

Dental Students and General Practitioners' Knowledge about Oral Mucosal Variations: A Survey-Based Analysis

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ABSTRACT

Background: Dentists have the capability to improve our population's oral and general health by early detection, appropriate management, and referral of oral mucosal variations because many systemic disorders have oral symptoms, many of which appear before their systemic counterparts. This paper is dedicated to assess the knowledge of Iraqi general practitioners and senior dental students about common oral mucosal variations. This cross-sectional study included (71) general dentists graduated from Iraqi dental schools and (279) senior dental students. A questionnaire form was created with slides showing various oral conditions with questions on each slide to gauge the respondent's awareness of the diagnosis. For data analyzing Microsoft Excel and Statistical Package for Social Sciences (SPSS) version 26 were used. Results showed that the number of correct diagnoses of pathological and non-pathological oral conditions ranged from (18.3%-98.6%) and (15.5%-98.5%) for dental students and general dentists, respectively, and the most frequently diagnosed lesion was oral squamous cell carcinoma (97.7%) while lingual thyroid was the most frequently incorrectly diagnosed (18%). In conclusions more training for Iraqi general practitioners and senior dental students is needed to provide better oral health care.

Keywords: Oral mucosa; Pathological; Nonpathological; Biopsy; Diagnosis; Management.

Article Information

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INTRODUCTION

Anomalies or changes to the tissues lining the oral cavity are referred to as "oral mucosal lesions". Numerous factors, including infection, inflammation, trauma, or neoplastic processes, can cause these lesions ⁽¹⁾. Oral symptoms are seen in many systemic illnesses, and many of them manifest prior to their systemic counterparts. Routine oral examinations are vital and practical means to diagnose and treat a variety of oral and non-oral problems early on so dental professionals play a critical role in the early detection and management of oral lesions

because they operate as the first point of contact with patients in order to prevent systemic progression and delayed management. Consequently, to recognize oral disorders, dentists need to possess a wide range of working knowledge ⁽²⁾. Rather from being pathogenic changes, pseudolesions are typical anatomical structures or paraphysiologic changes of the oral mucosa that may be mistakenly designated as such during a routine oral examination ⁽³⁾. Both the patient and the practitioner may be duped by pseudolesions, leading to anxiety and a fear of malignancy.

Treating these problems with surgery or medicine is not only ineffective, but it might lead to overtreatment ⁽⁴⁾. The majority of dentists find it challenging to diagnose oral mucosal lesions. Few studies evaluated thorough and comprehensive knowledge and awareness of oral mucosal lesions, despite the fact that several assessed knowledge and attitudes around oral cancer ⁽⁵⁾. A study for the analysis of dentists' knowledge regarding oral mucosal lesions was done in Turkey, and the results showed that 85% of dentists had trouble diagnosing oral mucosal lesions, 62% had not updated their knowledge from literature, and 93% had neither performed biopsies nor consulted other practitioners ⁽⁶⁾. The purpose of this study is to assess the general practitioners' and senior dentistry students' knowledge and awareness of common oral mucosal lesions in order to enhance patient diagnosis and treatment procedures.

Nomenclature & Symbols

SPSS	Statistic al Package for Social Sciences	OMLs	oral mucosal lesions
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MATERIALS AND METHODS

The present study was conducted in the Department of Oral Diagnostic Sciences at the College of Dentistry, University of Baghdad in the period between November 2023 and April 2024. The questionnaire form (created by using Google form) was designed including 25 slides, the first one required the respondents to specify their status (whether they are undergraduate senior dental students or graduate general dentists). Meanwhile the, remaining 24 slides had oral conditions, anatomical variation and lesions which included (denture stomatitis, fissured tongue, ranula, gingival overgrowth,

fordyce granules, mucocele, white sponge nevus, oral squamous cell carcinoma, pyogenic granuloma, periapical granuloma, black hairy tongue, tongue thrush, lingual thyroid, geographic tongue, lichen planus, lingual varicosities, papilloma, linea alba, herpes simplex lesion, verruca vulgaris, oral melanotic macule, frictional hyperkeratosis, circumvallate papillae and nicotine stomatitis), with questions on each slide to assess the awareness of the respondents about the diagnosis, and to focus on whether these cases may or may not require surgical biopsies in order to reach the final diagnosis.

The questionnaire was sent to (400) individuals, (350) of them answered the questions and they were divided into two groups:

- Group I: senior dental students from the dental schools which included (279) individuals.
- Group II: general dentists graduated from several Iraqi dental schools which included (71) individuals.

Students and general practitioners who are not graduates of Iraqi universities and students who were not seniors (in Fifth stage) were excluded. The questionnaires were distributed electronically to the students of the government and private dental schools in Baghdad and the general dentists working in the Ministry of Health, dental schools and private practices.

The form can only be submitted after answering every question about the slides on the website.

Data analysis

After collecting the samples, Mann-Whitney U test was used to compare the difference between the number of participants from group I and group II. Meanwhile, the t test was used to compare the number of correct diagnoses between these two groups. Data were analyzed using Microsoft Excel and Statistical Package for Social Sciences (SPSS) version 26 to explore the results of this cross-sectional study. P-value less than 0.05 considered significant.

RESULTS

Distribution of the respondents

The total number of respondents to the questionnaire was 350 individuals, with 279 (79.7%) of the respondents from Group I, and 71 (20.3%) of the respondents from the Group II. The numerical and percentage distribution of the respondent is shown in Fig.1.

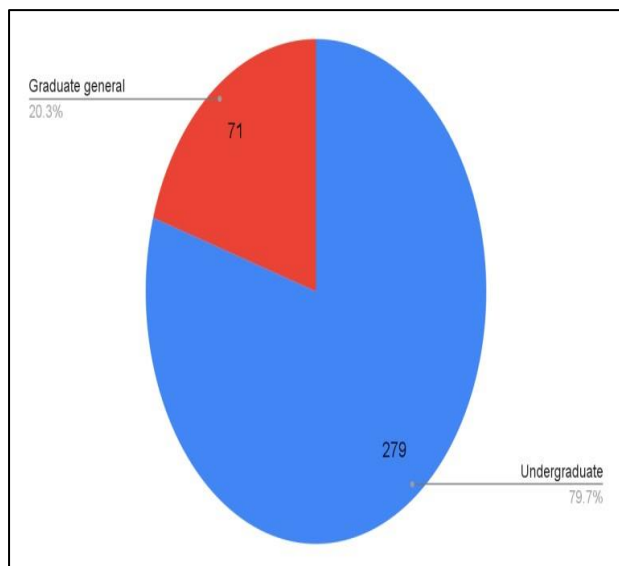


Figure 1. The numerical and percentage distribution of the respondent.

Distribution of correct answers between graduates and students

There was a statistically significant correlation in the number of the student and dentist groups using Mann-Whitney U test $p < 0.05$.

The percentage of senior dental students and graduate general dentist respondents who answered the questionnaire correctly was 63.85% and 64.73% respectively. The distribution is shown in Fig.2.

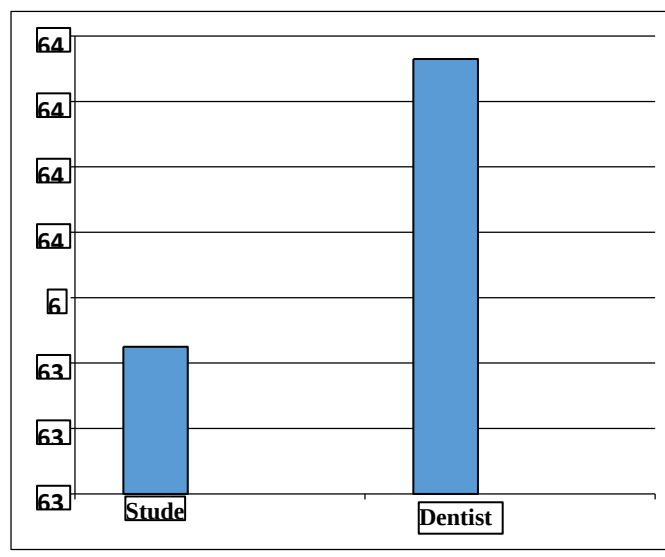


Figure 2. The percentage distribution of the student and dentist answers using Mann-Whitney U test.

Distribution of correct answers between Graduates and Undergraduates according to each mucosal lesion

The questionnaire form contains 24 slides, very brief history and clinical information for each mucosal lesion. The percentage of the correct answers of the dental students and general dentists is shown in tab1.

The number of correct diagnoses distinguishing developmental or nonpathological oral conditions from pathological oral lesions requiring biopsy and/or treatment ranged from 18.3% to 98.6% and 15.5% to 98.5% concerning dental students and general dentists respectively. To compare between the two groups there was no significant difference using t test $p < 0.05$.

The most correctly diagnosed lesions were oral squamous cell carcinoma (97.7%), papilloma (94.9%), ranula (94.6%), and pyogenic granuloma (91.4%) All of these lesions were pathological and this was identified correctly by most of the respondents. The second most correctly answered was verruca vulgaris as (84%).

While lingual thyroid and frictional hyperkeratosis were the most incorrectly answered, (18%) and (18.6%) respectively,

Table 1. The percentage distribution of the correct answers of the dental students and general dentists

Case no.	Case	Senior Dental Student Correct answer %	General Dentist Correct answer %	Mean
1	Denture Stomatitis	47.7	47.9	47.7
2	Fissured Tongue	68.8	83.1	71.7
3	Ranula	95.0	93.0	94.6
4	Gingival Overgrowth	64.2	42.3	59.7
5	Fordyce Granules	55.6	59.2	56.3
6	Mucocoele	70.3	59.2	68
7	White Sponge Nevus	37.3	53.5	39.1
8	Oral Squamous Cell Carcinoma	98.6	94.4	97.7
9	Pyogenic Granuloma	92.1	88.7	91.4
10	Periapical Granuloma	65.9	73.2	67.4
11	Black Hairy Tongue	54.5	69.0	57.4
12	Tongue Thrush (Candidiasis)	77.1	69.0	75.4
13	Lingual Thyroid	18.6	15.5	18.0
14	Geographic Tongue	57.3	69.0	59.7
15	Lichen Planus	64.2	67.6	64.9
16	Lingual Varicosities	42.7	56.3	45.4
17	Papilloma	93.9	98.5	94.9
18	Linea Alba	70.3	76.1	71.4
19	Herpes Simplex Lesion	63.8	62.0	63.4
20	Verruca Vulgaris	83.9	84.5	84.0
21	Oral Melanotic Macule	50.9	66.2	54.0
22	Frictional Hyperkeratosis	18.3	19.7	18.6
23	Circumvallate Papillae	48.4	53.5	49.4
24	Nicotine Stomatitis (Smoker's Palate)	69.9	62.0	68.3

they were considered pathological by most respondents. The second most incorrectly answered were the white sponge naevus, lingual varicosities, denture stomatitis and circumvallate papillae, (39.1%), (45.4%), (47.7%) and (49.4%) respectively.

The white sponge naevus, varicosities and circumvallate papillae were considered pathological by most while denture stomatitis was considered non pathological.

In oral melanotic macule, Fordyce granules, black hairy tongue, geographic tongue and drug induced gingival overgrowth, the responders were divided almost in half between those who considered them to be pathological and those who did non-pathological, with a slight tendency towards the correct answer (54%), (56.3), (57.4%), (59.7%), and (59.7%) respectively.

DISCUSSION

In this study the number of the two groups that participated and responded to the questionnaire was significantly different with the senior dental students being more than general dentists due the presence of electronic academic groups that made it easier to distribute the questionnaire form and allowed them to receive the questions and submit their answers quickly. On the other hand, the questionnaire form was sent to graduating general dentists in small groups and by direct personal communication. The slight difference in questionnaire findings between the two groups may be attributed to the fact that most of the dentists participating in this study were recent graduates.

The most correctly answered questions were about oral squamous cell carcinoma, papilloma, ranula and pyogenic granuloma, all of which were pathological, which was expected because the clinical picture of all of these lesions

looked alarmingly different than the normal state.

The squamous cell carcinoma which is responsible for around 90% of oral malignancies and affects swallowing, appearance, pronunciation, and taste perception⁽⁷⁾, is the most correctly answered, because it usually has a very aggressive manifestation and this has been clearly demonstrated in the picture shown to the respondents.

The most incorrectly answered questions were about lingual thyroid and frictional hyperkeratosis. Frictional hyperkeratosis is a benign occurrence with no malignant potential, simply, a reactive hyperkeratosis caused by trauma or friction⁽⁸⁾.

Meanwhile, the lingual thyroid is even trickier, more debatable and confusing, although it may cause dyspnea, dysphagia, or bleeding and may even contribute to hyperthyroidism; it is in fact not a pathology in itself⁽⁹⁾. On the other hand, their identification and proper management is essential since they may be the only functioning thyroid tissue occurring in the body⁽¹⁰⁾.

The second most incorrectly answered were the white sponge naevus, lingual varicosities, circumvallate papillae and denture stomatitis. White sponge naevus is a developmental condition but clinically, it can be confused with many other pathological and more serious lesions for example leukoplakia and lichen planus, this may explain the result. While the lingual varicosities is also developmental it can sometimes appear prominent, bright and alarming and some of the respondents may have confused it with a hematoma or other vascular anomaly⁽¹¹⁾.

This also goes for the circumvallate papilla which in some individuals appear to be quite large which might in many cases alarm an untrained dentist and even cause them to excise

these papillae as a biopsy and take them for histopathological analysis, when in reality, since they often house taste buds, circumvallate papillae are among the tongue's gustatory papillae ⁽¹²⁾. Their enlargement, like the varicosities, is merely an anatomical variation ⁽¹³⁾.

By many, denture stomatitis which is a multifactorial pathological condition characterized by erythema on the oral mucosa that comes into contact with the denture surface ⁽¹⁴⁾, was considered non pathological, perhaps because it looks to be as a result of pressure, or maybe it is not realized that this lesion is caused by the candida species of microorganism.

In oral melanotic macule, Fordyce granules, black hairy tongue, geographic tongue and drug induced gingival overgrowth, the responders had very conflicting opinions, they were divided almost in half between those who considered them to be pathological and those who did non-pathological, with a slight tendency towards the correct answer.

Oral melanotic macule is a hyperpigmented, benign lesion and is most frequently found on the palate, buccal mucosa, and vermillion border of the lips. An oral melanotic macule is a single, uniformly colored, dark brown to black lesion that typically has a diameter of less than 7 mm and clearly defined borders ⁽¹⁵⁾. The reason for the divergent views regarding oral melanotic macules is that they can be mistaken for more aggressive and severe pigmented lesions, such as melanoma, which necessitates a biopsy. However, once diagnosed, there is no need for additional treatment because these macules are benign and pose no threat. A slight majority considered them to be non-pathologic because it was mentioned in the patient history that "the lesion has been present for a long duration with no change in size or color" ⁽¹⁶⁾.

Geographic tongue is a benign condition but it can also be confused with a similarly

looking, more serious pathological lesion that may have the same presentation, that is for example the reticular form of oral lichen planus.

On the other hand, Fordyce granules that represent ectopic sebaceous glands also referred to as Fordyce spots located in the oral and maxillofacial region ⁽¹⁷⁾ and black hairy tongue, that can be distinguished by the elongated, filiform papillae on the tongue's dorsum, which give it a hairy look ⁽¹⁸⁾, both have a very characteristic appearance and there is not an easily applicable explanation as to why they were considered pathological other than low awareness about these conditions.

Most dentists experienced difficulties when trying to diagnose (OMLs). A study by Poelman MR, et al found that dentists in the Netherlands do not have sufficient knowledge to accurately diagnose some oral mucosal lesions and to select a correct management. The result shown the number of correct diagnoses ranged from 14% to 93%, whilst the number of correct management decisions ranged from 43% to 86%. For benign OMLs, the number of correct diagnoses and management decisions ranged from 32 to 100% and 9% to 48%, respectively ⁽¹⁹⁾. This result has been relatively in consistent with our study.

Lack of awareness of the diagnosis of OMLs leads to inadequate watchfulness regarding early signs and symptoms of precancerous lesions. Despite the ease of visual oral inspection, a thorough knowledge and confidence is crucial to understand the feasibility and effectiveness of screening programs of serious oral lesions such as oral squamous cell carcinoma ⁽²⁰⁾.

CONCLUSIONS

Reasonable percentage of the two groups, the senior dental student and general dentist were considered able to diagnose oral conditions/lesions and had the knowledge

regarding the diagnostic steps including biopsy requirement and treatment. However, more efficient pre- and post-graduation training is necessary to increase the efficiency of the dental professionals in the diagnosis of the common oral mucosal lesions, and subsequently, in their correct management.

Ethical approval

The present study Which is conducted by authors (Rania Jamal Noori, Fatimah Jalil Ismail, Shahad Yousif Rashid and Mina Ayad Taha) was approved by the local Department of Oral Diagnostic Sciences committee.

Statement of Permission and Conflict of Interests

The others declare that there aren't any financial interests, direct or indirect connections, or other circumstances that could raise concerns about bias in the reported work or the stated conclusions, implications, or opinions. This includes any relevant commercial or other funding sources for the individual author(s) or the associated department(s) or organization(s), as well as personal relationships or direct academic competition.

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