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Prevalence of tongue disorders in women who receive dental care in Karaba Province

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SUMMARY

Background: The tongue is an important health indicator. Some diseases may show signs on the tongue. Fissured is a condition where grooves and fissures (crevices) of different depths appear on the back of the tongue. How common this is varies depending on the definition used, but most sources say 10–20% of people have it. The aim: how often women with various health problems have tongue conditions and what links there are between tongue conditions and other health problems.

Method: A study was conducted at Karaba Province Dentistry Polyclinics Centre (October 2023–December 2024). The study was approved by the Karbala Board of Medical Specialties' ethics committee. Participants completed a questionnaire about their family, social and medical histories related to tongue anomalies. Girls aged 1–13 were excluded from questions on alcohol, smoking, and marriage. The oral examinations followed the standards of the World Health Organization (WHO).

Results: The majority of participants were aged between 31 and 40 years (27%), with the under-20s group being the least represented. 39% of the participants were married. Hypertension was prevalent in 19% of the participants, as was heart disease (11%), diabetes (20%), and asthma (10%), The most prevalent condition was fissured tongue. Tongue candidiasis was observed in individuals 31-40 years old. Other conditions ranged from 4-8%, with higher prevalence observed in males.

Conclusion: This study had similar tongue lesions to others, but we did not apply the same methodology, thus we cannot be sure of the outcomes. Dentists must detect oral lesions linked to other disorders. We must detect these diseases early to save lives.

Keywords: CRP; Estrogen; Progesterone; HRT; Inflammatory; Bleeding

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INTRODUCTION

The tongue is an organ that is characterized by its muscular nature and its complex structure. Suction, mastication, phonation and the perception of sensations such as taste, temperature, pain and general sensations. It also plays a role in jaw development [1]. The actual frequency of various linguistic ailments across diverse ethnic groups remains contested, primarily due to a dearth of well-designed population epidemiological research that is both conclusive and exhaustive. Nevertheless, clinical expertise can frequently enable gross estimations of illness prevalence [2,3].

The clinical manifestation of tongue lesions exhibits significant variability, with the majority of cases arising from local origins. Previous research has comprehensively investigated the etiology of various tongue lesions, elucidating a broad spectrum of underlying conditions [4]. The identification of tongue lesions can expedite the early diagnosis of specific hormonal, allergic, or systemic disorders, and in rare instances, may signify the inaugural presentation of a disease [5]. The tongue is susceptible to a variety of lesions, encompassing both non-neoplastic and neoplastic forms. Neoplastic lesions can be classified as either benign or malignant based on their progressive development pattern. On the other hand, non-neoplastic lesions often appear as inflammation or as a response to other types of irritative stimuli. Frequently, these lesions go unnoticed during standard oral exams [6,7].

A plethora of studies have previously examined the occurrence of various tongue lesions [8,9]. It has been observed that the tongue can be impacted by a number of clinical disorders, with these changes either being isolated to the tongue or extending to other areas of the oral cavity. Due to the great heterogeneity in the clinical presentation of tongue diseases, the vast majority of tongue lesions are of local origin [10]. The detection of tongue lesions may aid the early diagnosis of some systemic disorders [5].

The increasing utilization of hormone replacement therapy among women, emphasizes the need for a systematic evaluation, as do their possible effects on the cardiovascular system. This study's goal is to compile data regarding the possible oral symptoms that these hormone replacement therapy may cause in women of increase inflammatory and cardiovascular evens.

MATERIALS AND METHODS

Method

The cross-sectional study was conducted with the objective of assessing the sample size. The study was conducted at the Karbala Province Dentistry Polyclinics Centre, in the outpatient diagnostic department. The study was conducted between 1 October 2023 and 31 December 2024. All patients who consented to participate in the trial were included.

After getting written permission from patients or their parents, which was approved by the Karbala Board of Medical Specialties' institutional ethics committee, a suitable questionnaire was administered. This questionnaire contained comprehensive information such as age, gender, and family, social, and medical histories linked to various tongue abnormalities. The subjects under the age of 14 (1–13 years old) were not requested to respond to questions regarding alcohol usage, smoking habits, and marital status. The WHO guideline was followed for the clinical examination of the oral cavity.

A meticulous clinical examination was conducted on each patient, employing established methodologies for the evaluation of the oral cavity, with a particular emphasis on the tongue. The dimensions of the tongue, its motility, any surface alterations, and the presence of distinctive mucosal lesions were all meticulously scrutinized.

Statics

The Statistical Package for Social Sciences (SPSS, version 26) was used to analyse the data. Chi-square tests of association were used to compare proportions. Fisher's exact test was used in cases where the predicted number of more than 20% of the cells in the table was less than 5%. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Basic clinical characteristics

As demonstrated in **Tab. 1.**, the majority of the sample was between the ages of 31 and 40, with 33% while the lowest percent was <20 years old. Furthermore, The data revealed that the majority of the sample (39%) were married. As illustrated in **Tab. 1.**, the prevalence of hypertension, heart disease, diabetes, and asthma, was found to be 21%, 11%, 20%, 11%, and 10%, respectively (**Tab. 1.**).

Fissured tongue was the most prevalent condition, with a prevalence of 42% among females aged 31-40 years and 42% among male patients between same years of age. Tongue candidiasis was observed in patients 31-40 years of age, affecting 19% of males and 14% of females.

The prevalence of fissured tongue ranged from 39% in males aged 41-50 years to 44% in females under 20 years of age (**Tab. 2.** and **Fig. 1.**). Similarly, the prevalence of tongue candidiasis ranged from 14% in males over 50 years of age to 12% in females of the same age group (**Tab. 2.** and **Fig. 1.**). Other conditions ranged between 4-8%, with males demonstrating a higher prevalence than females (**Tab. 2.** and **Fig. 1.**).

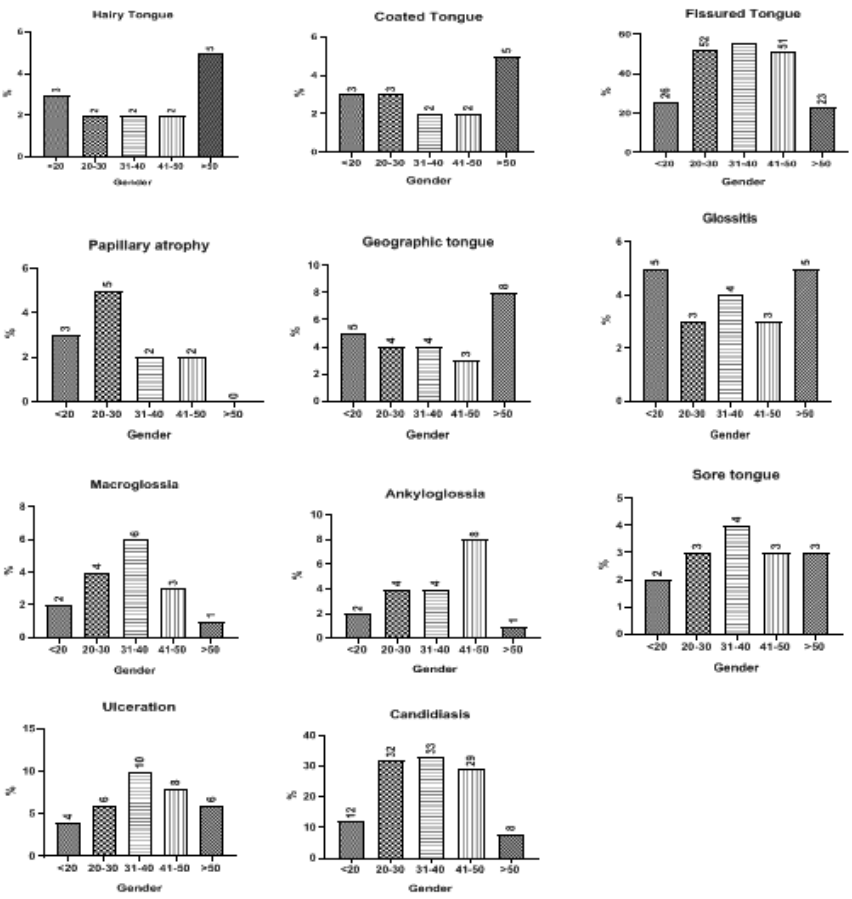
Tab. 1. Basic characteristics of the studied sample.

Age (Years)	**Total**	**%**
<20	39	7%
20-30	155	28%
31-40	181	33%
41-50	139	25%
>50	40	7%
Total	554	100%
Marital status	**Total**	**%**
Single	157	28%
Married	215	39%
Divorced	107	19%
Widowed	75	14%
Total	554	100%
Type of disease	**Total**	**%**
Hypertension	117	**21%**
Diabetes	112	20%
Asthma	53	10%
Heart disease	61	11%
RA	32	6%
Cancer	27	5%
Hyperthyroidism	29	5%
Psychological disorder	19	3%
Psoriasis	65	12%
Others	39	7%
Total	554	100%

Tab. 2. The frequency and percent of different types of tongue condition.

Tongue pathology	Gender	<20	%	20-30	%	31-40	%	41-50	%	>50	%	Total	%	p value
Hairy Tongue	Male	0	0%	1	1%	1	1%	1	1%	0	0%	3	1%	NS
	Female	1	5%	1	1%	1	1%	1	1%	1	5%	5	2%	
Coated Tongue	Male	1	6%	2	3%	2	2%	2	3%	3	14%	10	4%	S
	Female	0	0%	2	2%	1	1%	1	1%	2	11%	6	2%	
Fissured Tongue	Male	4	22%	33	46%	45	51%	25	37%	4	19%	111	42%	NS
	Female	5	24%	45	54%	52	56%	38	53%	3	16%	143	49%	
Papillary atrophy	Male	1	6%	2	3%	1	1%	1	1%	0	0%	5	2%	S
	Female	0	0%	1	1%	1	1%	2	3%	0	0%	4	1%	
Geographic tongue	Male	0	0%	3	4%	2	2%	3	4%	1	5%	9	3%	NS
	Female	1	5%	3	4%	3	3%	1	1%	2	11%	10	3%	
Glossitis	Male	0	0%	2	3%	2	2%	2	3%	1	5%	7	3%	NS
	Female	1	5%	2	2%	2	2%	2	3%	1	5%	8	3%	
Macroglossia	Male	1	6%	1	1%	2	2%	1	1%	1	5%	6	2%	NS
	Female	1	5%	2	2%	1	1%	1	1%	0	0%	5	2%	
Ankyloglossia	Male	0	0%	2	3%	1	1%	3	4%	0	0%	6	2%	NS
	Female	2	10%	2	2%	2	2%	5	7%	1	5%	12	4%	
Sore tongue	Male	1	6%	1	1%	2	2%	2	3%	2	10%	8	3%	NS
	Female	1	5%	1	1%	2	2%	1	1%	1	5%	6	2%	
Ulceration	Male	1	6%	3	4%	5	6%	4	6%	4	19%	17	6%	NS
	Female	1	5%	3	4%	5	5%	4	6%	2	11%	15	5%	
Candidiasis	Male	6	33%	11	15%	16	18%	15	22%	3	14%	51	19%	NS
	Female	4	19%	9	11%	13	14%	10	14%	4	21%	40	14%	
Lingual Varicosities	Male	2	11%	5	7%	2	2%	3	4%	1	5%	13	5%	NS
	Female	1	5%	5	6%	3	3%	4	6%	1	5%	14	5%	
Lichen planus	Male	0	0%	2	3%	3	3%	3	4%	1	5%	9	3%	NS
	Female	2	10%	3	4%	3	3%	2	3%	1	5%	11	4%	
Hemangioma	Male	1	6%	3	4%	4	5%	2	3%	0	0%	10	4%	NS
	Female	1	5%	5	6%	4	4%	3	4%	0	0%	13	4%	
Total	Male	18	100%	71	100%	88	100%	67	100%	21	100%	265	100%	-
	Female	21	100%	84	100%	93	100%	72	100%	19	100%	289	100%	
NS: Non-Significant, S: Significant, * vs other age groups, € vs other condition														

Fig. 1. Frequency and percent of the most four common tongue conditions by gender.



DISCUSSION

This study discusses the prevalence of tongue conditions from a large sample of Karbala dental outpatients. The study revealed a significant difference in the prevalence of tongue conditions when compared to previous studies. The prevalence of fissured tongue, candidiasis, ulceration and other conditions was higher than that observed in other studies. Furthermore, the prevalence of fissure and glossitis was higher in males than in females.

The prevalence of tongue disorders, which are often linked to local etiological variables, has been the subject of numerous research studies. As a result, these disorders frequently co-occur with systemic diseases and other pathological situations. It is essential to test for these disorders in order to detect abnormalities located on the tongue as well as those located far from the oral mucosa [11,12].

Fissured tongue, a condition characterized by the presence of wrinkles or fissures on the tongue, is a relatively uncommon occurrence [13]. Its etiology is most often considered to be genetic. Potential causative factors for tongue fissuring include vitamin B deficiency, candidiasis, lichenoid lesions, and hypo functioning salivary glands [14]. Additionally, it has been observed that fissured tongue is frequently associated with diabetes mellitus [15]. A study conducted among Karbala outpatients of dentistry revealed that 39% male and 44% female of the sample exhibited fissured tongue, with females demonstrating a higher propensity than males. Contrary to the findings of the aforementioned studies, the prevailing condition in the present analysis was fissured tongue.

Geographic Tongue (GT) is a prevalent oral ailment that manifests as a red, inflamed tongue with white spots. The prevalence of GT exhibits significant geographical and demographic variations. In the USA, the prevalence is 0.6%, in South Africa 1.6%, and in Brazil 21% [16]. These disparities are attributable to the varied clinical criteria employed to identify the illness. The prevalence of GT has been observed to occur most frequently in early childhood or puberty, especially in females, but can also occur in adults over 40, suggesting that hereditary factors may not play a role in its etiology [17]. Tongue Papillary, characterized by the loss of papillae in the anterior two-thirds of the tongue, has been linked to chronic trauma, nutritional inadequacies, lichen planus, xerostomia, candidiasis, and, on occasion, a burning sensation [18].

The clinical indication of elongation of the papillae on the dorsal surface of the tongue is known as hairy tongue. This condition is frequently observed in response to xerostomia, fever, illness, and the administration of certain medications, including tobacco and pharmaceuticals. In our study, 14 (4.4%) of the patients exhibited hairy tongues that were black, yellow, or white in colour. The prevalence rate of these lesions was 11.3% [19].

CONCLUSION

The number of tongue lesions seen in this study matches the results of other similar studies. However, the way epidemiological research is carried out can make it hard to draw firm conclusions. Dentists need to be able to spot and tell the difference between oral mucosal lesions that indicate systemic disease and those that don't. Knowing how oral lesions look can save lives by helping to spot them early and refer patients quickly to the right place for treatment.

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