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## **Association between a periodontal disease, smokers & smokeless tobacco in Rajnandgaon population (Chhattisgarh, India)**

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### **Abstract**

**Aim and Objective:** This study aimed to evaluate an association between a periodontal disease smokers & smokeless tobacco in Rajnandgaon district (Chhattisgarh, India) adults.

**Methods:** The study population included 150 subjects with the habit of tobacco consumption, based on form of tobacco use they were divided into Group 1 (smoking), Group 2 (Smokeless tobacco), and Group 3 (both). The periodontal status for each group was evaluated by measuring Oral Hygiene Index-Simplified and Community Periodontal Index for Probing Depth and Attachment Loss.

**Results:** OHI-S mean scores in Group 1, Group 2 and Group 3 were similar, which were not statistically significant ( $p>0.076$ ). The mean values of CPI-PD were  $3.65\pm 0.43$  in Group 1,  $1.65\pm 0.35$  in Group 2,  $2.77\pm 0.31$  in Group 3 with no significant difference between the three Groups ( $p>0.404$ ). When the mean values of CPI-AL in  $0.75\pm 0.76$  Group 1,  $1.65\pm 0.35$  in group 2, and  $2.77\pm 0.31$  in Group 3) were compared in between the Groups, a statistically significant difference was observed in Group 3 ( $p<0.001$ ).

**Conclusion:** Periodontal disease is significantly associated with smoking status in rajnandgaon adults. Smokeless tobacco users having more amount of attachment loss than smokers. Tobacco consumption of tobacco in both the forms can caused poor periodontal status.

**Keywords:** Periodontitis, smoking, inflammation, attachment loss

### **Introduction**

Smoking tobacco has been considered as a major risk factor for oral cancer, Tobacco consumption is prevalent in approximately one third of adult population worldwide, which can be either smoke or smokeless forms<sup>[1]</sup>. Multiple cross-sectional and longitudinal studies regarding the association between smoking and periodontal disease had stated that increased pocket depth measurements, attachment loss and alveolar bone loss are more prevalent in smokers than non-smokers<sup>[2]</sup>.

Severe rate of periodontal disease might be due to greater amounts of plaque accumulation in smokers when compared to non-smokers. High prevalence of *Aggregatibacter actinomycetemcomitans*, *Porphyromonas gingivalis* and *Tannerella forsythia* was reported in subgingival plaque of smokers than non-smokers<sup>[4,5]</sup>. The common forms of tobacco smoking are cigarette, beedi, chutta and hooka, with cigarette being the most predominant form<sup>[6]</sup>. More than four thousand toxins are present in tobacco smoke which includes substances like carbon monoxide, oxidating radicals, carcinogens like nitrosamines and addictive psychoactive substances like nicotine which are detrimental to health<sup>[7]</sup>.

Periodontitis is a complex, chronic inflammatory disease of the tooth supporting connective tissues and alveolar bone. It is caused by an aberrant host response against oral and dental plaque bacteria. The host response is further compromised by unfavourable lifestyle factors, such as smoking, and by systemic diseases such as diabetes. If periodontitis is not diagnosed and treated, the chronic periodontal infection may persist over many years. There is progression in the breakdown of tissues, and teeth may become mobile and eventually exfoliate; 8–13% of the population suffers from severe periodontitis<sup>[8,9]</sup>.

This study aimed to evaluate an association between a periodontal disease smokers & smokeless tobacco in Rajnandgaon district (Chhattisgarh, India) adults.

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## Materials and Methods

In this cross-sectional study, 150 male patients aged between 25 to 70 years, with habit of tobacco consumption, attending to the Department of dentistry, government medical college, Rajnandgaon, Chhattisgarh, India, were selected. The study protocol was approved by the ethical committee and an informed consent was obtained from all the patients in the study.

### Inclusion criteria were

- 1) Patients with at least more than thirteen natural teeth;
- 2) either form of tobacco users and
- 3) Systemically healthy patients.

Exclusion criteria were: 1) Patients who are taking medicine. The patients were divided into three groups based on the form

of tobacco usage

**Group 1:** Patients who were current smokers according to Center for Disease Control and Prevention classification

**Group 2:** Patients with chewing smokeless tobacco

**Group 3:** Patients who were current smokers with habit of chewing smokeless tobacco

Clinical examination was carried to assess periodontal status by measuring Oral Hygiene Index- Simplified, Community Periodontal Index (CPI), which includes assessment of Probing Depth and Clinical Attachment Loss.

## Results

**Table 1:** descriptive statistical analysis

	Group 1 (n=50)	Group 2 (n=50)	Group 3 (n=50)	Total (n= 150)
Cigarette	48(98%)	0	34(72.5%)	71(88.8%)
beedi	2(3.5%)	0	5(13%)	7(8.8%)
Cigar/ Hookah	2(2.3%)	0	1(2.33%)	2(2.5%)
Zarda (smokeless)	0	19(47.5%)	43(82.5%)	6(15%)
Gutka (smokeless)	0	10(25%)	6(51%)	7(9.8%)
Khaini (smokeless)	0	19(47.5%)	7(34%)	6(8.8%)
Pan (smokeless)	0	19(47.5%)	5(9.4%)	6(15%)
Snuff (smokeless)	0	19(47.5%)	6(6.8%)	7(8.8%)
OHI-S score	3.53±1.03	3.06±0.92	3.56±0.93	3.51±0.98
CPI-PD	3.65±0.43	1.65±0.35	2.77±0.31	4.63±0.43
CPI-AL	0.75±0.76	1.650±0.74	2.75±0.60	1.20±0.56

## Discussion

Smoking is an important risk factor for periodontitis. In India, 32.7% of males are smokers, while in the United States; approximately 25% of the adult population smokes cigarettes. Less education, lower socio economic status, increasing age, and rural residence are associated with smoking<sup>[3, 5, 7]</sup>. With a high prevalence of smokers in many countries, the association between cigarette smoking and periodontal diseases presents as a significant public health problem.

The strength of the relationship between smoking and periodontitis depends on the criteria used to identify periodontitis and whether the effects of plaque and confounding variables are addressed. Compared to nonsmokers, young adult smokers aged 19 to 30 years have a higher prevalence and severity of periodontitis when controlled for plaque levels (50-52).

Previous studies have shown a strong relationship between the prevalence and severity of periodontal disease with the number of cigarette smoked per day and the duration of years. According to Wickholm S *et al.*, the frequency of consumption is represented in the form of pack years and had observed that as the number of pack years increased to 15 or more, the prevalence and severity of periodontal disease had also increased<sup>[10]</sup>. According to Haffajee AD and Socransky SS, increased amount of clinical attachment loss was observed in current smokers at maxillary lingual sites and lower anterior teeth than past and never smokers<sup>[11]</sup>. A study by Monten *et al.*, in Swedish adult population have found similar results with presence of periodontal disease and significantly high prevalence of gingival recessions in moist snuff users than non-users<sup>[12]</sup>. In a study conducted by Navkiran *et al.*, on the evaluation of periodontal effects associated with duration of smokeless tobacco use and observed that greater gingival recession is associated with

smokeless tobacco users with the duration of habit since more than seven years<sup>[13]</sup>.

## Conclusion

The present study revealed periodontal disease is significantly associated with smoking status in rajnandgaon adults. Smokeless tobacco users having more amount of attachment loss than smokers. Tobacco consumption of tobacco in both the forms can caused poor periodontal status.

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