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Knowledge and awareness about early detection of oral cancer among dental society in Iraq, Baghdad: a cross-sectional study

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ABSTRACT

Background: Oral cancer remains a significant public health concern, with early detection playing a crucial role in improving prognosis and survival rates. Dental professionals are often the first to identify suspicious oral lesions, making their knowledge and awareness critical for timely diagnosis. *Aim*: This study aimed to assess the attitudes and knowledge of Baghdad's dental community regarding the early detection of oral cancer. *Methodology*: A cross-sectional survey was conducted among 193 dentists in Baghdad using a self-reported questionnaire. The survey collected data on participants' demographics, awareness of oral cancer risk factors and clinical signs, and familiarity with diagnostic methods. *Results*: Most respondents had less than 15 years of professional experience, and only 20.2% held postgraduate qualifications. Regarding risk factor awareness, 41.45% identified tobacco use, 35.75% identified a history of oral cancer, and 8.80% recognized HPV as a risk factor. The most commonly recognized clinical sign was a persistent ulcer (37.3%), followed by white lesions (26.94%). Less frequently noted signs included enlarged lymph nodes (13.98%) and dysphagia (5.18%). In terms of diagnostic preferences, 54.40% favored scalpel biopsy, followed by brush biopsy (22.27%) and exfoliative cytology (14.50%). Less common techniques included Toluidine blue (5.69%), Lugol's iodine stain (2.07%), and fluorescent imaging (1.03%). *Conclusion*: While Baghdad's dentists demonstrate a basic understanding of oral cancer risk factors and signs, significant gaps exist in their knowledge of advanced diagnostic and screening methods. These findings highlight the need for targeted educational interventions to improve early detection practices.

KEYWORDS

oral cancer, early detection of oral cancer, dental knowledge, lugol's iodin, oral cancer survival

1. INTRODUCTION

Oral cancer is one of the most common cancers worldwide, with high mortality rates. According to the International Agency for Research on Cancer, there were an estimated 377,000 new cases of lip and oral cavity cancers in 2020, with nearly 177,000 deaths worldwide [1].

Tobacco use, in any form, and excessive alcohol use are the major risk factors for oral cancer. A factor most prominent in South and Southeast Asia is the chewing of betel quid which generally is

comprised of areca nut, slaked lime, betel leaf and may contain tobacco [2].

Male are more in having oral cancer in a ratio about 1.2:1 and the most common sites for OSCC were the tongue, followed by the lips. Gingiva was the least frequent site affected by OSCC [3,4].

Clinically, OSCC usually manifests as ulcers, exophytic tumors, or patches of leukoplakia or erythroplakia [5].

To attain the WHO objective of controlling the burden of OC worldwide, an increase in the awareness of regular oral mucosal screening must be achieved among the public and the general dental practitioner (GDP). Diagnosis by a conventional oral examination with digital palpation can be subjective and although scalpel biopsy and histopathological examination are the gold standards, adjunctive techniques can be supplementary tools for routine screening which can assist the GDPs to accelerate referrals and reduce unnecessary biopsies [6].

Dental and medical school curricula should be enhanced and focus on raising oral cancer awareness among students, and training on oral cancer prevention and early detection should be provided [7,8].

In addition, they should be encouraged to educate patients about potential risk factors for oral cancer, regarding its steadily increasing prevalence worldwide [9,10].

This study aimed to assess the attitudes and knowledge of Baghdad's dental community regarding the early detection of oral cancer.

2. METHODOLOGY

2.1. Study design and participants

In this cross sectional study a questionnaire was given for the survey of early detection of oral cancer to dental students, general dental practitioners (GDPs), and dental specialists in Baghdad to assess their knowledge, attitudes, and practices regarding the early detection of oral cancer. A total of 193 participants were recruited using convenience sampling from both public and private dental settings, as well as academic institutions.

2.2. Questionnaire design

Data were collected using a structured, paper-based questionnaire specifically designed to evaluate the participants' awareness of oral cancer risk factors, clinical presentations, diagnostic approaches, and related professional practices. The questionnaire consisted of 12 close-ended items grouped into the following sections:

- Demographics: This section collected information on gender, age, time since graduation (categorized as student, <15 years, or >15 years), specialty (student, general practitioner, or specialist), highest qualification (student, BDS, MSc, or PhD), and nature of clinical practice (private, public, both, or none).
- Knowledge of risk factors and sites: Participants were asked to identify common risk factors for oral cancer (e.g., tobacco, previous history of oral cancer, alcohol, HPV, sun exposure, advanced age, and poor diet) and to select anatomical sites they monitor for potentially malignant lesions (e.g., tongue, floor of the mouth, buccal/labial mucosa, palate, or all sites).
- Recognition of clinical presentations: This section explored the participants' recognition of common clinical signs of oral cancer, including persistent ulcers, enlarged lymph nodes, white and red lesions, dysphagia, limited tongue mobility, non-healing sockets, and oral lumps.
- Awareness of diagnostic techniques: Participants were asked to select the most commonly used diagnostic techniques for detecting oral cancer, such as scalpel biopsy, brush biopsy, Toluidine blue stain, Lugol's iodine stain, fluorescent imaging, and exfoliative cytology.
- Knowledge of associated conditions: This section assessed familiarity with potentially malignant disorders commonly linked to early oral cancer, including leukoplakia, erythroplakia, chronic hyperplastic candidiasis, lichenoid lesions, and others.
- Professional attitudes and training: Participants were asked about their confidence in diagnosing oral cancer based on clinical appearance, comfort in performing biopsies, attendance at continuing education courses on oral cancer within the past five years, and whether they felt they needed further training in oral cancer detection.

2.3. Pilot testing and validation

The questionnaire was reviewed by a panel of oral medicine and oral pathology experts to ensure face validity and content relevance. Minor modifications were made to improve clarity and consistency of the questions. A pilot test was conducted with a small sample of 10 dentists who were not included in the final analysis. Feedback from the pilot test was used to refine the questionnaire prior to distribution.

2.4. Data collection procedure

Participants were approached in their workplaces or academic institutions and were provided with the study objectives. Informed consent was obtained before distributing the paper-based questionnaire. Participation was voluntary, and anonymity was maintained throughout the process.

Table 1. Distribution of responses on oral cancer risk factors, signs, and diagnostic methods.

Which sites would you pay attention to when looking for potentially malignant lesions?		
Site	**Responses**	
	n	**(%)**
All sites	90	46.63
Tongue	44	22.79
Floor of the mouth	37	19.17
Buccal / Labial mucosa	14	7.25
Palate	8	4.14
Risk factors	**Responses**	
	n	**(%)**
Tobacco	80	41.45
Previous history of oral cancer	69	35.75
HPV	17	8.80
Advanced age	8	4.14
Alcohol	10	5.18
Poor diet	8	4.14
Sun exposure	1	0.51
Knowledge about most common clinical presentations	**Responses**	
	n	**(%)**
Persistent ulcer	72	37.30
White lesion	52	26.94
Enlarged lymph node	27	13.98
Red lesion	23	11.91
Dysphagia & limited tongue mobility	10	5.18
Lump	7	3.62
Non-healing socket	2	1.03
Knowledge about most common diagnostic techniques	**Responses**	
	n	**(%)**
Scalpel biopsy	105	54.40
Brush biopsy	43	22.27
Exfoliative cytology	28	14.50
Toludine blue stain	11	5.69
Lugol's iodine stain	4	2.07
Fluorescent imaging	2	1.03
Knowledge about most common conditions associated with early oral cancer	**Responses**	
	n	**(%)**
Leukoplakia	102	52.84
Erythroplakia	26	13.47
Others	16	8.29
Chronic hyperplastic candidiasis	22	11.39
Lichenoid lesion	15	7.77
Actinic cheilitis	12	6.21

3. RESULTS

As seen in Table 1, this cross-sectional study evaluated the knowledge and practices of dentists in Baghdad regarding the early detection of oral cancer. To assess participants' knowledge about oral potentially malignant disorders and oral cancer, dentists were asked about the most common risk

factors and the anatomical sites most frequently affected by oral cancer.

a. Risk factor awareness:
- 41.45% of respondents identified tobacco use (in both smoking and smokeless forms) as a major risk factor.
- 8.80% recognized human papillomavirus (HPV) as a risk factor.
- 5.18% identified alcohol consumption, while 4.14% cited advanced age, and another 4.14% noted poor diet.
- Only 0.51% mentioned sun exposure as a contributing factor.

b. Anatomical awareness: 46.6% of the responders paid attention to the overall area of oral cavity as a potential site for malignancy.

c. Most common clinical presentations of oral cancer:
- 37.3% of dentists identified a persistent ulcer.
- 26.94% reported white lesions.
- Other symptoms recognized included enlarged lymph nodes (13.98%), red lesions (11.91%), dysphagia (5.18%), and lumps (3.62%).

d. Diagnostic methods used in early detection:
- 54.40% of respondents preferred scalpel biopsy.
- 22.27% selected brush biopsy, and 14.50% mentioned exfoliative cytology.
- Less frequently chosen techniques included Toluidine blue staining (5.69%), Lugol's iodine stain (2.07%), and fluorescent imaging (1.03%).

e. Awareness of conditions commonly associated with early oral cancer:
- Leukoplakia was the most recognized, followed by erythroplakia and chronic hyperplastic candidiasis.
- Lichenoid lesions and actinic cheilitis were much less frequently identified as conditions with malignant potential.

4. DISCUSSION

The findings from this study indicate that although dentists in Baghdad exhibit a basic understanding of oral cancer risk factors, significant knowledge gaps remain. Tobacco use was the most commonly identified risk factor (41.45%), which is consistent with prior studies [2]. However, awareness of other established risk factors such as HPV (8.80%) and alcohol (5.18%) was notably lower, while recognition of sun exposure as a risk factor was minimal (0.51%), underscoring the need for more comprehensive education on etiological factors.

Anatomical site awareness also revealed deficiencies. While nearly half of the participants acknowledged the general oral cavity as a site of concern, fewer demonstrated knowledge of high-risk subsites such as the tongue or floor of the mouth, which contrasts with literature emphasizing the importance of site-specific vigilance in early detection [10].

With respect to clinical signs, the most frequently recognized presentations of oral cancer were persistent ulcers (37.3%) and white lesions (26.94%), findings that align with previous research [4,5]. However, fewer participants identified other significant symptoms such as enlarged lymph nodes (13.98%), red lesions (11.91%), and dysphagia (5.18%), indicating an incomplete clinical picture and reinforcing the need for enhanced diagnostic training.

In terms of diagnostic practices, scalpel biopsy was the most widely recognized technique (54.40%), in line with its established role as the diagnostic gold standard [6]. Nevertheless, awareness of adjunctive methods such as Toluidine blue (5.69%), Lugol's iodine stain (2.07%), and fluorescent imaging (1.03%) was limited, suggesting a lack of familiarity with supportive tools that could aid in early detection and screening.

When assessing knowledge of potentially malignant disorders, leukoplakia and erythroplakia were commonly identified, whereas conditions such as lichenoid lesions and actinic cheilitis were underrecognized. These findings are in agreement with previous studies highlighting similar knowledge deficits [8].

Overall, the results suggest a pressing need for targeted educational interventions and continuing professional development programs focused on comprehensive oral cancer detection, particularly regarding lesser-known risk factors, diverse clinical presentations, and adjunctive diagnostic tools.

5. CONCLUSION

Based on our findings, we believe that more education of dentists would serve to address the knowledge deficiency and practice shortcomings with regard to oral cancer screening, prevention and early detection. Continuing education courses can have an optimistic influence on practitioners' ability to detect oral cancer at early stages through improving their knowledge and early detection practices.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

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