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PREVALENCE OF TONGUE LESIONS IN STOMATOLOGY TEACHING HOSPITAL- KABUL, AFGHANISTAN

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Abstract

Background: The tongue is an important part of dental and systemic health, frequently acting as a mirror for underlying diseases. Despite their diagnostic value, tongue lesions are poorly understood in impoverished countries such as Afghanistan. The purpose of this study was to determine the prevalence and patterns of tongue lesions among dental outpatients at Kabul's Stomatology Teaching Hospital.

Methods: A cross-sectional study of 14353 adult dental outpatients was undertaken over the course of 24 weeks beginning in October 2024. To identify common tongue lesions, clinical examinations were performed using WHO (1980) criteria. SPSS v25 was used to analyze the data, and chi-square tests were used to determine the relationship between lesion prevalence and gender.

Results: 14,353 patients visited Stomatology Teaching Hospital throughout the course of 24 weeks.

Of these, 651 (4.5%) had tongue lesions. Females accounted for 57.8% of the cases, with the most affected age group being 18-28 years (46.1%). The most prevalent tongue lesions were coated tongue (40.6%), fissured tongue (20.4%), and depopulation of the tongue (18.1%). The fissured tongue had a statistically significant relationship with gender ($p = 0.039$). Overall, only 26.3% of patients were aware of tongue lesions. Females, on the other hand, showed much higher levels of attentiveness.

Conclusion: Coated tongue, fissured tongue, and depopulation were the most prevalent tongue lesions in the studied population. Findings underscore the importance of integrating routine tongue examination in dental visits and highlight the need for educational programs to improve awareness and early detection of tongue abnormalities, particularly among males and younger adults.

Keywords: Tongue lesions, Prevalence, Oral mucosa, Oral cavi

Introduction

The tongue is an amazing muscular structure that can perform a variety of different and significant tasks, such as perception of taste, intonation, deglutition, mastication, speaking, maintenance of oral hygiene, protection of soft and hard tissues of the oral cavity, and assistance in the growth of the orofacial region [1]. It encompasses different features, such as specialized epithelium, muscles, nerve fibers, adipose tissues, salivary gland tissue, and lymphoid tissue, which can be a starting point for pathological lesions that can impend a patient's quality of life and overall health [2].

Because of its location and accessibility within the oral cavity, the tongue can exhibit a variety of oral and systemic symptoms that can significantly impact its structure and function. As a result, it can serve as a vital source of information for diagnosis [3-5]. A wide variety of disorders, including geographic tongue, fissured tongue, coated tongue, hairy tongue, crenated tongue, sublingual varices, and median rhomboid glossitis, are among the most commonly recognized lesions that can affect the tongue [6, 7].

Between 2.39% and 15.1% of the general population worldwide has tongue lesions [7, 8]. The prevalence rates of these various lesions vary widely; fissured tongue accounts for 0.8–60% of cases [9, 10], geographic tongue ranges from 0.1% to 14.3% [11], and studies estimate the prevalence of sublingual varice at about 22.5%, which is common in people over 60 and uncommon in children [12]. Moreover, one of the most common tongue lesions has been found to be a coated tongue [13]. These discrepancies can be attributed to several factors, such as variations in geographic location, ethnicity, and study design. The observed discrepancies in prevalence rates between surveys are further influenced by gender differences within the study samples, differences in diagnostic criteria, and differences in methodology used by different researchers [14].

Although several studies have been conducted worldwide on the prevalence of tongue lesions, there is still a notable lack of research in developing nations such as Afghanistan. This literature gap highlights the need for additional research by dental practitioners. Therefore, this study aimed to determine the prevalence of commonly occurring tongue lesions among patients visiting the Stomatology Teaching
Hospital in Kabul, contributing important insights to the oral healthcare field.

Methodology

This cross-sectional study encompassed outpatients who visited the outpatient department (OPD) of the Stomatology Teaching Hospital at Kabul University of Medical Sciences over a 24-week period starting from October 1, 2024. The study protocol received approval from the Research Committee of Kabul University of Medical Sciences on 13/08/1403 (03/11/2024), protocol 11, agenda no 1.

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The study comprised 14353 consecutive dental outpatients who appeared to be in good health. None of the subjects were there to diagnose or treat an oral soft tissue lesion; instead, they were all there for a routine dental examination or treatment. All patients who visited the dentist outpatient department and were at least eighteen years old, regardless of gender, met the inclusion criteria. In addition to subjective symptoms and functional abnormalities like dysgeusia, burning tongue, taste loss, and tongue protrusion interferences, the study excluded patients with severe restrictions in mouth opening, those who were unable to give consent for the study (such as those with psychiatric disorders), and those who were unwilling to participate. Individuals who were willing to participate in the study were considered to have given implied consent.

The tongue lesions examined in this study included fissured tongue, geographic tongue, coated tongue, hairy tongue, depopulation of the tongue, crenated tongue, and sublingual varices, based on the WHO (1980) criteria [15]. Clinical examinations were conducted by two distinct authors: Author F.K. gathered data from the female outpatient department (OPD), and Author A.M.S collected data from the male OPD. The patient was seated in a dental chair during both exams, which were carried out using a standard dental mirror and probe under artificial lighting, in accordance with the WHO methodology [15]. In addition to diagnosing the lesions, we also assessed patients' awareness of these abnormalities, determining whether they were aware of any tongue lesions. Intra-examiner reliability for all lesions was 100%, and inter-examiner reliability was also 100%. Any structural abnormalities related to the tongue's color, texture, size, shape, or appearance were documented. In cases of uncertainty, a clinical expert (author R.R) was consulted to ensure diagnostic accuracy and consensus.

Version 25 of the Statistical Package for Social Sciences (SPSS) software (SSPS® Inc., Chicago, IL, USA) was used to conduct the statistical analysis. Descriptive analysis was done using frequencies and percentages. The differences in age, gender, and lesion prevalence were compared using the chi-square test. Statistical significance was established when the P value was less than 0.05.

Results

This study comprised 651 patients with tongue lesions, representing a 4.5% prevalence rate among the 14,535 patients assessed throughout the study period. 376 (57.8%) were females, whereas 275 (42.2%) were males (Table 2). The majority of participants were in the 18–28 years age group (46.1%), followed by 29–39 years (20.7%), 40–50 years (19.0%), 51–61 years (8.9%), and those aged 62 years and above (5.2%) (Table 3).

The most commonly observed tongue lesion was a coated tongue, found in 264 patients (40.6%), followed by fissured tongue in 133 patients (20.4%), and depopulation of the tongue in 118 patients (18.1%). Less frequent findings included sublingual varices (12.0%), crenated tongue (8.1%), geographic tongue (7.8%), ankyloglossia (2.2%), hairy tongue (1.1%), and tongue mass (0.5%). Among all lesions, the fissured tongue showed a statistically significant association with gender (p=0.039). However, no statistically significant gender differences were found for the prevalence of other tongue lesions (Table 4).

Table 1: Prevalence of Tongue Lesions.

Tongue lesions	Frequency	Percent
Patients with tongue lesions	651	4.5
Total number of Patients	14353	100.0

Table 2: Frequency of Tongue Lesions by Gender

Gender	Frequency	Percent	Valid Percent	Cumulative percent
Female	376	57.8	57.8	57.8
Male	275	42.2	42.2	100.0
Total	651	100.0	100.0	100.0

Table 3: Frequency of Tongue Lesions by Age Group.

Age	Frequency	Percent	Valid Percent	Cumulative percent
18-28	300	46.1	46.1	46.1
29-39	135	20.7	20.7	66.8
40-50	124	19.0	19.0	85.9
51-61	58	8.9	8.9	94.8
>62	34	5.2	5.2	100.0
Total	651	100.0	100.0	100.0

Table 4: Frequency and Percentage of Tongue Lesions

Tongue lesions	Frequency	Percent	P-Value

Geographic tongue	Yes	51	7.8	1.000
	No	600	92.2	
Fissured tongue	Yes	133	20.4	.039
	No	518	79.6	
Coated tongue	Yes	264	40.6	.573
	No	387	59.4	
Hairy tongue	Yes	7	1.1	1.000
	No	644	98.9	
Ankyloglossia	Yes	14	2.2	1.000
	No	637	97.8	
Created tongue	Yes	53	8.1	.146
	No	598	91.9	
Sublingual varices	Yes	78	12.0	.393
	No	573	88.0	
Depapillation of tongue	Yes	118	18.1	.837
	No	533	81.9	
Tongue mass	Yes	3	.5	.267
	No	648	99.5	

Regarding awareness of tongue lesions, only 171 participants (26.3%) reported being aware of such conditions, while the majority (480 participants, 73.7%) were unaware (Table 5). Females were significantly more aware than males, with 30.1% of females reporting awareness compared to 21.1% of males, a difference that was statistically significant (p=0.012).

Table 5: Awareness of Tongue Lesions by Gender

Gender	Aware (n, %)	Not Aware (n, %)	Total	P-Value
Female	113 (30.1%)	263 (69.9%)	376	.012
Male	58 (21.1%)	217 (78.9%)	275	
Total	171 (26.3%)	480 (73.7%)	651	

Discussion

The occurrence of tongue lesions varies greatly between groups and demographics, emphasizing the significance of regional research in understanding this health concern. The current study found that the prevalence of tongue lesions was 4.5%, with 651 cases identified among 14,353 patients who visited the Stomatology Teaching Hospital in Kabul. This prevalence appears to be much lower than in previous research conducted in various countries and demographic contexts. For example, a survey of Iranian schoolchildren found an incidence of 29.9%

(16). Similarly, cross-sectional research in Yemen discovered a startlingly high incidence of 76.5% (17), but two separate investigations in India reported tongue lesion prevalence rates of 13.75% and 12.07%, respectively (2, 18). Several reasons can explain the substantial discrepancy in reported prevalence between research, including differences in study design (clinical vs. histopathological), diagnostic criteria, sample size, population characteristics, and healthcare-seeking behavior. Notably, the lower prevalence in the current study may be due to a more conservative diagnosis approach, underreporting, or changes in screening techniques, particularly in a general patient group rather than a dental-focused or symptomatic sample.

In this study, females had a higher frequency of tongue lesions (57.8%) than males (42.2%), which contradicted prior findings. For example, two investigations found that males had a higher prevalence, especially in older age groups (19, 20). Similarly, another study discovered that 62% of tongue lesion cases in a Turkish dental outpatient group were men (21). These

disparities may reflect inequalities in demographic features, health-seeking practices, or sociocultural factors that influence clinical presentation. In our environment, the gender difference could possibly be attributable to females' higher health-seeking behavior or potential hormonal implications, though more study is needed to investigate this link.

In our study, the majority of tongue lesions (46.1%) were found in the 18-28 age range, with a gradual decrease in prevalence as age increased. This data is largely consistent with results from a study conducted in the United Arab Emirates, where 71.4% of tongue lesion cases were identified among people aged 21 to 40 (19). Other populations have had differing findings. For example, a study in Turkey discovered the highest prevalence among middle-aged people (50-59 years), accounting for 27.6% of cases, emphasizing the significance of regular screening in this age range (22). Disparities in age-related prevalence between studies may be due to differences in technique (clinical vs. histology), population demographics, healthcare availability, or risk factor exposure. Nonetheless, these comparisons emphasize the need for age-specific oral health interventions and continuous monitoring across all age groups.

Among the numerous lesions identified, coated tongue (40.6%) was the most common, most likely due to its relationship with microbial accumulation, poor oral hygiene, and nutrition. This data is comparable with a study in Thailand, which found a high frequency of coated tongue (68.4%) among Thai dentistry patients, and a study in India, where coated tongue (26.2%) was likewise the most common anatomical abnormality (20, 23). The second most prevalent lesion in our analysis was a fissured tongue (20.4%), followed by decapitation (18.1%). This trend is consistent with research conducted in Libya, where fissured tongue (48.4%) and depopulated tongue (25.6%) were predominant (24). Interestingly, another study in a Turkish population found just 5.2% had a fissured tongue, emphasizing potential regional and methodological differences (25). Despite the existence of obvious lesions, patient awareness was extremely poor, with only 26.3% expressing knowledge of tongue lesions. A gender discrepancy in awareness was also observed: 30.1% of females were aware

of tongue lesions, compared to only 21.1% of males, a statistically significant difference ($p = 0.012$). This research highlights a serious gap in oral health literacy, implying that many people may not seek timely evaluation or treatment for tongue anomalies. It emphasizes the critical need for targeted public health measures and patient education programs to raise knowledge of oral health issues, such as the significance of tongue examinations.

However, several studies discovered varied lesion patterns, particularly when histological data was evaluated. For example, Alaeddini et al. identified lichen planus (25.2%) and irritation fibroma (14.5%) as the most prevalent biopsy-confirmed tongue lesions (26). Similarly, Farhangian and Jaafari-Ashkavandi identified irritant fibroma, squamous cell carcinoma, and oral lichen planus as the most common findings (27). These variations are most likely due to variances in study populations, diagnostic settings, and inclusion criteria. Overall, coated and fissured tongues appear to be among the most frequent non-neoplastic tongue lesions in different groups, while prevalence rates vary depending on demographic, behavioral, and methodological factors.

This study has various limitations that must be addressed when evaluating the results. First, the cross-sectional design makes it difficult to determine causal correlations between demographic characteristics and the presence of tongue lesions. Although connections were found, no temporal or longitudinal conclusions can be taken. Second, the data were gathered from a single clinical site, thus they may not be fully typical of the overall population. The findings may thus reflect geographical features or healthcare-seeking behavior unique to the study site. Despite these limitations, the findings provide useful insight into the prevalence and kinds of tongue lesions in an understudied group, emphasizing the critical need for more oral health education. This study lays a strong foundation for future research and public health initiatives aimed at enhancing early detection, patient education, and preventive strategies in oral healthcare.

Conclusion

This study sheds light on the prevalence and characteristics of tongue lesions in patients visiting the Stomatology Teaching Hospital in Kabul. The data show a significantly lower prevalence rate than international reports, with coated tongue, fissured tongue, and depopulation being the most often detected lesions in this study. Females and young adults had a higher frequency of tongue lesions, indicating that demographic and behavioral factors may influence oral health. The severe lack of awareness, especially among men, emphasizes the critical need for focused educational initiatives to enhance oral health literacy. Overall, this study emphasizes the importance of regional data in developing effective public health initiatives and advocates for the incorporation of tongue examinations into routine oral health screenings to improve early identification and preventative therapy.

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Author Contribution: Following recommended guidelines for author contributions in research publications, the roles of each author are outlined as follows:

Razia Rabizada: Played a primary role in the conception and design of the study, and contributed substantially to shaping the theoretical framework and research methodology. Fariha Kamal: Was actively involved in data collection, and analysis, and took the lead in drafting and revising the manuscript. Ahmad Milad Stanikzai: Ensured the accuracy and reliability of the analytical methods, performed key computations and data analyses, and supported the critical review and refinement of the manuscript. Amina Ghuriani: Provided overall supervision, guidance, and mentorship to the research team. Played a critical role in the final review and approval of the manuscript for submission.

Conflict of interest

The authors declare no conflict of interest.

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