depend upon several factors such as, study designs, sample size, eligibility criteria, recording of data, criteria for assessment of disease, microbial pathogens, disease activity and multifactorial nature of periodontal diseases including age, gender, socioeconomic status, educational status, stress factors and control of these factors is challenging.

In the present study, the findings suggest that only 29.90% subjects need complex treatment. On the other hand, approximately 63% subjects require either oral hygiene instructions or oral hygiene instructions or oral prophylaxis. Only 7% subjects were healthy and needed no treatment. Finally, the results indicates that majority of the population need primary and secondary level of program to educate, motivate and instruct people about oral hygiene maintenance and provide the treatment in its early stages to reduce the chances of initiation or progression of periodontal diseases.

CONCLUSION

Periodontal Disease was found to be 93.00% in the study population, and most participants required oral hygiene instruction and oral Prophylaxis. To Prevent or minimize the progression of disease more number of oral health surveys will help in planning of health program at large scale beneficence of the society.

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