

**OCCURRENCE OF TONGUE DISORDERS IN URBAN POPULATION:
A CROSS SECTIONAL STUDY**

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ABSTRACT

The oral cavity, along with the tongue, are sites of neoplasms, reactive processes, and infections, and may be a harbinger of systemic diseases. Tongue is generally known as the organ of taste. It also helps to articulate speech. The secondary functions of the tongue are to help swallowing and chewing the food. Although easily examined, abnormalities of the tongue can present a diagnostic and therapeutic dilemma for physicians. Recognition and diagnosis require a thorough history, including onset and duration, antecedent symptoms, and tobacco and alcohol use.

Key words:

Tongue, abnormalities, infections, organ of taste

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INTRODUCTION

Oral health highlights the relationship between oral and overall health, emphasizing that oral health involves more than dentition. Oral lesions have long been considered the first signs of many systemic disorders and a plethora of oral diseases¹. Tongue is the most accessible and motile organ in the oral cavity. Tongue is essentially a muscular complex organ covered by epithelium which performs functions like sucking, swallowing, phonation and perception of sensations including taste characteristics, thermal changes, pain stimuli and general sensations and helps in jaw development⁴. The tongue is not only the site of a variety of local lesions, but it also reflects the presence of a number of systemic diseases. Because the dentist will most often be the first to observe these conditions, it is essential that he or she be familiar with their diagnosis⁵. Hippocrates, Galen and others considered the tongue to be a barometer of health, emphasizing its diagnostic and prognostic importance. Most tongue disorders are short-lived and resolve spontaneously or with simple treatment, while others may cause long-term difficulties, requiring up to date medical management¹. Local and systemic disorders affect the tongue and provide some understanding of the distress that usually accompanies limitation of function of this organ. The purpose of the present study was to evaluate the prevalence of the more common morphologic and functional anomalies of the tongue in south Indian population⁶.

MATERIALS AND METHODS

The study was carried out in the Department of Oral Medicine and Radiology, Meenakshi Ammal Dental college and hospital for a period from June 2017 to October 2017. Patients reporting to the outpatient department were included in the study. After obtaining the informed consent, a detailed family and medical history were recorded. The age and gender of patient was noted. Under artificial illumination on a dental chair, using a mouth mirror the dorsal, ventral and lateral borders of tongue were made note of. The tongue was examined for any surface changes, specific lesions, size and movements. The type and site of the lesions were also recorded. The data obtained was tabulated and statistical tests was applied to them to derive consistent conclusions.



Fig 1 Oral Lichen Planus

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Fig 2 Benign Migratory Glossitis



Fig 6 Physiological Pigmentation



Fig 3 Lichenoid Reaction



Fig 7 Ankyloglossia

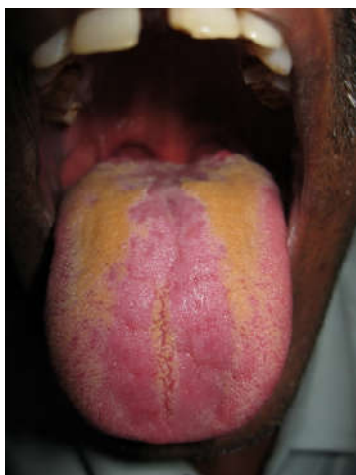


Fig 4 Coated Tongue



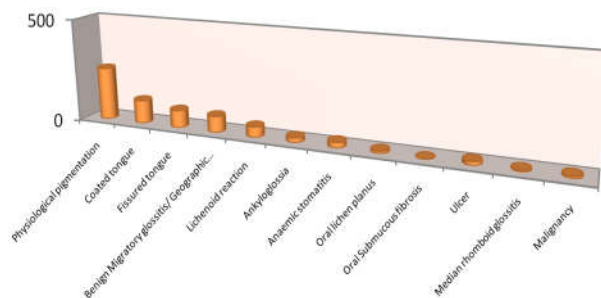
Fig 8 Median Rhomboid Glossitis



Fig 5 Ulcer

RESULTS

The total number of patients who had tongue abnormalities amongst those who visited the outpatient clinic was 687 among which 391 were males and 296 were females which gave us a male predominance. The various types of tongue lesions that were observed were:



Graph 1 Prevalence of tongue lesions

Table 1 Types of tongue lesion and their prevalence percentage in males and females

Type of Tongue Lesion	% Of Occurrence	Females	Males
Physiological pigmentation	51.6	56.7	43.3
Coated tongue	19.2	23.7	13.5
Fissured tongue	11.1	17.5	4.0
Benign Migratory glossitis/ Geographic tongue	5.1	7.3	2.7
Lichenoid reaction	4.8	7.0	2.4
Partial Ankyloglossia	2.5	3.3	1.5
Anaemic stomatitis	2.4	3.6	1.0
Oral lichen planus	1.0	1.6	0.4
Oral Submucous fibrosis	0.6	0.0	1.1
Ulcer	0.9	1.1	0.6
Median rhomboid glossitis	0.4	0.5	0.2
Malignancy	0.5	0.4	0.6

The tongue abnormalities were more common in males than in females; the highest tongue lesion being physiologic pigmentation observed in 51.6% population which was common in females (56.7%). Coated tongue was observed in 19.2% of patients with male predominance (13.5%). Fissured tongue was observed in 11.1% of patients with male predominance (4%). The lesions such as benign migratory glossitis (5.1%), lichenoid reaction (4.8%) and partial ankyloglossia (2.5%) were common among males. On the other hand, anaemic stomatitis (2.4%) and oral lichen planus (1.0%) was common among females. Oral submucous fibrosis (0.6%) was observed only in males in the current study. Ulcers (0.9%) were common among females and Median rhomboid glossitis (0.4%) and malignancy (0.5%) had a male predominance.

DISCUSSION

The tongue is a good reflection of general health status of the human body. Tongue disorders could result from local causes or as a manifestation of systemic disease. There are variations in prevalence of tongue lesions across the world due to differences in ethnic groups, gender, age and use of different diagnostic criteria and methodology⁴.

Age: In our study, the percentage of tongue lesions in age group of 20-30 years was 36.8 %, 30- 40 years was 33.6%, 40 - 50 years was 17.4% and 50- 60 years was 12.2 %. Studies conducted by Fuaod SA in UAE population reported that out of 130 patients, 75 patients were in age group of 20-39 years of age followed 40-59 years and 60-79 years with 34 and 10 patients respectively^{4,7}.

Gender: In our study some of the tongue lesions were higher in males but on the whole, lesions were common among males as compared to females, which was in accordance with study reported by Patil S *et al.*^{4, 8}. The results of our study were contradictory to Fuaod SA study where they reported female predominance^{4,7}. Byahatti *et al.* reported female predominance with 173 females and 147 males which too contradict the present study^{4,9}.

Type of lesions

Physiological pigmentation: Physiologic pigmentation of the oral mucosa is clinically manifested as multifocal or diffuse melanin pigmentation with variable prevalence in different

ethnic groups. Various stimuli, such as trauma, hormonal changes, medication, and radiation may result in an increased production of melanin¹⁸. An age-related increase of oral melanocytes has also been observed^{17,18}. Physiologic pigmentation develops during the first decades of life but may not come to the patient's attention until later. The physiologic pigmentation is asymptomatic, and no treatment is required¹⁷. In our study, physiological pigmentation was seen more among females (56.9%) with an overall prevalence of 51.6%.

Coated tongue: Coated tongue was significantly related to smoking [5, 12]. It was the second most common lesion in the present study with prevalence rate of 19.2%. Patil S *et al* reported out of 595 patients, 167 patients with coated tongue with a prevalence rate of 28% [8]. The prevalence of coated tongue was reported to be 9.2% [11] and 11% [5] in studies done by Darwazeh *et al.*

Fissured tongue: In the present study fissured tongue was reported in patients with prevalence rate of 12.4 % where 69.4 % was seen in males and 30.6 % was seen in females. In Libyan population the prevalence was found to be 48.4%. The prevalence of fissured tongue was quite low in Saudi Population (1.4%) and Turkish populations [10, 3]. Patil S *et al* reported out of 595 patients, 89 patients were diagnosed with fissured tongue with prevalence of 14.9% [8]. This lesion has been suggested to be genetically determined. Various contributory factors to the development include hyposalivation, diabetes mellitus, candidiasis, vitamin B deficiency and lichenoid reactions [9]. Also increasing age is associated with hyposalivation, which is one of the prime contributing factors [5]. Most of the patients with fissuring of the tongue present with no symptoms, however if the fissures are deep, symptoms such as soreness with acidic food and beverages may be present. The deep fissures acts as a reservoir for food particles and accumulate bacterial and candidal organisms leading to the inflammation of the tongue. No definitive therapy or medication is required except to encourage good oral hygiene including brushing the dorsal surface of tongue to remove any food debris from the fissures.

Geographic tongue: It was reported in 11.5% patient. Patil S reported out of 595 patients 98 patients with geographic tongue with a prevalence rate of 16.4% [8] which was higher than the present study. The prevalence of geographic tongue in Brazilian population and Libyan population showed a prevalence of 21% and 17.4% respectively [9, 14]. The studies conducted by Jordanian population showed prevalence rate of geographic tongue as 6.8% and 4.8% [5, 11]. Studies conducted in the American population [15] and South African population showed prevalence rate of 0.6% and 1.6% respectively [16]. Benign migratory glossitis or geographic tongue is a common benign disorder of unknown etiology. Etiology of geographic tongue is not clear, but in children, it can be associated with environmental allergies. Other conditions associated with this pathology are Vitamin B deficiency, a trigger from certain foods such as cheese, congenital anomaly, asthma, rhinitis, systemic diseases such as psoriasis, anaemia, gastrointestinal disturbances, candidiasis, lichen planus, hormonal imbalance and psychological conditions. The treatment regime include Topical steroids,

Vitamin A therapy, rinse with a topical anaesthetic agent, antihistamines, analgesics, steroids and sodium bicarbonate in water and diphenhydramine are helpful and reducing the symptom [18].

Ankyloglossia: Disturbance in the organogenesis of tongue might lead to some malformations like Ankyloglossia, commonly known as tongue tie, is a congenital oral anomaly which may decrease mobility of the tongue tip and is caused by an unusually short, thick lingual frenulum, a membrane connecting the underside of the tongue to the floor of the mouth. In our study prevalence rate was of 8.5%. The prevalence of ankyloglossia in various studies has been estimated to be 0.1%-3.7% [19], which was much less than the present study. Patil S reported out of 595 patients 21 patients were diagnosed with tongue tie with prevalence of 3.5% which was less than the present study. Morowati *et al.* reported a family with isolated ankyloglossia inherited as an autosomal dominant or autosomal recessive trait having prevalence of 4.5% with abnormally short lingual frenulum common in males [20].

Median Rhomboid Glossitis: It is a developmental and congenital defect causing a segment of tuberculum impar to persist on the dorsal surface of the tongue, instead of being buried in normal embryonic development. In the present study it was reported to be only in 1 patient with prevalence rate of 0.6%. It is caused by chronic candidal infections which plays a leading etiologic role, smoking and diabetes acts as a promoter. Infected cases may also demonstrate a midline soft palate erythema in the area of routine contact with the underlying tongue involvement; this is commonly referred to as a kissing lesion most commonly which is reported in immunocompromised patients. A prevalence of 0.6% has been reported in Jordanian and Libyan population [5, 9] which was in accordance with the present study. Patil S reported out of 595 patients 22 patients were diagnosed with median rhomboid glossitis with prevalence rate of 3.7% which was higher than the present study [8].

Ulcers: Patil S reported out of 595 patients 40 patients were diagnosed with ulcer with a prevalence rate of 6.6% which was much higher than the present study. Byahatti *et al* reported with 320 patients out of which 10 patients were diagnosed with ulcer with a prevalence rate of 3.2%. Commonly involved ulcers are traumatic and aphthous ulcers. Traumatic ulcers are caused by denture irritation are referred to as sore spots. This may be a result of over extension of flanges, sequestration of bony spicules under denture of roughened, or 'high' spot on the inner surface of denture. Ulcerations may also result from thermal, electrical and chemical. Aphthous ulcer is a common condition characterized by recurring ulcers confined to oral mucosa in patients with no other signs of disease. There are various etiological factors such as hereditary, trauma, deficiency states, psychological factors, endocrine disorders, allergic conditions, blood dyscrasias, drugs, Gastro Intestinal diseases, urological disorders, dermatological disorders and immunologic origin etc. Aphthous ulcer respond to steroids and ulcers due to trauma, etiological factors should be removed.

Anemic stomatitis: It is a condition in which a smooth, red, painful tongue (glossitis) with atrophy of the filiform and later

the fungi form papillae occurs. In the present study 24 patients were diagnosed with bald tongue with a prevalence rate of 2.67%. Majority of patients with this condition will be having burning sensation in tongue. The anaemia glossitis responds well to iron therapy and a high-protein diet.

CONCLUSION

Oral cavity is considered, a good reflection of general health status of the human body. Tongue disorders could result from local causes or as a manifestation of systemic disease, hence it is of great concern. The present data will provide more information regarding the tongue lesions and may alert the dental clinician regarding any associated underlying systemic conditions. Patients with lesions of unclear aetiology can be referred to a specialist and thorough knowledge of the clinical features can be lifesaving in some subjects by early diagnosis and referral.

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