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# GENDER DISTRIBUTION OF ORAL MUCOSA LESIONS IN PATIENTS ATTENDING AL-SADER TEACHING HOSPITAL IN MISSAN PROVINCE

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## ABSTRACT

### Background

The purpose of this study was to determine the percentage and gender difference of oral lesions in a sample of Iraqi patients from Missan. The age, gender, educational, socioeconomic, cultural levels, smoking, medications used, and systemic diseases are factors that could predispose to the occurrence of oral lesions.

### Patients and Methods

This study was conducted from April 2009 to March 2011. A total of 266 patients were examined. Of these, 123 were males and 143 were females. The patients' age ranged between 15 to 69 years. An interview was conducted to collect information using a structured questionnaire which was completed by each patient. The patients were examined clinically by two trained examiner, the lesions that could not be diagnosed by clinical examination alone were examined histopathologically by histopathologist in the same hospital.

### Results

Among the 266 patients, each patient had one or more oral lesions. The number of oral lesions was 316. Oral lesions were classified according to the following seven categories: tongue lesions 29.32%, normal variants 26.69%, white lesions 16.54%, ulcerated lesions 12.41%, candidiasis 7.14%, benign lesions 6.77% and malignant lesions 1.14%. Tongue lesions were more common among males 18.05% than in females 11.28%. Denture induced fibrous hyperplasia and denture stomatitis and Linea Alba was more common among females 8.65% than males 6.39%, while Fordyce granule, hairy tongue and geographical tongue, were more common among males (7.14%, 4.89%, 3.76% respectively) than in females.

### Conclusion

Routine examinations of oral cavities are valuable in identifying several oral lesions and this will help establish early diagnosis and treatment and better prognosis particularly early precancerous and other oral lesions.

**KEYWORDS:** Oral Lesions, Oral Disease, Oral Mucosa, Percentage

## INTRODUCTION

A change in color of the normal reddish oral mucosa to white constitutes one of the most frequently encountered oral abnormalities [(1)]. A variety of malignant and pre-malignant lesion of oral cavity appear white, like leukoplakia, oral submucous fibrosis, oral lichen planus, erythroplakia, chronic hyperplastic candidiasis, sub-lingual-keratosis, tobacco-induced keratosis, syphilitic keratosis and carcinoma in situ [(2)].

The initiation of these precancerous conditions may depend upon extrinsic local factors. The more frequently blamed factor is tobacco used in different ways i.e. smoking and chewing that causes local irritation [(3)].

Ricke et. al. [(4)] pointed out in his study that eating spicy food and, smoking tobacco are the causative factors of oral lesions. Oral lesion constitute major public health problem in South Asian countries. Public of these areas are habitual of taking spicy food, smoking and chewing tobacco. These are the common social habits in this region. Researches had found that these habits are risk factors for producing oral lesion.

Oral lesions can cause discomfort or pain that interferes with mastication, swallowing, and speech. Oral lesions can produce symptoms such as halitosis, xerostomia or oral dysesthesia, which interfere with daily social activities [(5)]. Diagnosis of wide variety of lesions that occur in the oral cavity is an essential part of dental practice (Figure 1). An important element in establishing a diagnosis is knowledge of the lesions' relative frequency, or percentage at one point in time [(6)]. Among the broad spectrum of causes leading to changes in the oral mucosa are infections from bacteria, fungi, viruses, parasites, and other agents; physical and thermal influences, changes in the immune system, systemic diseases, neoplasia, trauma and other factors, some of which are issues of aging [(7)].

Dental factors (poor oral hygiene, sharp teeth, and improperly fitting dentures) have been thought to play a role in the occurrence of oral mucosal lesions. Denture wearers are suffering the characteristic lesions from the dentures [(8)]. The tongue lesions; fissured, geographic and hairy tongue, oral lesions Fordyce granules, and leukoedema are classically considered to be developmental oral lesions rather than having virtual disease characteristics [(9)]. Candidosis occupying second place in frequency of the mucosal membrane of the oral cavity has been looked upon as mirroring the general health [(10)].

## PATIENTS AND METHODS

A total of 266 patients, of these 123 (46.24%) were males and 143 (53.76%) females. The patients' ages were between 15 to 69 years. All patients included in this study were referred to the outpatient clinic of Oral and Maxillofacial Surgery in Missan general hospital (Missan –Iraq) from April 2009 to March 2011. An interview was conducted to collect information using a structured questionnaire which was completed by each patient and the examiner. Both dental and general medical histories of the patients were obtained.

The patients were examined clinically by two trained examiner using artificial light, mouth mirror, gauze. A preliminary diagnosis was established at the time of clinical examination. Some of the mucosal changes where diagnosed solely by clinical examination e.g. linea Alba, fissured tongue. Sometimes a cotton swab was used to remove evident debris; a swab was always used to test whether a white lesion could be wiped off. In some cases where the observed lesion could be of traumatic origin, this was eliminated and the patients were requested to return for evaluation several days later for a new exploration.

Initial assessment and diagnosis was made by history and clinical examination which was subsequently confirmed histopathologically (by whom), type of habit and nature of lesion were all recorded. During the clinical examination, the following elements including features of the lesion, anatomical location, extension, etiological factors or related factors, dental status were analyzed. The collected data were then evaluated using SPSS version 19.

## RESULTS

Among the 266 patients, Females constituted 53.76 % (n=143) and males 46.24% (n=123). The age range of the patients was between 15-69 years. 316 oral lesions were detected. Oral lesions were classified according to the following 7 categories: tongue lesions 29.33%, normal variants 26.69%, white lesions 16.54%, ulcerated lesions 12.41%, candidiasis 7.15%, benign lesions 6.77% and malignant lesions 1.14%.

### Distribution of Tongue Diseases According to Gender

Table 1 showed the distribution of tongue lesions according to patient's gender. Tongue abnormalities were present in 29.33% (n=78) of the total sample. Tongue lesions were more common among males 18.05% than in females 11.28%. The most common tongue condition was fissured tongue, constituting about 14.29 % of all tongue conditions. Other tongue lesions include black hairy tongue 8.27%, geographic tongue 6.77%, consequently. All the tongue lesion are more common in male than female.

**Table 1: Distribution of Tongue Diseases According to Gender**

| Tongue Diseases | Males | | Females | | Total | | Gender Difference |
|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | |
| Fissured Tongue | 25 | 9.4 | 13 | 4.89 | 38 | 14.29 | $X^2$= 0.618 P > 0.05 d.f. =2 |
| Black hairy Tongue | 13 | 4.89 | 9 | 3.38 | 22 | 8.27 | |
| geographic tongue | 10 | 3.76 | 8 | 3.01 | 18 | 6.77 | |
| **Total** | **48** | **18.05** | **30** | **11.28** | **78** | **29.33** | |

### Distribution of Normal Variants According to Gender

Table 2 showed the distribution of normal variants according to patient's gender. Normal variants were observed in 26.69% of the patients. The most common variant was Linea Alba, which

Was seen in 15.04%. Other normal variant include Fordyce's granules 11.65%. There is no statistical difference in normal variants distribution between male and female, although the linea Alba is more common in female than male (8. 65%, 6.39%) respectively.

**Table 2: Distribution of Normal Variants According to Gender**

| Normal Variants | Male | | Female | | Total | | Genders Difference |
|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | $X^2$= 2.467 P > 0.05 d.f. = 1 |
| Linea alba | 17 | 6.39 | 23 | 8.65 | 40 | 15.04 | |
| Fordyce granules | 19 | 7.14 | 12 | 4.51 | 31 | 11.65 | |
| **Total** | **36** | **13.53** | **35** | **13.16** | **71** | **26.69** | |

### Distribution of White Oral Lesions According to Gender

Table 3 showed the distribution of white lesions according to patient's gender. White lesions were observed in 16.54 % of all patients. The most common white lesion was traumatic keratosis seen in 15.04% of all patients. Other white lesions include lichen planus1.50 %.

**Table 3: Distribution of white Oral Lesions According to Gender**

| White Lesions | Males | | Females | | Total | | Genders Difference |
|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | |
| Traumatic keratosis | 22 | 8.27 | 18 | 6.77 | 40 | 15.04 | $X^2$= 0.593 P > 0.05 d.f. = 1 |
| Lichen planus | 3 | 1.13 | 1 | 0.38 | 4 | 1.50 | |
| **Total** | **25** | **9.40** | **19** | **7.15** | **44** | **16.54** | |

**Distribution of Ulcerative Lesions According to Gender**

Table 4 showed the distribution of ulcerative lesions according to patient's gender. Ulcerative, lesions were diagnosed in 12.41% of the studied populations. The most common ulcerative lesion was recurrent aphthous ulceration seen in 6.02% of all patients. Other ulcerative lesions include traumatic ulcer (3.38%) recurrent herpes simplex virus infection (3.01%) consequently. The table also showed that the ulcerative oral lesions are more common in female than male in both total lesions and in separate lesion, (7.52% for female and 4.89% for male as a total) but it is also of non significant value p value >0.05 .

**Table 4: Distribution of Ulcerative Lesions According to Gender**

| Ulcerative Lesions | Male | | Female | | Total | | Genders Difference |
|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | |
| Recurrent aphthus ulcer | 7 | 2.63 | 9 | 3.38 | 16 | 6.02 | $X^2$= 0.278 P > 0.05 d.f. = 2 |
| Traumatic ulcer | 3 | 1.13 | 6 | 2.26 | 9 | 3.38 | |
| Recurrent herpes simplex infection | 3 | 1.13 | 5 | 1.88 | 8 | 3.01 | |
| **Total** | **13** | **4.89** | **20** | **7.52** | **33** | **12.41** | |

**Distribution of Candidiasis According to Gender**

Table 5 showed the distribution of candidiasis according to patient's gender. Candidiasis was observed in 7.15% of all patients. The most common candidal infection was denture stomatitis seen in 5.64 % of all patients. Other candidiasis includes angular cheilitis1.51%. Median rhomboid glossitis and acute pseudomembranous candidiasis also was seen but in few cases. Here the candidiatic lesion is more common in female than male with no significant changes.

**Table 5: Distribution of Candidiasis According to Gender**

| Candidiasis | Male | | Female | | Total | | Genders Difference |
|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | |
| Denture stomatitis | 6 | 2.26 | 9 | 3.38 | 15 | 5.64 | $X^2$= 1.552 P > 0.05 d.f. = 1 |
| Angular cheilitis | 3 | 1.13 | 1 | 0.38 | 4 | 1.51 | |
| **Total** | **9** | **3.39** | **10** | **3.76** | **19** | **7.15** | |

**Distribution of Benign Lesions According to Gender**

Table 6 shows the distribution of benign lesions according to patient's gender. Benign lesions were diagnosed in 6.77% of the studied population. The most common benign lesions were fibroepithelial hyperplasia, which was seen in 3.38% of all patients. Other benign lesions include denture induced fibrous hyperplasia 2.63%, pyogenic granuloma 0.76%. The female are more commonly affected by benign oral lesion than male (3.76%, 3.01% respectively) with no

significant changes.

**Table 6: Distribution of Benign Lesions According to Gender**

| Benign Lesions | Males | | Females | | Total | | Genders Difference |
|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | |
| Fibroepithelial hyperplasia | 4 | 1.50 | 5 | 1.88 | 9 | 3.38 | $X^2$= 0.032 P > 0.05 d.f. = 2 |
| Denture induced fibrous hyperplasia | 3 | 1.13 | 4 | 1.50 | 7 | 2.63 | |
| pyogenic granuloma | 1 | 0.38 | 1 | 0.38 | 2 | 0.76 | |
| **Total** | **8** | **3.01** | **10** | **3.76** | **18** | **6.77** | |

**Distribution of Malignant Lesions According to Gender**

As shown in table 7 malignant lesions was seen in 1.14 % of all patients, these include Squamous cell carcinoma 0.76 % and mucoepidermoid carcinoma 0.38 % of the studied population. And the female are more affected by malignant lesion than male with no significant changes.

**Table 7: Distribution of Malignant Lesions According to Gender**

| Malignant Lesions | Males | | Females | | Total | | Genders Difference |
|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | |
| Squamous cell carcinoma | 1 | 0.38 | 1 | 0.38 | 2 | 0.76 | $X^2$= 0.75 P > 0.05 d.f. = 1 |
| Mucoepidermoid carcinoma | 0 | 0 | 1 | 0.38 | 1 | 0.38 | |
| **Total** | **1** | **0.38** | **2** | **0.76** | **3** | **1.14** | |

## DISCUSSIONS

Prior to discussing the results of the present study, it should be stressed that the findings are influenced by the conditions under which the data were collected. If the operative and circumstantial particularities associated with the geographic, social, and cultural setting are taken into consideration, the results obtained can be compared with those of similar studies. In the Department of Oral Diagnosis and Medicine, admission to clinical care is processed when patients request elective dental care by professionals. Patients spontaneously presenting for dental consultation exhibit an attitude that may differ from that found in an epidemiological survey of an open population. Epidemiological studies performed over the past few years have shown considerable variation in the percentage of oral mucous lesions among different regions throughout the world [(11)]. There are considerable methodological problems because of the absence of standard protocols and the wide variation in the methods used. Consequently, the percentage found for each lesion varies widely among research groups. Among 266 patients had one or more oral lesions, a result comparable with that in a study by Reichart [(12)] in German, but lower than that in other studies done by Hand [(13)], and more than that found by Ross and Gross in a cross-sectional study in south India [(14)]. These variations could be explained due to: Geographical factors, Different methodologies used, Gender distribution of the sample, Age distribution of the sample, Specific cultural habits like smoking and use of alcohol, Variation in the clinical interpretation of parameters, Real differences in the percentage of oral lesions, Racial factor, Educational level of the patients, Socioeconomic factors, Cultural levels, Medication used, Systemic diseases, use of dentures, Food type and the number and type of the lesion included in the study .Oral lesions in general were slightly more among males 53.76 % than in females 46.24 %. This is in agreement with the finding of Kovac-Kavcic [(15)], but disagrees with the finding of Ikeda et al [(16)] among Cambodian population patients in which oral lesions where

more in females than in males.

Tongue abnormalities were present in 29.33(n=78) of the total sample. Tongue lesions were more common among males 18.05% than in females11.28%. This is in agreement with the finding of Alshadodhamid [17] among Yemeni dental outpatients. Our result disagrees with the finding Bagan Sebastian [18], where tongue lesions were higher among females than males and it was not statistically significant. The most common tongue condition was fissured tongue, constituting about 14.29% of all conditions. This is in agreement with the finding of Alshadodhamid[17]and disagrees with the finding of Bagan Sebastian [18].

Fissured tongue was more among males 9.40% than in females 4.89% however; gender differences were not statistically significant which are in agreement with the finding of Alshadodhamid [17]. Black hairy tongue was seen in 8.27 %. This percentage is comparable to the finding Alshadodhamid [17], and inferior to that observed in a cross-sectional study Bagan Sebastian[18]. Geographic tongue was diagnosed in 6.77%. This percentage is comparable to the finding by Alshadodhamid [17]. Geographic tongue was more in males however gender difference was not statistically significant.

**Percentage, Gender Distribution of Normal Variants**

Normal variants were observed in 26.69% of the patients. Linea Alba was seen in 15.04%. It was significantly more common among females 8.65% than in males 6.39%. This Percentage is comparable to the finding by Ragian et al [19]. But it is lower than that found by Scully [20]. Fordyce granule was seen in 11.65% of all patients. This is comparable to the finding by Alshadodhamid [17]. Fordyce granules was significantly more common among males 7.14% than in females 4.51% which is in agreement with the finding of Ragian et al [19], but conflicts with the finding of Chiapelli [21] in which Fordyce granules were significantly more common in females. Fordyce granules may be a target of the androgenic hormones.

White lesions were observed in 16.54 % of all patients. Traumatic keratosis was seen in 15.04% of all patients. This is comparable to the finding by Holmstrup [22] but lowers than that found by Ikeda et al. [16] in an adult Cambodian population. Traumatic keratosis was more in males 8.27% than females 6.77%. The higher Percentage of Traumatic keratosis among males is in agreement with the finding of Ikeda in Cambodian population [16]. Frictional hyperkeratosis is caused by chronic friction against an oral mucosal surface, resulting in a hyperkeratotic white lesion. If the physician is clinically confident of a traumatic cause for the lesion, no biopsy is required. Removal of the cause of irritation usually resolves the problem. If the cause is uncertain, the lesion should be treated as idiopathic leukoplakia, and biopsy should be obtained.

Oral lichen planus was seen in 1.50% of all patients. This is comparable to the finding by Silverman Jr et al [23]. The high Percentage of oral lichen planus among males is in agreement with the finding of Scully et al [20].

Ulcerative lesions were diagnosed in 12.41% of the studied populations. Recurrent aphthous ulcer was seen in 6.02%. This is comparable to the finding by Donat [24]. Recurrent aphthous ulcer was more in females 3.38% than in males 2.63%. Similar finding has been reported by Holmstrup et al. [22], and disagrees with the finding of Ragian et al.[19] in which recurrent aphthous ulcer was more frequent in males than in females.

The most common cause of single ulcers on the oral mucosa is trauma. Trauma may be caused by teeth, food, dental appliances, dental treatment, heat, chemicals, or electricity. Traumatic ulcer was seen in 3.38%. This Percentage is

comparable to the finding by Ragian et al [19] in Africa.

Traumatic ulcer was more in females 2.26% than in males 1.13%. Recurrent herpes simplex infection, the sore or fever blister was observed in 3.01%. This is comparable to the finding by Scully et al [20] .The higher percentage of recurrent herpes simplex virus infection among females in which 1.88% among females and 1.13% among males is in agreement with the finding of Scully et al [20].

Candidiasis was observed in 7.15% of all patients. Denture stomatitis was seen in 5.64%. This percentage is comparable to the finding by Guggenheimer et al [25]. Denture stomatitis was more common among females than in males 3.38% and 2.26% respectively. This is in agreement with the finding of Guggenheimer et al. Angular cheilitis was seen in 1.51% of all patients. This Percentage is in accordance with the study done by Khalid et al [26] among Saudi patients, but it is lower than that of other study done Donat et al [24]. Angular cheilitis was more prevalent in males 1.13% than in females 0.38%.

Benign lesions were diagnosed in 6.77% of the studied population. Fibroepithelial hyperplasia was seen in 3.38%. This is comparable to the finding by Sahtool et al [27] and lower than that found by Bagan Sebastian [18]. Fibroepithelial hyperplasia was more prevalent in females 1.88% than in males 1.88%. Denture induced fibrous hyperplasia was seen in 2.63% of all patients which is comparable with the finding of Alshadodhamid [17] in Yemeni population. Denture induced fibrous hyperplasia was more common among females 1.50% than in males 1.13%. This is in agreement with the finding of Sahtool et al [27]. Pyogenic granuloma was diagnosed in 0.76%. of the studied population. This is comparable to the finding by the same author.

Malignant lesions were seen in 1.14 % of the studied population. This is comparable with the finding of Prout et al [28]. Of these malignant lesions; two patients had squamous cell carcinoma 0.76%, and only one patient had Mucoepidermoid carcinoma 0.38 these finding is comparable to the finding by Ihunwo et al [29]. The lower percentage of malignant lesions in the present study is probably because many patients with oral cancer go to the Department of Oral and Maxillofacial Surgery in the capitals' Hospitals and only few cases of oral cancer are diagnosed at governorate hospital.

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