

Exploring the Level of Oral Cancer Awareness Among Healthcare Workers in Bergama District, Izmir

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Abstract

This study aimed to assess the level of oral cancer awareness among medical professionals in Turkey. This study included 90 medical doctors who were provided with a 25-item questionnaire. These questions assessed their knowledge of oral cancer risk factors, screening methods, attitudes toward oral cancer, management of oral care, and general cancer awareness of the disease. All respondents identified cigarette use and viral infections as risk factors, with 95.6% also confirming alcohol consumption as a risk factor. Regarding the lesions with the highest cancer risk, 15.6% of the participants highlighted erythroplakia and Morbus Bowen, while 47.8% pointed to leukoplakia and erythroplakia. Statistically significant differences were observed between age groups in their recognition of alcohol consumption as a risk factor ($P = 0.002$), increasing age as a risk factor ($P = 0.007$), the distribution of common oral cancer regions ($P = 0.001$), the identification of the two most cancer-prone lesions ($P = 0.021$), and the importance of alcohol use in patient medical history ($P = 0.008$). Early detection and diagnosis of oral cancer are essential for effective treatment. While this study suggests that medical doctors in the region are generally aware of oral cancer, it also highlights the need for improvements in oral cancer education in medical school curricula, as well as the importance of continued postgraduate education on the subject.

Keywords: Medical professionals, Oral cancer, Awareness

Introduction

Oral cancers rank as the ninth leading cause of cancer-related deaths globally, as reported by the World Cancer Report 2014. They represent approximately 2-10% of all cancer diagnoses in each part of the world, with squamous cell carcinoma making up about 85-90% of these cases. The primary risk factors for oral cancer include tobacco and alcohol use, with individuals who use both substances being at an even greater risk of developing the disease. Other contributing factors

include immunodeficiency, prolonged sun exposure, socioeconomic conditions, infection with human papillomavirus (HPV), and inadequate intake of vegetables and fruits [1-6].

Early detection plays a crucial role in improving the chances of successful treatment, as it makes the condition more responsive to therapy. A significant barrier to early intervention is the public's lack of awareness, which has been noted as a major reason for delays in seeking appropriate care [7, 8]. Moreover, previous studies have shown that general medical practitioners often lack sufficient knowledge of the risk factors for oral cancer, leading to delayed referrals to specialists. It is further noted that individuals at high risk for oral cancer typically do not visit dentists regularly, but they do seek medical advice from general practitioners, highlighting the critical role these professionals play in early detection [9-12].

Access this article online

Website: <https://smerpub.com/>

E-ISSN: 3108-4834

Received: 04 December 2020; Revised: 12 February 2021; Accepted: 14 February 2021

How to cite this article: Keser G, Altun D, Namdar Pekiner F. Exploring the Level of Oral Cancer Awareness Among Healthcare Workers in Bergama District, Izmir. Arch Int J Cancer Allied Sci. 2021;1:4-15. <https://doi.org/10.51847/b9MoOb7uwm>

For instance, a study conducted in Jordan used a survey to assess the understanding of oral cancer risk factors and the ability to identify common oral lesions associated with the disease. The results showed a significant knowledge gap between medical and dental graduates, with dental graduates demonstrating a much better understanding of the topic [13-15].

Similarly, a study by Tanriover *et al.* [16] in Istanbul, Turkey, assessed the knowledge of oral cancer among 200 family doctors. The findings revealed that one-third of the physicians did not ask patients about tobacco use, and a significant portion did not inquire about alcohol consumption. Despite these findings, there remains limited research on this issue. This study aims to evaluate the level of oral cancer awareness among medical professionals in the Bergama district of Izmir, Turkey.

Materials and Methods

The research protocol for this study received approval on 24/07/2020, under protocol number 09.2020.734. The study participants included ninety medical doctors from various specialties, and health centers within the Bergama district of Izmir province. These medical professionals were asked to complete a questionnaire containing 25 questions focused on risk factors, diagnostic methods, attitudes toward managing oral

cancer, oral cancer, and general knowledge about the disease.

Statistical Analysis

IBM SPSS Statistics 22.0 software (IBM SPSS, Turkey) was used to perform statistical analyses. The normality of data distribution was evaluated using the Shapiro-Wilk test. Descriptive statistics (mean, frequency, and standard deviation) were used to summarize the data. For comparisons of normally distributed data between groups, one-way ANOVA and Student's t-test were applied. For comparing qualitative data, Chi-square, Fisher's exact test, Fisher-Freeman-Halton test, and continuity correction were used. Statistical significance was set at a p-value of <0.05.

Results

The study involved 90 participants, with 64 (71.1%) males and 26 (28.9%) females, aged between 27 and 72 years, with a mean age of 47.28 ± 9.61 years. Among the respondents, 28.9% were family physicians, 14.4% were general practitioners, and 56.7% were specialists. A breakdown of their respective specialties is provided in **Table 1**.

Table 1. Distribution of age, gender, and specialty

	Result
Age, minimum-maximum (mean $\pm$ SD)	27-72 (47.28 ± 9.61)
Gender	
Male	64 (71.1%)
Woman	26 (28.9%)
Age group (years)	
27-30	24 (26.7%)
40-59-year old	55 (61.1%)
≥ 60	11 (12.2%)
Specialty	
Family doctor	26 (28.9%)
Algology	1 (1.1%)
Neurosurgery	2 (2.2%)
Biochemistry	2 (2.2%)
Pediatrics	4 (4.4%)
Internal medicine	3 (3.3%)
Skin and venereal diseases	2 (2.2%)
Physical therapy and rehabilitation	2 (2.2%)
Gastroenterology	1 (1.1%)
General surgery	2 (2.2%)
Chest diseases	3 (3.3%)

Ophthalmology	2 (2.2%)
Public health	1 (1.1%)
Infectious diseases	2 (2.2%)
Obstetrics and Gynecology	5 (5.6%)
Cardiology	4 (4.4%)
ENT	2 (2.2%)
Neurology	1 (1.1%)
Orthopedics and traumatology	4 (4.4%)
General practitioner	13 (14.4%)
Radiology	3 (3.3%)
Psychiatry	2 (2.2%)
Urology	3 (3.3%)
Specialty	
Family doctor	26 (28.9%)
General practitioner	13 (14.4%)
Specialist	51 (56.7%)

ENT: Ear, nose, and throat; SD: Standard deviation

All the physicians in the study identified viral infections and tobacco use as significant risk factors for oral cancer. Additionally, 95.6% of participants acknowledged alcohol consumption as another important risk factor, while 4.4% did not. Other factors that were widely recognized included a low intake of fruits and vegetables (91.1%), chewing tobacco products like Maras powder (93.3%), and advancing age (91.1%) (**Table 2**).

In terms of oral cancer locations, only 3.4% of the physicians believed that the cancer affects all areas equally. A majority, 31.5%, observed that it commonly occurs on the bottom of the floor of the mouth and the sublingual region, while 33.7% reported it most frequently affects the buccal, lip, gingival mucosa, and tongue. Fewer physicians (7.9%) noted it as most

common on the hard and soft palate and floor of the mouth, and 21.3% indicated that the dorsum of the tongue and buccal/lip/gingival mucosa were more frequently impacted. A minority, 2.2%, cited the sublingual region and palate as the predominant sites (**Table 2**).

Regarding primary oral cancer lesions, 90% of respondents identified these as significant risk factors, while 6.7% were unsure. Descriptions of these lesions varied: 18% characterized them as small, painful, and white, while 48.3% described them as painless, small, and white. In terms of lesions most likely to develop into cancer, 15.6% identified erythroplakia and Morbus Bowen, whereas 47.8% associated leukoplakia and erythroplakia as the most dangerous lesions (**Table 2**).

Table 2. Distribution of parameters of risk factors and diagnostic procedures

Risk factors and diagnosis procedures	N (%)
Tobacco use as a risk factor	
No	-
Yes	90 (100%)
Alcohol use as a risk factor	
No	4 (4.4%)
Yes	86 (95.6%)
Low consumption of vegetables and fruits as a risk factor	
No	7 (7.8%)
Yes	82 (91.1%)
I do not know	1 (1.1%)
Chewing tobacco such as Maras powder as a risk factor	
Yes	84 (93.3%)
I do not know	6 (6.7%)
Exposure to ultraviolet rays as a risk factor	

No	2 (2.2%)
Yes	86 (95.6%)
I do not know	2 (2.2%)
Viral infections as risk factors	
No	-
Yes	90 (100%)
high age as a risk factor	
No	6 (6.7%)
Yes	82 (91.1%)
I do not know	2 (2.2%)
The most common oral cancer sites	
Equally often in all regions	3 (3.4%)
Floor of the mouth and sublingual region	28 (31.5%)
Buccal/lip/gingival mucosa and dorsum of the tongue	30 (33.7%)
The floor of the mouth with hard and soft palate	7 (7.9%)
Dorsum of the tongue and buccal/lip/gingival mucosa	19 (21.3%)
Sublingual region and hard and soft palate	2 (2.2%)
Age range most frequently diagnosed with oral cancer (years old)	
20-40	5 (5.6%)
40-60	56 (62.2%)
60-80	29 (32.2%)
Evaluation of primary oral cancer lesion as a risk factor	
No	3 (3.3%)
Yes	81 (90%)
I do not know	6 (6.7%)
Clinical features of primary oral lesion	
Small, painful, white area	16 (18%)
Small, painless, white area	43 (48.3%)
Small, painful, red area	15 (16.9%)
Small, painless, red area	15 (16.9%)
Two lesions with the highest cancerous tendency	
Erythroplakia and Morbus Bowen	14 (15.6%)
Leukoplakia and erythroplakia	43 (47.8%)
Blue nevus and leukoplakia	22 (24.4%)
Morbus Bowen and blue nevus	11 (12.2%)
The most common form of oral cancer	
Squamous cell carcinoma	67 (74.4%)
Large-cell carcinoma	3 (3.3%)
Small-cell carcinoma	2 (2.2%)
Adenosquamous carcinoma	18 (20%)

Although 68.9% of the physicians strongly agreed with the statement, “I inform my patients about suspicious oral lesions,” only 14.4% of them strongly agreed with the

statement, “I have adequate training to conduct an oral cancer examination,” as shown in **Figure 1**.

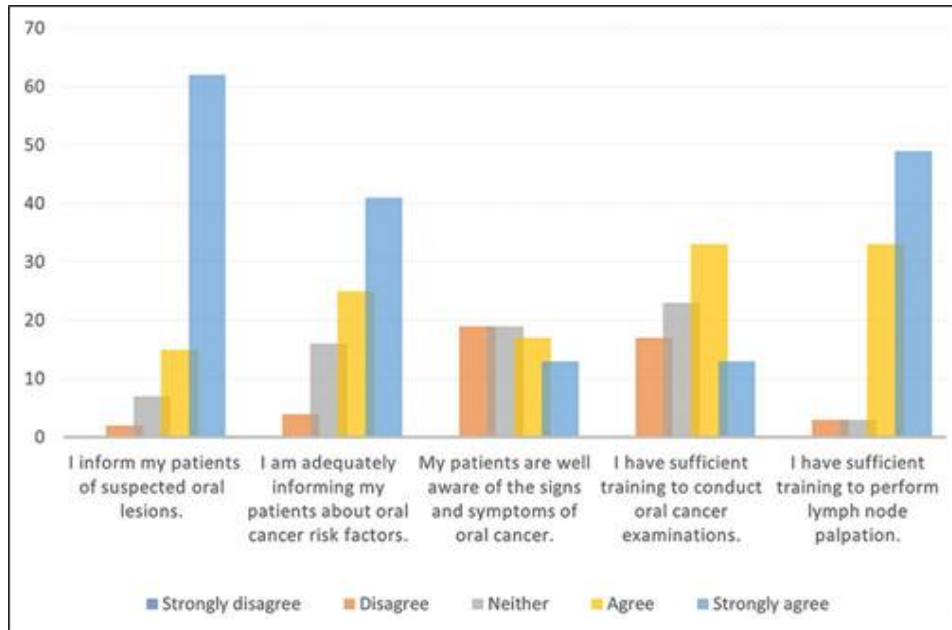


Figure 1. Distribution of attitudes toward oral cancer

No statistical difference was observed between males and females regarding the recognition of alcohol use as a risk factor ($P = 0.673$) (Table 3). However, the participation rate for the statement “I inform my patients with suspected oral lesions” was significantly higher among men (76.6%) compared to women (50%) ($P = 0.029$) (Table 4).

Table 3. Assessment of risk factors and diagnostic procedures by gender

Risk factors and diagnosis procedures	Gender		P-value
	Man (n (%))	Woman (n (%))	
Alcohol use as a risk factor			
No	3 (4.7%)	1 (3.8%)	0.667 ^a
Yes	61 (95.3%)	25 (96.2%)	
Low consumption of vegetables and fruits as a risk factor			
No	5 (7.8%)	2 (7.7%)	1.000 ^b
Yes	58 (90.6%)	24 (92.3%)	
I do not know	1 (1.6%)	0 (0%)	
Chewing tobacco such as Maras powder as a risk factor			
Yes	60 (93.8%)	24 (92.3%)	0.561 ^a
I do not know	4 (6.3%)	2 (7.7%)	
Exposure to ultraviolet rays as a risk factor			
No	2 (3.1%)	0 (0%)	0.751 ^b
Yes	61 (95.3%)	25 (96.2%)	
I do not know	1 (1.6%)	1 (3.8%)	
Viral infections as risk factors high age as a risk factor			
No	5 (7.8%)	1 (3.8%)	0.133 ^b
Yes	59 (92.2%)	23 (88.5%)	
I do not know	0 (0%)	2 (7.7%)	
The most common oral cancer sites			
Equally often in all regions	3 (4.8%)	0 (0%)	0.239 ^b
Floor of the mouth and sublingual region	18 (28.6%)	10 (38.5%)	
Buccal/lip/gingival mucosa and dorsum of the tongue	22 (34.9%)	8 (30.8%)	
The floor of the mouth with hard and soft palate	3 (4.8%)	4 (15.4%)	
Dorsum of the tongue and buccal/lip/gingival mucosa	16 (25.4%)	3 (11.5%)	

Sublingual region and hard and soft palate	1 (1.6%)	1 (3.8%)	
Age range most frequently diagnosed with oral cancer (years old)			
20-40	3 (4.7%)	2 (7.7%)	0.856 ^b
40-60	40 (62.5%)	16 (61.5%)	
60-80	21 (32.8%)	8 (30.8%)	
Evaluation of primary oral cancer lesion as a risk factor			
No	1 (1.6%)	2 (7.7%)	0.280 ^b
Yes	59 (92.2%)	22 (84.6%)	
I do not know	4 (6.3%)	2 (7.7%)	
Clinical features of primary oral lesion			
Small, painful, white area	10 (15.9%)	6 (23.1%)	0.346 ^b
Small, painless, white area	31 (49.2%)	12 (46.2%)	
Small, painful, red area	9 (14.3%)	6 (23.1%)	
Small, painless, red area	13 (20.6%)	2 (7.7%)	
Two lesions with the highest cancerous tendency			
Erythroplakia and Morbus Bowen	8 (12.5%)	6 (23.1%)	0.071 ^b
Leukoplakia and erythroplakia	35 (54.7%)	8 (30.8%)	
Blue nevus and leukoplakia	12 (18.8%)	10 (38.5%)	
Morbus Bowen and blue nevus	9 (14.1%)	2 (7.7%)	
The most common form of oral cancer			
Squamous cell carcinoma	47 (73.4%)	20 (76.9%)	0.743 ^b
Large-cell carcinoma	2 (3.1%)	1 (3.8%)	
Small-cell carcinoma	1 (1.6%)	1 (3.8%)	
Adenosquamous carcinoma	14 (21.9%)	4 (15.4%)	

^aFisher's exact test; ^bFisher-Freeman-Halton test

Table 4. Distribution of attitudes toward oral cancer by gender

Attitude toward oral cancer	Gender		P-value
	Man (n (%))	Woman (n (%))	
I inform my patients of suspected oral lesions			
Strongly disagree	2 (3.1%)	2 (7.7%)	0.029 ^{a,*}
Diasgree	0 (0%)	2 (7.7%)	
Neither	5 (7.8%)	2 (7.7%)	
Agree	8 (12.5%)	7 (26.9%)	
Strongly agree	49 (76.6%)	13 (50%)	
I am adequately informing my patients about oral cancer risk factors			
Strongly disagree	3 (4.7%)	1 (3.8%)	0.327 ^a
Diasgree	1 (1.6%)	3 (11.5%)	
Neither	12 (18.8%)	4 (15.4%)	
Agree	17 (26.6%)	8 (30.8%)	
Strongly agree	31 (48.4%)	10 (38.5%)	
My patients are well aware of the signs and symptoms of oral cancer			
Strongly disagree	18 (28.1%)	4 (15.4%)	0.117 ^b
Diasgree	11 (17.2%)	8 (30.8%)	
Neither	16 (25%)	3 (11.5%)	
Agree	9 (14.1%)	8 (30.8%)	
Strongly agree	10 (15.6%)	3 (11.5%)	
I have sufficient training to conduct oral cancer examinations			

Strongly disagree	2 (3.1%)	2 (7.7%)	0.901 ^a
Diasgree	12 (18.8%)	5 (19.2%)	
Neither	16 (25%)	7 (26.9%)	
Agree	24 (37.5%)	9 (34.6%)	
Strongly agree	10 (15.6%)	3 (11.5%)	
I have sufficient training to perform lymph node palpation			
Strongly disagree	1 (1.6%)	1 (3.8%)	0.393 ^a
Diasgree	2 (3.1%)	1 (3.8%)	
Neither	1 (1.6%)	2 (7.7%)	
Agree	23 (35.9%)	10 (38.5%)	
Strongly agree	37 (57.8%)	12 (46.2%)	

^aFisher-Freeman-Halton test; ^bChi-square test *P < 0.05

A significant difference was observed in how alcohol consumption was viewed as a factor of risk across different age groups. In pairwise comparisons, the group aged 60 years and older (72.7%) perceived the use of alcohol as a risk factor at a lower rate than the 40–59 years age group (100%). No notable differences were found between other age groups regarding the recognition of the use of alcohol as a risk factor (**Table 5**).

Furthermore, a significant variation in the distribution of common oral cancer locations across age groups was identified (P = 0.001). Paired comparisons revealed that the incidence of oral cancer in the buccal/lip/gingival

mucosa and dorsum of the tongue was significantly lower in the 60+ age group (18.2%) compared to the 40–59 years age group (38.2%). No significant differences were found between the other age groups concerning oral cancer sites (**Table 5**).

Additionally, the occurrence of lesions with high cancer risk, such as blue nevus and leukoplakia, was significantly lower in those over 60 years old (9.1%) compared to those aged 27–30 years (45.8%). No significant differences were found in the distribution rates of these lesions among the other age groups (**Table 5**).

Table 5. Evaluation of risk factors and diagnostic procedures by age groups

	Age group			P-value
	27-30 years (n (%))	40-59 years (n (%))	≥ 60 years (n (%))	
Alcohol use as a risk factor				
No	1 (4.2%)	0 (0%)	3 (27.3%)	0.002 ^{a,*}
Yes	23 (95.8%)	55 (100%)	8 (72.7%)	
Low consumption of vegetables and fruits as a risk factor				
No	3 (12.5%)	2 (3.6%)	2 (18.2%)	0.370 ^b
Yes	21 (87.5%)	52 (94.5%)	9 (81.8%)	
I do not know	0 (0%)	1 (1.8%)	0 (0%)	
Chewing tobacco such as Maras powder as a risk factor				
Yes	23 (95.8%)	52 (94.5%)	9 (81.8%)	0.295 ^a
I do not know	1 (4.2%)	3 (5.5%)	2 (18.2%)	
Exposure to ultraviolet rays as a risk factor				
No	1 (4.2%)	0 (0%)	1 (9.1%)	0.261 ^b
Yes	23 (95.8%)	53 (96.4%)	10 (90.9%)	
I do not know	0 (0%)	2 (3.6%)	0 (0%)	
Viral infections as risk factors high age as a risk factor				
No	1 (4.2%)	2 (3.6%)	3 (27.3%)	0.007 ^{b,*}
Yes	21 (87.5%)	53 (96.4%)	8 (72.7%)	
I do not know	2 (8.3%)	0 (0%)	0 (0%)	
The most common oral cancer sites				

Equally often in all regions	0 (0%)	0 (0%)	3 (27.3%)	0.001 ^{b,*}
Floor of the mouth and sublingual region	9 (39.1%)	17 (30.9%)	2 (18.2%)	
Buccal/lip/gingival mucosa and dorsum of the tongue	7 (30.4%)	21 (38.2%)	2 (18.2%)	
The floor of the mouth with hard and soft palate	3 (13%)	2 (3.6%)	2 (18.2%)	
Dorsum of the tongue and buccal/lip/gingival mucosa	4 (17.4%)	13 (23.6%)	2 (18.2%)	
Sublingual region and hard and soft palate	0 (0%)	2 (3.6%)	0 (0%)	
Age range most frequently diagnosed with oral cancer (years old)				
20-40	3 (12.5%)	2 (3.6%)	0 (0%)	0.266 ^b
40-60	12 (50%)	35 (63.6%)	9 (81.8%)	
60-80	9 (37.5%)	18 (32.7%)	2 (18.2%)	
Evaluation of primary oral cancer lesion as a risk factor				0.297 ^b
No	0 (0%)	2 (3.6%)	1 (9.1%)	
Yes	23 (95.8%)	50 (90.9%)	8 (72.7%)	
I do not know	1 (4.2%)	3 (5.5%)	2 (18.2%)	
Clinical features of primary oral lesion				0.148 ^b
Small, painful, white area	4 (17.4%)	12 (21.8%)	0 (0%)	
Small, painless, white area	13 (56.5%)	27 (49.1%)	3 (27.3%)	
Small, painful, red area	3 (13%)	8 (14.5%)	4 (36.4%)	
Small, painless, red area	3 (13%)	8 (14.5%)	4 (36.4%)	
Two lesions with the highest cancerous tendency				0.021 ^{b,*}
Erythroplakia and Morbus Bowen	2 (8.3%)	10 (18.2%)	2 (18.2%)	
Leukoplakia and erythroplakia	10 (41.7%)	29 (52.7%)	4 (36.4%)	
Blue nevus and leukoplakia	11 (45.8%)	10 (18.2%)	1 (9.1%)	
Morbus Bowen and blue nevus	1 (4.2%)	6 (10.9%)	4 (36.4%)	
The most common form of oral cancer				0.387 ^b
Squamous cell carcinoma	20 (83.3%)	41 (74.5%)	6 (54.5%)	
Large-cell carcinoma	1 (4.2%)	2 (3.6%)	0 (0%)	
Small-cell carcinoma	0 (0%)	1 (1.8%)	1 (9.1%)	
Adenosquamous carcinoma	3 (12.5%)	11 (20%)	4 (36.4%)	

^aFisher-Freeman-Halton test; ^bChi-square test *P < 0.05

The assessment of prior alcohol consumption during medical history-taking showed a significant difference across age groups ($P = 0.008$). Pairwise comparisons revealed that the group aged 60 years and above (72.7%) was significantly less likely to evaluate past alcohol use

than the 40–59 years age group (98.2%) ($P = 0.013$). No significant differences were observed between the age groups in terms of assessing past alcohol consumption during medical history taking (**Figure 2**).

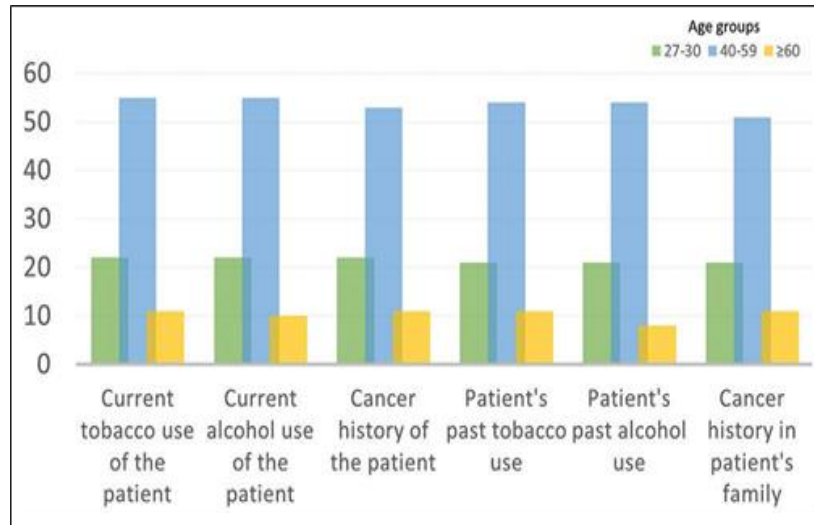


Figure 2. Information evaluated while taking medical anamnesis among age groups

No statistically significant differences were found among specialty groups regarding the distribution of common oral cancer locations, age groups frequently diagnosed with evaluation of primary oral cancer lesions as a risk factor, or clinical characteristics of primary oral lesions (**Table 6**).

However, there was a significant difference among specialties in considering advanced age as a risk factor for oral cancer ($P = 0.036$). Pairwise comparisons revealed that family physicians (100%) were significantly more likely to consider advanced age as a

risk factor compared to general practitioners (69.2%). No significant differences were found between other specialty groups in assessing advanced age as a risk factor (**Table 6**).

Additionally, significant differences were observed among specialty groups in the distribution of the 2 lesion types with the highest cancer risk ($P = 0.016$). The frequency of leukoplakia and erythroplakia lesions with high cancer susceptibility was notably higher in the +60 years age group (49%) compared to the 27-30 years age group (30.8%) (**Table 6**).

Table 6. Evaluation of risk factors and diagnostic procedures by specialty groups

Risk factors and diagnosis procedures	Specialization group			P-value
	Family doctor (n (%))	General practitioner (n (%))	Expert (n (%))	
Alcohol use as a risk factor				
No	1 (3.8%)	0 (0%)	3 (5.9%)	1.000 ^a
Yes	25 (96.2%)	13 (100%)	48 (94.1%)	
Low consumption of vegetables and fruits as a risk factor				
No	1 (3.8%)	2 (15.4%)	4 (7.8%)	0.100 ^b
Yes	25 (96.2%)	10 (76.9%)	47 (92.2%)	
I do not know	0 (0%)	1 (7.7%)	0 (0%)	
Chewing tobacco such as Maras powder as a risk factor				
Yes	24 (92.3%)	12 (92.3%)	48 (94.1%)	1.000 ^a
I do not know	2 (7.7%)	1 (7.7%)	3 (5.9%)	
Exposure to ultraviolet rays as a risk factor				
No	0 (0%)	0 (0%)	2 (3.9%)	0.412 ^b
Yes	26 (100%)	12 (92.3%)	48 (94.1%)	
I do not know	0 (0%)	1 (7.7%)	1 (2%)	

Viral infections as risk factors high age as a risk factor				
No	0 (0%)	3 (23.1%)	3 (5.9%)	0.036 ^{b,*}
Yes	26 (100%)	9 (69.2%)	47 (92.2%)	
I do not know	0 (0%)	1 (7.7%)	1 (2%)	
The most common oral cancer sites				
Equally often in all regions	2 (7.7%)	1 (7.7%)	0 (0%)	0.076 ^b
Floor of the mouth and sublingual region	7 (26.9%)	3 (23.1%)	18 (36%)	
Buccal/lip/gingival mucosa and dorsum of the tongue	9 (34.6%)	7 (53.8%)	14 (28%)	
The floor of the mouth with hard and soft palate	5 (19.2%)	0 (0%)	2 (4%)	
Dorsum of the tongue and buccal/lip/gingival mucosa	3 (11.5%)	2 (15.4%)	14 (28%)	
Sublingual region and hard and soft palate	0 (0%)	0 (0%)	2 (4%)	
Age range most frequently diagnosed with oral cancer (years old)				
20-40	1 (3.8%)	2 (15.4%)	2 (3.9%)	0.271 ^b
40-60	19 (73.1%)	8 (61.5%)	29 (56.9%)	
60-80	6 (23.1%)	3 (23.1%)	20 (39.2%)	
Evaluation of primary oral cancer lesion as a risk factor				
No	1 (3.8%)	0 (0%)	2 (3.9%)	0.097 ^b
Yes	23 (88.5%)	10 (76.9%)	48 (94.1%)	
I do not know	2 (7.7%)	3 (23.1%)	1 (2%)	
Clinical features of primary oral lesion				
Small, painful, white area	3 (11.5%)	3 (23.1%)	10 (20%)	0.707 ^b
Small, painless, white area	12 (46.2%)	6 (46.2%)	25 (50%)	
Small, painful, red area	7 (26.9%)	1 (7.7%)	7 (14%)	
Small, painless, red area	4 (15.4%)	3 (23.1%)	8 (16%)	
Two lesions with the highest cancerous tendency				
Erythroplakia and Morbus Bowen	2 (7.7%)	0 (0%)	12 (23.5%)	0.016 ^{b,*}
Leukoplakia and erythroplakia	8 (30.8%)	10 (76.9%)	25 (49%)	
Blue nevus and leukoplakia	10 (38.5%)	2 (15.4%)	10 (19.6%)	
Morbus Bowen and blue nevus	6 (23.1%)	1 (7.7%)	4 (7.8%)	
The most common form of oral cancer				
Squamous cell carcinoma	16 (61.5%)	9 (69.2%)	42 (82.4%)	0.344 ^b
Large-cell carcinoma	2 (7.7%)	1 (7.7%)	0 (0%)	
Small-cell carcinoma	1 (3.8%)	0 (0%)	1 (2%)	
Adenosquamous carcinoma	7 (26.9%)	3 (23.1%)	8 (15.7%)	

^aFisher-Freeman-Halton test; ^bChi-square test, *P < 0.05

Discussion

It is crucial for both dentists and medical professionals to have the ability to promptly find oral cancer and possess the necessary knowledge and tools for initial diagnosis,

as this plays a significant role in prognosis and treatment outcomes. Physicians must know the potential for oral cancer, and all patients must be routinely and thoroughly screened for oral mucosal lesions to improve survival rates [17].

Kazmi *et al.* [18] assessed awareness regarding oral squamous cell carcinoma (OSCC) and found that 10.5% of medical professionals believed that only tobacco and the use of alcohol were the main causes of oral cancer. Additionally, only 57.1% of them were familiar with the symptoms of oral cancer, and 31.3% believed that OSCC could not be diagnosed in its early stages.

In research by Carter and Ogden [3], 20.17% of medical doctors reported routinely examining oral mucosa, a stark contrast to the 95.49% of dentists who do so. Furthermore, only 43.3% of physicians recognized alcohol as a risk factor for oral cancer, whereas smoking was identified as a risk factor at a higher among both dentists and physicians. The study also highlighted the poor awareness of other risk factors among both groups. In this study, all participating physicians identified tobacco use and viral infections as risk factors for oral cancer, with 95.6% also acknowledging alcohol consumption as a risk factor. Additionally, 91.1% considered low fruit and vegetable intake, 93.3% pointed to chewing tobacco such as Maras powder, and 91.1% highlighted advanced age as a risk factor.

Canto *et al.* [19] found that family physicians in Maryland acknowledged the risk factors for oral cancer but had misconceptions regarding non-risk factors. Around 77% of physicians asked their patients about risk factors during medical history intake, but fewer than 24% conducted oral cancer examinations on patients over 40. About 64% expressed interest in continuing education on oral cancer. In a similar study in South Carolina, 13% of physicians had examined at least half of their patients for oral cancer within the past year. Additionally, 83% supported smoking cessation, and 53% were aware of resources for tobacco cessation. Around 37% expressed interest in tobacco cessation counseling training, and 49% were interested in oral cancer screening education [20]. Tanriover *et al.* [16] reported that 29.9% of physicians in Turkey did not inquire about tobacco use in their patients. In contrast, our study revealed that the rate of assessing past alcohol consumption among patients aged 60 and over (72.7%) was significantly lower than in the 40-59 years age group (98.2%) ($P = 0.013$).

A study conducted by Gelažius *et al.* [21] revealed that 26.3% of medical professionals accurately recognized the primary sites for oral cancer diagnosis, while 78.9% correctly identified the age group most frequently affected, and 61.4% were able to pinpoint the most common type of oral cancer lesion.

Another study by Gelažius *et al.* [22] in 2018 found that 81% of physicians felt insufficiently prepared to diagnose primary oral cancer.

A survey conducted in Massachusetts revealed that although 96% of physicians routinely asked patients about smoking and alcohol consumption, only 9% of physicians and 39% of dentists could accurately identify the two most frequent sites for oral cancer. Another study reported that 25.7% of respondents recognized the floor of the mouth as a common location for oral malignancies. In the current study, 15.6% of participants identified erythroplakia and Morbus Bowen as the lesions with the highest cancer risk, while 47.8% pointed to leukoplakia and erythroplakia [23, 24].

Conclusion

The early recognition and diagnosis of oral cancer by medical professionals is essential for ensuring timely and effective treatment. This study highlights that medical doctors exhibit a generally positive attitude toward oral cancer awareness. However, it also underscores the necessity for enhancing the teaching of oral cancer in medical school curricula, alongside the need for ongoing postgraduate education and training on this subject to further improve awareness and clinical.

Acknowledgments: None

Conflict of Interest: None

Financial Support: None

Ethics Statement: None

References

1. Abdullah Jaber M. Dental practitioner's knowledge, opinions and methods of management of oral premalignancy and malignancy. *Saudi Dent J* 2011;23:29-36.
2. Oliveira JM, Pinto LO, Lima NG, Almeida GC. Oral cancer: Assessment of academic dentistry and nursing knowledge as for the risk factors and diagnostic procedures. *Rev Bras Canc* 2013;59:211-8.
3. Carter LM, Ogden GR. Oral cancer awareness of undergraduate medical and dental students. *BMC Med Educ* 2007;7:44-52.

4. Kebabcıoğlu Ö, Pekiner FN. Assessing oral cancer awareness among dentists. *J Cancer Educ* 2018;33:1020-6.
5. Özbayrak S, Pekiner FN. *Oral Cancers: Clinical Findings and Treatment Approaches in Point of Early Diagnosis*. İstanbul: Quintessence Publication; 2016.
6. Keser G, Pekiner FN. Assessing oral cancer awareness among dental students. *J Cancer Educ* 2019;34:512-8.
7. Keser G, Yılmaz G, Pekiner FN. Assessment of knowledge level and awareness about human papillomavirus among dental students. *J Cancer Educ* 2020. doi: 10.1007/s13187-019-01683-3.
8. Gbotolorun OM, Eweka O, Lawal A, Fadeyibi O, Emeka CI. Knowledge, opinions, and practices about oral cancer among general medical practitioners in Lagos, Nigeria. *J Oral Res Rev* 2015;7:6-11.
9. Devadiga A, Prasad KV. Knowledge about oral cancer in adults attending a Dental Hospital in India. *Asian Pac J Cancer Prev* 2010;11:1609-13.
10. Gbotolorun OM, Bakare T, Olojede AC, Adeniyi A, Emeka CI, Adetayo AM, *et al.* A survey of patients with or-facial tumours in two tertiary hospitals in Lagos, Nigeria. *Niger Med Pract* 2014;66:3-6.
11. West R, Alkhatib MN, McNeill A, Bedi R. Awareness of mouth cancer in Great Britain. *Br Dent J* 2006;200:167-9.
12. McLeod NM, Saeed NR, Ali EA. Oral cancer: Delays in referral and diagnosis persist. *Br Dent J* 2005;198:681-4.
13. Hollows P, McAndrew PG, Perini MG. Delays in the referral and treatment of oral squamous cell carcinoma. *Br Dent J* 2000;188:262-5.
14. Patton LL, Elter JR, Southerland JH, Strauss RP. Knowledge of oral cancer risk factors and diagnostic concepts among North Carolina dentists. Implications for diagnosis and referral. *J Am Dent Assoc* 2005;136:602-10.
15. Alami AY, El Sabbagh RF, Hamdan A. Knowledge of oral cancer among recently graduated medical and dental professionals in Amman, Jordan. *J Dent Educ* 2013;77:1356-64.
16. Tanrıover O, Hidiroğlu S, Save D, Akan H, Ay P, Karavus M, *et al.* Knowledge of oral cancer, preventive attitudes, and behaviors of primary care physicians in Turkey. *Eur J Cancer Prev* 2014;23:464-8.
17. Kademani D. Oral cancer. *Mayo Clin Proc* 2007;82:878-87.
18. Kazmi F, Alkait S, Alghamdi H, Alhussain G, Tabassum A. Assessing knowledge, attitude and practices for oral squamous cell carcinoma among health care professionals in princess Nourah University, Riyadh, KSA. *Asian Pac J Cancer Prev* 2020;21:539-45.
19. Canto MT, Horowitz AM, Drury TF, Goodman HS. Maryland family physicians' knowledge, opinions and practices about oral cancer. *Oral Oncol* 2002;38:416-24.
20. Reed SG, Cartmell KB, Duffy NG, Wahlquist AE, Sinha D, Hollinger A, *et al.* Oral cancer preventive practices of South Carolina dentists and physicians. *J Cancer Educ* 2010;25:166-73.
21. Gelažius R, Gervickas A, Petronis Ž, Vaičiūnaitė E. Epidemiology of primary oral cancer diagnostics among dentists and physicians in Lithuania. *Stomatologija* 2019;21:83-91.
22. Gelažius R, Gervickas A, Kubilius R. Epidemiology of primary oral cancer diagnostics in Kaunas. *Stomatologija* 2018;20:49-53.
23. Applebaum E, Ruhlen TN, Kronenberg FR, Hayes C, Peters ES. Oral cancer knowledge, attitudes and practices: A survey of dentists and primary care physicians in Massachusetts. *J Am Dent Assoc* 2009;140:461-7.
24. Borhan-Mojabi K, Moradi A, Yazdabadi A. Evaluating the degree of knowledge on oral cancer among general practitioners and dentists in Qazvin. *J Eval Clin Pract* 2012;18:498-501.