



Gender difference in prevalence and incidence of mucosal lesions associated with wearing removable dentures

Anirudh BVM¹, Keerthi Sasanka L^{*2}, Venkatesh K², Nivethigaa B³

¹Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai-77, Tamil Nadu, India

²Department of Prosthodontics, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai-77, Tamil Nadu, India

³Department of Orthodontics, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai-77, Tamil Nadu, India

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ABSTRACT

Denture users are vulnerable to changes in the oral cavity due to improper maintenance of dentures. Most common lesions due to dentures are denture stomatitis, epulis fissuratum, traumatic ulcers etc. The aim of this study is to find out the gender difference in prevalence and incidence of mucosal lesions associated with wearing removable dentures. Case records were collected and analysed the data of 41000 patients between June 2019 and March 2020 from saveetha dental. A total of 249 cases were recorded with patients who have a removable denture, and their data was tabulated with parameters such as age, gender, type of lesion, size of the lesion, type of denture. Data were then imported to spss for statistical analysis. Descriptive statistics and chi-square test were used for further analysis. Total of 249 patients was recorded who had dentures in which 40.1% (n=100 patients) were affected with oral lesions, in which 53% were females, and 47% were males who were affected. The mucosal lesions were found to be more prevalent in age groups above 50 years. The most common lesion was denture stomatitis, where t the most common type of denture used was TPD (73%). Within the limits of this study, prevalence of mucosal lesions due to dentures was similarly seen in both genders, with denture stomatitis being the most common lesion associated with a denture.



*Corresponding Author

Name: Keerthi Sasanka L

Phone: 8374691106

Email: keerthis.sdc@saveetha.com

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INTRODUCTION

Dentures are appliances which replace the lost natural tooth or teeth with artificial teeth. Dentures, when used for a period of time, causes changes in the oral cavity, like lesions related to dentures such as denture stomatitis, traumatic ulcers, epulis fissuratum etc. These lesions might be associated with systemic disease also (Márton *et al.*, 2004; Kivovics, 2007; Ali *et al.*, 2015). Studies showed that Diabetes is one of the risk factors for denture stomatitis and hyperplasia due to denture (Dundar and Kal, 2007). The prevalence of mucosa lesions is increased with an increase in an age where studies have proven it (Corbet *et al.*, 1994). One of the causes of oral

lesions due to dentures is not replacing old or worn-out dentures (Moskona and Kaplan, 1992; Ashok et al., 2014).

Proper oral hygiene and health care has to be maintained for preventing these lesions (Selvan and Ganapathy, 2016; Subasree et al., 2016; Vijayalakshmi and Ganapathy, 2016; Basha et al., 2018).

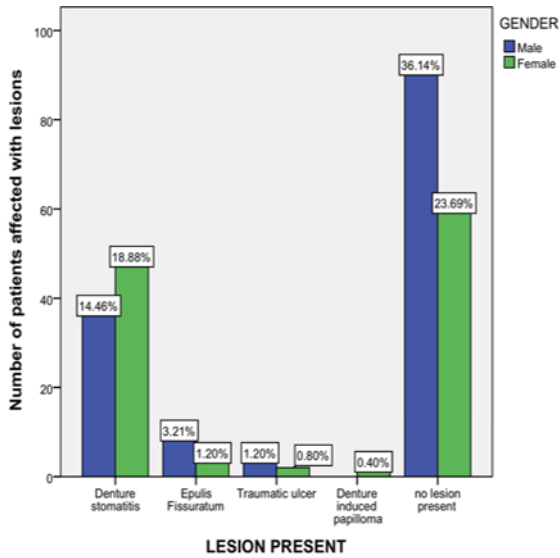


Figure 1: This graph shows the prevalence of lesions caused due to dentures among different genders.

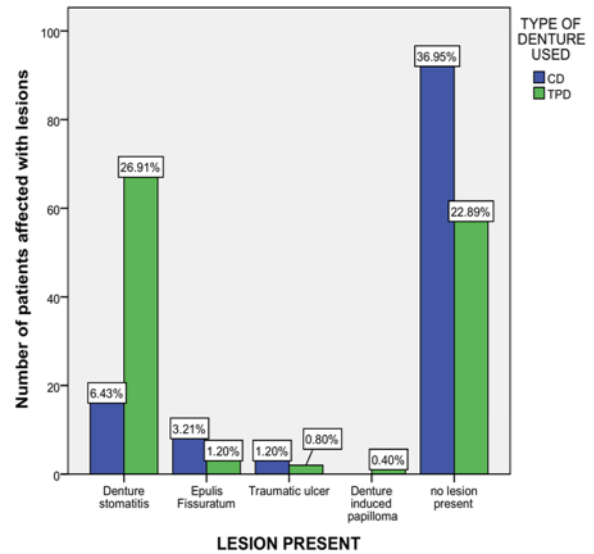


Figure 3: This graph explains the correlation of denture related lesions with different types of denture.

The prevalence of females being affected with oral lesions more than men is seen in a few studies as well as in the current study (Dorey et al., 1985; Firoozmand et al., 2006; da Silva et al., 2011).

Denture stomatitis/ denture sore mouth is characterized by inflammatory changes and which is most frequently seen in the maxilla. Females are more prone to denture stomatitis (Love et al., 1967; Chrigström et al., 1970).

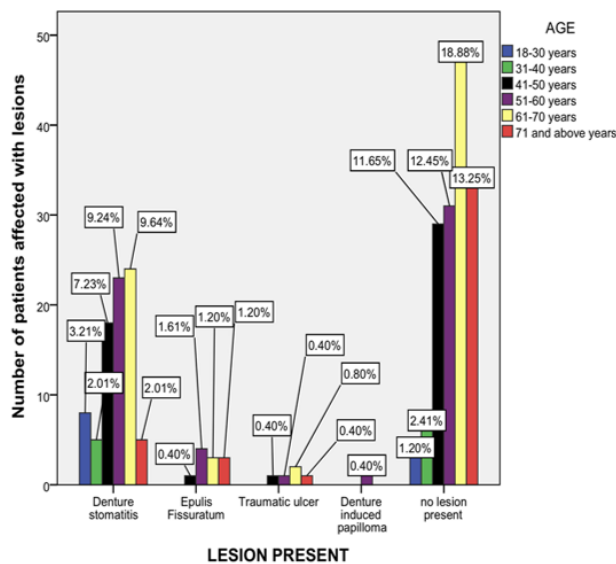


Figure 2: This graph explains the correlation of denture related lesions among different age groups.

Previous literature suggested that defective dentures, improper cleaning techniques of denture cleaning affect the condition of denture which can induce the lesions (Budtz-Jorgensen, 1981; Peltola et al., 2008; Sesma et al., 1999; Jyothi et al., 2017).

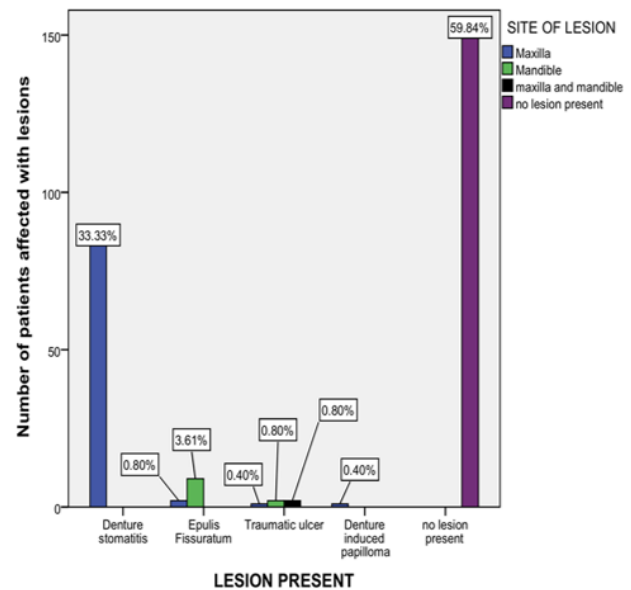


Figure 4: This graph explains the prevalence of denture related lesions associated with the site of lesions.

Traumatic ulcers occur due to newly fitted dentures, ill-fitting dentures, overextend denture flanges which frequently occur in the first five years

Table 1: Gender distribution in accordance with the type of lesion.

Lesion Present	Male	Female
Denture stomatitis	36	47
Epulis fissuratum	8	3
Traumatic ulcer	3	2
Denture induced papilloma	0	1
No lesion present	90	59

Table 2: The frequency of different age groups in accordance with the type of lesion.

Lesion Present	18-30 years	31-40 years	41-50 years	51-60 years	61-70 years	71 years and above
Denture Stomatitis	8	5	18	23	24	5
Epulis Fissuratum	0	0	1	4	3	3
Traumatic Ulcer	0	0	1	1	2	1
Denture Induced Papilloma	0	0	0	1	0	0
No Lesion Present	3	6	29	31	47	33

of denture use (Coelho *et al.*, 2004). Angular cheilitis affects the angles of the mouth with an ulcerated appearance (Jones, 1976). Studies suggest that it's caused due to loss of vertical height (Moskona and Kaplan, 1992). Angular cheilitis is directly not caused by dentures, and it is not taken into consideration in this study (Venugopalan *et al.*, 2014; Ashok and Suvitha, 2016; Ganapathy, 2016; Ajay *et al.*, 2017).

Epulis fissuratum is caused due to chronic irritation due to unstable denture, overextended denture flanges. This study does not involve FPD and implant-supported denture (Ganapathy *et al.*, 2017; Ranganathan *et al.*, 2017; Kannan and Venugopalan, 2018; Duraisamy *et al.*, 2019). The aim of this study is to find out the gender difference in prevalence and incidence of mucosal lesions associated with wearing a removable denture.

MATERIALS AND METHODS

It is a retrospective cross-sectional study done under a university setting. Case records were collected and analyzed the data of 41000 patients between June 2019 and March 2020. A total of 249 cases were recorded with patients who had a removable denture. The case sheets were cross-verified.

The data is tabulated under parameters such as age, gender, type of lesion, size of the lesion, type of dentures. Data were then imported to spss for statistical analysis where descriptive statistics and chi-square test were done for further analysis.

RESULTS AND DISCUSSION

Total of 249 patients was recorded in which 55% were male, and 45% were female. Out of 249 patients, only 40% (n=100) had oral lesions in which 53% were females, and 47% were males (Figure 1, Table 1). In this study, The prevalence of females being more affected was seen, which is 53% (n=100). Some studies have also shown the same results (Dorey *et al.*, 1985; Firoozmand *et al.*, 2006; da Silva *et al.*, 2011). It wasn't well understood, but it has been suggested that women tend to overuse dentures while not needed, such as during sleeping (Cutright, 1974).

The most affected age group in this study were 51-60 years (29%) and 61 to 70 years (29%) while the least affected was 31-40 years (Figure 2, Table 2). Several authors claim that with an increase in age, there is a decrease in the salivary flow which makes them prone to these lesions (Canger *et al.*, 2009; Filgueiras *et al.*, 2016). In this study, Denture Stomatitis was the most commonly seen lesion, which is 83% out of 100 patients and 33.3% out of 249 patients (Figure 3). Some studies showed a high prevalence of denture stomatitis such as 65%-463 students and low prevalence rate -3.3% out of 210 cases (Budtz-Jorgensen, 1974; Ali *et al.*, 2015). This could be the fact that patients were maintaining oral hygiene properly recommended by the dentist.

Most prevalent type of denture used was TPD (52.2% - 249 patients, 73% - 100 patients) in which 67% cause denture stomatitis (Figure 3, Table 3). Most of the studies show that CD is one of the causes

Table 3: The frequency of the type of denture in accordance with the type of lesion.

Lesion present	CD	TPD
Denture stomatitis	16	67
Epulis fissuratum	8	3
Traumatic ulcer	3	2
Denture induced papilloma	0	1
No lesion present	92	57

Table 4: The frequency of site of lesion in accordance with the type of lesion.

Lesion present	Maxilla	Mandible	Maxilla and mandible	No lesion present
Denture stomatitis	83	0	0	0
Epulis fissuratum	2	9	0	0
Traumatic ulcer	1	2	2	0
Denture induced papilloma	1	0	0	0
No lesion present	0	0	0	149

of these oral lesions (Ali *et al.*, 2015). This might be due to the fact that people in this region are not aware of proper oral hygiene maintenance. Maxilla was the most prevalent site of lesions (34.9% - 249 patients, 87% - 100 patients) (Figure 4, Table 4) due to denture stomatitis mostly affecting maxilla (Budtz-Jorgensen, 1974; Ariga *et al.*, 2018). Chi-square test was done with the type of lesion present and with the type of denture used, $P < 0.05$, which was statistically significant (Figure 3). Another positive correlation was found between the type of lesion present and site of the lesion, $P < 0.05$, which was statistically significant (Figure 4).

Figure 1 shows that the X-axis represents lesions present, and Y-axis represents the number of patients affected by lesions. Green color indicates females and blue indicates males. According to this graph, the prevalence of these lesions was similar in both the genders. (Pearson chi-square value- 8.961, p-value- 0.062, $p > 0.05$ which is statistically not significant). Figure 2 shows that the X-axis represents lesions present, and Y-axis represents the number of patients affected by lesions. Blue color indicates 18-30 years, green indicates 31-40 years, black indicates 41-50 years, purple indicates 51-60 years, yellow indicates 61-70 years and red indicates 71 and above years. The figure explains that patients above 50 years had a higher prevalence, making them prone to these lesions, statistically not significant (Pearson chi-square value-24.103, p-value- 0.238, $p > 0.05$ which is statistically not significant).

Figure 3 shows that the blue color indicates CD and green indicates TPD. The X-axis represents lesions present, and Y-axis represents the number

of patients affected by lesions. Denture stomatitis was the most common lesion seen mostly in TPD users (Pearson chi-square value- 42.629, p-value- 0, $p < 0.05$, which is statistically significant).

Figure 4 X-axis represents lesions present, and Y-axis represents the number of patients affected by lesions. Blue color indicates maxilla, green indicates mandible, black indicates both maxilla and mandible and purple indicates no lesion.

This graph shows that maxilla had a high occurrence of the denture-related lesion which was mostly seen in cases of denture stomatitis (Pearson chi-square value-526.4, p-value- 0, $p < 0.05$ which is statistically significant). Short sample size, single centered study and absence of different ethnic populations were the limitations of this study. Studying for a larger population with different ethnic populations and making it a multi-centred study can be done in the future.

CONCLUSION

Within the limits of the study, Prevalence of mucosal lesions due to dentures was almost similar in both the genders. TPD users were most commonly affected with the denture-related lesions with denture stomatitis being the most common among the lesions associated with dentures. The prevalence of these lesions can be reduced by giving strict and proper instructions about the maintenance of dentures as well as oral hygiene.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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