



# Evaluation of the Frequency Distribution of Oral Biopsies in Shahid Sadoughi Hospital in Yazd During 2010-2019

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## Abstract

**Background and aims:** Oral mucosa is prone to various lesions. Some of these lesions can be early signs of a particular disease or even malignancy in the body. The aim of this study was to investigate the frequency distribution of oral biopsies from 2009 to 2019.

**Methods:** In this analytical descriptive cross-sectional study, 621 records of the oral cavity biopsies performed in the pathology department of Shahid Sadoughi hospital were analyzed. Age, gender, type of lesion, site of lesion, histopathological diagnosis, year of referral, and medical specialist who performed the biopsy were included in the study checklist. The data were analyzed using chi-square and Kruskal-Wallis test in SPSS version 25.0.

**Results:** Of 621 biopsies, 308 specimens belonged to men (49.6%) and 313 specimens belonged to women (50.4%). The mean age of patients was 46.58±21.08 years, ranging from 6 months to 95 years. The most affected areas were the tongue (33%), lower lip (29.1%) and cheeks (17.7%). squamous cell carcinoma (SCC) (27.9%), inflammatory lesions (26.1%), mucocele (14.8%), and ulcers (8.5%) were the most frequent lesions. There was a significant difference in the age of individuals with different lesions ( $P<0.001$ ).

**Conclusion:** The most frequent lesion diagnosed in biopsies was SCC. The most frequently affected sites were tongue and cheek. Lesions were more frequent in women and were most frequently seen in the fourth, fifth, and sixth decades of life.

**Keywords:** Oral mucosa, Oral lesions, Biopsy

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## Introduction

The prevalence of oral mucosal lesions (OMLs) is variable in different populations. Some of these lesions can be early signs of a malignancy in the body. Early diagnosis of oral lesions as the first sign of disease prevents the progression of the disease or at least increases the likelihood of successful treatment.<sup>1</sup> There has been much research on the prevalence of oral lesions in the world<sup>2</sup>, and studies have also been conducted in this field in Iran. In the study of Delavarian et al in Mashhad,<sup>3</sup> Babae et al in Babol<sup>4</sup> and Molania et al in Sari,<sup>5</sup> the highest frequency was observed in pregnant women.

Nowadays, with scientific advancements and development of numerous techniques such as biopsy, cytology, and other tests, the knowledge about the diagnosis of oral lesions has substantially expanded.<sup>6</sup> Given that there are many similarities in the clinical presentations of different types of oral diseases, paraclinical tests such as biopsy should be sometimes used to reach the final diagnosis.<sup>7</sup>

According to the treatment protocol prescribed by the American dentists, in addition to treating dental

problems, dentists are also required to examine the health status of the tissues of different sites of the mouth and if they see any symptoms, they should treat it or refer the patient to the respective specialists. Diagnosis of lesions and diseases of the maxillofacial region is done by various specialists such as oral and maxillofacial surgeons, oral medicine and maxillofacial specialists, general surgeons, and ENT specialists. Pathological examination is only a communication bridge for the final diagnosis and biopsy confirms the clinical diagnosis.<sup>8</sup>

Biopsy is one of the most valuable methods for diagnosing oral cancers along with an accurate history and appropriate clinical examinations, which are performed ideally by oral health specialists with appropriate equipment. Unfortunately, biopsies are overlooked by most physicians and dentists. In many cases, due to the selection of inappropriate location for sampling or incorrect method of biopsy, the biopsy is ineffective and must be done again.<sup>9,10</sup>

Dentists' knowledge about the frequency of OMLs based on age, gender, as well as the type and location of the lesion helps to make a differential diagnosis and avoid

harmful surgery or unnecessary radiation therapy.<sup>11</sup>

Given that sometimes unnecessary biopsies for normal oral changes are performed by other specialists and most of the biopsies performed in the hospital settings are done under general anesthesia that is ethically questionable, because almost all biopsies of the oral cavity can be performed under local anesthesia, and considering the advances made today, laser biopsies and punching instruments can be used easily. Therefore, the present study was conducted to investigate the frequency distribution of biopsies performed in the oral cavity in Shahid Sadoughi hospital in Yazd, Iran.

## Materials and Methods

### Study Design and Population

This is a descriptive cross-sectional study. The study was performed on the files archived in the pathology department of Shahid Sadoughi Hospital in Yazd during 2010-2019.

### Sampling Method

All oral sampling files (n: 621) archived from 2010 to 2019 were reviewed.

### Inclusion and Exclusion Criteria

All oral biopsy cases were reviewed and cases with incomplete and unreadable information or non-confirmed histopathological results were excluded.

### Studied Items

Age, gender, type of the lesion, location of lesion, histopathological diagnosis, year of referral and the physician who had performed the biopsy were registered in the checklist.

### Data Analysis

Data were analyzed using chi-square test and Kruskal-Wallis test in SPSS version 25.0.

## Results

In this study, the files of 621 patients were retrieved from the archive of the pathology department of Shahid Sadoughi hospital from 2010 to 2019 and reviewed. Of the total biopsies performed, 308 samples belonged to men (49.6%) and 313 samples belonged to women (50.4%). The mean age of the patients was  $46.58 \pm 21.08$  years with a range of 6 months to 95 years. The frequency distribution of patients by decades is shown in Table 1. The most frequently affected site was the tongue (33%), followed by the lower lip (29.1%) and cheeks (17.7%).

Most (72.8%) of the examined biopsies were performed by ENT specialists and only a few of them (1.8%) were performed by oral and maxillofacial surgeons (Table 1).

As can be seen, squamous cell carcinoma (SCC) (27.9%) was the most frequent lesion, followed by inflammatory lesions (26.1%), mucosal (14.8%), and nonspecific ulcers (8.5%). Other lesions had a frequency of less than 5%.

The most frequent lesion in men and women was SCC, followed by lichen planus, inflammatory hyperplasia, and BCC. However, SCC and lichen planus were more frequent in women and inflammatory hyperplasia and BCC in men.

There was no statistically significant difference between men and women in oral lesions ( $P=0.233$ ) (Table 2).

The mean age of patients affected by each of the oral lesions studied are presented in Table 3. The results of Kruskal-Wallis test showed a statistically significant difference in age among people with different oral lesions ( $P<0.001$ ). The most frequently affected locations by SCC were inflammatory hyperplasia, nonspecific ulcer, leukoplakia, and hemangioma of the tongue, and the most frequently affected location by mucocele and BCC was the lower lip. Lichen planus was more frequent in the cheek mucosa. SCC, inflammatory hyperplasia, and lichen planus were more frequent in the age group of 50-59 years, nonspecific ulcers and leukoplakia in the age group of 40-49 years, mucocele in the age group of 20-29 years, and BCC in the age group of 69-60 years (Table 2).

## Discussion

Oral diseases include a wide range of benign or malignant lesions. Diagnosis of many of them by biopsy is an essential part of oral medicine.<sup>12</sup> Most of the available evidence

**Table 1.** Frequency Distribution of Biopsies With Respect to Age, Location of Lesion, and Physician

	Number (%)	
Decade of life	0-9	29 (4.7)
	10-19	45 (7.2)
	20-29	72 (11.6)
	30-39	91 (14.7)
	40-49	89 (14.3)
	50-59	111 (17.9)
	60-69	85 (13.7)
	70-79	65 (10.5)
	80-89	31 (5)
	90-99	3 (0.5)
Location of lesions	Tongue	205 (33)
	Lower lip	181 (29.1)
	Cheek	110 (17.7)
	Upper lip	44 (7.1)
	Gum	31 (5)
	Floor	30 (4.8)
	Soft palate	15 (2.4)
	Hard palate	5 (0.8)
Physician	ENT specialist	452 (72.8)
	General surgeon	63 (10.1)
	Others	40 (6.4)
	Dermatologist	34 (5.5)
	Plastic surgeon	21 (3.4)
	Oral and maxillofacial surgeon	11 (1.8)

**Table 2.** Frequency of Diagnosed Lesions With Respect to Gender

Diagnosis	Gender	
	Male	Female
	Number (%)	Number (%)
SCC	85 (27.6)	88 (28.1)
Inflammatory hyperplasia	72 (23.4)	90 (28.8)
Mucocele	57 (18.5)	35 (11.2)
Nonspecific ulcer	29 (9.4)	24 (7.7)
Lichen planus	10 (3.2)	20 (6.4)
BCC	12 (3.9)	11 (3.5)
Leukoplakia	9 (2.9)	12 (3.8)
Hemangioma	10 (3.2)	10 (3.2)
Lichenoid reaction	4 (1.3)	3 (1)
Sarcoma	2 (0.6)	4 (1.3)
Nevus	5 (1.6)	1 (0.3)
Wart	3 (1)	2 (0.6)
Lipoma	3 (1)	2 (0.6)
Pemphigus	1 (0.3)	3 (1)
Mucormycosis	1 (0.3)	2 (0.6)
Lymphangioma	1 (0.3)	2 (0.6)
Sjogren syndrome	0 (0)	3 (1)
Fibro epithelial hyperplasia	2 (0.6)	0 (0)
Foreign body reaction	2 (0.6)	1 (0.3)
Total	308 (100)	313 (100)

Chi-square test, *P*-value = 0.233

on oral lesions is epidemiological or clinical in nature or has focused on the occurrence of a particular disease in a specific population or a specific age group without histological diagnosis.<sup>13-16</sup> Quantitative histology-based studies have been performed on patients of all ages to investigate oral lesions, and very few have addressed oral soft tissue pathology.<sup>17,18</sup>

In this study, the frequency of oral soft tissue lesions along with a definitive histological report in biopsies performed in Shahid Sadoughi hospital in Yazd was investigated. As the selected samples are from one of the main hospitals of the city, they may not represent the entire community because only lesions submitted for biopsy were evaluated, it means, some oral lesions are detectable without biopsy, such as recurrent aphthous stomatitis or some gum diseases.

However, when compared to studies with only one clinical diagnosis, the presence of histological explanations increases the accuracy of the diagnosis. In addition, the present study found the predominant location of the lesions, which could help to better understand the epidemiology of the lesions.

The results of the present study showed that the number of lesions in women was slightly higher in women than in men, which could be due to the fact that women refer to teaching medical centers more frequently.

In the present study, the mean age of patients was 46.58 (range: 6 months-95 years). In the study by Guedes et al,<sup>12</sup> the age range of oral lesions in biopsies performed in

**Table 3.** Frequency of Oral Lesions with Respect to the Most Frequently Affected Location and Age Group

Lesion	Frequency		Age		Most Frequently Affected Location		Most Frequently Affected Age Group	
	Number (%)	Mean	SD	Location	Number (%)	Age Group	Number (%)	
SCC	173 (27.9)	56.16	18.71	Tongue	75 (43.4)	50-59	35 (20.2)	
Inflammatory hyperplasia	162 (26.1)	47.28	17.21	Tongue	76 (46.9)	50-59	39 (24.1)	
Mucocele	92 (14.8)	24.77	17.33	Lower lip	62 (67.4)	20-29	26 (28.3)	
Nonspecific ulcer	53 (8.5)	47.25	17.37	Tongue	18 (60)	40-49	13 (24.5)	
Lichen planus	30 (4.8)	49.83	12.22	Cheek	18 (60)	50-59	14 (46.7)	
BCC	23 (3.7)	56.47	20.08	Lower lip	9 (39.1)	60-69	5 (27.1)	
Leukoplakia	21 (3.4)	62.38	20.39	Tongue	10 (47.6)	40-49	5 (23.8)	
Hemangioma	20 (3.2)	32	21.37	Tongue	5 (25)	40-4, 10-19	5 (25)	
Lichenoid reaction	7 (1.1)	60.42	18.30	Tongue, cheek, gum	2 (28.6)	70-79	3 (42.9)	
Sarcoma	6 (1)	31.66	32.74	Tongue	3 (50)	0-9	2 (33.3)	
Nevus	6 (1)	39.66	14.20	Upper lip	4 (66.7)	30-39	3 (50)	
Wart	5 (0.8)	36	9.51	Lower lip	2 (40)	30-39	3 (60)	
Lipoma	5 (0.8)	33.20	13.88	Lower lip	3 (60)	10-19, 20-39, 29-30, 49-59, 40-50	1 (20)	
Pemphigus	4 (0.6)	67	23.15	Lower lip	2 (50)	40-49	2 (50)	
Mucormycosis	3 (0.5)	53.66	28.36	Cheek, soft palate, lower lip	1 (33.3)	29-69, 20-60, 70-79	1 (33.3)	
Lymphangioma	3 (0.5)	20.66	13.65	Lower lip	2 (66.7)	0-9, 20-29, 30-39	1 (33.3)	
Sjogren syndrome	3 (0.5)	47.33	15.04	Lower lip	3 (100)	30-39, 40-49, 60-69	1 (33.3)	
Fibro epithelial hyperplasia	3 (0.5)	28	9.89	Cheek, floor, lower lip	1 (33.3)	0-9, 10-19, 40-49	1 (33.3)	
Foreign body reaction	2 (0.3)	56.50	10.60	Cheek, floor	1 (50)	40-49, 60-69	1 (50)	

Portugal was 3-100 years, and most cases were observed in the fourth, fifth, and sixth decades of life. In the study conducted by Shahsavari et al,<sup>19</sup> the mean age of patients was 43 years. It has been well established that malignant oral disorders and oral cancer are more frequent in the elderly.<sup>14,20-22</sup> In the study conducted by Omidian et al,<sup>23</sup> the lowest number of samples was less than ten years, which is consistent with the present study.

In this study, the most common mucosa involved was the tongue and buccal mucosa. In the study of Baharvand et al<sup>24</sup>, the most common sites were buccal mucosa, lip mucosa, and ventral surface of the tongue. In the study of Ghanaei et al<sup>25</sup>, the most common lesions were in the tongue and gums, in the study of Cury et al<sup>26</sup> in the gums, in the study of Ali and Bajacharya et al<sup>28</sup> in the buccal and gingival mucosa, and in the study by Shulman et al<sup>29</sup> in the palate and gums. The reason for the differences between the research results can be attributed to the different societies. The frequency of lesions and other epidemiological indicators have been reported to be very different in various articles, whose main reasons are the study method, study centers, sampling method, and sample size. The most common mucosal lesion detected in this study was squamous cell carcinoma (SCC), which was also the most common in the studies of Shahsavari and Omidian<sup>19,23</sup>. Squamous cell carcinoma accounts for more than 90% of oral cancers<sup>30</sup>; in the present study, its prevalence was almost the same in men and women. The mean age of patients was 56.16 years. In the present study, 26.1% of the samples were reactive lesions. These lesions were the most common after SCC. In the study of Ababneh et al<sup>31</sup>, reactive lesions accounted for 91% of all lesions; in the present study, their frequency was higher in women, tongue area, and in the age group of 50-59 years. According to Seifi et al<sup>32</sup>, the prevalence of reactive lesions was higher in people under 40 years of age. Also in the study of Kadeh et al<sup>33</sup>, reactive oral lesions were more common in the age group of 21 to 40 years, which is not consistent with the present study.

The third most common lesion in this study was the oral mucocoeles, which accounted for 14.8% of all lesions. It was more frequent in men than in women and was more frequent in the age group of 20-29 years and lower lip. In the study conducted by More et al,<sup>34</sup> the lesion was more frequent in the age group of 15-24 years and in men. The most frequently affected sites were the lower lip and the ventral surface of the tongue. Jani et al<sup>35</sup> reported a male-to-female ratio of 1.77:1. The peak age of occurrence was between the first and third decades in 36 patients. Additionally, 94.44% of lesions were observed in the lateral part of the lower lip mucosa. The results of the above-mentioned studies are largely consistent with our results.

In this study, nonspecific ulcers accounted for 8.5% of all pathological ulcers. The prevalence of ulcers in the study conducted by Guedes et al was 3.9% and it is similar to the study done by Jones and Franklin<sup>15</sup> in which the frequency was 8.2%. Oral lesions are common complications in

people. In most cases, these lesions are mild and heal spontaneously.

The prevalence of the lesions is higher in women compared to men.<sup>36</sup> The present study found that the frequency of lesions was higher in men than in women. Patient history and clinical examination greatly aid in the diagnosis of mouth ulcers and in many cases prevent unnecessary biopsies.

Lichen planus was the fifth most frequent lesion in the present study; however, it is a chronic and relatively common mucosal skin disease in middle age that affects 0.2%-2% of the population.<sup>37</sup> Men and women are affected almost equally. In the present study, its frequency was twice as high in women as in men. Its frequency in the sixth decade of life was similar to the age reported by Jones and Franklin<sup>15</sup> and Guedes et al.<sup>12</sup> However, in the study performed by Esmaily et al,<sup>38</sup> its frequency was reported to be higher in men and in the fourth decade of life.

The frequency of other oral lesions in the present study was less than 5%. It is possible that a large number of people are unaware of the oral lesions in their mouth that need to be followed up, and this indicates the need to emphasize periodic oral examinations.

In the present study, most of the samples were collected by ENT specialists and only a few of the samples were collected by oral and maxillofacial surgeons. It seems that patients who have problems in the oral cavity are more likely to refer to an ENT specialist. This may be due to the patients' lack of knowledge about the specialty of oral and maxillofacial diseases and the scope of their activities.

The results of the study by Delavarian and Zavvar<sup>39</sup> showed that most of the patients had referred to the department of oral and maxillofacial diseases due to dental problems and a smaller number due to the signs or symptoms of oral mucosal diseases. A study conducted by Villa et al<sup>40</sup> in the United States also revealed that patients with oral diseases were often examined by several other physicians before being referred to an oral pathologist due to a lack of knowledge about this specialty among general practitioners. The study done by Navabi et al<sup>41</sup> showed that a high percentage of treatments for OMLs were inappropriate and also due to the long time interval between the onset of symptoms of oral diseases and referral to an oral disease specialist, appropriate measures were necessary.

Unfortunately, many physicians and even some dentists are still unfamiliar with the range of capabilities, functions, and treatment facilities in the field of oral disease. This issue, along with the lack of education of medical students about oral mucosal diseases and the lack of precise familiarity of specialists in various medical fields with these diseases, leads to inappropriate diagnostic measures and unnecessary treatments in many patients with oral lesions. These wrong measures cause much time and money to be wasted by patients and insurance organizations and sometimes lead to irreparable consequences for the patient.<sup>41</sup>

Therefore, the attendance of an oral and maxillofacial specialist in each hospital is essential for oral sampling and consultation.

### Conclusion

The results of this study showed that the most frequently diagnosed lesion based on the registered biopsies was SCC. The most frequently affected sites were the tongue and buccal mucosa. Lesions were more frequent in women and in the fourth, fifth, and sixth decades of life. Most oral biopsies were performed by ENT specialists.

### Conflict of Interest Disclosures

The authors declare that there is no conflict of interests.

### Ethical Approval

The protocol of the study was approved by the Ethics Committee of Shahid Sadoughi University of Medical Sciences, Yazd (ethics code: IR.SSU.REC.1398.191).

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