

## Prevalence Of Oral Mucosal Lesions In Complete Denture Wearers - A Retrospective Study

Research Article

Herald J sherlin<sup>1\*</sup>, Kiran<sup>2</sup>, Vivek Narayan<sup>3</sup>

<sup>1</sup> Professor and Head of department, Department of Oral pathology, Saveetha Dental College and hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, Tamil Nadu, India.

<sup>2</sup> Saveetha Dental College and hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, Tamil Nadu, India.

<sup>3</sup> Senior lecturer, Department of oral medicine, Saveetha Dental College and hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, Tamil Nadu, India.

### Abstract

Prevalence of complete edentulousness is very common in India. However, due to improper maintenance, ill fitting prosthesis, irritation and Colonization of various pathogens leads to formation of several oral lesions such as candidiasis, angular cheilitis, denture stomatitis, traumatic ulcers, flabby ridges and oral carcinomas. The study was performed as a retrospective cross-sectional study in a hospital setting. Data of 86000 patients visiting saveetha dental college was obtained in the time period of June 2019 to March 2020. Data Collected were analysed using SPSS. Descriptive analysis having and chi - square test done for association study. Out of 506 complete denture wearers, 22 had denture associated lesions. Among them most common was denture stomatitis, and most commonly affected age group was 61-70 years. There was no statistical significance between age, gender and lesion ( $p > 0.05$ ). Denture stomatitis was the most prevalent oral lesion found in complete denture wearers followed by angular cheilitis. Most commonly affected age group is 61-70 years.

**Keywords:** Age; Sex; Lesion; Denture Stomatitis; Angular Cheilitis; Complete Denture.

### Introduction

Oral lesions in complete denture wearers are caused due to tissue changes, ill fitting prosthesis, pathogens, and lead to altered clinical presentations and sometimes even complications [14]. Due to the dynamic environment of the oral cavity and loading of oral mucosa, denture could be the direct cause for these changes. Alterations in oral environment, tissue responses and alteration may also be influenced by presence or absence of systemic illness and other diseases. Medical conditions that can cause hyposalivation and parafunctional are more likely to cause mucosal alterations [18, 21, 24, 12]. Diabetes mellitus was considered as a major risk factor for denture stomatitis and denture hyperplasia [6, 29, 11].

Denture stomatitis is the most common oral lesion seen in denture wearers. It is an inflammatory condition which causes changes in oral mucosa in denture bearing areas mostly in max-

illa due to increased surface area of the palate [5, 26]. This can be characterized by erythema and swelling of the affected region [20]. In a study of 463 random complete dentures using patients, prevalence of denture stomatitis was found to be 65% [3, 28]. It is found to have female predilection, i.e., more frequently seen in females than in males [25, 13, 27, 29].

Angular cheilitis is a lesion that is clinically diagnosed by appearance of deep fissures affecting the angle of the mouth and it has ulcerated appearance [16]. Studies suggest that loss of vertical dimension is a major cause for occurrence of this lesion, and is associated with candida colonization with denture wearers and poor oral hygiene. Prevalence of angular cheilitis in complete denture patients is upto 30% [7, 4].

Other common lesions are inflammatory hyperplasia, epulis fissuratum which are caused due to the reaction caused by ill fit-

#### \*Corresponding Author:

Herald J sherlin,  
Department of Oral pathology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, Tamil Nadu, India.  
Email Id: sherlin@saveetha.com

**Received:** December 02, 2020

**Accepted:** January 21, 2021

**Published:** February 27, 2021

**Citation:** Herald J sherlin, Kiran, Vivek Narayan. Prevalence Of Oral Mucosal Lesions In Complete Denture Wearers - A Retrospective Study. *Int J Dentistry Oral Sci.* 2021;08(02):1785-1788. doi: <http://dx.doi.org/10.19070/2377-8075-21000353>

**Copyright:** Herald J sherlin©2021. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

ting denture-it causes tissue hyperplasia in the areas which are in contact with the denture. There were seen in 5-10% of dentures wearing patients. In large scale study these lesions were seen in 6.3% in the 55-64years age group and 11.5% in 65 above age groups [1, 19]. The lesions are caused due to chronic irritation/injury/illfitting/unstable dentures or extended flanges. Proliferation of the tissues takes place soon after prosthetic treatment [9]. Inorder to prevent these conditions the complete denture patient should be well educated about denture maintenance and about the periodic examination due to changing supporting tissues for the detection of early mucosal lesion, so that oral and denture hygiene is maintained. In order to prevent or reduce the recurrence of the lesion, patient should be recalled and reviewed for examination regularly. The aim of the study is to know about the prevalence of the lesions present in patients who are using complete dentures and factors associated to the lesions such as habits, systemic illness, previously studies are done based on lesions that are caused due to denture, this study focuses on correlation between other factors and the lesions.

**Materials and methods**

The study was a retrospective study conducted in a university setting, The approval for this study was obtained from the institution ethics board. The clinical information of the patient was obtained from the Hospital. Case details of patients were retrieved from 86000 patients visiting Saveetha Dental College in the time period of June 2019 to March 2020. The sample size contained 506 com-

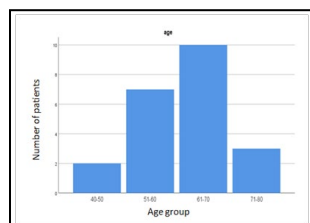
plete edentulous patients out of which 22 patients with denture associated lesions were selected. Sampling bias was minimised by collecting all the data available and no sorting process was done. Cross Checking and evaluation of data was done with both the clinical photographs of the patient and cytological smears when available. Parameters like age, gender, habits, systemic illness, lesion, maintenance of denture, correction were collected and verified. The data was tabulated in excel sheet coded and entered in SPSS software IBM 20 for statistical analysis. Descriptive statistics-percentage, mean, standard deviation were analysed. Chi-square test was done to compare proportions of two groups and p value < 0.05 was considered to be statistically significant.

**Results and Discussion**

There were a total of 506 complete denture patients reporting to the hospital in the given time period. 22 patients (4.3%) had oral lesions associated with denture irritations. The distribution of age groups is summarised in figure 1. The most commonly affected age group was 61-70 years, followed by 71-80 years, the least common affected age group is 41-50 years. Most commonly affected gender is females(63.6%) than males (36.4%). The most commonly diagnosed lesion was denture stomatitis (68.2%) followed by angular cheilitis (31.8%) (Table 1) There was no statistical significance between age, gender, lesion and systemic illness. (Figures 2-4).

The study was conducted among 506 Complete denture wear-

**Figure 1. Bar diagram representing frequency distribution of denture wearing patients with different age groups having oral mucosal lesions. X axis represents the different age groups and Y axis represents the number of patients with oral lesions. More frequent occurrence was observed in elderly population within 61-70 years of age.**



**Table 1. Frequency distribution of different lesions seen in the study population.**

Lesion	No of cases	Percentage
Denture stomatitis	15	68.2
Angular cheilitis	7	31.8

**Figure 2. Bar charts depicting the association of oral mucosal lesions with different age groups. Red: Angular Cheilitis, Blue: dentureStomatitis. X axis represents the age of the patients and Y axis represents the number of patients. There was no significant association between oral mucosal lesions and different age groups. Pearson’s Chi square p = 0.44 hence not significant.**

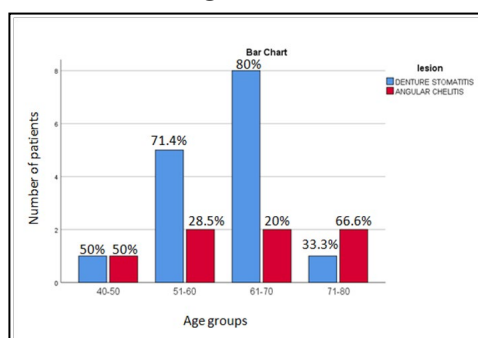


Figure 3. Bar charts showing the distribution of oral mucosal lesions among males and females. Blue; male, Red; Female. X axis represents the Oral lesions that are caused due to complete dentures irritation along with gender, Y axis represents the number of patients. There was no significant association between the distribution of oral mucosal lesions among males and females. Pearson's Chi square test,  $p=0.20$  ( $>0.05$ ) hence not significant.

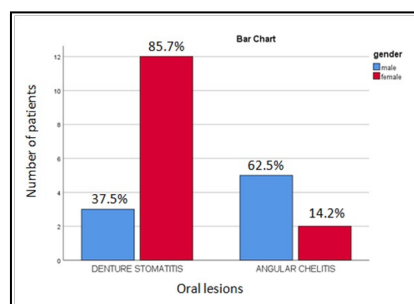
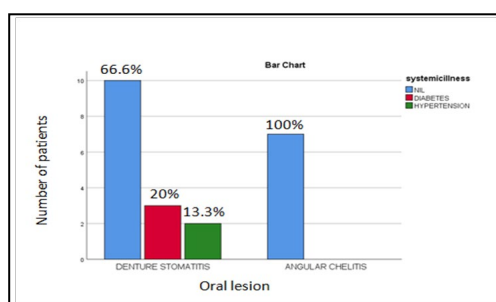


Figure 4. Bar charts depict the association between oral mucosal lesions and systemic illness. Blue; no systemic illness, Red; Diabetes mellitus, green; hypertension. X axis represents the oral lesion along with the systemic illness. Y axis represents the number of patients. There was no significant association between oral mucosal lesions and systemic illness. Pearson's chi square test,  $p = 0.22$  ( $>0.05$ ) hence not significant.



ers, out of which 22 had denture associated oral lesions. It was observed that the most commonly affected age group was 61-70 years. Similar results were observed in the study [2] and [22, 14, 13] This is because old people are more likely to lose their teeth rather than younger population and hence require prosthesis. The most commonly affected gender was females rather than males. Studies suggest that oral lesions are more common in females than in males [8, 13], This could be due to the prolonged usage of denture by females for aesthetics reasons [22] compared to males and infrequent cleaning.

Denture stomatitis was the most commonly observed lesion (68.18%) followed by angular cheilitis (31.8%). Studies suggest that denture stomatitis is the most common oral lesion that is caused due to colonization of candida [17, 14]. Poorly maintained dentures with plaque accumulation and use of dentures even during sleep may be a major cause of denture stomatitis in elderly population. Also the maxillary denture have more palatal coverage providing an environment for candida growth [10, 28]. An ill fitting denture may promote plaque accumulation leading to poor oral hygiene. It also important to know that the swallowing or aspiration of denture plaque would expose immunocompromised patients and medicated patients to the risk of unexpected infections.

Angular cheilitis is associated with loss of vertical dimension and colonization of candida, Different studies suggested that an increase in the frequency of angular cheilitis with increase in length of usage of denture, which suggest that loss of vertical dimension could be an important cause, as it is assumed that the overclosure of the jaws will produce occlusive folds at the angles of the mouth in which saliva tends to collect and the skin subse-

quently becomes macerated, fissured and secondarily infected and colonized mainly with Candida and few bacterial species such as Staphylococcus aureus. Poor oral hygiene, severe desorbed ridge and decrease in the face vertical height of occlusion can cause active colonization of Candida, which results in angular cheilitis among the elderly and institutionalized people leading to nutritional deficiency and impaired quality of life [23].

In the present study, diabetes mellitus was the most common systemic illness followed by hypertension-similar finding has been observed in a study [22, 13, 28], however it was observed that there was no statistical significance seen between both these values this could be because of the smaller sample size of the present study. The limitations of the study is that the sample is small and all the diagnosis is based on clinical findings. The status of the tissue and denture was not noted. Studies should be conducted on a larger population so as to identify the defects leading to these lesiona and provide improved care.

## Conclusion

According to the study the most common oral lesion seen among complete denture wearers is denture stomatitis. This study reveals that elder population aged more than 60 years and females are most commonly affected. Systemic illness and smoking are risk factors.

## References

- [1]. Axéll T. A prevalence study of oral mucosal lesions in an adult Swedish population. *Odontol Revy Suppl.* 1976;36:1-103. Pubmed PMID: 186740.
- [2]. Bozdemir E, Yilmaz HH, Orhan H. Oral mucosal lesions and risk factors

- in elderly dental patients. *Journal of dental research, dental clinics, dental prospects*. 2019;13(1):24.
- [3]. Budtz-Jørgensen E. The significance of *Candida albicans* in denture stomatitis. *Scand J Dent Res*. 1974;82(2):151-90. Pubmed PMID: 4598186.
- [4]. Chakraborty A, Ramani P, Sherlin HJ, Premkumar P, Natesan A. Antioxidant and pro-oxidant activity of Vitamin C in oral environment. *Indian J Dent Res*. 2014 Jul-Aug;25(4):499-504. Pubmed PMID: 25307916.
- [5]. Chrigström K, HEDEGård B, Markén KE. Gerodontologiska studier. IV. Oralstatus och vårdbehov vid en vårdhems- och pensionärsinstitution i Stockholm [Gerodontological studies. IV. Oral status and the need for treatment at an institution and nursing home for old-age pensioners in Stockholm]. *Sven Tandlak Tidsskr*. 1970 Dec;63(12):981-9. Swedish. Pubmed PMID: 4924281.
- [6]. Dundar N, Ilhan Kal B. Oral mucosal conditions and risk factors among elderly in a Turkish school of dentistry. *Gerontology*. 2007;53(3):165-72. Pubmed PMID: 17202819.
- [7]. Ettinger RL. The etiology of inflammatory papillary hyperplasia. *J Prosthet Dent*. 1975 Sep;34(3):254-61. Pubmed PMID: 22334986.
- [8]. Macedo Firoozmand L, Dias Almeida J, Guimarães Cabral LA. Study of denture-induced fibrous hyperplasia cases diagnosed from 1979 to 2001. *Quintessence Int*. 2005 Nov-Dec;36(10):825-9. Pubmed PMID: 16261799.
- [9]. Gheena S, Ezhilarasan D. Syringic acid triggers reactive oxygen species-mediated cytotoxicity in HepG2 cells. *Hum Exp Toxicol*. 2019 Jun;38(6):694-702. Pubmed PMID: 30924378.
- [10]. Gupta V, Ramani P. Histologic and immunohistochemical evaluation of mirror image biopsies in oral squamous cell carcinoma. *Journal of oral biology and craniofacial research*. 2016 Sep 1;6(3):194-7.
- [11]. Hannah R, Ramani P, Sherlin HJ, Ranjith G, Ramasubramanian A, Jayaraj G, et al. Awareness about the use, ethics and scope of dental photography among undergraduate dental students dentist behind the lens. *Research Journal of Pharmacy and Technology*. 2018 Mar 1;11(3):1012-6.
- [12]. Hema Shree K, Ramani P, Sherlin H, Sukumaran G, Jeyaraj G, Don KR, et al. Saliva as a Diagnostic Tool in Oral Squamous Cell Carcinoma - a Systematic Review with Meta Analysis. *Pathol Oncol Res*. 2019 Apr;25(2):447-453. Pubmed PMID: 30712193.
- [13]. Jangid K, Alexander AJ, Jayakumar ND, Varghese S, Ramani P. Ankyloglossia with cleft lip: A rare case report. *Journal of Indian Society of Periodontology*. 2015 Nov;19(6):690.
- [14]. Jayaraj G, Sherlin HJ, Ramani P, Premkumar P, Anuja N. Cytomegalovirus and Mucoepidermoid carcinoma: A possible causal relationship? A pilot study. *Journal of oral and maxillofacial pathology: JOMFP*. 2015 Sep;19(3):319.
- [15]. Jayaraj G, Sherlin HJ, Ramani P, Premkumar P, Natesan A. Stromal myofibroblasts in oral squamous cell carcinoma and potentially malignant disorders. *Indian J Cancer*. 2015 Jan-Mar;52(1):87-92. Pubmed PMID: 26837985.
- [16]. Jones E. Some Types of Massage and Soft Tissue Therapies. In *Massage for Therapists* 2009 Sep 28.
- [17]. Karim JF, Kareem SA. A Clinical Study on Denture Stomatitis in a Group of Denture Wearers in Sulaimani Governorate. *J Zankoy Sulaimani*. 2007:35-41.
- [18]. Kivovics P, Jáhn M, Borbély J, Márton K. Frequency and location of traumatic ulcerations following placement of complete dentures. *Int J Prosthodont*. 2007 Jul-Aug;20(4):397-401. Pubmed PMID: 17695871.
- [19]. Kumar A, Sherlin HJ, Ramani P, Natesan A, Premkumar P. Expression of CD 68, CD 45 and human leukocyte antigen-DR in central and peripheral giant cell granuloma, giant cell tumor of long bones, and tuberculous granuloma: An immunohistochemical study. *Indian J Dent Res*. 2015 May-Jun;26(3):295-303. Pubmed PMID: 26275199.
- [20]. Love WD, Goska FA, Mixson RJ. The etiology of mucosal inflammation associated with dentures. *J Prosthet Dent*. 1967 Dec;18(6):515-27. Pubmed PMID: 4863769.
- [21]. Márton K, Boros I, Fejérdy P, Madléna M. Evaluation of unstimulated flow rates of whole and palatal saliva in healthy patients wearing complete dentures and in patients with Sjogren's syndrome. *J Prosthet Dent*. 2004 Jun;91(6):577-81. Pubmed PMID: 15211301.
- [22]. Mubarak S, Hmud A, Chandrasekharan S, Ali AA. Prevalence of denture-related oral lesions among patients attending College of Dentistry, University of Dammam: A clinico-pathological study. *J Int Soc Prev Community Dent*. 2015 Nov-Dec;5(6):506-12. Pubmed PMID: 26759806.
- [23]. Radford DR, Challacombe SJ, Walter JD. Denture plaque and adherence of *Candida albicans* to denture-base materials in vivo and in vitro. *Crit Rev Oral Biol Med*. 1999;10(1):99-116. Pubmed PMID: 10759429.
- [24]. Sivaramakrishnan SM, Ramani P. Study on the Prevalence of Eruption Status of Third Molars in South Indian Population. *Biology and Medicine*. 2015 Oct 1;7(4):1.
- [25]. Sridharan G, Ramani P, Patankar S, Vijayaraghavan R. Evaluation of salivary metabolomics in oral leukoplakia and oral squamous cell carcinoma. *J Oral Pathol Med*. 2019 Apr;48(4):299-306. Pubmed PMID: 30714209.
- [26]. Sridharan G, Ramani P, Patankar S. Serum metabolomics in oral leukoplakia and oral squamous cell carcinoma. *J Cancer Res Ther*. 2017 Jul-Sep;13(3):556-561. Pubmed PMID: 28862226.
- [27]. Swathy S, Gheena S, Sri VL. Prevalence of pulp stones in patients with history of cardiac diseases. *Research Journal of Pharmacy and Technology*. 2015 Dec 1;8(12):1625.
- [28]. Thangaraj SV, Shyamsundar V, Krishnamurthy A, Ramani P, Ganesan K, Muthuswami M, et al. Molecular Portrait of Oral Tongue Squamous Cell Carcinoma Shown by Integrative Meta-Analysis of Expression Profiles with Validations. *PLoS One*. 2016 Jun 9;11(6):e0156582. Pubmed PMID: 27280700; PMCID: PMC4900586.
- [29]. Viveka TS, Shyamsundar V, Krishnamurthy A, Ramani P, Ramshankar V. p53 Expression Helps Identify High Risk Oral Tongue Pre-malignant Lesions and Correlates with Patterns of Invasive Tumour Front and Tumour Depth in Oral Tongue Squamous Cell Carcinoma Cases. *Asian Pac J Cancer Prev*. 2016;17(1):189-95. Pubmed PMID: 26838208.