Short Communication

J Babol Univ Med Sci
23; 2021. P: 345-351

Frequency of Oral Lesions and Its Relationship with Some Variables

M. A. Alaei Bakhsh (DDS)[1], M. Khosravi Samani (DDS, MS)[2], M. Motalebnejad (DDS, MS)[2], A. Bijani (MD, PhD)[3], A. Ghorbani (DDS)[1], M. Mehryari (DDS, MS)*[4]

1.School of Dentistry, Babol University of Medical Sciences, Babol, I.R.Iran

2.Dental Materials Research Center, Institute of Health, Babol University of Medical Sciences, Babol, I.R.Iran

3.Social Determinants of Health Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, I.R.Iran

4.Department of Oral and Maxillofacial Diseases, School of Dentistry, Babol University of Medical Sciences, Babol, I.R.Iran

J Babol Univ Med Sci; 23; 2021; PP: 345-351

Received: May 22nd 2021, Revised: Jun 21st 2021, Accepted: Jul 10th 2021.

ABSTRACT

BACKGROUND AND OBJECTIVE: Early diagnosis of oral diseases affects the prognosis and treatment. Despite advances in oral health, there are still oral health problems worldwide. Considering that culture, gender, age, ethnicity and habits may have a significant impact on the prevalence of lesions, this study was performed to investigate the frequency of oral lesions over 10 years and its relationship with some variables.

METHODS: In this cross-sectional study, the medical records of 1092 patients with various types of oral lesions who referred to the Department of Oral and Maxillofacial Diseases of Babol Dental School during 2009-2017 were evaluated and compared based on year, age, gender, type of lesion (white and red, pigmented, vesiculobullous, orofacial and tumoral pains, and disorders associated with systemic and peripheral or central diseases).

FINDINGS: In this study, out of 1092 cases, 672 cases were related to female clients (61.5%) and 420 cases (38.5%) were related to male clients ($p<0.001$). The mean age of the subjects was 43.2±16.81 years. The highest frequency was related to white and red lesions with 305 cases (27.9%), which was 193 cases in women (28.7%) and 112 cases in men (26.7%) ($p<0.001$). The highest frequency of lesions was related to the cheeks with 351 cases (32.1%) including 235 cases (35%) in women and 116 cases (27.6%) in men ($p<0.01$). The lowest frequency was observed in the floor of mouth in 68 cases (6.2%). Tumoral lesions had a higher mean age of involvement than other lesions ($p<0.001$). The frequency of orofacial pain and burning symptoms in women was significantly higher than men ($p=0.006$).

CONCLUSION: The results of the study showed that the frequency of white and red lesions of the mouth is more than other cases and its most common location is in the buccal mucosa. The frequency of lesions also has a significant positive relationship with female gender.

KEY WORDS: *Oral Mucosal Lesions, Oral and Maxillofacial Diseases, Red and White Lesions, Orofacial Pains*.

Please cite this article as follows:

Alaei Bakhsh MA, Khosravi Samani M, Motalebnejad M, Bijani A, Ghorbani A, Mehryari M. Frequency of Oral Lesions and Its Relationship with Some Variables. J Babol Univ Med Sci. 2021; 23: 345-51.

***Corresonding Author: M. Mehryari (DDS, MS)**

Address: Department of Oral and Maxillofacial Diseases, School of Dentistry, Babol University of Medical Sciences, Babol, I.R.Iran

Tel: +98 11 32291408

E-mail: mah.mehryari@yahoo.com

[DOR: 20.1001.1.15614107.1400.23.1.48.7]

[DOI: 10.22088/jbums.23.1.345]

Introduction

Oral mucosal lesions are more common in old men than women and are more common in the elderly who use removable prosthetics or tobacco (1-4). Mucosal lesions include macules, papules, plaques, nodules, vesicles, bulla, erosions, pustules, ulcers, and purpura (5). Most acute vesicular bullous lesions occur in young patients and are less common in the elderly (6). The other group of lesions are white and red, and may occur when the oral mucosa is exposed to toxic chemicals. Microbes, especially fungi, can form a false white membrane composed of flattened epithelial cells, fungal mycelium, and neutrophils that have little adhesion to the oral mucosa (7).

Oral lesions appear months before skin lesions, which shows the importance of paying attention to the discovery of these lesions. Bullous pemphigoid and mucous membrane pemphigoid are more common in the elderly than other pemphigoids. Bullous pemphigoid is most often seen in adults over 60 years of age and is self-limiting. One of the specific symptoms of this disease is itching in skin lesions. Oral lesions can most often occur in the form of desquamative gingivitis, which is similar to oral mucosal pemphigoid lesions (8). Culture, gender, age, ethnicity and habits may have a significant impact on the prevalence of lesions. In addition, socio-economic differences between demographic groups may have this effect (9).

Squamous cell carcinoma (SCC) is the most common oral cancer, especially in the elderly, which accounts for 4% of all oral cancers in men and 2% in women (10). Early detection of a malignant tumor certainly has an effect on the prognosis and treatment. Failure to pay attention to the possibility of malignancy may lead to delayed diagnosis and treatment, the need for more aggressive treatments, and in the worst case, premature death (11). Better knowledge and understanding of radiological findings can lead to early diagnosis, shortening of any delay, and thus improving disease prognosis (12).

Despite numerous advances in cancer treatment, oral cancer is one of the top ten causes of death due to its late detection for a variety of causes, including being asymptomatic in the early stages, clinical similarity to other lesions, and variation in clinical manifestations (13). Therefore, it is necessary for dentists to have the necessary information about lesions and common diseases in this area with the help of epidemiological studies in order to be able to correctly interpret the changes that have occurred in the tissues and structures of the mouth and reach a correct diagnosis (14). Thus, in this study, we decided to evaluate the frequency of oral lesions in all patients referred to the Department of Oral and Maxillofacial Diseases of Babol Dental School from 2009 to 2017.

Methods

In this cross-sectional study, after approval by the ethics committee of Babol University of Medical Sciences with the ethics code IR.MUBABOL.REC.1397.054, all records of patients who referred to the Department of Oral and Maxillofacial Diseases of Babol Dental School during the years 2009 to 2017 were examined. Incomplete files or normal anatomical variations were excluded from the study.

Required data such as demographic information of clients including age, gender, occupation (employed or unemployed), presence or absence of underlying systemic disease and medication use, information on specific characteristics such as the location of the lesion (tongue, buccal mucosa, gums, etc.), size (less than one centimeter or larger than one centimeter), color and texture (in terms of homogeneity or inhomogeneity), clinical information such as clinical appearance, clinical behavior of the lesion (pain, burning, etc.). existence of histopathological diagnosis, radiographic view (normal, radiopaque, radiolucent or mixed) and presence or absence of paraclinical tests as well as specialized information about lesions including division into groups of vesiculobullous lesions, white and red lesions, pigmentation, systemic diseases, tumoral and orofacial pains, central lesions, benign exophytic lesions and dental lesions (15) were extracted from patients' files and entered into the checklist.

In this study, individuals were classified and studied in three age groups of 12 years (children) and less, 13 to 59 years and over 60 years (elderly). Then, the data were analyzed by SPSS 17 statistical software using Chi-square statistical tests, Fisher's exact test and Student's t-test, and $p<0.05$ was considered significant.

Results

Out of 1092 cases, 47 cases were not included in the review due to being incomplete. Of these, 672 (61.5%) cases were related to female clients and 420 (38.5%) were related to male clients. Of these, 491 (45%) cases had underlying systemic disease which included 339 women (50.4%) and 152 men (36.2%) ($p<0.001$). The mean age of the subjects was 43.2±16.81 years. The

[DOR: 20.1001.1.15614107.1400.23.1.48.7]
[DOI: 10.22088/jbums.23.1.345]

mean age of men was 42.47±18.36 years and women was 43.65±15.77 years. The youngest age was 2 years old and the oldest age was 85 years old. Tumoral lesions with a mean age of 60.9±15 years had the highest mean age and dental lesions with a mean age of 20.8±8 years had the lowest mean age (p<0.001). Other lesions based on age were: pigmented lesions with 48.4±14 years, white and red lesions with 47.5±12 years, ulcerative lesions with 43.5±1 years, orofacial lesions with 43.4±16 years, benign exophytic lesions with 39.2±18 years and central lesions with 35.6±15 years.

The most common category of lesions in children was benign exophytic lesions (18 cases [60%] out of 30 pediatric patients) followed by central lesions (with 7 cases [23.3%]). The most common lesions in the second group were white and red lesions with 251 diagnoses (28.8%) out of 872 patients, followed by benign exophytic lesions with 224 diagnoses (25.7%). In the elderly group, the most common category of lesions was related to white and red lesions (with 53 diagnoses [27.9%] out of 190 patients in this group), followed by benign exophytic lesions (with 40 cases [21.1%]). In the evaluation of the frequency of lesions in different locations of the oral cavity, the highest frequency was related to the cheek with 351 cases (32.1%) including 235 cases (35%) in women and 116 cases (27.6%) in men (p=0.01). After the cheek, the highest frequency was related to gingiva (252 lesions, 23.1%), which was 162 cases (24.1%) in women and 90 cases (24.1%) in men. Other common sites of lesions were 243 cases (22.3%) in the tongue, 197 cases in the lips (17.1%), 122 cases in the palate (11.2%), 101 cases in the bone (9.2%) and 68 cases in the floor of the mouth (6.2%). In the evaluation of the frequency of lesion categories, the highest frequency was related to white and red lesions with 305 cases (27.9%), which was 193 cases (28.7%) in women and 112 cases (26.7%) in men (p<0.001).

Frequency of other lesions were respectively as follows: benign exophytic lesions with a total frequency of 282 cases (25.8%), ulcerative lesions with a total frequency of 142 cases (13%), orofacial pain with 123 cases (11.3%), central lesions with 114 cases (10.4%), lesions related to systemic diseases with 59 cases (5.4%), tumoral lesions with 43 cases (3.9%), pigmented lesions with 29 cases (2.7%) and dental lesions with 12 cases (1.1%) whose frequency was different in men and women (p=0.006). In the group of white and red lesions, the most common lesions were lichen planus, followed by lichenoid reaction and denture stomatitis.

In the category of ulcerative lesions, the most common lesion was pemphigus vulgaris and then traumatic ulcer. Among benign exophytic lesions, the most common were Pyogenic Granuloma (PG) and Peripheral Giant Cell Granuloma (PGCG), followed by mucocele and irritation fibroma. Among central lesions, the most common cases were radicular cysts, followed by dentigerous cysts and odontogenic keratocyst (OKC). Squamous cell carcinoma (SCC) was the most common malignant tumor of the mouth. Melanotic macule was also the most common lesion of pigmented lesion followed by tattoo amalgam. Among the clinical signs of burning, pain, bleeding, sensory changes, dry mouth and swelling, only the sign of burning was significantly different between the genders (Figure 1). In terms of radiological lesions, the highest rate of lesions was radiolucent in both genders (Table 1).

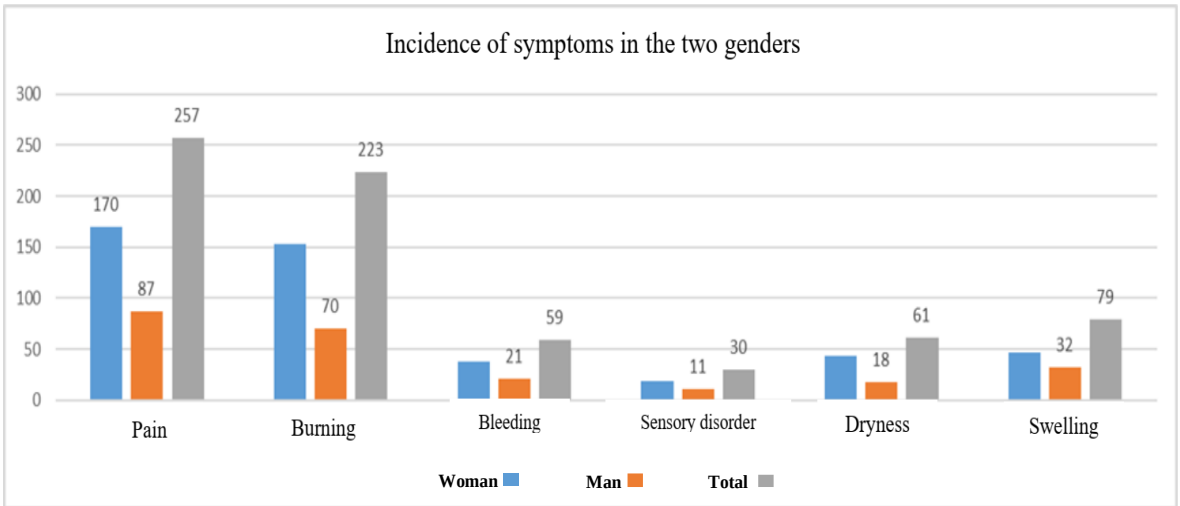

Figure 1. Comparison of the frequency of symptoms in both genders

[DOR: 20.1001.1.15614107.1400.23.1.48.7]
[DOI: 10.22088/jbums.23.1.345]

Table 1. Opacity status of radiological lesions by gender

Radiological lesions Gender	Normal Number(%)	Radiolucent Number(%)	Radiopaque Number(%)	Mixed Number(%)
Woman	610(90.8)	44(6.5)	13(1.9)	5(7)
Man	375(89.3)	35(8.3)	7(1.7)	3(7)
Total	985(100)	79(7.2)	20(1.8)	8(0.7)

Discussion

In this study, women were significantly more likely to have systemic diseases compared to men. The most common sites of oral lesions were the cheeks and floor of the mouth. Only in oral lesions in the cheek, there was a difference between males and females, and it was more common in women. This finding could be coincidental. Oral lesions were often larger than one centimeter in size, and this finding was not unique to any particular gender. In addition, the lesions, both in terms of color and texture, were generally heterogeneous and no difference was observed between the two genders. In the study by Owlia et al., pigmented lesions were significantly more common in men (16), which is probably due to the consumption of tobacco products. In the study of Baharvand et al., the frequency of oral lesions in patients referred to the dental school was 9.3% (17).

In this research, only people with oral lesions were studied. The frequency of white and red lesions was higher than other lesions and the frequency of dental lesions was less than the others. This finding could be due to the fact that dental lesions are less likely to be referred to an oral and maxillofacial specialist by other specialists. The frequency of orofacial pain was significantly higher in women than men. Among the clinical signs of burning, pain, bleeding, sensory changes, dry mouth and swelling, only the sign of burning was significantly different between the two genders. In all symptoms, women had higher frequency than men, and the most common symptom was pain and the least was sensory disturbances. In total, 9.5% of patients had central lesions, which were mostly radiolucent.

Tumoral lesions had a higher mean age of involvement than other lesions, which could be due to the cumulative phenomenon. The frequency of white and red, ulcerative, pigmented, systemic, benign exophytic, orofacial, central and dental lesions was higher in middle age. Only in the case of tumoral lesions, the observed frequency was higher in the elderly, i.e., over 60 years. This finding may be due to the cumulative process of predisposing factors and risk factors for tumoral lesions. In the category of white and red lesions, the most common lesions were lichen planus, followed by lichenoid reaction and denture stomatitis. In the category of ulcerative lesions, the most common lesion was pemphigus vulgaris and then traumatic ulcer. Among benign exophytic lesions, PG and PGCG were the most common, followed by mucocele and irritation fibroma. Among central lesions, the most common cases were radicular cysts, followed by dentigerous cysts and OKC. Melanotic macule was also the most common lesion of pigmented lesion followed by tattoo amalgam.

Vasconcelos et al. reported that in the age range of 40 to 60 years, men were the dominant population, with the predominant disease being inflammatory processes followed by SCC. They also reported a 5% prevalence in periapical granuloma and a 4% prevalence in periapical cysts (18). The results of their study are different from the present study and the reason for this difference can be due to race and ethnicity and the studied lesions. This finding is apparently different from the present study, but in fact, since the present study did not distinguish between cysts and granulomas, intraosseous lesion was observed as the most common one, which is consistent with the study of Vasconcelos et al.

In Baharvand et al.'s study, out of 2465 patients, 9.6% had oral lesions, of which the frequency of lesions was 51.3% in women, 4.22% white and red lesions, and 1.42% geographic tongue. The most common lesions were in the age range of 40 to 60 years and the most common site of lesions was the labial mucosa (17). In their analysis, Baharvand et al. also examined the prevalence of oral lesions and it was not possible to determine this parameter in the present study because the present study only dealt with patients with oral lesions and categorized them. The results of their study regarding the most commonly observed lesions and also the higher prevalence of these lesions in women are similar to the present study. In the study of Shahzad et al., the most common diseases were gingivitis followed by irreversible pulpitis and periodontitis. About 58% of patients were male (19). Their study examined patients in just one day and therefore their sample size is small.

[DOR: 20.1001.1.15614107.1400.23.1.48.7]
[DOI: 10.22088/jbums.23.1.345]

In this regard, the present study is robust. The present study did not investigate oral diseases and the aim was to evaluate the lesions. In the study by Ghanaei et al., out of 1581 adults over 30 years of age, the prevalence of oral lesions was about 19.4% higher in men than women, and also the prevalence of grooved tongue with 4% and Fordyce granule with 2.8% showed the highest prevalence (20).

Their results regarding the higher prevalence of oral lesions in men than women contradict the findings of this study and may be due to age restrictions in the studied patients. In the present study, a wider age range has been investigated. Furthermore, since they also examined tongue lesions, the prevalence of such lesions was reported to be higher than white and red lesions, but in fact, by examining their study data, after tongue lesions, white lesions were the most common, among which Fordyce granule and candidiasis were most common. However, in the present study, Fordyce granule was considered a natural anatomical finding.

De Macedo Amaral et al. also stated that the prevalence of these diseases varies greatly depending on the region, country and also the data collection center. In this study, 1075 clinical cases were reviewed, of which 60% were female patients and the mean age of patients was 41 years. In these patients, 1444 cases of oral diseases and lesions were diagnosed, the most common of which was soft tissue tumor of oral cavity. Evolutionary defects were in the next category and epithelial tissue diseases were in the third category. The highest prevalence of the disease was related to fibrosis hyperplasia and then candidiasis (21).

Jahanbani et al. stated that 28% of adults had at least one oral lesion, of which 29.2% were boys and 26.9% were girls, which was not statistically significant (22). Their study was performed only on students aged 12 to 15 years, while the present study covered the age range of 2 to 85 years, which due to this difference in samples, the results of the present study provide more comprehensive information. Their study on the prevalence of lesions in boys is different from the present study, which may be different due to age range. However, it was stated that this difference was not significant. Kniest et al. stated that out of 140 referred patients, 89 were female and the mean age of the clients was 47.2 years. The total number of diagnosed lesions was 126, of which 97.6% were benign lesions. The most common lesions were inflammatory fibrous hyperplasia, followed by candidiasis, followed by mucocele and fibroma. Three cases of malignancy were observed (23). Their results regarding the prevalence of female patients are similar to the present study, but there is a difference between the two studies in the prevalence of the type of lesion. In fact, they only evaluated tumoral lesions, but the present study examined different types of oral lesions.

The results of this study indicate that most of the patients with oral lesions were women. The most common site of oral lesions was the buccal mucosa and it was more common in women than men, and the rare site was the floor of the mouth. The frequency of white and red lesions was more than other lesions and among them, lichen planus had the highest frequency and the frequency of dental lesions was less than the others. The frequency of orofacial pain was significantly higher in women than men. Tumoral lesions had a higher mean age of involvement than other lesions. Moreover, the symptom of burning was significantly higher in women than men. Oral lesions were often larger than one centimeter in size, and this finding was not unique to any particular gender. SCC was most common in tumoral lesions. Melanotic macule was the most common pigmented lesion.

Acknowledgment

We would like to thank the Vice Chancellor for Research and Technology of Babol University of Medical Sciences for supporting the research and also the staff of the Oral Disease Department of Babol Dental School.

[DOR: 20.1001.1.15614107.1400.23.1.48.7]
[DOI: 10.22088/jbums.23.1.345]

References

1.Corbet EF, Holmgren CJ, Phillipsen HP. Oral mucosal lesions in 65-74-year-old Hong Kong Chinese. Community Dent Oral Epidemiol. 1994;22(5 Pt 2):392-5.

2.Kuc IM, Samaranayake Lp, Van Heyst EN. Oral health and microflora in an institutionalised elderly population in Canada. Int Dent J. 1999;49(1):33-40.

3.Lin HC, Corbet EF, Loe EC. Oral mucosal lesions in adult chinese. J Dent Res. 2001;80(5):1486-90.

4.MacEntee MI. The prevalence of edentulism and disease related to dentures – a literature review. J Oral Rehabil. 1985;12(3):195-207.

5.Hand JS, Whitehill JM. The prevalence of oral mucosal lesion in an elderly population. J Am Dent Assoc. 1986;112(1):73-6.

6.Lamey PJ, Rees TD, Binnie WH, Wright JM, Rankin KV, Simpson NB. Oral presentation of pemphigus vulgaris and its response to systemic steroid therapy. Oral Surg Oral Med Oral Pathol. 1992;74(1):54-7.

7.Jessri M, Mawardi H, Farah CS, Woo S-B. White and Red Lesions of the Oral Mucosa. Contemp Oral Med. 2019:1207-48.

8.Cebeci A-R-I, Gülşahi A, Kamburoglu K, Orhan B-K, Oztaş B. Prevalence and distribution of oral mucosal lesions in an adult Turkish population. Med Oral Patol Oral Cir Bucal. 2009;14(6):E272-7.

9.Mohtasham N, Babakoohi Sh, Shiva A, Shadman A, Kamyab-Hesari K, Shakeri M-T, et al. Immunohistochemical study of p53, Ki-67, MMP-2 and MMP-9 expression at invasive front of squamous cell and verrucous carcinoma in oral cavity. Pathol Res Pract. 2013;209(2):110-4.

10.Korman NJ. Bullous pemphigoid. The latest in diagnosis, prognosis, and therapy. Arch Dermatol. 1998;134(9):1137-41.

11.White SC, Pharoah MJ. Oral Radiology: Principles & Interpretation, 5th ed. United States: Mosby; 2002. p. 256-61, 343, 373-386, 405-16, 443.

12.HosseiniZarch SH, JavadianLangaroodi A, TavassoliNoghabi A. Accuracy of Conventional Radiography in Differentiating Between Benign Lesions and Malignant Ones in the Maxillofacial Region. J Mashhad Dent School. 2009;33(2):121-8. [In Persian]

13.Shiva A, Mousavi SJ. Evaluation of Dentists Knowledge about Oral Cancer in Sari-Iran in 2013. J Mazand Univ Med Sci. 2014;24(109):164-71. [In Persian]

14.Gemaque K, Nascimeto GG, Junqueira JLC, de Araújo VC, Furuse C. Prevalence of Oral Lesions in Hospitalized Patients with Infectious Diseases in Northern Brazil. Sci World J. 2014;2014:586075.

15.Glick M. Burket's oral medicine, 12nd ed. United States: People's Medical Publishing House; 2015. p. 30-140.

16.Owlia F, Tabatabaei SH, Motallaei MN, Ayatollahi R, Ayatollahi F, Rashidi F, et al. Prevalence of Oral Mucosal Lesions in Admitted Patients in internal department of Yazd Shahid sadoughi hospital in 2018. J Res Dent Sci. 2020;17(3):236-43. [In Persian]

17.Baharvand M, Abbasi P, Yaseri M, Mortazavi H. Frequency of Oral Lesions in 2465 Dental Patients: A Cross-Sectional Study. J Adv Med Biomed Res. 2017;25(111):115-27.

18.Vasconcelos AC, Aburad C, Lima IF, Santos SM, De Freitas Filho SAJ, Franco A, et al. A scientific survey on 1550 cases of oral lesions diagnosed in a Brazilian referral center. An Acad Bras Cienc. 2017;89(3):1691-7.

19.Shahzad M, Moosa Y, Ahmad F, Farooq S. Pervalence of oral diseases-A study done on world oral health day. Pakistan Oral Dent J. 2015;35(3):483-4.

20.Ghanaei FM, Joukar F, Rabiei M, Dadashzadeh A, Kord Valeshabad A. Prevalence of Oral Mucosal Lesions in an Adult Iranian Population. Iran Red Crescent Med J. 2013;15(7):600-4.

21.de Macedo Amaral S, Miranda ÁMMA, de Noronha Santos Netto J, Pires FR. Prevalence of oral and maxillofacial diseases diagnosed in an Oral Medicine service during a 7-year period. J Oral Diag. 2016;1:41-6.

22.Jahanbani J, Morse DE, Alinejad H. Prevalence of oral lesions and normal variants of the oral mucosa in 12 to 15-year-old students in Tehran, Iran. Arch Iran Med. 2012;15(3):142-5.

[DOR: 20.1001.1.15614107.1400.23.1.48.7]
[DOI: 10.22088/jbums.23.1.345]

23.Kniest G, Stramandinoli RT, de Castro Ávila LF, dos Santos Izidoro ACA. Frequency of oral lesions diagnosed at the Dental Specialties Center of Tubarao (SC). RSBO.2011;8(1):13-7.

[DOR: 20.1001.1.15614107.1400.23.1.48.7]
[DOI: 10.22088/jbums.23.1.345]