The Prevalence And Associated Factors Of Denture Wearing Associated Oral Lesions Among Dental Patients Attending College Of Dentistry Clinics In Aljouf University

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Abstract

Background: oral lesions can be induced by wearing dentures and have been associated with impacting the quality of life of dental patients.

Study objectives: to determine the prevalence of denture associated oral lesions and their associated possible factors in college of dentistry clinics, Aljouf University.

Methods and subjects: this was a retrospective study to collect data from files of patients who wear dentures. The study included 344 patients. All files were reviewed and the extracted data were further analyzed using SPSS version 20. The relationships between variables were tested using One Way Anova and Pearson correlation. Data were presented as frequencies, percentages, means, and standard deviation. Significance was examined at alpha ≤ 0.05.

Results: a total of 344 files were reviewed. The following oral lesions were found: denture stomatitis (48.8%), papillary hyperplasia (39.8%), traumatic keratosis (22.1%), angular cheilitis (16.9%), and erythematous candidiasis (10.2%). No significant relationships were found between oral lesions and both age and gender bases on One Way Anova test. Pearson correlation showed a significant positive correlation between traumatic keratosis and age ($r=0.110$, $p=0.042$), and a negative correlation between traumatic keratosis and erythematous candidiasis ($r=-0.110$, $p=0.039$).

Conclusions: The present studies showed that oral lesions associated with wearing denture are prevalent and create health problems that impact the quality of life of dental patients

Keywords: Oral lesions, dentures, angular cheilitis, hyperplasia, stomatitis, erythematous candidiasis, traumatic keratosis

Introduction

There has been an increased prevalence of oral lesions over time which is usually associated with tooth loss and the need to use dentures (Coelho et al., 2004).

Several oral lesions associated with wearing dentures have been reported to include denture stomatitis, erythematous candidiasis, angular cheilitis, traumatic keratosis and papillary hyperplasia (Pegah et al., 2012; Aiman et al., 2013; Mubarak et al., 2015).

Denture stomatitis is considered as an infectious condition in which oral mucosa is infected by fungi and to a lesser extent by bacteria in the area under the denture (Lakshmi, 2015). According to Girard et al (1996), the occurrence of ulcers is likely to due to newly fitted dentures and resorption of alveolar bone.

Angular cheilitis is a mucocutaneous lesion associated with deep fissures, and ulcerated appearance. The occurrence of angular cheilitis depends on various factors including nutritional, systemic, and drug-related factors (Park et al., 2011). Angular cheilitis has an infectious nature and the patients usually suffer from burning of their lip angels (Sharon and Fazel, 2010).

Erythematous candidiasis has been described in an association with burning sensations either in in the oral cavity or the tongue. It is possible that the appearance of tongue to be either bright red or bald appearance (Pankaj et al., 2015).

The study of Anura (2014) confirmed that the wearing of denture wearing is associated with various oral lesions including histological and gross changes. Patil et al (2013) conducted a study to determine the frequency of oral lesions among denture wearers in a North Indian population. The results showed that the prevalence of frictional keratosis was (19.9%).

Mubarak et al (2015) conducted a study to identify the frequency of oral lesions associated with denture wearing among dental patients visiting the clinics of the College of Dentistry, University of Dammam. The results showed that the frequency of oral lesions was 20.5% of studied cases. Hyperplasia was the most frequent induced lesion (41.9%). The researchers found a significant correlation ($P = 0.004$) between the type of denture and oral lesions.

Sadig (2010) conducted a study to examine the frequency and associated factors with denture stomatitis among dental patients who wear dentures. The results indicated that the prevalence of denture stomatitis was 62%.

Sharmila. and Muralidharan (2015) conducted a study to evaluate the presence of Candida albicans in complete denture wearers with angular

chelitis. The results indicated that coagulase negative staphylococcus and viridans streptococcus were more likely to be encountered in such lesions. The researchers also identified some species of Candida albicans.

Study objectives

The main objective of the present study is to determine the prevalence of denture associated oral lesions and their associated possible factors in college of dentistry clinics, Aljouf University.

Methods and subjects

Study design

A retrospective study design was conducted to collect data from files of dental patients who wear dentures.

Study setting

The present study was conducted at specialized dental center of Ministry of Health in Skaka and college of dentistry clinics, Aljouf University.

Study sample

A total of 344 files of dental patients were reviewed.

Study variables

Study variables included demographic variables (age and gender) and oral lesions including denture stomatitis, erythematous candidiasis, angular cheilitis, traumatic keratosis and papillary hyperplasia.

Data collection

An excel working sheet including study variables was created for each patient's file. After the data of all patients had been completely collected, the final excel sheet that include all patients was created.

Statistical analysis

Data analysis was conducted using SPSS version 20. Data was presented as frequencies and percentages for all variables except age which was presented as mean and standard deviation. One Way Anova analysis was conducted to examine the effect of both age and gender on oral lesions among dental patients who wear dentures. Further correlational analysis was conducted to examine the possible correlations between variable. Pearson correlation was used. Significance was considered at alpha level ≤ 0.05.

Results

Demographic characteristics of dental patients

As shown in table 1, the study included 344 participants, of whom 296 (86%) were males. The mean age was 66.11± 5.95 years.

Table 1: Demographic characteristics of dental patients (N=344)

Variable	Description
Age (M±SD years)	**66.11± 5.95**
Gender (N, %): **- Male** **- Female**	 **296 (86%)** **48 (14%)**

Frequency of oral lesions associated with denture wearing

As demonstrated in table 2, the prevalence of denture stomatitis was 48.8%, followed by papillary hyperplasia (39.8%), traumatic keratosis (22.1%), angular cheilitis (16.9%), and erythematous candidiasis (10.2%).

Table 2: Frequency of oral lesions associated with denture wearing (N=344)

Oral lesion	Frequency	Percentage
Denture stomatitis:		
- Yes	**168**	**48.8**
- No	**176**	**51.2**
Erythematous candidiasis:		
- Yes	**35**	**10.2**
- No	**309**	**89.8**
Angular cheilitis:		
- Yes	**58**	**16.9**
- No	**268**	**83.1**
Traumatic keratosis:		
- Yes	**76**	**22.1**
- No	**268**	**77.9**
Papillary hyperplasia:		
- Yes	**137**	**39.8**
- No	**207**	**60.2**

The relationship between oral lesions and gender

One way Anova analysis was conducted to investigate the relationship between oral lesions and gender. The results did not reveal any significant relationship between gender and oral lesions ($p>0.05$ for all oral lesions) (table 3).

Table 3: The relationship between oral lesions and gender (One Way Anova)

Oral lesion	Sum of squares	Df	Mean square	F	P value
Denture stomatitis	**0.144**	**1**	**0.144**	**0.58**	**0.45**
Angular chielitis	**0.020**	**1**	**0.020**	**0.14**	**0.707**
Traumatic keratosis	**0.009**	**1**	**0.009**	**0.051**	**0.821**
Papillary hyperplasia	**0.030**	**1**	**0.030**	**0.125**	**0.724**
Erythematous candidiasis	**0.019**	**1**	**0.019**	**0.206**	**0.650**

The relationship between oral lesions and age

The results of One Way Anova analysis did not show significant relationships between age and oral lesions ($p>0.05$ for all oral lesions) (table 4).

Table 4: The relationship between oral lesions and age (One Way Anova)

Oral lesion	Sum of squares	Df	Mean square	F	P value
Denture stomatitis	**4.69**	**27**	**0.165**	**0.642**	**0.917**
Angular chielitis	**3.64**	**27**	**0.135**	**0.955**	**0.532**
Traumatic keratosis	**3.88**	**27**	**0.144**	**0.820**	**0.726**
Papillary hyperplasia	**8.66**	**27**	**0.321**	**0.137**	**0.106**
Erythematous candidiasis	**1.79**	**27**	**0.066**	**0.705**	**0.862**

Correlation among study variables

Correlation analysis was conducted to explore possible correlations among study variables. Pearson correlations were found in the following patterns: traumatic keratosis was negatively and significantly correlated with erythematous candidiasis ($r=-0.110$, $p=0.042$). The results also showed a significant positive correlation between traumatic keratosis and age ($r=0.110$, $p=0.039$) (table 5).

Table 5: Correlation among study variables (Pearson correlation)

Variable 1	Variable 2	Correlation	P value
Traumatic keratosis	**Erythematous candidiasis**	**-0.110**	**0.042**
Traumatic keratosis	**Age**	**0.110**	**0.039**

Discussion

The present study was conducted to determine the prevalence of denture associated oral lesions and their possible associated factors because oral health is important and has impacts on the quality of life as demonstrated by several studies (İlkerCebeci and Gülşahı, 2009; Ali et al., 2013).

The results of the present study showed that the prevalence of denture stomatitis was about 49%, and this prevalence is higher than that reported in other studies such as the study of Patil et al (2014) who reported a prevalence of denture stomatitis as low as 12.4% and this can explained by variations in population characteristics. Other studies in the region showed that a higher prevalence of denture stomatitis to reach 62% (Sadig, 2010).

The data of this study showed that the prevalence of erythematous candidiasis was about 10%, and this was less than that reported in other studies in which it was reported as 18.2% (Patil et al., 2014).

The prevalence of Angular cheilitis in this study was about 17%, which was higher than that of the study of Patil et al (2013), 1.9% and higher

than the prevalence reported by Pegah et al (2012) who reported 2.5% prevalence of angular cheilitis. The study of Mujica et al (2008) reported the prevalence of angular cheilitis to be 5%. It seems that the variations in prevalence may due to more than one factor including hygiene and characteristics of studied populations. Another plausible explanation may due to mechanical aspects including bad construction of dentures and loose of vertical dimension.

The prevalence of traumatic keratosis was about 22% in this study, and this result is slightly higher than that reported by Patil et al (2013) who reported keratosis as 19.2%.

The findings of the present study showed that hyperplasia was induced among about 40% of participants. The prevalence of hyperplasia in our study is slightly lower than that reported by other authors in the region. Mubarak et al (2015) reported the prevalence of hyperplasia as 41.9%. Other studies reported that the prevalence of hyperplasia was 7.2% (Patil et al., 2013).

Using One Way Anova analysis did not significant relationships between oral lesions and each of age and gender ($p>0.05$ for all variables), and this is plausibly explained by taking into consideration that oral lesions were induced by wearing dentures.

Finally, two significant correlations were shown between traumatic keratosis and age (positive and significant), which is plausible to be explained by taking into consideration that as age increases traumatic keratosis is likely to increase. The other association is between traumatic keratosis and erythematic candidiasis (negative and significant), which implies that erythematic candidiasis is likely to reverse the occurrence of traumatic keratosis.

Conclusion

The present studies showed that oral lesions associated with wearing denture are prevalent and create health problems that impact the quality of life of dental patients.

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