Advanced Medical Journal, Vol.10, No.2, P.100-108,2025 https://doi.org/10.56056/amj.2025.348

Tongue lesions and anomalies among patients attending outpatient clinic in Sulaymaniyah city

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Abstract

Background and objectives: The tongue is an essential muscular organ used for speech, mastication, deglutition and sucking, it had an influence on face development, and dental occlusion. The aim of this study was to determine the prevalence of tongue lesions and anomalies among patients attending outpatient of Peramerd dental health center in Sulaymaniyah city.

Methods: This cross-sectional study was conducted on 400 patients randomly who visited Peramered dental health center between December 2022; to May 2023. The tongue was examined for abnormalities in size, shape, mobility, lesions, and surface changes. When clinical features were not diagnostic, a biopsy was conducted.

Results: The study sample included 225 females (56.3%) and 175 males (43.8%), the prevalence of tongue lesions with no significant depending on sex distribution (p-value = 0.14). In the current study most of the patients are aged 50 years and above ranged (22.3%), and the tongue lesions significant with old age (p <0.001). There were 212 individuals with one or more tongue disorders, with a prevalence of tongue lesions of (53%). Fissured tongue was the most frequent condition, detected in 101 individuals (25.3%). Hypertension and diabetes mellitus were determined to be the two most prevalent systemic disorders.

Conclusion: The current study revealed a significant frequency of tongue lesions among older patients, more in males, and higher in smoking and systemic diseases. The more prevalent tongue lesions were fissure tongue and coated tongue, while lipoma, pyogenic granuloma, and strawberry tongue were at the least frequent.

Keywords: Fissure tongue, Frequency, Systemic disease, Tongue lesion

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Introduction

The tongue is made up of several different muscle groups and has an epithelium-covered fibrous structure made up of the midline lingual septum and the hyoglossus membrane. The tongue's muscles are divided into the intrinsic and extrinsic groups.[1] The tongue is a crucial muscular organ used for speech, mastication, deglutition, sucking, and the sense of tastes, temperature changes, and pain stimuli. Additionally, it has had an impact on facial development, growth, and dental occlusion.[2] Disruptions in the development and growth of oral tissues cause abnormalities. Some of them develop in the uterus and persist throughout life. Other abnormalities may not surface for years.[2] It is anatomically situated in the oropharynx and is thought to be the body's strongest muscle organ, with incredibly dense and intricate innervation.[3] Changes in the environment of the oral cavity or a lesion of the tongue may have an influence on these functions, significantly reducing the patient's quality of life.[1] The tongue acts as a mirror, reflecting the many systemic disorders that impact the body and providing the dentist with a diagnostic tool.[4] As a significant component of oral lesions, tongue lesions require close examination and early identification. The tongue is particularly affected by several ailments that can affect a number of various bodily internal systems.[4] Numerous tongue lesions have been researched extensively in the past, demonstrating the wide spectrum of medical disorders that can affect the tongue. The early detection of various hormonal, allergy, or systemic illnesses may benefit from the identification of tongue lesions because they may be the condition's first observable symptom.[5] Lesions have been observed to vary based on ethnicity, regional variations, research design, diagnostic criteria used in the study, and gender disparities in the studied populations.[6] The groupings for tongue lesions included nutritional deficiencies, physical, chemical, and thermal injuries, immunological diseases, premalignant tumors, bacterial, viral or fungal infections, developmental anomalies (fissured tongue, geographic tongue, hairy tongue, ankyloglossia , median rhomboid glossitis, macroglossia), and other conditions.[3] The aim of this study is to identify the prevalence of tongue lesions and anomalies in several age groups, in both genders, among patients attending Peramerd Dental Health Center in Sulaymaniyah City, as well as to determine the possibility that some tongue conditions are associated with age, gender, smoking, alcoholic drinking habits, and systemic diseases.

Patients and methods

A cross-sectional study was performed on 400 patients seeking for routine dental examinations and dental treatment at the diagnostic Department of the Peramerd Dental Health Center, in Sulaymaniyah City. Patients were randomly collected from December 2022; to May 2023. Consent forms were completed by all patients or their parents and approved by the Kurdistan Higher council of Medical Specialties ethics committee. Each patient and the examiner completed a structured questionnaire as part of an interview to gather information. Complete details on the patients' age, gender, familial, social, and medical histories were documented in the questionnaire. Under artificial lighting on a dental chair, the patients had a clinical examination with the use of gauze, sterile gloves, and a disposable mirror. The oral cavity and tongue examinations were made based on history, clinical features, and investigations according to the WHO criteria.[7] The tongue was examined for abnormalities in size, shape, mobility, lesions, and surface changes. When clinical features were not diagnostic and where no clinical improvement was observed, a biopsy was conducted. Furthermore, lymph nodes were examined.

https://doi.org/10.56056/amj.2025.348


Just a small percentage of the patient was aware of the lesion. Most individuals had no symptoms at all. None of the patients were taking any medication for any of the lesions that were being looked at. The data was tabulated in an Excel worksheet and analyzed using the SPSS software package (version 27). To compare proportions, the Chi-square test of association was used. Fisher's exact test was used when the expected count of more than 20% of the table's cells was less than five. A p-value less than 0.05 was considered statistically significant.

Results:

Among the 400 outpatients who contributed in the study, 212 (individuals had one or more tongue lesions), representing a prevalence rate of 53%. The age varied between 2 and 85 years (mean age = 35.26 years, SD = 16.85). The frequency of age groups is shown in Table (1). The majority of the patients in age of 50 years and above. Among the age group, there were 28 (7.0%) aged <10 years, 50 (12.5%) aged 10–19 years, 68 (17.0%) aged 20–29 years, 83 (20.8%) aged 30-39 years, 82 (20.5%) aged 40–49 years, and 89 (22.3%) aged 50 years and older.

Table (1): Frequency of age groups

Age	Frequency	Percent (%)
< 10	28	7.0
10-19	50	12.5
20 - 29	68	17.0
30 - 39	83	20.8
40 - 49	82	20.5
≥ 50	89	22.3
Total	400	100.0

The frequency of gender is seen in Table (2). There are 225 females (56.3%) and 175 males (43.8%) in the research sample. The sample consisted of more than half female participants.

Table (2): Frequency of gender

Gender	Frequency	Percent (%)
Male	175	43.8
Female	225	56.3
Total	400	100.0

The frequency and percentage of tongue lesions is shown in Table (3) the fissured tongue Picture (1) was the most common lesion, accounting for 25.3% of cases. Coated tongue Picture (2) and geographic tongue Picture (3) came in second and third, with around 23.3% and 4% of cases, respectively. With a frequency of only 0.3%, lipomas Picture (4) pyogenic granuloma Picture (5), and strawberry tongue Picture (6) were the least frequent tongue lesions.

Table (3): Frequency and percentage of tongue lesions

Type of tongue lesions	No.	(%) n= 400
Fissured tongue	101	25.3
Coated tongue	93	23.3
Geographic	16	4.0
Aphthous ulcer	6	1.5
Black hairy tongue	5	1.3
Irritational fibroma	5	1.3
Scalloped tongue	4	1.0
Traumatic Ulcer	4	1.0
Varicosities	4	1.0
Ankyloglossia	3	0.8
Hemangioma	3	0.8
Lingual papillitis	3	0.8
Lichen planus	3	0.8
Median rhomboid glossitis	2	0.5
Glossitis	2	0.5
Macroglossia	2	0.5
Lipoma	1	0.3
Pyogenic granuloma	1	0.3
Strawberry tongue	1	0.3

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Most of the patients were in good health and did not have any significant health problems. Table (4) illustrates that individuals had systemic illnesses. Of those individuals, 7.3% had hypertension, 4.8% had diabetes, 3% had anemia, and 2.3% had hypothyroidism.

Table (4): Frequency and percentage of systemic diseases

Medical Condition	No.	(%) n= 400
Hypertension	29	7.3
Diabetes	19	4.8
Anemia	12	3.0
Hypothyroidism	9	2.3
Psychological disorder	5	1.3
Cancer	5	1.3
Neurological disease	4	1.0
GIT disease	4	1.0
Asthma	1	0.3

As indicated by Table (5), the frequency of tongue conditions increases with age, reaching (78%) in those 50 years of age or above and (25%) in those under 10 years of age (p <0.001).The tongue lesion was more in males (57.14%) than those in females (49.77%), However, there were no significant differences in the prevalence of tongue lesions depending on gender distribution (p-value = 0.14).There was a notably higher frequency seen among smokers (75.94%) compared to non-smokers (47.35%) (p <0.001). There was a considerably higher frequency (78.37%) among individuals with systemic disease compared to those without disease (47.23%) (p<0.001).

Table (5): Prevalence of tongue lesions in terms of research factors

Age	Tongue conditions						p-value
	Present		Absent		Total		
	No.	%	No.	%	No.	%	
< 10	7	25%	21	75%	28	100%	<0.001
10 - 19	9	18%	41	82%	50	100%	
20 - 29	24	35.29%	44	64.70%	68	100%	
30 - 39	56	67.46%	27	32.53%	83	100%	
40 - 49	47	57.31%	35	42.68%	82	100%	
≥ 50	69	78%	20	22%	89	100%	
Gender							
Male	100	57.14%	75	42.85%	175	100%	0.14
Female	112	49.77%	113	50.22%	225	100%	
Smoking							
No-smoking	152	47.35%	169	52.64%	321	100%	<0.001
Smoker	60	75.94%	19	24%	79	100%	
Systemic disease							
No	154	47.23%	172	52.76	326	100%	<0.001
Yes	58	78.37%	16	21.62%	74	100%	

Table (6) is demonstrated the most prevalent tongue lesions are fissured tongue, coated tongue, geographic, and aphthous ulcer. fissured tongue and coated tongue were largely detected in the age group of 50 years or above (p-value=0.001), while the geographic and aphthous ulcer were not significantly linked with age; the p-values

https://doi.org/10.56056/amj.2025.348

were (0.331) and (0.57) respectively. Among them, geographic tongue was significantly encountered in males (p value 0.046). The occurrence of fissured tongue and coated tongue were substantially linked with smoking (p-values 0.001 and 0.005, respectively); however, no significant correlation was seen between smoking and geographic tongue or aphthous ulcer. The presence of various tongue lesions (fissured tongue, coated tongue, geographic, and aphthous ulcer) was substantially linked with any systemic disease.

Table (6): The prevalence of most frequent tongue lesions is associated with age, gender, smoking, and systemic diseases

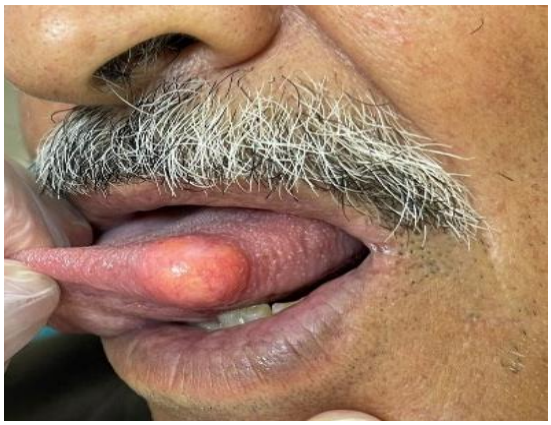
Age	N	Tongue conditions			
		Fissured No. %	Coated No. %	Geographic No. %	RAS No. %
< 10	28	0	3	2	0
		0%	10.71%	7.14%	0%
10 -19	50	1	6	2	0
		2%	12%	4%	0%
20 - 29	68	11	6	2	1
		16.17%	8.82%	2.94%	1.47%
30 - 39	83	21	30	3	3
		25.30%	36.14%	3.61%	3.61%
40 - 49	82	32	13	6	1
		39%	15.85%	7.31%	1.21%
≥ 50	89	36	35	1	1
		40.44%	39.32%	1.12%	1.12%
P-value		<0.001	<0.001	0.331	0.57
Gender	N				
Male	175	46	48	12	3
		26.28%	27.42%	6.85%	1.71%
Female	225	55	45	4	3
		24.44%	20%	1.77%	1.33%
P-value		0.37	0.75	0.046	1
Smoking	N				
No-Smoking	321	71	60	8	3
		22.11%	18.69%	2.49%	0.93%
Smoker	79	30	33	8	3
		37.97%	41.77%	10.12%	3.79%
P-value		<0.001	0.005	1	1
Systemic disease	N				
NO	312	57	58	0	0
		18.26%	18.58%	0%	0%
Yes	88	44	35	16	6
		50%	39.77%	18.18%	6.81
P-value		<0.001	<0.001	<0.001	<0.001

https://doi.org/10.56056/amj.2025.348

Picture (1): (A 19 years old patient presented with multiple small furrows or grooves on the dorsal surface of the tongue, Fissure tongue)

Picture (2): (A 24 years old patient presented with white tongue due to overgrowth of papillae on the surface of the tongue, Coated tongue)

Picture (3): (A 48 years old patient presented with multiple irregular red and white patches associated with fissure tongue, Geographic tongue)



Picture (4): (A 60 years old patient presented with mass on the side of the tongue, lipoma)

Picture (5): (A 50 years old patient presented with small lobulated brown mass on the tip of the tongue, Pyogenic granuloma)

Picture (6): (A 5 years old patient presented with red, swollen, bumpy tongue, Strawberry tongue)

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Discussion:

The tongue is an accurate diagnostic tool for some systemic illnesses and is a true reflect of the body, Disorders of the tongue may be caused locally or a sign of a systemic illness.[5,8] A detailed history of the lesion, any prior symptoms, and investigations can help with early identification and diagnosis even when the lesion is readily checked.[9] This study was done to find a various types of tongue lesions in both males and females among outpatients at the Peramerd Dental Health Centre in Sulaymaniyah. According to statistical data, tongue lesions were detected in both males and females of all ages. The prevalence of tongue lesions in the study population was assessed to be 53 percent. The results are similar to the Yemeni sample conducted by Al Wesabi M et al and Indian research performed by Raman P et al, where the prevalence of tongue lesions was76.5% and 62.6% respectively.[3,10] However, the study conducted by Shinde SB et.al and Shamloo N et al. estimated a very low prevalence of 2.85% and 3.7% respectively.[5,11] Different ethnicities, geographical features, study designs, diagnostic standards, sample sizes, age and gender distributions in the study population, certain national customs, and even variations in the socioeconomic status of the study population could all contribute to the difference.[11] The current study demonstrated that old-aged individuals are substantially associated with the majority of tongue lesions. The lesions were shown to be particularly prevalent in the age group of 50 years and above (78%), which accords with the Alshayeb M et al. research, which indicated that the majority of tongue lesions occurred in patients over 50 years old (37.8%).[12] In the study done by Shamloo N et al. in the Iranian population, the incidence peak (42%) occurred between the ages of 41-60. The gender distribution of this study revealed that the tongue lesions were more common among men (57.14%) than in women (49.77%). It accords with those of Fomete B et al. and Patil S et al. studies demonstrated that males presented with a higher ratio of tongue lesions as compared with female patients.[1,9] In comparison, the results of our study were contradictory to the Sura Ali F study where they reported female predominance over males.[13] Similarly, Byahatti SM et al. reported female predominance than males which contradicts the present study.[14] According to the current study, fissured tongue is the most frequent tongue condition, with a frequency of 25.3% of tongue lesions. This finding accords with the outcomes of studies Al-Maweri SA et al. Al-Mobeeriek A et al. and Darwazeh AMG et al. also the fissure tongue was the more frequency.[15,16,17] However in the study showed by Patil S et al. in the Indian population, Mirza D et al. in the Pakistan and Motallebnejad M et al. in Iran, the most common tongue lesion was coated tongue, the frequency of fissure tongue lesser than the result in current study.[9,18,19] These variations might be attributed to genetics and the frequency of fissured tongues in various ethnic groups. In this study, the prevalence of fissured tongue is significantly linked with elderly patients (40.44%) who are 50 years or older. This conclusion is consistent with the findings of the Yemeni research and Jordanian study which discovered that elderly patients had a greater incidence of fissured tongue.[15,17] Furthermore, different research conducted by Feil ND et al. found that age-related increases in the frequency of fissured tongues were also associated with a higher severity of these fissures.[20] The fissured tongue, also known as lingual plicata, scrotal tongue, or grooved tongue, is a generally asymptomatic condition defined by deep fissures and grooves on the tongue's dorsal surface.[21] A number of factors, such as hyposalivation, diabetes mellitus, candidiasis, vitamin B insufficiency, and

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lichenoid reaction, may contribute to the development of a fissured tongue. The likelihood of developing a fissured tongue rises with age. One of the main contributing causes, hyposalivation, is linked to rising age, which helps to explain it.[5] Patients with Down syndrome, acromegaly, psoriasis, and Sjögren syndrome have all been shown to have fissured tongues. Three main symptoms are characters of Melkersson-Rosenthal syndrome include severe fissuring, facial nerve palsy, and recurrent orofacial swelling.[9] The majority of individuals show up symptomless, but significant fissures may cause symptoms including discomfort while eating or drinking acidic foods and beverages. The deep fissures encourage the accumulation of food particles, which raises the possibility of bacterial and candidal organism invasions and increases the possibility of tongue inflammation. Apart from encouraging patients to practice proper oral hygiene, such as washing and brushing the dorsal surface of the tongue to remove any food particles from the fissures, no specific therapy is needed.[4] The current study also demonstrate that smoking has a considerable impact on the frequency of tongue diseases. Similarly, research done in Erbil, Iraq, found that smoking and drinking were a substantial risk factor for tongue lesions.[6] However, alcohol use was unknown to any of the patients in the present study. Also, in the study conducted by Shayeb MA et al. smoking was linked with many types of tongue lesions.[4] in the present study, the occurrence of tongue lesions was significantly associated with systemic disease which agrees with the study of Alzubaidee AF. It was found that systemic disease was significantly related to tongue lesions.[6] Salivary flow reduction is common in the elderly and may be associated with systemic diseases, occasionally as a result of medication use. It can also cause oral side effects as well as the formation of oral lesions and tongue lesions.

Conclusion

The most prevalent anomalies among patients attending outpatient of Peramerd Dental Health Center in Sulaymaniyah City were fissured tongue followed by coated tongue tends to increase with age, systemic disease, and smoking. However, the tongue lesions were more common in male patients but there was no significant difference among tongue anomalies according to gender. Promoting adequate oral hygiene while avoiding local conditions that may trigger problems was recommended. Some conditions need a regular follow-up, patients should care about the condition, and in the cases of ankyloglossia should be treated surgically.

Acknowledgement:

I would like to thank GOD (Allah) for giving me the power and talent to complete this project successfully. After that, I want to appreciate the guidelines and encouragement of those around me who always help me during the hardest times. Firstly, I would like to express my gratitude for the efforts of my supervisor, Professor Shanaz Mohammed Gaphor, for her supervision and support throughout this research and its completion. Lastly, I would like to thank the Ministry of Health and Peramerd Dental Health Center for permitting the collection of the data.

Conflicts of interest:

The author reports no conflicts of interest.

Reference:

1.Fomete B, Agbara R, Osunde DO, Bello SA, Yunus AA, Boulama A. Pattern and Presentation of tongue lesions in Kaduna, Nigeria: an 8-year Review. Niger Dent J Res 2018;3(2):84-90.

2.Abed AH, Abdullah MI, Warwar ANH. The Prevalence of Tongue Anomalies among Medium School Pupils at Aged 13-15 Years

Old in Fallujah City, Iraq. J Res Med Dent Sci 2018;6(1):249-55.
3.Al Wesabi M, Al Hajri M, Shamala A, Al Sanaani S. Tongue lesions and anomalies in a sample of Yemeni dental patients: A cross-sectional study. J Oral Res 2017;6(5):121-6.
4.Shayeb MA, Fathy E, Nadeem G, El-Sahn NA, Elsahn H, Khader IE, et al. Prevalence of most common tongue lesions among a group of UAE population: retrospective study. Radiat. Oncol. J. 2020; 1 (46): 001-005
5.Shinde SB, Sheikh NN, Ashwinirani S, Nayak A, Kamla K, Sande A. Prevalence of tongue lesions in western population of Maharashtra. Int J Appl Dent Sci. 2017;3(03):104-8.
6.Alzubaidee AF. The Occurrence of Tongue Lesions among Dental Outpatients Attending Khanzad Dental Polyclinics Center in Erbil City. D J M 2020;19(2):41-51.
7.Kramer I, Pindborg JJ, Bezroukov V, Infirri J. Guide to epidemiology and diagnosis of oral mucosal diseases and conditions. World Health Organization. Community Dent Oral Epidemiol 1980;8(1):1-26.
8.Bhattacharya PT, Sinha R, Pal S. Prevalence and subjective knowledge of tongue lesions in an Indian population. J Oral Biol Craniofac Res 2016;6(2):124-8.
9.Patil S, Kaswan S, Rahman F, Doni B. Prevalence of tongue lesions in the Indian population. J Clin Exp Dent 2013;5(3): e128.
10.Raman P, Krithika C, Anandi M, Kanmani R, Kannan A, Raghuram P. Prevalence of tongue lesions in tobacco and non-tobacco users of OPD, SRM dental college, Chennai: A cross-sectional study. Int J Adv Health Sci. 2015; 10:1-5.
11.Shamloo N, Lotfi A, Motazadian HR, Mortazavi H. Squamous cell carcinoma as the most common lesion of the tongue in Iranians: a 22-year retrospective study. Asian Pac J Cancer Prev 2016;17(3):1415-9.
12.Alshayeb M, Mathew A, Varma S, Elkaseh A, Kuduruthullah S, Ashekhi A, et al. Prevalence and distribution of oral mucosal lesions associated with tobacco use in patients visiting a dental school in Ajman. Radiat Oncol J 2019;13(2):29-33.
13.Fuoad SA. A clinical study on tongue lesions among Iraqi dental Outpatients. Gulf Medical University: Proceedings. 2013(17-18):180-5.
14.Byahatti SM, Ingafou MS. The prevalence of tongue lesions in Libyan adult patients. 2010.
15.Al-Maweri SA, Al-Jamaei AA, Al-Sufyani GA, Tarakji B, Shugaa-Addin B. Oral mucosal lesions in elderly dental patients in Sana'a, Yemen. J Int Soc Prev Community Dent 2015;5(Suppl 1): S12.
16.Al-Mobeeriek A, AlDosari AM. Prevalence of oral lesions among Saudi dental patients. Ann Saudi Med 2009;29(5):365-8.
17.Darwazeh AMG, Almelaih AA. Tongue lesions in a Jordanian population. Prevalence, symptoms, subject's knowledge and treatment provided. Med Oral Patol Oral Cir Bucal. 2011;16(6): e745–49.
18.Mirza D, Devi B, Salman S, Khalid A, Omer SA, Zeeshan J. Prevalence of Tongue Lesions in Patients Visiting Private Dental Practices of Pakistan: A Multicenter Study. InMed. Forum 2022 Mar (Vol. 33, No. 3, p. 53).
19.Motallebnejad M, Babaee N, Sakhdari S, Tavasoli M. An epidemiologic study of tongue lesions in 1901 Iranian dental outpatients. J Contemp Dent Pract. 2008;9(7):73-80.
20.Feil ND, Filippi A. Frequency of fissured tongue (lingua plicata) as a function of age. Swiss Dent J. 2016;126(10):886-97.
21.Mohammad RS, Alzubaidee AF, Qurtas DS. Prevalence of Oral Lesions in Patients with Psoriasis. D J M 2020;19(2):192-9.

https://doi.org/10.56056/amj.2025.348