

Prevalence Of Gingival Recession Among Patients Using Different Forms of Tobacco in South Indian Population- A Retrospective Study

Dharsan R¹, Priya Lochana Gajendran², Karthikeyan Murthykumar³, Dhanraj Ganapathy^{4*}

¹Saveetha dental College and Hospital, Saveetha institute of medical and technical sciences , Saveetha university, Chennai, India,
Email : 151801053.sdc@saveetha.com

²Senior lecturer, Department of Periodontics, Saveetha dental college and hospital, Saveetha university, Chennai ,India,
Email : Priyalochana.87@gmail.com

³Senior Lecturer, Department of Periodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai 600077, Tamil Nadu, India, Email : karthikeyanmurthykumar@gmail.com

⁴Professor & Head, Department of Prosthodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai 60007, Tamil Nadu, India, Email : dhanrajmaganapathy@yahoo.co.in

Abstract

Introduction: Gingival recession (GR) is a condition in which the gingival border is apical to the cementoenamel junction and the root is exposed to the oral environment. Tobacco use is one of the most important risk factors for the development of destructive types of periodontal disease, as well as a risk factor for GR.

Aim: The aim of the present cross-sectional study was to assess the prevalence of gingival recession among patients visiting a university dental hospital setting who are using different forms of tobacco.

Materials & Method: This study was conducted during the period of November 2019 to April 2020 in Saveetha Dental College and Hospitals in Chennai among patients with gingival recession who are under the usage of various forms of tobacco. The data were sorted and tabulated in Microsoft Excel and then entered in IBM SPSS software version 23 for descriptive statistics.

Results And Discussion: According to the results there is a decline in tobacco users with increase in age, drastically so after the age of 50. Figure 3 shows us that there is a maximum prevalence of GR of 19.60% among the age group 40-50 years and also shows the gradual increase in the prevalence of GR with age in accordance with the number of participants belonging to each age group. There may be a higher chance of prevalence of GR among those who use both the forms of tobacco, i.e. smokable and chewable than just a single form of usage.

Conclusion: From this retrospective study we conclude that gingival recession is evident in patients who use various forms of tobacco with a prevalence rate of 68.40 %. Highest prevalence of gingival recession among the age groups is 19.60% of age group 40-50 years who majorly smoked and used chewable forms of tobacco.

Keywords: dentin hypersensitivity, innovation, gingival recession , periodontal health , tobacco

DOI: 10.47750/pnr.2022.13.S04.109

INTRODUCTION

Gingival recession (GR) is a condition in which the gingival border is apical to the cementoenamel junction and the root is exposed to the oral environment, leading to difficulties such as root caries, dental hypersensitivity, and aesthetics of periodontal tissue. (1) GR frequently causes an aesthetic concern, especially when it affects the anterior teeth, as well as fear of tooth loss as the damage progresses. Because the root surface is exposed to the oral environment and an increase in the deposition of dental plaque, it may be linked to dentine hypersensitivity, root caries, abrasion, cervical wear, and erosion. (2) The recession of the gingival can be either localised or generalised, and it can affect one or more surfaces.

Previous research has shown that the aetiology of GR is complex, with several factors acting in concert. A wide range of variables, including morphological, inflammatory, and traumatic variables, have been shown to be strongly linked with GR. A number of writers have tried to explain the phenomenon and the pathogenesis of gingival recession but due to its complex multifactorial etiology the accurate pathogenesis still remains unknown. (2) Dentists may also be confronted with considerations about how to avoid future attachment loss. It is difficult to anticipate whether additional changes in gingival recession will

occur at a specific location due to the interplay of several probable contributing variables.(3)

Although many dental diseases go unreported by patients, gingival recession is a common visible dental alteration that patients notice and may prompt them to seek dental care. Although this condition is common, it can also be an indication of periodontal disease in certain people. As a result, gingival recession prevention and control are based on an accurate assessment of the condition's prevalence in relation to the risk factors that contribute to its development. Tobacco use is one of the most important risk factors for the development of destructive types of periodontal disease, as well as a risk factor for GR. Our team has extensive knowledge and research experience that has translated into high quality publications.(4–16),(17–21) (22) (23) Thus the aim of the present cross-sectional study was to assess the prevalence of gingival recession among patients visiting a university dental hospital setting who are using different forms of tobacco.

Materials And Method

Study Design

This study was conducted in Saveetha Dental College and Hospitals in Chennai among patients with gingival recession who are under the usage of various forms of tobacco. Data of those patients with gingival recession and have also under the usage of tobacco between the time period November 2019 to April 2020 were collected.

Data Collection And Tabulation

Data collection was done using the patient database with the timeframe work of November 2019 to April 2020. There were 898 patients with the presence of gingival recession and who used one or the other forms of tobacco. The data about the gender and tooth number were collected. All the patient data were reviewed and those fitting under the inclusion and exclusion criteria were included. Cross verification of data was done by the reviewer. The collected data was tabulated based on the following parameters:

Inclusion criteria

Patients under the usage of various types of tobacco products.

Exclusion criteria

Patients with preexisting medical conditions and those with special needs were excluded from the study. Patients who are not under the usage of tobacco products.

Statistical analysis

The data were sorted and tabulated in Microsoft Excel and then entered in IBM SPSS software version 23. Descriptive statistics were performed. Categorizable variables were expressed in the frequency and percentage. Chi square test was used to test the correlation between two variables. p value less than 0.05 is considered as statistically significant.

Results

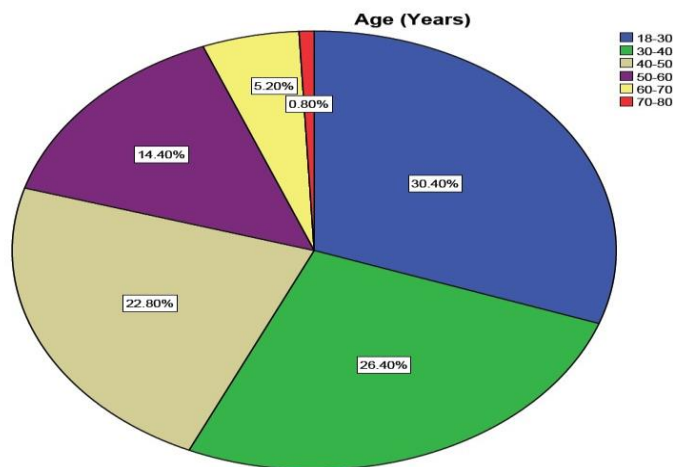


Figure 1: Pie chart representing the age distribution of the participants of the study who were under the usage of tobacco. 30.40% of the participants belonged to the age group of 18-30 years of age. 26.40 %, 22.80%, 14.40%, 5.20% and 0.80% of the participants belonged to the age group of 30-40 years, 40-50 years, 50-60 years, 60-70 years and 70-80 years of age respectively. Blue indicates age group 18-30 years, green indicates age group 30- 40 years, beige indicates age group 40-50 years, purple indicates age group 50-60 years, yellow indicates age group 60-70 years and red represents age group 70-80 years.

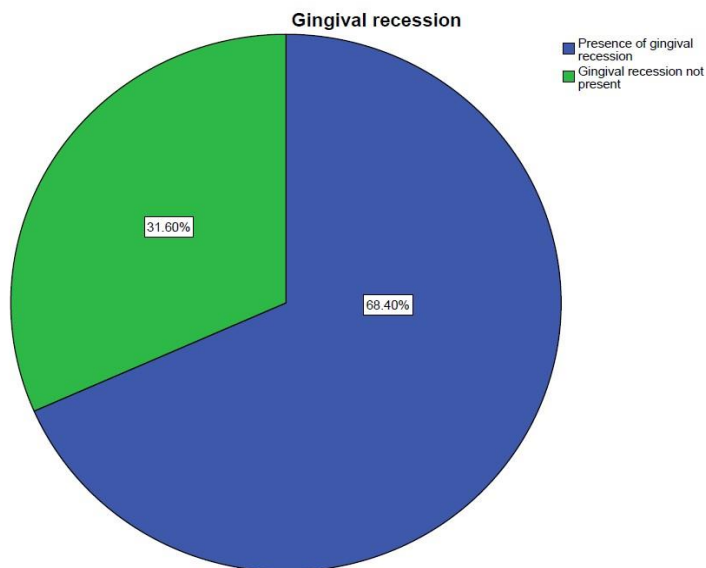


Figure 2: Pie chart representing the prevalence of gingival recession among the study participants. Prevalence of gingival recession was seen among 68.40% of the participants and 31.60% of the participants did not have gingival recession. Blue represents the presence of GR and green represents the absence of GR.

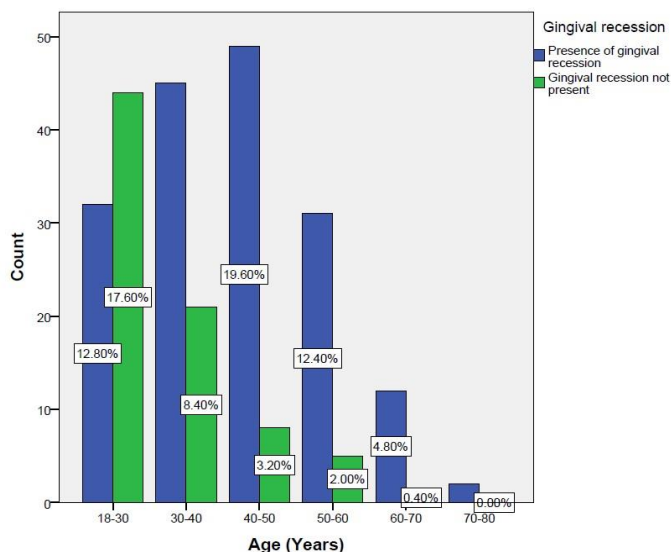


Figure 3: This is a bar graph depicting the association between various age groups and the prevalence of gingival recession. The X-axis represents the age groups while Y-axis represents the prevalence of gingival recession. Blue colour indicates the presence of gingival recession and green color indicates the absence of gingival recession. Results show that the age group 40 - 50 years show the most presence of gingival recession of 19.60% and 3.20% absence of gingival recession. Age group 18-30 shows a 12.80% presence and 17.60% absence of gingival recession among patients using various forms of tobacco. Age group 30-40 shows a 18.0% presence and 8.40% absence of gingival recession. Age group 50-60 shows a 12.40% presence and 2.0% absence of gingival recession. Age group 60-70 shows a 4.80% presence and 0.4% absence of gingival recession. Age group 70-80 shows a 0.8% presence and 0.0% absence of gingival recession. The chi-square test was analysed P value= 0.042 (p > 0.05) which is statistically significant.

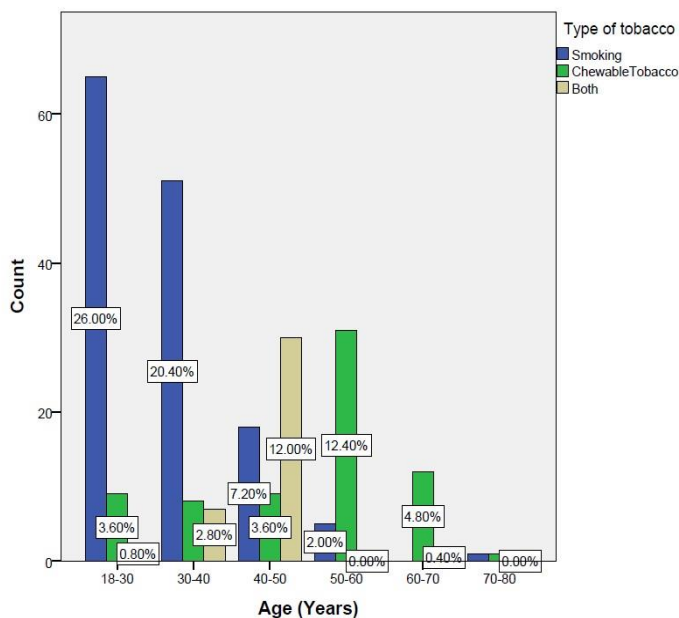


Figure 4: This is a bar graph depicting the association between various age groups and the type of tobacco used by the study subjects. The X-axis represents the age groups while Y-axis represents the prevalence of the type of tobacco used by the

participants. Blue colour indicates prevalence of smoking, green color indicates the usage of chewable form of tobacco and beige represents the usage of both smokable and chewable tobacco. Results show that the age group 40-50 years show the maximum usage 12%, of both the forms of tobacco, 7.2% of only smoking and 3.6% of only chewable tobacco. Age group 18-30 shows a 26% usage of smoking, 3.60% of chewable tobacco and 0.80% of both. Age group 30-40 shows a 20.40% usage of smoking, 4.0% of chewable tobacco and 2.80% of both. Age group 50-60 shows a 2.0% usage of smoking, 12.4% of chewable tobacco and 0.0% of both. Age group 60-70 shows 4.80% usage of chewable tobacco and 0.40% of both. While the age group 70-80 years showed 0.40% usage of smoking as well as chewable tobacco. The chi-square test was analysed P value= 0.176 ($p > 0.05$) which is statistically not significant.

Discussion

The present investigation was undertaken in order to estimate the possible influence of an independent element, usage of tobacco products on GR in a population of people visiting a university dental setup. Epidemiological studies play a significant role in monitoring the trends and for assessing the dental needs and awareness in a community.(24) There has been a considerable amount of information about prevalence of gingival recession in other parts of the world, whereas in India, not much baseline data is available. Results from figure 1 shows us the age wise distribution of tobacco users visiting a private university dental hospital among which the majority of participants of about 30.40% were among 18-30 years of age followed by 30-40 years, 40-50 years and so on. According to these results there is a decline in tobacco users with increase in age, drastically so after the age of 50. This is in accordance with another study by Rani M et al which states that tobacco use grew until the age of 50, after which it levelled out or began to fall.(25) Figure 2 shows us the presence of GR among the participants, where 68.40% participants had gingival recession and 31.60% of participants did not show any recession. Whereas another study done by N.A. Chrysanthakopoulos et al stated that 94.7 percent of subjects had GR on at least one tooth surface.(26)

Figure 3 shows us that there is a maximum prevalence of GR of 19.60% among the age group 40-50 years and also shows the gradual increase in the prevalence of GR with age in accordance with the number of participants belonging to each age group. Gingival recession was thought to be a natural feature of human ageing for decades, however all evidence to support this claim is insufficient. Although age makes it more likely for the factors of gingival recession to manifest themselves, this does not entail that they are caused by it.(27) Figure 4 shows us that the age group that was most prevalent with GR, 40-50 years was also the age group to which the maximum number of participants who used both the types of tobacco products belonged to. This hereby tells us that there may be a higher chance of prevalence of GR among those who use both the forms of tobacco, i.e. smokable and chewable than just a single form of usage. Results stated that there is a highest prevalence of smoking (26.0%) among the age group 18-30 years and highest use of chewable tobacco (12.40%) among 50-60 years. Results show us that there is an elevated prevalence of GR among smokeless tobacco users, in accordance to another study which states that the prevalence of gingival recession was significantly elevated in smokeless tobacco users among the adult greek population.(28)

The link between smoking and periodontal disease isn't well understood, pathologically. However, based on the information now available, the evidence strongly supports that smoking has a significant and negative impact on periodontal health and disease when the data is carefully weighted. Patients with periodontitis who smoke had more severe periodontal disease and recession than those who did not smoke, according to a research by Martinez-CP et al.(29) Oral mucosal lesions were seen in 46 percent of current week users, mostly in the mandible at the locations where the smokeless tobacco quid was deposited. The existence of poor oral hygiene and gingivitis in these users was not connected to the development of oral lesions, and the use of smokeless tobacco was not always linked with severe types of periodontal disease. Sites close to mucosal lesions in smokeless tobacco users, on the other hand, exhibited considerably more recession and attachment loss than locations not next to lesions in users or equivalent non-user sites.(30) However, based on the information now available, the evidence strongly supports that tobacco usage has a significant and negative impact on gingival recession.

Conclusion

From this retrospective study we conclude that gingival recession is evident in patients who use various forms of tobacco with a prevalence rate of 68.40%. Highest prevalence of gingival recession among the age groups is 19.60% of age group 40-50 years who majorly smoked and used chewable forms of tobacco. The recession among young adults is multidimensional and widespread. It can lead to dentin hypersensitivity and, as a result, a rise in need for pain and aesthetic treatments. To avoid recession, more study is needed to understand the underlying aetiology.

Acknowledgement

We would like to thank all the participants who took part in the study. We also thank Saveetha dental college and hospitals for their constant help and support.

Conflict Of Interests

All the authors declare that there was no conflict of interest in the present study.

Source Of Funding

The present project is funded by

Saveetha Institute of Medical and Technical Sciences.

Saveetha Dental college and Hospitals.

Saveetha University.

Dharsan industry pvt.ltd.

REFERENCE

1. Manchala SR, Vandana KL, Mandalapu NB, Mannem S, Dwarakanath CD. Epidemiology of gingival recession and risk indicators in dental hospital population of Bhimavaram. *J Int Soc Prev Community Dent.* 2012 Jul;2(2):69–74.
2. Tugnait A, Clerehugh V. Gingival recession—its significance and management [Internet]. Vol. 29, *Journal of Dentistry.* 2001. p. 381–94. Available from: [http://dx.doi.org/10.1016/s0300-5712\(01\)00035-5](http://dx.doi.org/10.1016/s0300-5712(01)00035-5)
3. Clerehugh V, Tugnait A. Diagnosis and management of periodontal diseases in children and adolescents [Internet]. Vol. 26, *Periodontology 2000.* 2001. p. 146–68. Available from: <http://dx.doi.org/10.1034/j.1600-0757.2001.2260108.x>
4. Ramesh A, Varghese S, Jayakumar ND, Malaiappan S. Comparative estimation of sulfiredoxin levels between chronic periodontitis and healthy patients - A case-control study. *J Periodontol.* 2018 Oct;89(10):1241–8.
5. Paramasivam A, Priyadharsini JV, Raghunandhakumar S, Elumalai P. A novel COVID-19 and its effects on cardiovascular disease. *Hypertens Res.* 2020 Jul;43(7):729–30.
6. S G, T G, K V, Faleh A A, Sukumaran A, P N S. Development of 3D scaffolds using nanochitosan/silk-fibroin/hyaluronic acid biomaterials for tissue engineering applications. *Int J Biol Macromol.* 2018 Dec;120(Pt A):876–85.
7. Del Fabbro M, Karanxha L, Panda S, Bucchi C, Nadathur Doraiswamy J, Sankari M, et al. Autologous platelet concentrates for treating periodontal infrabony defects. *Cochrane Database Syst Rev.* 2018 Nov 26;11:CD011423.
8. Paramasivam A, Vijayashree Priyadharsini J. MitomiRs: new emerging microRNAs in mitochondrial dysfunction and cardiovascular disease. *Hypertens Res.* 2020 Aug;43(8):851–3.
9. Jayaseelan VP, Arumugam P. Dissecting the theranostic potential of exosomes in autoimmune disorders. *Cell Mol Immunol.* 2019 Dec;16(12):935–6.
10. Vellappally S, Al Kheraif AA, Divakar DD, Basavarajappa S, Anil S, Fouad H. Tooth implant prosthesis using ultra low power and low cost crystalline carbon bio-tooth sensor with hybridized data acquisition algorithm. *Comput Commun.* 2019 Dec 15;148:176–84.
11. Vellappally S, Al Kheraif AA, Anil S, Assery MK, Kumar KA, Divakar DD. Analyzing Relationship between Patient and Doctor in Public Dental Health using Particle Memetic Multivariable Logistic Regression Analysis Approach (MLRA2). *J Med Syst.* 2018 Aug 29;42(10):183.
12. Varghese SS, Ramesh A, Veeraiyan DN. Blended Module-Based Teaching in Biostatistics and Research Methodology: A Retrospective Study with Postgraduate Dental Students. *J Dent Educ.* 2019 Apr;83(4):445–50.
13. Venkatesan J, Singh SK, Anil S, Kim S-K, Shim MS. Preparation, Characterization and Biological Applications of Biosynthesized Silver Nanoparticles with Chitosan-Fucoidan Coating. *Molecules [Internet].* 2018 Jun 12;23(6). Available from: <http://dx.doi.org/10.3390/molecules23061429>
14. Alsubait SA, Al Ajlan R, Mitwalli H, Aburaisi N, Mahmood A, Muthurangan M, et al. Cytotoxicity of Different Concentrations of Three Root Canal Sealers on Human Mesenchymal Stem Cells. *Biomolecules [Internet].* 2018 Aug 1;8(3). Available from: <http://dx.doi.org/10.3390/biom8030068>
15. Venkatesan J, Rekha PD, Anil S, Bhatnagar I, Sudha PN, Dechsakulwatana C, et al. Hydroxyapatite from Cuttlefish Bone: Isolation, Characterizations, and Applications. *Biotechnol Bioprocess Eng.* 2018 Aug 1;23(4):383–93.
16. Vellappally S, Al Kheraif AA, Anil S, Wahba AA. IoT medical tooth mounted sensor for monitoring teeth and food level using bacterial optimization along with adaptive deep learning neural network. *Measurement.* 2019 Mar 1;135:672–7.
17. PradeepKumar AR, Shemesh H, Nivedhitha MS, Hashir MMJ, Arockiam S, Uma Maheswari TN, et al. Diagnosis of Vertical Root Fractures by Cone-beam Computed Tomography in Root-filled Teeth with Confirmation by Direct Visualization: A Systematic Review and Meta-Analysis. *J Endod.* 2021 Aug;47(8):1198–214.
18. R H, Ramani P, Tilakaratne WM, Sukumaran G, Ramasubramanian A, Krishnan RP. Critical appraisal of different triggering pathways for the pathobiology of pemphigus vulgaris-A review. *Oral Dis [Internet].* 2021 Jun 21; Available from: <http://dx.doi.org/10.1111/odi.13937>
19. Ezhilarasan D, Lakshmi T, Subha M, Deepak Nallasamy V, Raghunandhakumar S. The ambiguous role of sirtuins in head and neck squamous cell carcinoma. *Oral Dis [Internet].* 2021 Feb 11; Available from: <http://dx.doi.org/10.1111/odi.13798>
20. Sarode SC, Gondivkar S, Sarode GS, Gadbaal A, Yuwanati M. Hybrid oral potentially malignant disorder: A neglected fact in oral submucous fibrosis. *Oral Oncol.* 2021 Jun 16;105390.
21. Kavarthapu A, Gurumoorthy K. Linking chronic periodontitis and oral cancer: A review. *Oral Oncol.* 2021 Jun 14;105375.
22. Vellappally S, Abdullah Al-Kheraif A, Anil S, Basavarajappa S, Hassanein AS. Maintaining patient oral health by using a xeno-genetic spiking neural network. *J Ambient Intell Humaniz Comput [Internet].* 2018 Dec 14; Available from: <https://doi.org/10.1007/s12652-018-1166-8>

23. Aldhuwayhi S, Mallineni SK, Sakhamuri S, Thakare AA, Mallineni S, Sajja R, et al. Covid-19 Knowledge and Perceptions Among Dental Specialists: A Cross-Sectional Online Questionnaire Survey. *Risk Manag Healthc Policy*. 2021 Jul 7;14:2851–61.
24. Bhopal RS. *Concepts of Epidemiology: Integrating the Ideas, Theories, Principles, and Methods of Epidemiology*. Oxford University Press; 2016. 480 p.
25. Rani M. Tobacco use in India: prevalence and predictors of smoking and chewing in a national cross sectional household survey [Internet]. Vol. 12, *Tobacco Control*. 2003. p. 4e – 4. Available from: <http://dx.doi.org/10.1136/tc.12.4.e4>
26. Chrysanthakopoulos NA. Prevalence of Gingival Recession and associated Risk Factors among 18–45-Year-Old Who Attended a Dental Practice in Greece [Internet]. Vol. 5, *International Journal of Experimental Dental Science*. 2016. p. 28–33. Available from: <http://dx.doi.org/10.5005/jp-journals-10029-1119>
27. Jati AS, Furquim LZ, Consolaro A. Gingival recession: its causes and types, and the importance of orthodontic treatment. *Dental Press J Orthod*. 2016 Jun;21(3):18–29.
28. Chrysanthakopoulos NA. Gingival recession: prevalence and risk indicators among young Greek adults [Internet]. *Journal of Clinical and Experimental Dentistry*. 2014. p. e243–9. Available from: <http://dx.doi.org/10.4317/jced.51354>
29. Martinez-Canut P, Lorca A, Magan R. Smoking and periodontal disease severity [Internet]. Vol. 22, *Journal of Clinical Periodontology*. 1995. p. 743–9. Available from: <http://dx.doi.org/10.1111/j.1600-051x.1995.tb00256.x>
30. Robertson PB, Walsh M, Greene J, Ernster V, Grady D, Hauck W. Periodontal Effects Associated With the Use of Smokeless Tobacco [Internet]. Vol. 61, *Journal of Periodontology*. 1990. p. 438–43. Available from: <http://dx.doi.org/10.1902/jop.1990.61.7.438>