Original Research Paper

University J Dent Scie 2026; Vol. 12, Issue 1

Prevalence of various tongue anomalies in the Purvanchal region of Uttar Pradesh: A research article

Abstract

Background: The tongue is an essential part of the oral cavity. The physical inspection of the tongue aid in expressing the overall health of an individual. The tongue performs various functions, such as helping in swallowing, tasting, speaking, and chewing.

Aim: The present study aimed to determine the prevalence of different tongue lesions in Indian population.

Materials and Methods: A total of 1739 patients were evaluated. The tongue was inspected for any modification on its surface and particular lesions.

Result: The most frequent tongue lesion diagnosed was coated tongue, shown by 156 patients (28.78%), followed by geographic tongue in 87 patients (16.05%), depapillated tongue in 83 patients (15.31%), and fissured tongue in 66 patients. (12.18%).

Key-words: Tongue anomaly, Median rhomboid glossitis, Geographic tongue, Hairy tongue

Introduction:

The tongue is an essential part of the oral cavity. The physical inspection of the tongue aid in expressing the overall health of an individual. The tongue performs various functions, such as helping in swallowing, tasting, speaking, and chewing. Tongue is enveloped by multiple small elevated structures called papillae. These papillae contain taste buds. Maintaining the hygiene of the tongue is very important for human function.[1] A dirty and filthy tongue can influence the potential to taste. An unclean tongue progress a whitish or yellowish coating over their surface which contains dead cells, bacteria, and food particles. Some scientists revealed that bacteria from the oral cavity and tongue can plunge into the bloodstream, resulting in consequential heart diseases.[2] The tongue behaves like a mirror of the oral cavity. Tongue lesions can be infectious, developmental, autoimmune, benign or malignant tumors, and idiopathic.[3] numerous pathologies are diagnosed solely on the tongue. Various epidemiological researches have significantly shows the prevalence of lesions on the tongue approximately 18.5 % [4,5]. The current study conducted to evaluate the prevalence of various tongue anomalies in patients visiting to dental college for their routine dental check-up.

Access this article online

Website: www.ujds.in

DOI: https://doi.org/10.21276/ujds.2026.12.1.29

Materials and methods:

A total of 1739 patients were examined for the existence of different tongue lesions. Ethical clearance for the present study was obtained from the institutional ethical committee. The investigation of the oral cavity and tongue was done using

[1]HIMANSHU SINGH, [2]ANUJ GARG, [3]PANKAJ KUMAR SINGH, [4]VIJAY PRAKASH SHARMA, [5]SAURABH YADAV, [6]MALIK AJAZ AHMAD

[1]Department of Oral and Maxillofacial Pathology and Oral Microbiology, Rohtak, Haryana

[2]Department of Oral and Maxillofacial Pathology and Oral Microbiology, Dental College Azamgarh, Itaura Chandeshwar, Azamgarh

[3]Department of Prosthodontics and Crown & Bridge, Dental College Azamgarh, Itaura Chandeshwar, Azamgarh

[4]Department of Oral and Maxillofacial Pathology and Oral Microbiology, Saraswati Dental College & Hospital, Lucknow

[5]Department of Pediatric and Preventive Dentistry, Dental College Azamgarh, Itaura Chandeshwar, Azamgarh

[6]Department of Oral and Maxillofacial Pathology and Oral Microbiology, Career Post Graduate Institute of Dental Science and Hospital, Lucknow

Address for Correspondence: Dr. Himanshu Singh
MDS
Associate Professor
Dept. Oral and Maxillofacial Pathology and Oral Microbiology, Rohtak, Haryana
Email : himanshustar3g@gmail.com

Received : 13 Jan., 2025, Published : 31 March, 2026

How to cite this article: SINGH, H., & ANUJ GARG. (2026). Prevalence of various tongue anomalies in the Purvanchal region of Uttar Pradesh- A Hospital Based Study. UNIVERSITY JOURNAL OF DENTAL SCIENCES, 12(1).

a mouth mirror. The tongue was inspected for any modification on its surface and particular lesions. Some patients are asymptomatic, whereas some show symptoms like altered taste sensations, painful ulcerations, and difficulty in speech. History of smoking, tobacco, and alcohol was also written down.

Results:

The present study consisted of 1739 patients. The number of male and female patients is 889 and 850 respectively (table number 1). Of the total patients scrutinized, 542 patients were diagnosed with diverse tongue lesions. The distribution of different lesions is given in table number [2].

The most frequent tongue lesion diagnosed was coated tongue, shown by 156 patients (28.78%), followed by geographic tongue(figure-1) in 87 patients (16.05%), depapillated tongue in 83 patients (15.31%), and fissured tongue (figure-2) in 66 patients. (12.18%). Hairy tongue (figure-3) and median rhomboid glossitis was seen in 43 patients (7.93%) and 31 patients (5.72%) respectively. Ankyloglossia was seen in 27 patients (4.98%). Cleft tongue was seen in 11 patients (2.03%). Microglossia and macroglossia was seen in 04 patients (0.74%) and 16 patients (2.95%). 05 patients (0.92%) show fibroma, while 07 patients (1.29%) show papilloma.

Table number 1: Distribution of male and female patients

GENDER	NUMBER OF PATIENTS	PERCENTAGE
MALE	889	51.12 %
FEMALE	850	48.87 %
TOTAL	1739	100%

Table number 2: Distribution of various tongue lesions

NAME OF THE LESION	NUMBER OF PATIENTS	PERCENTAGE
ANKYLOGLOSSIA	27	4.98 %
CLEFT TONGUE	11	2.03 %
FISSURED TONGUE	66	12.18 %
DEPAPILLATED TONGUE	83	15.31 %
GEOGRAPHIC TONGUE	87	16.05 %
COATED TONGUE	156	28.78 %
MACROGLOSSIA	16	2.95 %
MICROGLOSSIA	04	0.74 %
MEDIAN RHOMBOID GLOSSITIS	31	5.72 %
HEMANGLOMA	06	1.11 %
HAIRY TONGUE	43	7.93 %
FIBROMA	05	0.92 %
PAPILLOMA	07	1.29 %
TOTAL	542	100 %

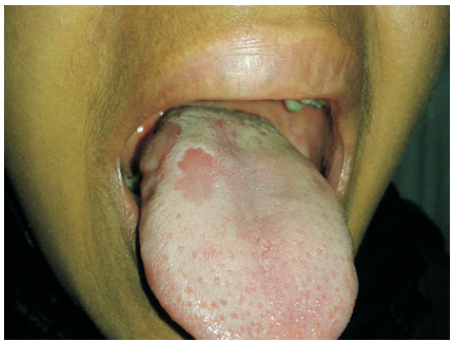

Figure 1: Geographic tongue

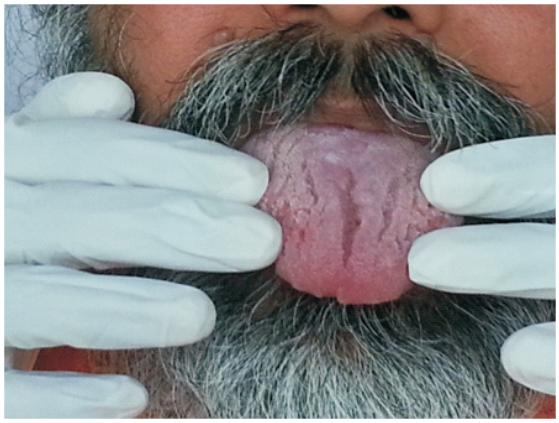

Figure 2: Fissured tongue

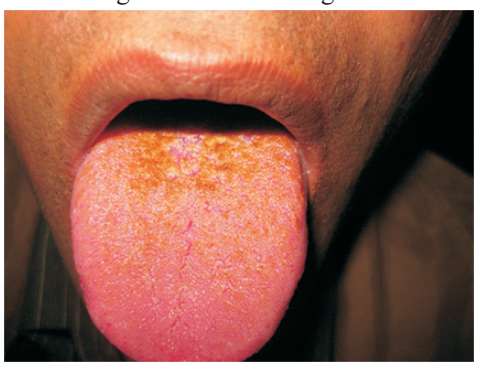

Figure 3: Hairy tongue

Discussion:

A coated tongue is indicated by the appearance of a yellowish-brown or white layer seen in the surface of the tongue. They are established from debris that is composed of bacteria, multiple desquamated epithelial cells, blood metabolites, and leukocytes from the periodontal pockets. [6]

In the present study, the prevalence of coated tongue is 28.78 % In a study done by Darwazeh et al, they observed the prevalence of coated tongue at 9.2 % and 11.0 %. [7,8]

In another study done by Omor et al, they observed that the prevalence of tongue coating was 21.8 %. [9] In another study, Campisi observed the overall prevalence of tongue coating was 51.4%. [10]

Geographic tongue was first described in 1831 by Rayer. It is a benign chronic inflammatory condition of the oral cavity. Geographic tongue is also known as benign migratory glossitis, annulus migrans, erythema migrans.[11,12,13] In a study done by Patil et al, they observed that the prevalence rate of geographic tongue was 16.4%. [14] In another study done by Byahatti et al, they observed a 21% prevalence rate of geographic tongue.[15] Also, Bezerra et al recognized the

prevalence rate of 17.4%. [16] In a study done by Ghanaei et al., a prevalence rate of 2.6% of geographic tongue was observed in the population of Iran. [17]

In 2020, Oivio et al. Conducted research and found that the prevalence rate of geographic tongue was 0.9% out of 1961 patients. [18]

A research study was conducted in the nigerian population by Taiwo et al and they observed the prevalence rate of 0.29% out of 690 patients. [19] In their study, Chher et al observed that out of 1634 patients, only 0.43% shows presence of geographic tongue. [20]

Leukoplakia is derived from the latin word leucos, which means white, and plakia means patch. According to Warnaikulasuriya et al. In 2007, it is defined as "leukoplakia should be used to recognize white plaques of questionable risk having excluded (other) known diseases or disorders that carry no increased risk for cancer". [21] In their study, Patil et al. observed the prevalence rate of leukoplakia as 3.0 %. [14] In a research conducted on Libyan patients by Byahatti et al, they observed the prevalence of leukoplakia as 0.3%. [15]

In a study conducted by Patil et al, tongue depapillation was seen in 11.5% patients In 2010, Byahatti et al observed the prevalence rate of 25.6% in the libyan population. [14,15]

In a study done by Ehsan et al on the population of Kabul city, they observed the prevalence rate of fissured tongue as 35.5%. [22] The Dos Santos et al observed the prevalence rate of 27.3% in the brazilian population. [23]

In a study conducted on the iran population, Khozeimeh and Rasti observed the prevalence rate of 11.8%. [24] In their study, Matthew et al. observed the prevalence rate of 13 % in the south indian population. [25] In a study conducted by Hamrah et al. in andkhoy city in Afghanistan, they observed that the prevalence rate of fissured tongue was 27.2%. [26]

Conclusion:

The outcome from the current research study shows a increased chances of functional and structural irregularity influencing the tongue. These irregularities may be incidentally detected or present symptomatically during regular oral cavity inspection. It is very important for recognition of the several causative factors for tongue irregularities so that proper treatment or management of tongue can be taken.

References:

1. Mosaico G, Pinna M, Grassi R, et al.: Oral health and caries prevention: how tongue hygiene helps maintain balance of microbiota and overall health in pediatric patients. Children (Basel). 2024, 11:10:3390
2. Janket SJ, Lee C, Surakka M, Jangam TG, Van Dyke TE, Baird AE, Meurman JH: Oral hygiene, mouthwash usage and cardiovascular mortality during 18.8 years of follow-up. Br Dent J. 2023, 1-6. 10:1038
3. 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. Oncology and Radiotherapy. 2020;46:1–5
4. Rohini S, Sherlin HJ, Jayaraj G. Prevalence of oral mucosal lesions among elderly population in Chennai: A survey. J Oral Med Oral Surg. 2020;26:10
5. Raman P, Krithika CL, Anandi MS, Kanmani R, Kannan A, Raghuram PH. 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
6. Ragunathan M, Herawati E, Epsilawati l. Clinical overview and predisposing factors of coated tongue in dental students of clinic fakultas kedokteran gigi universitas padjadjaran. Journal of radiology dentomaksilofasial Indonesia 2019; 3(3): 17-20.
7. Darwazeh AM, Pillai K. Prevalence of tongue lesions in 1013 Jordanian dental outpatients. Community Dent Oral Epidemiol. 1993;21:323-4
8. Darwazeh AM, Almelaih AA. Tongue lesions in a Jordanian population. Prevalence, symptoms, subject's knowledge and treatment provided. Med Oral Patol Oral Cir Bucal. 2011;16:e745-9
9. Prevalence and factors related to tongue coating among a sample of jordanian royal medical services dental outpatients. Rana A. Omor, Musab A. Arabeyat, Ayman N. Hiasat, Mahasen S. Ajarmeh, Hind H. Abu Fanas. JRSM 2015; 22(1): 35-40
10. Campisi G , Margiotta V. Oral mucosal lesions and risk habits among men in an italian study population. J oral pathol med 2002 ; 31(8):50
11. Campana F, Vigarios E, Fricain JC, Sibaud V. Geographic stomatitis with palate involvement. An Bras Dermatol. 2019;94(4):449-51
12. Netto JN, Dias MC, Garcia TR, Amaral SM, Miranda ÁM, Pires FR. Geographic stomatitis: An enigmatic condition with multiple clinical presentations. J Clin Exp Dent. 2019 Sep;11(9):e845-9.

13. Ogueta C I, Ramírez P M, Jiménez O C, Cifuentes M M. Geographic Tongue: What a Dermatologist Should Know. Actas Dermosifiliogr (Engl Ed). 2019 Jun;110(5):341-6.
14. Patil S , Kaswan S, Rahman F, Doni B. Prevalence of tongue lesions in the Indian population. J Clin Exp Dent. 2013;5(3):e128-32
15. Byahatti SM, Ingafou MSH. The prevalence of tongue lesions in Libyan adult patients. J Clin Exp Dent. 2010;2:e163-8.
16. Bezerra S, Costa Isabel. Oral conditions in childrens from birth to 5 years: the findings of a children's dental program. J Clin Pediatr Dent 2000;25:79-81.
17. Ghanaei, F. M., Joukar, F., Rabiei, M., Dadashzadeh, A., & Valeshabad, A. K. Prevalence of oral mucosal lesions in an adult Iranian population. Iranian Red Crescent Medical Journal,2013,15(7), 600–4
18. Oivio, U. M., Pesonen, P., Ylipalosaari, M., Kullaa, A., & Salo, T. Prevalence of oral mucosal normal variations and lesions in a middle-aged population: A northern Finland birth cohort 1966 study. BMC Oral Health,2020, 20(1), 357-61
19. Taiwo, J. O., Kolude, B., & Akinmoladun, V. Oral mucosal lesions and temporomandibular joint impairment of elderly people in the south east local government area of Ibadan. Gerodontology,2009: 26(3), 219–
20. Chher, T., Hak, S., Kallarakkal, T. G., Durward, C., Ramanathan, A., Ghani,W., et al. Prevalence of oral cancer, oral potentially malignant disorders and other oral mucosal lesions in Cambodia. Ethnicity & Health,2018, 23(1), 1–15
21. Aggarwal N and Bhateja S "Leukoplakia. Potentially Malignant Disorder of Oral Cavity -a Review" Biomed J Sci & Tech Res 2018;4(5):4219-26
22. Ehsan H, Azimi S, Yosufi A, Yousufi R. The Prevalence and Significance of Fissured Tongue in Kabul City Among Dental Patients. Clin Cosmet Investig Dent. 2023;15:21-9
23. Dos Santos PJB, Bessa CFN, De Aguiar MCF, Do Carmo MAV. Cross-sectional study of oral mucosal conditions among a central Amazonian Indian community, Brazil. J Oral Pathol Med. 2004;33(1):7–12
24. Khozeymeh F, Rasti A. The prevalence of tongue abnormalities among the school children in borazjan, iran. DRJ; 2006;3(1):1-6
25. Mathew A, Cherian S, Daniel M, Abraham T, Mathew R. Prevalence of fissured tongue in a South Indian population-A cross-sectional study. *J Oral Med*. 2017;1(1):9
26. Hamrah MH, Baghalian A, Ghadimi S, Mokhtari S, Kargar M, Khosrozadeh M,et al. The Prevalence and Correlates of Fissured Tongue Among Outpatients in Andkhoy City, Afghanistan: A Cross-Sectional Study. Clin Cosmet Investig Dent. 2021 ;13:335-42