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Original Article

Occurrence of Oral Mucosal Lesions in Patients Attending a Private University Dental Hospital in Riyadh, Saudi Arabia

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ABSTRACT

The presence of oral mucosal lesions serves as an important indicator of oral health, and understanding their prevalence is crucial for shaping public health initiatives. The present study aimed to assess the frequency of oral mucosal lesions in patients attending REU clinics and to analyze the prevalence based on factors such as gender, age, systemic health conditions, and lifestyle habits. Data were collected from 380 patients, documenting details such as age, gender, systemic health conditions, and lifestyle habits. Each individual underwent an oral examination using artificial light and a mouth mirror, with the procedure lasting approximately 5 to 8 minutes. Patients were examined while positioned in a supine posture. Among the participants, 28.3% exhibited one or more oral lesions. The most commonly identified conditions were abscesses (45%), linea alba (35%), and pericoronitis (15%). The overall prevalence of oral mucosal lesions in this study was relatively low, with abscesses and linea alba being the most commonly observed. Furthermore, no statistically significant correlation was found between oral lesions and factors such as gender, smoking habits, medical history, or nationality.

Keywords: Dental hospital, Prevalence, Oral lesions, Private college.

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Introduction

Globally, poor oral health among adults is evident through increased instances of dental caries, tooth loss, and periodontal disease, often accompanied by conditions like xerostomia, pre-malignant lesions, and oral cancer, particularly in older individuals [1-3]. The presence of lesions affecting the oral mucosa is a critical factor in evaluating oral health and plays a significant role in guiding government health policies and programs [4, 5].

Oral lesions can disrupt essential daily functions, such as chewing, swallowing, and speaking, and may cause symptoms including halitosis, xerostomia, or dysesthesia. Various types of oral mucosal lesions include fissured tongue, Fordyce granules, geographic tongue, pigmentation, Candida, lingual varices, petechiae, leukoplakia, and malignant conditions [6, 7]. Histopathological analysis of biopsied specimens remains a key diagnostic tool, typically influenced by clinical findings and supplementary diagnostic assessments. Understanding the distribution of oral and maxillofacial lesions (OMFL) is crucial for determining their prevalence in different populations, identifying high-risk groups, and ensuring the effective allocation of healthcare resources [8].

Individuals experiencing persistently elevated glucose levels are at a higher risk of developing infections and abscesses in the oral cavity. Diabetic patients are particularly prone to oral complications, making their oral environment more vulnerable to infections [9].

Literature review

Epidemiological research has highlighted a significant variation in the prevalence and types of oral lesions across different global regions. Reports have indicated a prevalence of 9.7% in Malaysia [10], 15.5% in Turkey [11], 25% in Italy [12], and 61.6% in Slovenia [13]. In Saudi Arabia, these lesions were found in 15% of dental patients [9], and in India, the prevalence was 41.2% [14].

Regarding younger patients, Roza et al. examined the occurrence of oral leukoplakia and oral erythroplakia, concluding that the occurrence of oral leukoplakia is relatively low in younger individuals. Further observational studies are needed to gain a deeper understanding of oral leukoplakia and other potentially malignant oral conditions in younger populations [15]. While lesions related to smoking are prevalent, smokeless tobacco also presents a significant risk. Binmadi *et al.* [16] identified smokeless tobacco as a contributing factor to oral cancer. In their study of 59 patients who used smokeless tobacco (SLT), 18.6% were diagnosed with oral squamous cell carcinoma [17].

Basha *et al.* [18] carried out a systematic review revealing that the prevalence of oral cancer in Saudi Arabia ranged from 21.6% to 68.6%. This condition poses a major public health issue, particularly in the southern region of Saudi Arabia, with Jazan province showing the highest rates. The male-to-female ratio of oral cancer varied, being 0.7:1 in Jazan and 1.2:1 in other areas of the country. The increased prevalence of oral cancer among females might be linked to higher consumption of smokeless tobacco, specifically Shamma, which raises the risk of developing oral cancer [19].

Study hypotheses

Oral mucosal lesions are more commonly observed in older patients and those with underlying systemic conditions.

Aims of the study

• To assess the frequency of oral mucosal lesions in patients attending REU clinics.

• To analyze the prevalence based on factors such as gender, age, systemic health conditions, and lifestyle habits.

Materials and Methods

Study design & sample

This study utilized a cross-sectional design, involving a clinical examination following the patients' consent.

Sample size calculation:

Confidence level: 95%

Population size: 2000

The margin of error: 5%

Required sample size: 380

Inclusion criteria

Participants who were over 18 years of age.

Exclusion criteria

Participants under the age of 18 years.

Study instrument

A questionnaire was utilized to gather data from each patient, documenting their age, gender, medical condition, and habits. Each individual underwent an examination with the use of a mouth mirror and artificial lighting, taking 5-8 minutes in total. The patient was positioned in a supine posture during the examination.

We documented the occurrence of various lesions among the patients, such as abscesses, pericoronitis, pulp polyps, materia alba, candidiasis, linea alba, mucoceles, leukoplakia, lichen planus, fibromas, and hairy tongue. Data was recorded in an Excel sheet, with patient-specific information including file number, age, occupation, nationality, gender, smoking status, smoking type, medical condition, tooth brushing frequency, dental visit history, and self-reported oral health. The comparison groups consisted of gender, nationality, smoking status, and medical condition.

Data confidentiality

The information obtained from patients' records, including their names, contact details, and file numbers, was kept strictly confidential.

Statistical analysis

The data gathered were processed using SPSS version 22, employing both descriptive and inferential statistical methods. Group comparisons were carried out using the Chi-square test, with a significance level set at 0.05.

Results and Discussion

Table 1. Demographic information about the participants

Demographical variables	Frequencies
Gender	Male: 61.4% Female: 38.6%
Occupation	None: 24% Student: 19% Employee: 36% Businessman: 21%
Nationality	Saudi: 73.8% Non-Saudi: 26.2%
Mean age	35.96 years (SD = 12.33)

Table 1 presents the participants who experienced a reduction in their oral infection symptoms. The findings indicate that 61.4% of male participants had oral lesions, compared to 38.6% of females. Among the participants, 36% were business owners, 21% were employed, 19% were students, and the remaining individuals were unemployed. The data also highlights the participants' nationalities, with 73.8% being Saudi, while 26.2% were from other nationalities. Furthermore, the average age of the participants was 35.96 years.

Table 2. Habits and medical status of the study participants

Habits & medical status	Frequencies
Smoker	Yes: 19.8% No: 80.2%
Cigarettes per day	Less than 10: 77.3% More than 10: 22.7%
Type of smoking	e-cigarette: 15% conventional: 65% shisha: 20%
Medical status	Yes: 9.3% No: 90.7%
Brushing frequency	None: 12.2% Once daily: 55.6% Twice daily: 32.3%
Visiting clinic	Regularly: 13.5% Only when needed: 86.5%

Table 2 outlines the behaviors and current health status of the participants, focusing on those being studied for oral mucosal lesions. It was found that 19.8% of participants smoke, while the remaining 77.73% consume fewer than ten cigarettes daily. Among smokers, 15% use conventional cigarettes, 65% prefer cigars, and 20% smoke shisha. Additionally, 9.3% of participants reported having a medical condition. Regarding oral hygiene, 55.6% clean their teeth once a day, and 32.3% do so twice daily. Furthermore, 13.5% of the participants are regular clinic visitors.

Table 3. Presence of oral lesions among study participants

Oral lesion-related queries	Frequencies
Presence of oral lesion	Yes: 28.3% No: 71.7%
Type of oral lesion	Abscess: 45% Pericoronitis: 15% Pulp polyp: 4% Linea alba: 35% Hairy tongue: 1%

Table 3 presents the overall distribution of oral lesions among the study participants. A total of 28.3% of the participants exhibited one or more types of oral lesions. The most frequently observed lesions were abscesses (45%), linea alba (35%), and pericoronitis (15%). Less common lesions included pulp polyps, which were

found in 4% of patients, and hairy tongue, which affected 1% of patients.

Table 4. Comparison among variables regarding the presence of oral lesions

Variables	Comparison	P-value
Gender	Male: 60.7% Female: 39.3%	0.482
Nationality	Saudi: 69.1%% Non-Saudi: 30.9%	0.123
Smoker	Yes: 25.3% No: 74.7%	0.314
Medical condition	Yes: 22.8% No: 77.2%	0.296

Table 4 illustrates the comparison of various factors concerning the presence of oral lesions. The analysis reveals that no significant differences were observed when comparing gender, nationality, smoking status, and medical conditions, as indicated by the high P values. According to the findings, 60.7% of those with oral lesions were male, and 39.3% were female. Regarding nationality, 69.1% of the participants were Saudi, while the rest were from other nationalities. When comparing smokers and non-smokers, it was found that 25.3% of individuals with oral lesions were smokers.

The study revealed that 69.1% of Saudis experienced at least one type of oral lesion. This is comparable to a previous study that reported a prevalence of 58.1% [20]. Similar findings were observed in studies from Slovenia (61.6%), the Philippines (61.0%), and Spain (58.8%) [21]. However, the prevalence was much higher in Thailand (83.6%) and Italy (81.3%) [22]. This study focused on a specific age and gender demographic, which may account for the lower prevalence compared to other regions. Additionally, research excluding minor oral conditions and focusing only on significant oral lesions reported much lower prevalence rates, such as 25.1% [22] and 8.4% [23], which were considerably lower than those found in this study. The mean age of participants in this study with oral lesions was 35.96 years, as highlighted in the table summarizing the demographics of other studies.

Cigarette smoking is a major risk factor for oral cancer and contributes to numerous pathological alterations in the oral mucosa [24]. Early detection and screening of smokers are critical for preventing the progression of oral health issues. In this study, 19.8% of smokers were diagnosed with oral cancer, with 77.3% consuming fewer than 10 cigarettes daily. The remaining 22.7% smoked more than ten cigarettes per day. It is crucial to offer regular dental care and health education to individuals at high risk. One study highlighted that common oral mucosal lesions (OMLs) among smokers included fissured tongue, coated tongue, aphthae, linea alba, glossitis, leukoplakia, candidiasis, and macroglossia [25]. However, these lesions were not observed in the participants of our study.

Another study identified smoking and advancing age as important risk factors for developing OMLs. Interestingly, smokers in this study were found to be approximately 7 years younger than nonsmokers on average [26]. Our findings, however, showed no significant difference in the occurrence of oral lesions between smokers and nonsmokers. Fordyce granules were most commonly seen in smokers, while OMLs were more prevalent in men than in women [14].

This study focused solely on individuals who smoked cigarettes, specifically conventional cigarettes (65% of participants) and shisha cigarettes (20%). Other habits, such as alcohol consumption or chewing tobacco, were not included in the assessment. A different study indicated that the prevalence of oral mucosal lesions (OMLs) varied with different behaviors, but smoking remained the most significant risk factor. This highlights the necessity for smokers to undergo regular monitoring and thorough evaluations. Additionally, dental professionals, oral hygienists, and other healthcare providers need to receive adequate training on managing smokers' oral health [24].

In our study, participants who brushed their teeth once daily showed poorer health outcomes compared to those who brushed twice daily. This pattern was consistent in both groups. The data analysis suggested that smokers had a significantly higher incidence of OMLs. The findings of this study align with similar research on the subject. Dentists must recognize the adverse effects of smoking on the development of oral pathological conditions and actively encourage smokers to quit. Smoking not only contributes to oral premalignant and malignant lesions but also increases the presence of abnormal nuclei in the oral epithelium [24].

In previous studies, it was reported that 25.2% of participants had one or more white lesions. The most prevalent types of these lesions were leukoedema (5.1%), frictional keratosis (3.9%), and khat-induced white lesions (8.8%). Additionally, 2.4% of patients had lichen planus, 1.2% had leukoplakia, and 1.7% had lesions linked to smokeless tobacco use. The study identified significant associations between the presence of white lesions and factors such as older age (P = 0.004), male gender (P = 0.009), and the habits of chewing khat or tobacco (P = 0.001) [27, 28]. However, our research didn't observe any statistical links for similar factors.

A limitation of our research was the failure to document oral behaviors beyond smoking and brushing, such as the use of chewing tobacco or betel nut. Furthermore, including participants from diverse demographic areas could potentially yield more comprehensive results.

Conclusion

The overall prevalence of oral mucosal lesions in the studied sample was relatively low, with abscesses and linea alba being the most frequently observed lesions. Additionally, no significant statistical relationships were identified between gender, smoking habits, medical conditions, or nationality.

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Conflict of Interest: None

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Ethics Statement: This research complies with the ethical guidelines set by the REU ethical committee.

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