



# An Epidemiological Survey of Tongue Lesions in the Oral Pathology Department of Khorasgan Dental School From 2010 to 2020

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## Abstract

**Background and aims:** Many pathologic conditions can affect the tongue and their pattern of occurrence may differ. The objective of this study was the epidemiological survey of tongue lesions reported in a 10-year period in the Oral Pathology Department of Khorasgan Dental School.

**Methods:** In this cross-sectional study, 800 biopsy records were retrieved from the archives of the Oral Pathology Department of Khorasgan Dental School and examined. Moreover, the prevalence of lesions was investigated in terms of age and gender using descriptive statistics.

**Results:** The prevalence of lesions analyzed in the present study was 4.37%. About 71.42% of the participants were female and 28.58% were male. Irritation fibroma had the highest frequency (20%). The most frequent lesion among women was lichen planus with a prevalence of 20% and the most frequent lesion among men was irritation fibroma with a prevalence of 30%. *The highest frequency was observed in the age group of 21-30 years.* Squamous papilloma, lichen planus, and irritation fibroma were the most common lesions with a prevalence of 25%. No lesion was detected in people aged 1-10 years.

**Conclusion:** In the present study, reactive lesions were the most prevalent tongue lesions. According to the findings, changing the lifestyle and observing oral hygiene seem to help prevent these lesions to a large extent.

**Keywords:** Epidemiology, Lesion, Tongue, Clinical pathology, Pathology

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## Introduction

The tongue plays a critical role in speaking, chewing, tasting, and swallowing. All of these functions have made the tongue a vital organ. Considering the nature of the injury and the affected part of the tongue, this organ may suffer from problems such as vascular lesions, reactive and inflammatory lesions, and infection.<sup>1</sup> These lesions fall into two groups: neoplastic and non-neoplastic lesions. Neoplastic lesions include squamous cell carcinoma (SCC), fibroma, papilloma, and hemangioma, and non-neoplastic lesions include pyogenic granuloma, amyloidosis, leukoplakia, and reactive lesions.<sup>2</sup> In some cases, tongue lesions may result from a systemic disease in the person and appear as symptoms of it.<sup>3</sup>

According to the nutrition and health studies, the prevalence of tongue lesions is 15.5% in US adults. The prevalence of the lesion has been shown to be higher in people who use dentures and those who smoke. A study also found that the prevalence of orofacial cancers

in young people, especially in the Middle East region, is increasingly growing.<sup>4</sup> By reviewing the files of patients referred to the Pathology Department of Shahid Beheshti Dental School over a 25-year period (1981-2006), Mashhadiabbas et al, found that 19.87% of oral lesions were reactive hyperplastic lesions, among which irritation fibroma, peripheral giant-cell granuloma, and pyogenic granuloma were the most common lesions.<sup>5</sup> By analyzing data on the characteristics of tongue lesions in patients referred to the Oral Pathology Department of Tehran University of Medical Sciences from 1985 to 2010, Alaeddini et al found that tongue lesions constitute 6.3% of all analyzed lesions, and lichen planus was the most common lesion. Additionally, they found that tongue lesions were significantly more prevalent in women than in their male counterparts.<sup>6</sup>

In another study in 2012, Yousefi investigated 91 records of reactive lesions of the tongue retrieved from the archives of dental schools of Qazvin University and

Shahid Beheshti University of Tehran during 15 years and found irritation fibroma with a prevalence of 29.7% to be the most prevalent lesion of the tongue.<sup>7</sup> By analyzing 6435 biopsy reports from 1992 to 2014 at Shahid Beheshti Dental School, Tehran, Shamloo et al identified SCC as the most common lesion in the tongue. They also found neoplastic lesions to be the most frequent subgroup. Additionally, the incidence peak was observed in the age group of 41-60 years.<sup>8</sup> Keshani et al investigated the prevalence of reactive lesions of the tongue in the archives of Shahid Beheshti and Qazvin dental schools from 1998 to 2014 and reported irritation fibroma with a prevalence of 4.51% to be the most prevalent lesion of the tongue.<sup>9</sup> By analyzing 1807 biopsied samples available in the archives of the Department of Oral Pathology of Ibadan Hospital, Nigeria, Lasisi and Abimbola identified 74 cases of tongue lesions, among which SCC was the most prevalent one.<sup>2</sup>

The dentist can be the first one who encounters these lesions. The dentist can help the patient be aware of his underlying disease through accurate diagnosis and identification, so that treatment can be provided and irreparable injuries can be further prevented. Misdiagnosis of tongue cancer at the initial professional assessment often causes a fatal delay to occur if the patient receives no follow-up.<sup>10</sup> Moreover, by comparing the overall findings of these lesions obtained in this study and similar studies with those from the developed countries, it can be found that what percentage of people with these lesions have probably referred to other specialists such as ear, nose, and throat (ENT) surgeon or general surgeon by mistake instead of referring to an oral disease specialist and an oral pathology specialist and have experienced diagnostic or therapeutic mistakes.

Most studies in this area have been done based only on clinical findings and less attention has been paid to clinicopathologic findings. Due to the importance of this issue, by reviewing the records related to biopsied lesions of patients within a 10-year period in the Department of Pathology, Faculty of Dentistry of Islamic Azad University of Khorasgan, we decided to investigate the prevalence and clinicopathologic characteristics of tongue lesions.

## Materials and Methods

In this descriptive cross-sectional study, 800 biopsy records were retrieved from the archives of Oral Pathology Department of Khorasgan Dental School from 2010 to 2020 and evaluated for pathologic lesions (14 types) in the tongue area. These lesions included squamous papilloma, lichen planus, irritation fibroma, oral fibroma, focal epithelial hyperplasia, benign keratosis, lichenoid dysplasia, neurofibroma, pemphigus vulgaris SCC, epithelial dysplasia, lichenoid reaction, mucoepidermoid carcinoma, and pyogenic granuloma.

The census method was used to gather data and all records were investigated one by one. Inclusion criteria were the completeness of the recorded information, involvement of the patient's tongue, and the presence of

supporting pathological evidence.

Records with the lack of definitive histopathological results were excluded. The patient's age and gender, type of lesion, location of lesion, histopathologic diagnosis, year of referral, and the doctor who performed the biopsy were evaluated and recorded in the study checklist. In order to observe ethical considerations, the required analyses were done after obtaining the necessary permits and receiving an approval from the Department of Pathology, Faculty of Dentistry, Islamic Azad University of Isfahan. To keep the participants' information confidential, an assigned ID code or number was used instead of the participant's name. After collection, the data were entered into SPSS version 25.0. The data were analyzed using frequency and percentage.

## Results

### *Frequency of Examined Lesions*

In the present study, 800 biopsy records were reviewed to investigate 14 types of pathologic lesions in the tongue area. Overall, 35 records (4.37%) included 14 types of lesions. **Figure 1** shows the frequency of these lesions in the investigated records. As shown in **Figure 1**, 7 patients out of 35 were diagnosed with irritation fibroma (20%), showing the highest frequency among the analyzed lesions, followed by lichen planus and squamous papilloma, respectively.

### *Frequency of the Analyzed Lesions Based on the Subjects' Gender*

Of the 35 subjects, 25 patients (71.42%) were female and 10 patients (28.58%) were male (**Figure 2**). As can be observed in **Figure 2**, five out of 25 female subjects were diagnosed with lichen planus (20%), which was the most frequent lesion among female subjects, and 3 out of 10 male subjects were diagnosed with irritation fibroma (30%), which was the most frequent lesion among male subjects.

### *Frequency of the Analyzed Lesions Based on the Subjects' Age*

The highest frequency of the analyzed lesions belonged to the age group of 21-30 years, and a total of 12 lesions were identified in these patients. The most frequent lesions in this group were squamous papilloma, lichen planus, and irritation fibroma, each of which with a frequency of 25%. No lesion was detected in people in the age group of 1-10 years. **Figure 3** shows the frequency and type of lesions based on the age group of the subjects.

## Discussion

The aim of this study was the epidemiological survey of the pathologic tongue lesions diagnosed in a 10-year period in the Oral Pathology Department of Khorasgan Dental School. The prevalence and clinicopathologic characteristics of tongue lesions were investigated. A total of 35 patients (4.37%) had at least one lesion. Our findings are approximately similar to those of a retrospective

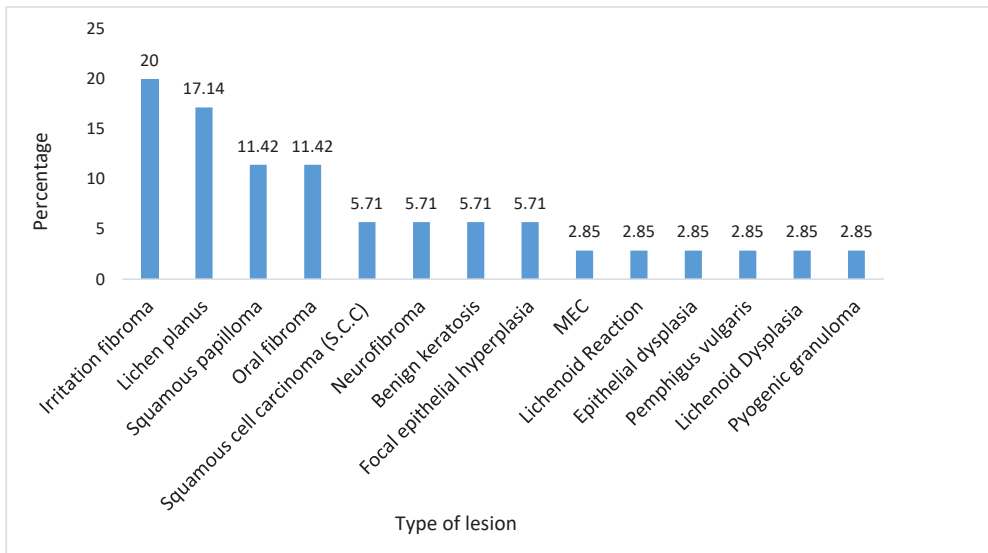


Figure 1. Percentage of Different Types of Lesions.

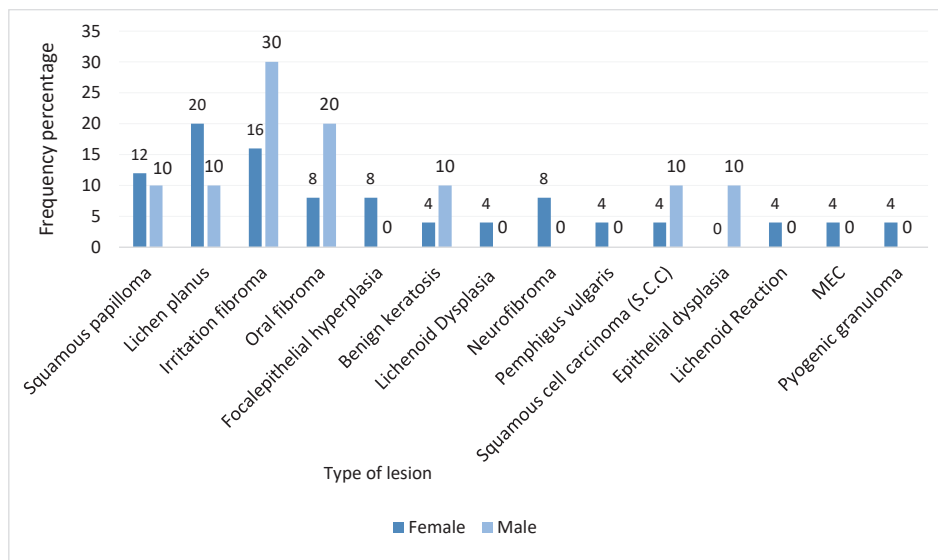


Figure 2. Percentage of Lesions Based on Gender.

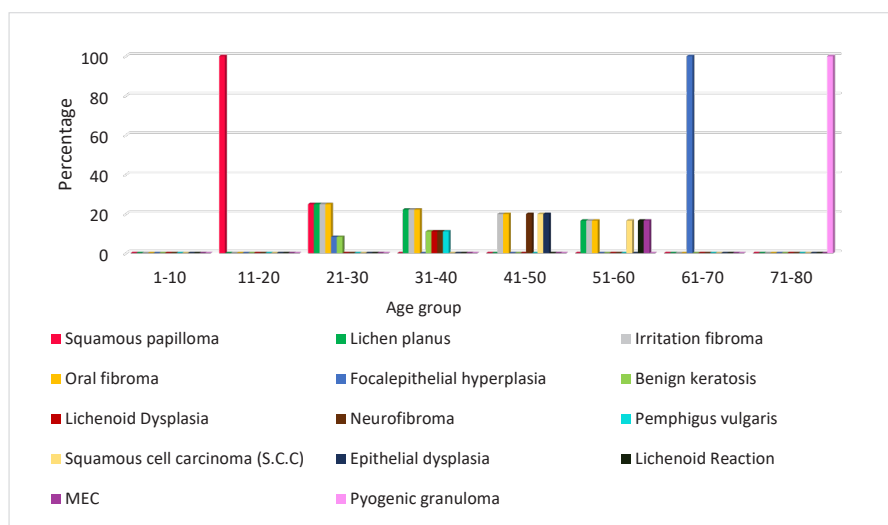


Figure 3. Percentage of Lesions Based on Age Group.

analysis of oral biopsies in Iran conducted by Shamloo et al. They reported the prevalence of tongue lesions to be 3.7%.<sup>8</sup> Lasisi and Abimbola also reported the prevalence of lesions analyzed in their study to be 4%, which was similar to that of the present study.<sup>2</sup> Alaeddini et al reported a prevalence of 6.3% for tongue lesions, which is a higher frequency compared to the present study. The lower frequency shown in the results of the present study may be due to the differences in the populations under study and the difference in the duration of studies. In comparison to the study by Alaeddini et al, our study was conducted in a shorter period of time. Additionally, the improper referral of patients with tongue lesions to other specialists and less relevant therapeutic centers may also contribute to this difference.<sup>6</sup>

Reactive lesions were the most frequent lesions in this study, among which irritation fibroma with a frequency of 20% had the highest frequency. In the study done by Keshani et al on reactive lesions of the tongue, the prevalence of the above-mentioned lesions was reported to be 51.4%, which was higher compared to this study.<sup>9</sup> In their study on tongue lesions, Alaeddini et al introduced lichen planus and irritation fibroma as the most frequent lesions, respectively.<sup>6</sup> In the study by Mashhadi et al, irritation fibroma, peripheral giant-cell granuloma, and pyogenic granuloma were found to be the most frequent lesions among reactive lesions.<sup>5</sup>

Oral irritation fibromas or traumatic fibromas, also known as the benign reactive tumors of connective tissues, are caused by local irritation and trauma. By increasing the inflammation volume, lesions can be expressed in response to local damage as an increase in the size of an organ or tissue caused by the increased number of cells.<sup>11</sup> Traumatic irritations include improper dental fillings, edges of cavities, dental calculus, sharp bone, orthodontic appliances, and dentures. Irritation fibroma was the most frequent lesion in people aged 21-30 years.

Neoplastic lesions were reported to be the most common tongue lesions in the study by Lasisi and Abimbola.<sup>2</sup> They identified SCC with a prevalence of 40.5% as the most frequent lesion.<sup>2</sup> This finding may be explained by the specific design of the study that includes tongue lesions only in terms of histology.

Studies conducted on tongue lesions based on clinical signs<sup>12,13</sup> reported a higher prevalence of benign lesions, while histological studies<sup>14,15</sup> reported a higher prevalence of neoplastic ones. However, in contrast to the present study, in a study conducted in Brazil on histologic lesions of the tongue, a higher prevalence of non-neoplastic lesions was reported (53.5%).<sup>16</sup>

In the present study, the analyzed tongue lesions were more common in the age group of 21-30 years. The highest frequency of the analyzed lesions in this group belonged to squamous papilloma, lichen planus, and irritation fibroma, each of which with a frequency of 25%. No lesion was diagnosed in people aged 1-10 years. In the study by Lasisi and Abimbola, the highest frequency of lesions

was observed in the age groups of 40-49 and 60-69 years.<sup>2</sup> Moreover, in the study by Kantola et al, 17.91% of the patients with tongue lesions were older than 40 years.<sup>10</sup> Neoplastic lesions of the tongue affect older age groups, while non-neoplastic lesions affect younger age groups. Aging is the most important risk factor for cancer in general and for several types of cancers in particular.<sup>2</sup> The incidence of oral cancer has been rising in some countries over the past few decades. Head and neck cancer is the sixth most common cancer worldwide and approximately 50% of patients diagnosed with this disease die annually.<sup>17</sup> In Brazil, 14,170 new cases of mouth cancer were identified in 2012. In the Northeast region, there were 2550 new cases, of which 1640 cases occurred in males and 910 in females.<sup>18</sup> In the present study, 71.42% of cases were female and 28.58% were male. The most frequent lesion among female subjects was lichen planus with a frequency of 20%, and the most frequent lesion among male subjects was irritation fibroma with a frequency of 30%. In the study by Lasisi and Abimbola, 58.1% of participants were male and 41.9% were female.<sup>2</sup> Hosni et al<sup>19</sup> analyzed oral leukoplakia and erythroplakia in their study and reported that these potentially malignant lesions are more common in men, while Yang et al<sup>20</sup> reported a higher prevalence in women. *Considering the increased population and greater dispersion of human societies*, it is necessary to know the relative prevalence and incidence of diseases of various organs of the human body to design the most appropriate and effective prevention and treatment programs in any human society. Knowing the prevalence and incidence of oral diseases and introducing them to dentists prevent unnecessary consultations, costs, and treatments and therapies, such as prescribing medications and even biopsy and tests.<sup>21</sup>

The main limitation of this study was the small number of samples of the lesions in the tongue area. It is suggested that in order to complete the epidemiological map of tongue lesions, more accurate studies be conducted in other areas based on the clinicopathologic findings. It is also suggested that other oral cavity lesions be analyzed.

## Conclusion

Irritation fibroma was the most frequent lesion in the present study. Lichen planus and irritation fibroma were found to be the most frequent lesions among female and male subjects, respectively. The highest frequency of the lesions analyzed in this study was observed in the age group of 21-30 years, and squamous papilloma, lichen planus, and irritation fibroma were the most common lesions in this age group. No lesion was detected in the age group of 1-10 years. It is suggested that further studies should be done in this regard.

## Conflict of Interest Disclosures

The authors declare that there is no conflict of interests regarding the publication of this article.

### Ethical Approval

This project was approved by Khorasgan University of Medical Sciences under the ethics code of IR.IAU.KHUISF.REC.1399.036.

### Authors' Contributions

All authors read and approved the final manuscript. SM and AA designed the study and collected the samples. RY and NA performed laboratory works. SM, AA, RY, and NA analyzed the data, drafted the paper, and revised the manuscript for important intellectual content.

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