

Evaluation of periodontal status among smokers and non-smokers using periodontal screening and recording (PSR) index

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Abstract

Periodontal diseases are one of the common oral diseases of mankind. With the new achievement in Periodontal Medicine, the association between periodontal disease and systemic health, screening of periodontal disease has become an important task. Cigarette smoking is a well established risk factor for periodontal disease. Periodontal Screening and Recording (PSR) Index has been used as a reliable, and reproducible index for screening purpose.

Aims: to compare the periodontal status among the smokers and non-smokers of rural Nepal using the PSR index

Materials and methods: 310 males (150 smokers and 160 non-smokers) were enrolled in the study. Periodontal status was recorded in each sextant of all the subjects using PSR index and was compared between the smokers and non-smokers. Statistical analysis was done by SPSS 10.0. Z- Test was employed to check significance between proportions of group.

Results: When compared between the smokers and non-smokers, number of healthy sextants was lower in smokers than non smokers (10% Vs 11%), and the sextant with mild bleeding on probing was almost similar (14.11% Vs 14.37%). The proportions of sextant with bleeding on probing with supra or subgingival calculus and/or defective margin were similar to both the groups. Sextants having probing depth of 3.5mm to 5.5 mm were significantly higher in smokers than non smokers ($P= 0.0001$). Similarly sextants with probing depth greater than 5.5 mm and with advanced periodontal destructions were significantly higher among the smokers than the non smokers (38% Vs 25 % and 14 Vs 3 respectively).

Conclusion: Prevalence of periodontal disease is higher among the smokers than non smokers.

Key words: Periodontal disease, Screening, Recording, Prevalence, Smokers, Non-smokers

Introduction

Periodontal diseases are one of the most common oral diseases of mankind. These are now considered as risk factor for a number of medical problems such as stroke, preterm low birth weight babies, respiratory disease and regulation of blood glucose levels in diabetics and also an important cause of tooth loss in adult. The causal relationship between the periodontal disease and systemic health has been established. With this new achievement in periodontal medicine, screening of periodontal disease has become as important as screening for the systemic health.

The early detection of periodontal disease with the aid of patient friendly screening system has become important task in identifying the risk group as well as to initiate the treatment. The early diagnosis and treatment of periodontal diseases, as with all diseases would make treatment less complex, less costly and more predictable, thereby greatly reducing its impact on the population. There have been a number of screening systems that have been developed to detect periodontal disease such as; Periodontal index¹, Periodontal disease index², Periodontal treatment needs system³,

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Community Periodontal Index of Treatment Needs⁴ and the extent and severity Index⁵. None of these have been universally accepted or are routinely used by most general practitioners⁶. To help, American Dental Association (ADA) with the endorsement of American Academy of Periodontology (AAP) introduced the Periodontal Screening and Recording (PSR) Index as the system recommended for the early detection of patients with periodontal disease in the US on October 6, 1993⁷. Various studies have support that PSR is a useful screening tool that will enhance identification of patients with periodontal disease^{8,9,10}. Periodontal Screening and Recording (PSR) index, the successor of to the Community Periodontal Index of Treatment need (CPITN), is a simple, reliable, and reproducible periodontal index for screening purposes⁷.

Smoking is one of the major risk factor for periodontal disease and early loss of teeth^{11,12,13,14}. Several studies have demonstrated that tobacco, per se, is a risk factor in the etiology of periodontal disease, with a local and systemic effect^{14,15}. Other studies have also confirmed a greater prevalence of attachment loss^{16,17}, recession¹⁶, severe destructive periodontal disease^{15,18}.

The aim of this study is to compare the periodontal status among the smokers and non smokers of rural Nepal using the Periodontal Screening and Recording (PSR) index.

Materials and methods

This study included 310 males (150 smokers and 160 non-smokers) aged 18- 60 years, attending the Dental OPD of Kathmandu University Hospital, Dhulikhel Hospital, Kavre, Nepal. Periodontal Screening and Recording (PSR) index was used as an epidemiological tool to assess the periodontal status of all the participants. Each individual's oral cavity was divided into 6 sextants and the maximum score of the sextant was recorded. Probing was done using PSR probe which has a 0.5 mm diameter ball tip and is colour- coded from 3.5 to 5.5 mm. The probe was gently inserted into the gingival sulcus until resistance was felt and then explored by "walking" around the mid-facial, disto-facial and corresponding lingual/palatal areas.

Codes ranges from 0-4, where 0 indicates that there is less than 3.5 mm of probing depth in the deepest crevice in the sextant with no calculus or defective margins or

bleeding on probing detected. Code 1 only differs from code 0 in that bleeding on probing is present. Code 2 only differs from code 0 in that supra or subgingival calculus and/ or defected margin of the restoration are present. Code 3 indicates that the probing depth is greater than 3.5 mm but less than 5.5 mm. Code 4 indicates that the highest probing depth in a sextant is greater than 5.5 mm. Each code can have an asterisk (*) placed depending on the clinical abnormalities including but not limited to furcation invasion, mobility, mucogingival problems or recession extending to colour-coded area of the probe.

Statistical analysis

The data was compiled, tabulated and was analyzed using SPSS 10.0. Z- Test was employed to check significance between proportions of group.

Results

Among 310 participants, 60% were between 25-44 years old and 25% were between 45- 54 years old. Out of 150 smokers, 42 (28%) smoked less than 5 cigarettes per day, 57 (38%) smoked 5-10 cigarettes per day, 30 (20%) smoked 11- 20 cigarettes per day and 21 (14%) smoked more than 20 cigarettes per day.

Among the smokers, out of 900 sextants, 90 were healthy and did not present any bleeding on probing, calculus and defective margins. 127 showed mild bleeding on probing, but were without supragingival or subgingival calculus and/or defective margins. 341 sextants had bleeding on probing with supragingival and subgingival calculus and/or defective margins. 249 sextants had probing depth of 3.5 mm – 5.5 mm and 93 sextants had pocket depth greater than 5.5 mm. 14 sextants among the smokers had the code* with mucogingival problems, mobility and furcation invasion. (Table 1)

Among the non-smokers, out of 960 sextants examined, 106 were healthy, 138 were with mild bleeding on probing without any supra or subgingival calculus and/or defective margins. 467 sextants had bleeding on probing with supra and subgingival calculus and/or defective margins. 166 sextants had probing depth of 3.5 mm -5.5 mm and 83 sextants had pocket depth greater than 5.5 mm. Only 3 sextants of the total 960 sextants observed among the non-smokers had code* with gingival recession and the furcation invasion. (Table 1)

Table 1: Comparison between smokers (S) and non-smokers (NS) with examined sextants in different age groups using PSR index

Age	Number of sextants		Code 0		Code 1		Code 2		Code 3		Code 4		Code *	
	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS
18-24	72	84	9	13	20	19	39	52	4	0	0	0	0	0
25-34	180	192	25	24	63	72	87	85	5	11	0	0	0	0
35- 44	360	378	38	51	29	39	127	186	152	79	14	23	3	0
45 – 54	228	240	18	18	15	8	70	123	65	54	60	37	5	2
55 – 60	60	66	0	0	0	0	18	21	23	22	19	23	6	1
Total	900	960	90	106	127	138	341	467	249	166	93	83	14	3

Z= 5.599 P= 0.0001

Discussion

In this study, 1860 sextants of a total of 310 males (150 smokers and 160 non-smokers) were screened by using Periodontal Screening and Recording (PSR) index. The present study reveals that smoking is a risk factor for periodontal diseases. Similar finding has been reported by other studies^{19,20,21,22}.

In all age groups, number of healthy sextants (code 0) was lower in smokers than non-smokers (10% versus 11%) and also the mild bleeding on probing without supra and/or subgingival calculus and/or defective margins (Code 1) (14.11% Vs 14.37%). These findings agree with the data from other studies showing that smokers experience less bleeding than non-smokers^{11,23,24}. Bleeding on probing with supra or subgingival calculus and/ or defective margins (Code 2) was similar to both the groups. Similar associations of bleeding and calculus parameters were found on various studies done to assess the periodontal status among the smokers and non-smokers using community periodontal index for treatment need (CPITN)^{22,25,26}.

The proportion of PSR index Code 3 i.e. Sextants having probing depth of 3.5 to 5.5 mm and code 4 i.e. probing depth greater than 5.5 mm among the remaining sextants was higher in smokers than non-smokers (27.6% Vs 10.4% and 17.3% Vs 8.6%). This finding is consistent with the study done by Luzzi et al²⁷ and Anil S et al²⁸ to evaluate the clinical periodontal conditions in smokers and non-smokers and is in contrary to the study findings of Awantani & Al- Jasser²⁹ which states that periodontal conditions as measured by CPITN of smokers and non-smokers do not differ with respect to the percentage of smaller or deeper pockets. The percentage of sextants affected by deep pockets (i.e. > 5.5 mm) among the smokers was 38% which is significantly higher than the non-smokers (25.9%) (P= 0.0001). Similar significant difference in relation to probing depth and attachment loss were reported by others^{16,20,28,30,31}. Similarly number of sextants with advanced form of periodontitis like

furcation involvement, recession > 5.5 mm and mobility (i.e. Code*) were significantly higher among the smokers than the non smokers (14 Vs 3) (P= 0.0001). This finding is consistent with the several studies showing smokers have advanced periodontal loss than the non smokers^{28,30,32,33,34}.

Conclusion

Based on methodology employed and considering its limitations, it may be concluded that prevalence of periodontal disease is higher in smokers as compared to non smoker subjects.

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