

Prevalence of Periodontitis in the Sample Population of Jammu Region – A Cross-Sectional Study

Anuradha Gandral¹, Romesh Singh², Manik Sharma³, Bhanu Kotwal⁴, Abhiroop Singh⁵, Vineet Kotwal⁶

¹Dental Surgeon, Department of Periodontics, Indira Gandhi Government Dental College, Jammu, Jammu and Kashmir, India, ²Professor and Head, Department of Periodontics, Indira Gandhi Government Dental College, Jammu, Jammu and Kashmir, India, ³Associate Professor, Department of Periodontics, Indira Gandhi Government Dental College, Jammu, Jammu and Kashmir, India, ⁴Lecturer, Department of Periodontics, Indira Gandhi Government Dental College, Jammu, Jammu and Kashmir, India, ⁵Registrar, Department of Oral Surgery, Indira Gandhi Government Dental College, Jammu, Jammu and Kashmir, India, ⁶Assistant Professor, Department of Periodontics, Indira Gandhi Government Dental College, Jammu, Jammu and Kashmir, India

Abstract

Aim: The aim of the present study is to evaluate the status of periodontal disease in the sample population of Jammu region.

Materials and Methods: The study included 400 males (200 cigarette smokers and 200 non-smokers) aged 16–65 years. The subjects were randomly selected from the patients attending the dental outpatient Department of Periodontics, Indira Gandhi Government Dental College, Jammu. Community periodontal index (CPI) score was recorded for each patient and a questionnaire was completed by each patient.

Results: Periodontal condition as assessed by CPI score showed that there was a statistically significant difference in the findings between tobacco consumers and non-tobacco consumers, and periodontal health was altered in the subjects who were tobacco consumers.

Conclusion: The increasing prevalence of periodontal diseases is a concerning problem which needs immediate intervention, if not, it would have a serious negative impact on the future oral health.

Key words: Periodontitis, Pocket, Smoking

INTRODUCTION

Chronic periodontitis (CP) is a major oral health problem and it is considered as one of the reasons for tooth loss in developing and developed nations. Worldwide, the prevalence of CP in the general adult population is reported to be 30–35%, with approximately 10–15% diagnosed with severe CP.^[1]

India is one of the major emerging market economies with a population of over 1 billion and is very diverse in

geography, culture, tradition, habits, and even race. This diversity also extends to literacy rates, health indicator rates infant mortality rate, and hygiene practices. This variation is reflected in the periodontitis prevalence as is revealed by the two major surveys conducted.^[2,3]

Periodontitis prevalence in India has also been reported. Chawla *et al.*, 1975, carried out a study in 1416 rural children and 189 factory workers in Lucknow area to assess the efficacy of oral hygiene measures and professional scaling in the prevention of disease progression. The authors reported the prevalence of gingivitis and periodontal disease in Lucknow children and adult samples to vary between 93% and 100%. They concluded that scaling half-yearly can prevent apical migration of epithelial attachment. Madden *et al.*, 2000, carried out a study in two villages in a rural area in Andhra Pradesh. One hundred and sixty participants were interviewed and examined with the community periodontal index (CPI) of

Access this article online



www.ijss-sn.com

Month of Submission : 03-2020
Month of Peer Review : 04-2020
Month of Acceptance : 05-2020
Month of Publishing : 05-2020

Corresponding Author: Anuradha Gandral, Department of Periodontics, Indira Gandhi Government Dental College, Jammu, Jammu and Kashmir, India.

treatment needs index. The authors noted a high prevalence of CP in this population.^[4,5]

There also prevails a view that people in Asia are particularly susceptible to periodontitis. This view of a particularly high prevalence of periodontal diseases appears to have originated from early epidemiological studies using an index system that gave weight to gingivitis and moderate periodontitis resulting from poor oral hygiene and calculus deposition.^[6]

Albandar, in an overview, concluded that subjects of Asian ethnicity had the third highest prevalence of periodontitis.^[7]

The studies on the prevalence of periodontitis in a rural and urban population in different parts of the world have provided data primarily on populations of different ethnic origins. Corraini *et al.*, 2008,^[8] studied the prevalence of periodontitis and its association with demographic, socioeconomic, and behavioral risk factors in an untreated and isolated population in Brazil, and 83% of the population had >4 mm probing depths. Wang *et al.*, 2007,^[9] performed a descriptive study of periodontal disease conditions among a selected sample of 400 participants in China. The authors observed that periodontal disease was widespread, and very few of the population had access to the oral care facilities. Nařacı *et al.*, 2007,^[10] assessed the oral health status of people aged 65 years and above in a rural district of Turkey. The authors reported a higher level of tooth loss with increasing age. A cross-sectional study performed in a rural area in Brazil, wherein a total of 172 participants were examined for periodontal and oral hygiene parameters, and the prevalence of periodontitis was estimated to be 24.4%.^[11]

MATERIALS AND METHODS

A cross-sectional study design was used. This study included 400 males aged 16–65 years attending the dental outpatient Department of Periodontics, Indira Gandhi Government Dental College, Jammu. CPI was used as an epidemiological tool. Patients were randomly selected depending on the following criteria.

Inclusion Criteria

The following criteria were included in the study:

- Over 18 years of age and not older than 65 years of age.
- More than 10 natural teeth present.

Exclusion Criteria

The following criteria were excluded from the study:

- Chronic systemic pathology, such as diabetes, other endocrine pathologies, and hematological pathologies.

- Periodontal health, with no clinical signs of periodontal inflammation (CPI =0).

Subjects were Divided into Two Groups

- Cigarette smokers
- Non-smokers.

Clinical Examination

The periodontal examination was conducted using the mouth mirror and community periodontal index of treatment needs probe, and the CPI score was recorded.

Codes and criteria of CPI index

Code-0=No periodontal disease (healthy periodontium).

Code-1=Bleeding observed during or after probing.

Code-2=Calculus or other plaque retentive factors either seen or felt during probing.

Code-3=Pathological pocket 4–5 mm in depth. Gingival margin situated on a black band of the probe.

Code-4=Pathological pocket 6 mm or more in depth. The black band of the probe is not visible.

An oral health questionnaire was also formulated and was filled by each subject [Figure 1].

RESULTS

The majority of the study group constituted the young adults under 35 years of age (47% of the total sample), 51% were having the periodontal disease and were consuming tobacco. In the oldest age group (over 55 years), only a small proportion (11%) had periodontal disease and were consuming tobacco.

The periodontal condition was measured by CPI score per person showed that in the group studied, there were statistically significant differences between tobacco consumers and non-tobacco consumers for CPI score of 1 ($P = 0.007$; non-tobacco consumers more likely to have gingival bleeding), 2 ($P = 0.004$; tobacco consumers more likely to have calculus present), CPI score 3 ($P = 0.001$; non-tobacco consumers more likely to have shallow pockets), and CPI score 4 ($P = 0.045$; tobacco consumers more likely to have deep pockets), as shown in Tables 1-3.

DISCUSSION

One of the landmark reports by Shah *et al.*, 2007, available about periodontitis prevalence in the Indian

Table 1: Study group according to age and tobacco consumption

| Age, n (%) | 16–65 years | <35 years | 35–44 years | 45–55 years | More than 55 years |
|-----------------------|-------------|-----------|-------------|-------------|--------------------|
| Tobacco consumers | 200 (50%) | 96 (51%) | 44 (48%) | 28 (37%) | 32 (73%) |
| Non-tobacco consumers | 200 (50%) | 92 (49%) | 48 (52%) | 48 (63%) | 12 (27%) |
| Total | 400 (100%) | 188 (47%) | 92 (23%) | 76 (19%) | 44 (11%) |
| Chi-square | | 0.09 | 1.18 | 5.27 | 9.08 |
| P value | | 0.78 | 0.68 | 0.03 | 0.00 |

Table 2: Mean and standard deviation according to age among tobacco and non-tobacco consumption

| Group | N | Mean age | Standard deviation |
|-----------------------|-----|----------|--------------------|
| Tobacco consumers | 200 | 38.08 | 13.22 |
| Non-tobacco consumers | 200 | 37.35 | 12.07 |

population is the multicentric study carried out by the Government of India in collaboration with the World Health Organization. A total of 22,400 participants covering both rural and urban districts of seven different states of India were examined for their periodontal status. A prevalence of 100% for periodontal disease was reported for the states of Orissa and Rajasthan. In addition, a varied prevalence of attachment loss >3 mm was observed in different states (Maharashtra – 78%, Orissa – 68%, and Delhi – 46%).^[2]

The prevalence rates for periodontitis observed in most of the studies in the Indian population are high (ranging from 27% to 100%). Studies done in various populations worldwide have shown similarly high prevalence rates in developing countries as compared to developed countries, wherein a decrease in the prevalence of periodontitis has been observed. The periodontitis prevalence observed in a Brazilian rural population ranged between 24.4% and 83%,^[8,11] and in a Thai population, it ranged from 92% to 100%.^[12] About 100% of a Vietnamese study population exhibited at least one site with attachment loss, and 90% of the adult participants in a Guatemalan population exhibited at least one site with clinical attachment level ≥6 mm.^[13]

Smoking is on the rise in the developing world, but falling in developed nations. About 15 billion cigarettes are sold daily or 10 million every minute.^[14] Smoking has clearly been implicated contributing to periodontal breakdown and in impeding the healing of periodontal tissues.^[15]

The findings in the present study are consistent with the study of Feldman *et al.*,^[16] showed that tobacco consumers with periodontal disease had less clinical inflammation and gingival bleeding when compared with non-tobacco consumers. This may be explained by the fact that one of the numerous tobacco smoke by-products, nicotine, exerts local vasoconstriction, reducing blood flow and edema, and acts to inhibit what are normally early signs of periodontal

Patient Name:..... Sex: M/F
 Age:..... Address:.....
 Occupation:.....
 Please give only one answer to each question
 1. How often do you brush your teeth each day?
 1 2 3 4
 After each meal Sometimes
 2. How many minutes do you brush your teeth for?
 1 2 3 4 Over 4 minutes
 3. What type of tooth brushing movements do you employ?
 Vertical Horizontal Combined
 4. Do you use a mouthwash?
 Yes No
 If yes, how often?
 1/day 2/day
 3/day more than 3/day
 5. Which secondary methods for plaque control do you use?
 Dental floss Inter-dental brushes
 Toothpicks None
 6. Do you, or did you use an electric toothbrush?
 Yes No
 7. On what is your daily diet mainly based?
 Potato chips Vegetables
 Milk products Meat
 8. Do you have bleeding gums?
 Yes No
 If yes, are these:
 Spontaneous Provoked Not constant
 9. Do you have any health problems?
 Yes No
 If yes, please give details.
 10. Do you smoke?
 Yes No I quit smoking
 11. If you are a smoker, how many cigarettes do you smoke daily?
 1-10 cigarettes 11-20 cigarettes
 21-40 cigarettes Over 40 cigarettes

Figure 1: Proforma

problems by decreasing gingival inflammation, redness, and bleeding.

In this study, we used the CPI as recommended by the World Health Organization. CPI is not a perfect measure of periodontal disease and excludes measurement of attachment loss, gingival recession, alveolar bone level, and other clinical periodontal parameters. Nevertheless, it was originally proposed as an appropriate estimation of disease in large epidemiological surveys and has contributed to an understanding of the epidemiology of periodontal disease on a global level.^[17]

Table 3: CPI scores according to reported tobacco consumption

| CPI scores | Code 1 bleeding (%) | Code 2 calculus (%) | Code 3 shallow pockets 4–5 mm | Code 4 deep pocket more than or equal to 6 mm | Total |
|-----------------------|------------------------|------------------------|----------------------------------|--|-----------|
| Tobacco consumers | 14 (7) | 116 (58) | 29 (15) | 41 (21) | 200 (100) |
| Non-tobacco consumers | 31 (15.6) | 87 (43.6) | 56(28) | 26(13) | 200(100) |
| Chi-square | 7.3 | 8.5 | 10.9 | 4.1 | |
| P value | 0.007 | 0.004 | 0.001 | 0.045 | |

CPI: Community periodontal index

CONCLUSION

The present study shows that tobacco consumers showed bad periodontal health. The findings highlight the need for preventive strategies aimed at young individuals, many of whom take up smoking as a habit, early in life. However, more variables could have improved the scope of the study.

REFERENCES

- World Health Organization. The WHO Global Oral Health Data Bank. Geneva: World Health Organization; 2007.
- Shah N, Pandey RM, Duggal R, Mathur VP, Rajan K. Oral Health in India: A Report of the Multi Centric Study. New Delhi: Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India and World Health Organization Collaborative Program; 2007.
- Mathur VB, Talwar PP. National Oral Health Survey and Fluoride Mapping 2002-2003. New Delhi, India: Dental Council of India; 2004.
- Chawla TN, Nanda RS, Kapoor KK. Dental prophylaxis procedures in control of periodontal disease in Lucknow (Rural) India. *J Periodontol* 1975;46:498-503.
- Madden IM, Stock CA, Holt RD, Bidinger PD, Newman HN. Oral health status and access to care in a rural area of India. *J Int Acad Periodontol* 2000;2:110-4.
- Corbet EF. Periodontal diseases in Asians. *J Int Acad Periodontol* 2006;8:136-44.
- Albandar JM, Rams TE. Global epidemiology of periodontal diseases: An overview. *Periodontol* 2000 2002;29:7-10.
- Corraini P, Baelum V, Pannuti CM, Pustigliani AN, Romito GA, Pustigliani FE, *et al.* Risk indicators for increased probing depth in an isolated population in Brazil. *J Periodontol* 2008;79:1726-34.
- Wang QT, Wu ZF, Wu YF, Shu R, Pan YP, Xia JL, *et al.* Epidemiology and preventive direction of periodontology in China. *J Clin Periodontol* 2007;34:946-51.
- Nalçaci R, Erdemir EO, Baran I. Evaluation of the oral health status of the people aged 65 years and over living in near rural district of Middle Anatolia, Turkey. *Arch Gerontol Geriatr* 2007;45:55-64.
- De Macêdo TC, Costa Mda C, Gomes-Filho IS, Vianna MI, Santos CT. Factors related to periodontal disease in a rural population. *Braz Oral Res* 2006;20:257-62.
- Dowsett SA, Archila L, Kowolik MJ. Oral health status of an indigenous adult population of Central America. *Community Dent Health* 2001;18:162-6.
- Do LG, Spencer JA, Roberts-Thomson K, Ha DH, Tran TV, Trinh HD, *et al.* Periodontal disease among the middle-aged Vietnamese population. *J Int Acad Periodontol* 2003;5:77-84.
- World Health Organization. Western Pacific Region, Fact Sheets. Geneva: World Health Organization; 2002.
- Johnson NW, Bain CA. Tobacco and oral disease. EU-working group on tobacco and oral health. *Br Dent J* 2000;189:200-6.
- Feldman RS, Bravacos JS, Rose CL. Association between smoking different tobacco products and periodontal disease indexes. *J Periodontol* 1983;54:481-7.
- Cutress TW, Ainamo J, Sardo-Infirri J. The community periodontal index of treatment needs (CPITN) procedure for population groups and individuals. *Int Dent J* 1987;37:222-33.

How to cite this article: Gandral A, Singh R, Sharma M, Kotwal B, Singh A, Kotwal V. Prevalence of Periodontitis in the Sample Population of Jammu Region – A Cross-Sectional Study. *Int J Sci Stud* 2020;8(2):1-5.

Source of Support: Nil, **Conflicts of Interest:** None declared.