




Prevalence of Oral Normal Variances in Cigarette Factory Workers in Lamongan, Indonesia

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Abstract

Objective This study aims to observe the distribution of oral normal variances in cigarette factory workers. An essential aspect of diagnosing oral mucosal lesions is differentiating between abnormalities and normal oral variances. Workers from cigarette factories tend to neglect their oral health because of their occupational environment. Lack of awareness in identifying oral mucosal conditions led to poor oral health of cigarette factory worker.

Materials and Methods A cross-sectional study; the sample population included 101 cigarette factory workers who participated in oral screening. The predictor variables in this study included all oral normal variances.

Results The prevalence of oral normal variances in this study was as the following: torus palatinus (62.38%), crenated tongue (51.49%), coated tongue (46.53%), linea alba buccalis (37.62%), fissured tongue (25.74%), prominent Stensen's duct (17.82%), lingual varix (9.90%), ankyloglossia (4.95%), torus mandibularis (3.96%), Fordyce's spots (1.98%), frictional keratosis (1.98%), and macroglossia (0.99%).

Conclusion Top three common normal oral variances among cigarette factory workers are torus palatinus followed by crenated tongue and coated tongue.

Keywords

- ▶ oral normal variances
- ▶ cigarette factory workers
- ▶ health

Introduction

Diagnosis is an important thing that must be mastered by a dentist. The diagnosis of oral mucosal lesions is an essential aspect of dental practice. In diagnosing oral mucosal lesions, some clinical findings can be found different from their normal state but still considered a normal condition. According to Cowson's theory, this finding is not a pathological abnormality but known as a pseudopathological lesion or normal variances in the oral mucosa.¹

Dentists must know the difference between abnormalities and normal oral variances. Misdiagnosis will have an impact on the management of patients correctly. Normal oral variances can be related to genetics, trauma, stress, systemic conditions, and exposure to certain substances.

Workers from cigarette factories tend to neglect their oral health because of overwork, minimal priority, limited availability of dental services, and financial constraints in developing countries.² As the work environment forms the major factor in determining health, special consideration

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should be given to oral health as it plays a crucial role in individuals' general health and well-being.³ Studies revealed a high prevalence of oral diseases and oral mucosal lesions among workers related to their occupational environment.^{4,5} Such studies are scarce among cigarette factory workers. The present cross-sectional study was undertaken to observe the distribution of oral normal variances in cigarette factory workers. This study can help them increase their awareness about oral health, especially in oral mucosa.

Materials and Methods

Study Design and Participants

This was a descriptive observational study with a cross-sectional design conducted in a cigarette factory in Lamongan, Indonesia, in October 2019. The study protocol was approved by the Health Research Ethical Clearance Commission, Faculty of Dental Medicine, Universitas Airlangga, with the registration number 788/HRECC.FODM/XII/2019. Study participants were all cigarette factory workers who participated in oral screening. The predictor variables in this study included all oral normal variances.

Oral Screening

Oral mucosal screening was performed by residents of the oral medicine specialist study program, using the standard oral mucosal screening protocol and standard disposable diagnostic instruments including disposable dental mirrors, explorers, retractors, gloves, masks, kidney bowls, and cotton rolls and pellets. The screening was performed indoors under sufficient lighting. A datasheet has been filled out for each subject who participated in the study. The datasheet contained personal information (age, gender, educational level, address) and a normal oral variances list. Normal variances of the oral mucosa are defined as soft tissue variation from its normal appearance diagnosed by clinical examination. A list of oral normal variances, determined based on the study of Della Vella et al⁶ and modified by the researcher of this study, can be seen in ►Table 1.

Data Presentation

Data obtained from the datasheet will be presented descriptively using a table in percentages and a prevalence rate analyzed using Microsoft Excel 2019.

Result

A total of 101 subjects participated in this study. The majority of the subjects were in the 31 to 40 years age group and most of them were female. Demographic data from subjects who participated in this study are presented in ►Table 2.

Oral normal variances found from oral screening are listed in ►Table 3; as presented, the most common oral normal variance found in cigarette factory workers was torus palatinus (62%). Male subjects found that linea alba buccalis was the most common normal variance of the oral mucosa (27%), while in female subjects, torus palatinus was the most

Table 1 Normal variance of the oral mucosa and its location

Location on oral cavity	Normal variance
Tongue	Fissured tongue Crenated tongue White and black hairy tongue Coated tongue Sublingual varices Lingual fimbriae Papilla circumvallates prominent Papilla foliates prominent Hyperpigmented papilla of tongue Depapillated tongue, including: a. Geographic tongue b. Median rhomboid glossitis
Buccal mucosa	Linea alba buccalis Fordyce granules White sponge nevus Prominent Stensen's duct
Gingiva	Gingival pigmentation
Alveolar bone	Torus palatinus Torus mandibularis

Table 2 Demographic data of study participants

Demographic aspect	Number of subjects	Percentage
Sex		
Male	5	4.95
Female	96	95.05
Age		
< 21 years	3	2.97
21–30 years	40	39.60
31–40 years	52	51.49
> 40 years	6	5.94

Table 3 Prevalence of normal oral variances found in cigarette factory worker

Normal variances	Number of subjects	Percentage
Torus palatinus	63	62.38
Crenated tongue	52	51.49
Coated tongue	47	46.53
Line alba buccalis	38	37.62
Fissured tongue	26	25.74
Prominent Stensen's duct	18	17.82
Lingual varix	10	9.90
Ankyloglossia	5	4.95
Torus mandibularis	4	3.96
Fordyce's spots	2	1.98
Frictional keratosis	2	1.98
Macroglossia	1	0.99

common normal variance of the oral mucosa (24%). Oral normal variances found in each gender can be seen in ► **Table 4.**

Discussion

In this study, the five highest normal oral variances were torus palatinus, crenated tongue, coated tongue, linea alba buccalis, and fissured tongue. Torus palatinus are benign bone tumors of the maxilla that elevate the midline of the palate. The exact etiology of the torus has not been clearly established. The genetic theory attributes a preponderant role to certain genetic factors in the occurrence of torus palatinus. On the contrary, several authors have cited that environmental factors are likely to promote oral exostoses. Although not clearly identified, masticatory hyperactivity and para-functions appear to be the main factors, and diet (unsaturated fatty acids and calcium) to a lesser extent.^{7,8} There is no relationship between working in a cigarette factory and torus palatinus.

Crenated tongue is a physiologic normal condition of the tongue that is not a disease of any form but results from a combination of factors, which are the size of the tongue, status of the existing dentition, and the pressure applied on the tongue by the surrounding teeth. Enlarged tongue or macroglossia can be developed or can be due to systemic conditions like hypothyroidism, sarcoidosis, and amyloidosis. In such cases, diagnosis is achieved by underlying history and varying clinical picture of the tongue. Obstructive sleep apnea is an exception in which tongue scalloping is present without evident macroglossia.⁹ A crenated tongue without macroglossia, which is much less common, has been reported in obstructive sleep apnea and rarely in nocturnal bruxism.¹⁰

Linea alba is a common alteration of the buccal mucosa that is most likely associated with pressure, frictional irritation, or sucking trauma from the facial surfaces of the teeth.¹¹ The presence of linea alba in the buccal mucosa and scalloped tongue are considered clinical signs of centric bruxism. The dental tightening or bruxism has as clinical signs the presence of linea alba and scalloped tongue.^{12,13} Bruxism is often related to stress, depression, or anxiety.¹⁴ Work climate, target demands, and workload can cause stress and anxiety to cigarette factory workers. There can be an indirect relationship between stress and anxiety of cigarette factory workers and the occurrence of crenated tongue and linea alba buccalis, but further research needs to be done.

Coated tongue is the clinical appearance of the dorsum of the tongue that is covered by a layer usually white or colored by the type of food or drink consumed. This membrane consists of filiform papillae that extend so as to give a picture like a thick membrane on the tongue and will hold debris and pigments from food, drinks, cigarettes, and candy. This condition can also occur in people with dehydration.

Dehydration and anxiety can cause a reduced saliva flow rate. It was reported that dehydration has a greater involve-

Table 4 Prevalence of normal oral variance in each gender group of study participants

Normal variances	Number of subjects	Percentage
Male		
Linea alba buccalis	3	27.27
Fissured tongue	2	18.18
Coated tongue	2	18.18
Prominent Stensen’s duct	2	18.18
Crenated tongue	1	9.09
Torus palatinus	1	9.09
Female		
Torus palatinus	62	24.12
Crenated tongue	51	19.84
Coated tongue	45	17.51
Linea alba buccalis	35	13.62
Fissured tongue	24	9.34
Prominent Stensen’s duct	16	6.23
Lingual varix	10	3.89
Ankyloglossia	5	1.95
Torus mandibularis	4	1.56
Fordyce’s spots	2	0.78
Frictional keratosis	2	0.78
Macroglossia	1	0.39

ment in the decrease in saliva flow rate. Saliva is important for self-cleansing in the oral cavity from food debris.¹⁵ Tasyirifah in his research stated that dehydration, anxiety, and fatigue, associated with work climate and job demands, occur in cigarette factory workers. These can occur due to heat that comes from a machine made from a hot iron that is used to attach cigarette packs, the dense population of workers in one room, low awareness regarding optimum quantity of drinking water to be consumed, short breaks, and the everyday target that cause most workers to have only a little time to rest.¹⁶ Dehydration, stress, anxiety, and fatigue in cigarette factory workers increase the risk factors for a coated tongue.

Fissured tongue is relatively common; numerous grooves or fissures are present on the dorsal tongue surface. The causal factor is uncertain, but heredity appears to play a significant role. There is evidence that the condition may be either a polygenic trait or an autosomal dominant trait with incomplete penetrance.¹¹ The occurrence of a fissured tongue cannot be directly related to dehydration, stress, or anxiety. However, dehydration and psychological factors can influence the reduced salivary flow, which will more severely impact patients with a fissured tongue. Fissured tongue causes debris and bacteria to easily get trapped inside the fissure, which can trigger halitosis, tongue inflammation, and tongue discomfort.

Identification of normal oral variance in cigarette factory workers can increase their awareness of oral mucosal disorders. Oral health is a valuable asset of every individual apart from being an essential component of general health. Occupation-related diseases are predisposed by the complex and varied occupational environment.^{3,17} Study of the oral normal variances as part of oral health status assessment in cigarette factory workers will provide future opportunities to maintain industrial health. For clinicians, identifying normal oral variances can help improve their ability to diagnose oral lesions by differentiating normal variations from other pathological conditions. As a further implication of this study, regular oral health check-ups for factory workers can be considered a new program for policy-making in factories. Maintaining good oral health status can support factory workers' general health and improve their daily work.

Studies on normal oral variances in cigarette factory workers are still rare. Therefore, this study can initiate further studies on the condition of the oral mucosa in cigarette factory workers and its relation to the occupational environment. However, there are still limitations to this research. The lack of identification of workers' socioeconomic factors, information about the workload of workers that is not provided by factory management, and the absence of general health status of the workers make it difficult for researchers to connect the condition of the oral mucosa to other factors related to cigarette factory workers. Departing from this limitation, further studies can be carried out by linking the conditions of the occupational environment and general health status with the incidence of oral mucosal abnormalities, both normal variances and pathological lesions, in cigarette factory workers.

Conclusion

The three most prevalent normal oral variances found in cigarette factory workers are torus palatinus, crenated tongue, and coated tongue. Oral mucosal conditions observed in this study included normal oral variances and other lesions without any clinical pathological tendency. A further concern to certain oral lesions is important to provide appropriate management. Doctor-patient communication, information, and education should be encouraged to adequately manage these oral mucosal conditions and prevent any worsening and pathological changes.

Conflict of Interest
None declared.

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