Prevalence of periodontal disease in rural population of Raigad district of Maharashtra: A cross-sectional study

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Abstract

Introduction: Periodontal disease is a multi-factorial condition that has been predominantly seen in areas where dental health care facilities are limited. Rural areas in Maharashtra are currently deprived of adequate dental care facilities.

Aim: The purpose of the present study was to evaluate the prevalence of periodontal disease in the rural population of Raigad district of Maharashtra state in India.

Materials and Method: 400 subjects from Raigad district were randomly examined for prevalence of periodontal disease. Subjects were divided into following groups: 15-24 years, 25-44 years, 45-64 and 65-74 years. CPI score for the selected individuals were recorded and the data was analyzed.

Results: It was observed that as the age increased, the CPI score also increased. While CPI score 2 (calculus) was most predominant in age groups 15-24 years, CPI score 3 (pathological pocket of 4-5 mm) was more common in the age groups 25-44 years &45-64 years. CPI score 4 (pathological pocket of >6 mm) was the highest in age groups 65-74 years.

Conclusion: There is a high prevalence of periodontitis in the selected population. The severity of periodontitis was seen to increase with increase in age.

Keywords: Periodontitis, Loss of attachment, CPI, Periodontal pocket.

Introduction

Periodontal disease is defined as a disorder of supporting structures of teeth that includes the gingiva, periodontal ligament, and alveolar bone. Periodontal disease is preceded by inflammation of the gingiva, termed as gingivitis.(1) Plaque is considered as the main etiological factor in the development of periodontal disease in association with increased host susceptibility.(2) World Health Organization has described the periodontal disease, along with dental caries, as a major cause of oral distress having a high prevalence rate.(3) According to a study conducted by the WHO, the presence of periodontal disease is still very high in developing countries due to lack of adequate oral health care measures.(4) Periodontal disease has been documented as a leading cause of tooth loss in India. The major symptoms include bleeding gums, receding gums, migration and loosening of teeth.(5)

Owing to the fact that rural Indian population lacks awareness and facilities for oral health care, there is a higher rate of prevalence of periodontal disease in rural Indian areas.(6) There is no adequate information about the periodontal status of the rural population of India. Raigad district of Maharashtra state in India is one such area where no data had been gathered in relation to the periodontal health and disease. The aim of the present study was to assess the periodontal and oral health status of the rural adult population of Raigad district of Maharashtra.

Materials and Method

The present study consisted of 400 participants who were randomly selected from four villages of Raigad district. The age range for participants involved in the study was restricted from 15 to 74 years. Examination of the periodontal status of participants was conducted at the primary health centre in the village. CPI (Community Periodontal Index) was chosen to assess the periodontal status of the subjects in the study. A sterile WHO CPITN-E probe was used for oral examination. The teeth were divided into six sextants: 18-14, 13-23, 24-28, 38-34, 33-43 and 44-48. 10 index teeth were chosen for examination: 17, 16, 11, 26, 27, 37, 36, 31, 46, 47. All the subjects were examined for gingival bleeding, calculus, and periodontal pockets. The study was reviewed by the Institutional Review board and clearance was obtained. A descriptive cross-sectional study was conducted to assess the periodontal status among the adult population in Raigad district of Maharashtra. A WHO assessment form was used to record the data which was analyzed later.

Results

A total of 400 subjects were examined out of which 384 were selected based on the selection criteria of CPI index, out of which 224 (58.3%) were males and 160 (41.7%) were females. Periodontal examinations were conducted for these subjects and were distributed into the following groups according to WHO Standard Age

Grouping: 15-24 years, 25-44 years, 45-64 years, 65-74 years.

In the age group of 15-24 years, it was observed that 43 (44.7%) subjects had healthy periodontium (score 0). 41 (42.7%) subjects showed signs of bleeding gums (score 1) while 9 (9.3%) subjects were examined to have calculus deposits. 3(3.1%) of the subjects in the group scored 3 showing signs of periodontal disease. In the other age group of 25-44 years, dental calculus (score 2) was detectable in 62 (50.7%) subjects. Other subjects, 39 (27.4%) in the group demonstrated shallow periodontal pockets with score 3. Also, 12 (8%) subjects were reported to have deep periodontal pockets above 5mm. However, in the age group of 45-54, the majority of the subjects had severe periodontal problems. 39 (39.8%) subjects had periodontal pockets from 4-5mm (score 3) while 21 (21.4%) subjects had periodontal pockets greater than 5 mm. Only 11 (11.2%) subjects showed signs of reversible periodontal disease (score 2) and only 9 (9%) subjects were healthy. In the last age group of 65-74 years, 19 (39.5%) subjects showed shallow periodontal pockets (score 3) while 11 (22.9%) subjects showed deep periodontal pockets (score 4) (Table 1). The results showed that the prevalence and severity of the periodontal disease increase with increase in the age. In addition, males showed a greater prevalence of periodontal disease as compared to the females.

Table 1: CPI scores for different age groups of the rural population

Age groups	CPI Score					
		0	1	2	3	4
	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)
15-24	96	43	41	9	3	0
25-44	142	17	12	62	39	12
45-64	98	9	11	18	39	21
65-74	48	1	5	12	19	11

Discussion

The aim of the present study was the assessment of the prevalence of periodontal disease in the Raigad district of Maharashtra. The study showed that age was a major factor that resulted in increased prevalence of periodontal disease in the rural areas. One of the major reasons for this finding was as certained to the lack of awareness among the rural population. Other reasons attributed to high disease prevalence were lack of basic dental care to the rural areas and adverse habits of the population. Periodontal disease is a bacterial disease that begins in young adult life and progresses thereafter if not treated. After 45 years, the severity of periodontal disease increases, demonstrated through increased periodontal pocket depth and loss of attachment which is in accordance with the previous studies conducted.[7,8]

In a study conducted by Kumar TS (2009), it was observed that the subjects had a predominant CPI score of 2 and the calculus deposition was observed to increase with age. Also, shallow pockets were seen in individuals with 35-44 years of age and deep pockets were seen in older individuals.[9]

Our study was in agreement with the findings of a study conducted by Kumar S et al. (2008) which involved oral health assessment through WHO oral health survey. It was reported that disease severity increased with increase in the age and maximum score (CPITN) was present in 35-44 years age group.[10]

Another study conducted by Joshi NV (2004) reported that calculus deposits were high in subjects with age 15-19 and 20-29 years. A high percentage of shallow pockets was seen in age group 30-44 and 45-60 years, while deep pockets were more in the age group 61 and above. These results are similar to those seen in the present study.[11]

A study performed by Singh T et al. (2009) to assess the periodontal status of therural population of Belgaum district reported that individuals above 45 years of age in two groups (45-60 years and 65 years above) had more periodontal problems than those in groups less than 45 years of age. Shallow and deep periodontal pockets were the most common signs observed. The study clearly demonstrated that severity of periodontal disease increased with increase in age.[12] These result were in accordance with our present study.

Thus, there is evidence that severity of the periodontal disease increases with increase in age which could be attributed to the reduced ability of the periodontal tissues to sustain the inflammatory load and descent of immune function. The study, however, did not individually assess the chronic or aggressive nature of the periodontal disease that has a different rate of disease progression.

India is a diverse nation with difference in culture, educational levels, and socioeconomic status. Many parts of the country, especially the rural areas are lacking primary oral health care services. In addition the majority of these rural areas are not assessed for the existing periodontal status of oral health. Thus, the actual scenario of severity of periodontal status has been masked and needs to be explored for a better oral health of the country. Multi-centric studies are required to be conducted to assess the quality of oral health and oral hygiene practices in different parts of India. The rural population is commonly deprived of oral health care facilities and should be the focus of research in future.

Conclusion

Within the limitations of the study, we conclude that severity of periodontal disease increases with increase in age and majority of the adult population are affected by periodontal disease. The present study highlights the importance of making the rural

population aware about the various causes of periodontal disease, the earliest symptoms experienced and the importance of getting the disease treated at the earliest.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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