

# Comparative Analysis of Periodontal Health Status by CPI Index in Cigarette Smokers & Non-Smokers

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## Abstract

**Introduction:** Smoking is a risk factor for oral cancer, periodontal diseases, and congenital defects such as cleft lip and palate in children whose mother smokes during pregnancy.

**Aims and Objectives:** to analyze the impact of smoking on the periodontal health status of the outpatient department of Teerthanker Mahaveer Dental College & Research Centre, Moradabad.

**Materials & methods:** Current cross-sectional study was carried out in Department of Public Health Dentistry of Teerthanker Mahaveer Dental College & Research Centre, Moradabad. Total of 490 male patients participated in between the age group of 35-50 years. Community Periodontal Index was recorded. Statistical analysis was done by using statistical package for social sciences. The chi-square test was used for analysis with significance level <0.05

**Results:** CPI codes 2, 3 & 4 are more in the smokers with highly significant values <0.05

**Conclusion:** There is significant impact of smoking on periodontal health of the individuals. Need and attention towards increasing use of tobacco consumption should be given.

**Keywords:** Cigarette, CPI Index, Smokers

## Introduction:

Today, tobacco is the single most preventable cause of the death & only legal consumer product that kills half of its users if used as intended.<sup>1</sup> It kills nearly six million people a year among which 5 million are users, ex users and more than 600 000 are those exposed to second-hand smoke. Nearly 80% of the smokers worldwide live in low- and middle-income countries, where tobacco-related illness and death is heaviest.<sup>2</sup>

Recent surveys have shown that India accounts second largest consumer of tobacco in the world. The prevalence of use of all types of tobacco use among men has been reported to be high in almost every parts of the country.<sup>3</sup> After the 1950's Surgeon General's

report, it is firmly established that tobacco use can lead to many oral diseases and adverse oral conditions. It is risk factor for oral cancer, periodontal diseases, and congenital defects such as cleft lip and palate in children whose mother smokes during pregnancy.<sup>4</sup>

The prevalence of periodontal disease is worldwide.<sup>5</sup> In India, periodontal disease is still a leading cause for the tooth loss. It is associated with variety of factors such as plaque and calculus, age, sex, smoking, systemic illness, genetics and also on the socioeconomic status of an individual.<sup>6</sup>

Tobacco use plays a significant role as a risk factor for periodontal diseases. Smokers experience more periodontitis than nonsmokers and also it is also

a risk factor for aggressive, destructive periodontal disease.<sup>7</sup>

The aim of the present study is to analyze the impact of smoking on the periodontal health status of the outpatient department of Teerthanker Mahaveer Dental College & Research Centre, Moradabad.

### Materials and Methods:

Current cross-sectional study was carried out in Department of Public Health Dentistry of Teerthanker Mahaveer Dental College & Research Centre, Moradabad. Study was carried out between the months of January to April 2014. Sample size was estimated on the basis of previous literature. Total of 490 male patients participated in between the age group of 35-50 years. Out of 490, 245 were smokers and 245 were non-smokers.

#### Inclusion Criteria:

- Individuals in between the age groups of 30-50 years and only male patients were considered.
- Those who agreed to give consent was included in the study.
- Those who have habit of Cigarette smoking on daily basis and atleast minimum of 3-4 cigarettes or more per day.(test group)
- Those who have not smoked at any time in their lives.(control group)
- Those who belongs to Moradabad District were included in the study.

#### Exclusion Criteria:

- Individuals with History of Systemic Diseases & illness.
- Individuals who denied to give the consent
- Individuals having <15 teeth were excluded from the study.
- Individuals showing any kind of neoplastic changes were excluded.
- Individuals subjected to periodontal therapy or any antibiotic medication during the last 6 months.

Basic demographic profile like the name, age, address, oral hygiene habits and habit of tobacco use was noted. Community Periodontal Index (CPI)<sup>9</sup> was recorded by using CPITN probe, mouth mirrors &

under good illumination light. All the instruments were sterilized prior to the examination. The index was recorded by a single, calibrated, trained examiner. Calibration was performed in the department by reexamining 5% of the sample size and the kappa value of 0.7 was obtained which indicates a substantial intra-examiner consistency.<sup>8</sup>

Statistical analysis was done by using statistical package for social sciences (SPSS version 17), Nominal categorical data between the groups were compared using the Chi square test.  $P < 0.05$  was considered statistically significant.

### Results:

Out of 490 individuals who participated in the study 35.9% are from 35-40 age group, 29.6% from 40-45 years age group and 34.5 % were from 45-50 years age group with mean value of 163.33 and SD  $\pm 16.25833$ (Table No. 1)

**Table No. 1: Age Distribution of the Participants**

Age Groups	Frequency	%
<b>35-40</b>	176	35.9%
<b>40-45</b>	145	29.6%
<b>45-50</b>	169	34.5%
<b>Total</b>	490	100%
<b>Mean <math>\pm</math> SD</b>	<b>163.33 <math>\pm</math> 16.25833</b>	

Most of the individuals that is 360(73.47%) uses toothbrush and tooth paste for cleaning their teeth, 93(18.98%) uses toothbrush and tooth powder while only 37(7.55%) individuals uses other measures such as finger, neem twig, salt etc.

Present study shows that there is significant correlation exist between the smoking and periodontal health of an individual. There were statistically significant difference seen between smokers and nonsmokers code 0 revealed  $P = 0.0007$  which indicates that nonsmokers have more healthy gingiva than smokers. Code 1 revealed  $P = 0.093$  which

indicates that more bleeding gums were seen in nonsmokers than smokers. Code 2 have shown  $P = 0.0148$  indicating more calculus in smokers similarly

code 3 & code 4 have shown  $P = 0.04235$  &  $P = 0.004$  respectively indicative of more periodontal pockets in the smokers than nonsmokers. (Table No. 2)

**Table No. 2: Correlation between CPI codes & Smoking**

	Total	Code 0	Code 1	Code 2	Code 3	Code 4
Smokers	245	23(9.39%)	61(24.90%)	80(32.65%)	64(26.12%)	17(6.94%)
Non-smokers	245	59(24.08%)	81(33.06%)	58(23.68%)	43(17.55%)	4(1.63%)
Chi square		15.805	2.817	5.939	4.121	8.048
P value		<b>0.0007</b>	<b>0.093</b>	<b>0.0148</b>	<b>0.04235</b>	<b>0.004</b>

### Discussion:

Impact of tobacco on oral health is well known, it has proven to cause malignant changes of oral mucosa, staining of the teeth and also severe periodontal diseases. Periodontitis is more severe in smokers showing more deep pockets, loosening of the teeth and also more furcation involvement. Oral health professionals probably have more access to the smokers compared to other health professionals. There is necessity of monitoring periodontal diseases in smokers as it is the reason behind the tooth loss in most of the smokers.<sup>9</sup>

The current age group was taken into the consideration as the tobacco habit is found to be more in this particular age group and this is the age group which is more prone to the periodontal disease and almost dentate. Severity of the periodontal disease begins in this particular age group and this can be halted.

Females were purposely excluded from the study to avoid the response bias and there is also very low prevalence of smoking present in females and

hormonal changes in females can also give the false interpretation.<sup>10</sup>

Results of the current study also supports the fact that there is a significant association present between smoking and periodontal health of an individual. CPI codes 2, 3 & 4 are more in the smokers only code 0, code 1 is more in nonsmokers suggestive of more healthy periodontal status in nonsmokers. These results are similar to the study done by Sreedevi M. et al<sup>11</sup> & Gautam DK et al<sup>12</sup> in both studies it has been proven that smokers have more periodontal pockets compared to nonsmokers and bleeding is more in nonsmokers as compared to smokers. The reason behind less bleeding in smokers is because smoking causes vasoconstriction of peripheral vessels. Thus it reduces the properties of inflammation such as bleeding redness and exudation.

Present study gives data about only the periodontal diseases and not all the diseases associated with tobacco. Duration of the tobacco use and frequency is not taken into consideration which could have effect on the periodontal health. In future the study can be

improved by taking considerations of nicotine level in blood and other related parameters can be measured.

### Conclusion:

Present study conclude that significant impact of smoking is there on periodontal health of the individual. It increases the chances of periodontal pocket formation in smokers as compared to that of the nonsmokers. Need and attention towards increasing use of tobacco consumption should be given. As periodontia act as a pillars to the teeth providing them anchorage need towards the periodontal health should be given.

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