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KNOWLEDGE LEVELS OF ORAL CANCER AND PRECANCEROUS CONDITIONS IN THE DENTAL COMMUNITY

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Abstract

Background: Oral cancer (OC) and precancerous lesions significantly influence overall health and quality of life. Early detection is crucial for reducing morbidity and mortality, yet delays in diagnosis contribute to poorer outcomes. A study in Saudi Arabia indicated gaps in dental students' awareness of risk factors associated with OC, highlighting the need for a broader investigation within the dental community. **Objective:** The purpose of this study was to evaluate dental students, interns and general dentists' knowledge and awareness of oral cancer and the precancerous lesions it refers to, and associated risk factors, in Saudi Arabia. **Methods:** This observational cross-sectional study was carried out in KSA, from July to December 2024. Dental students, interns and practitioners were included as participants. A structured 28 question questionnaire was then distributed encompassing demographics, knowledge of risk factors and knowledge of oral precancerous lesions and cancer. The results were robust with a targeted minimum of 700 participants. **Results:** A total of 256 participants completed the survey, consisting of 86.7% female and 23.7 years with a mean age. However, findings found that 89.1% identified tobacco as a high risk for OC, but only 42.2% linked poor fruit and vegetable intake. 71.1% recognized ultraviolet exposure as a risk factor. 68.8% had a low overall knowledge of oral cancer risk factors, 52.3% identified leukoplakia (a very common precancerous lesion), and alarmingly, only 31.2% correctly identified the sites at risk of cancer. Despite a high call for mandating oral cancer screenings (87.5%), only 21.1% felt prepared to perform them. **Conclusion:** There are still large knowledge level gaps concerning OC and precancerous conditions among Saudi Arabia's dental professionals, particularly regarding the lack of signs and symptoms of OC and the role of lifestyle factors in prevention. There are gaps in knowledge even with a strong desire for more education and training in this area. Targeted educational interventions within the dental community are needed to improve early detection and promote healthier public health outcomes.

Keywords: Dental students, Knowledge, Oral precancerous, Cancerous lesions

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Introduction:
Oral health reflects overall health. Conditions like oral cancer and precancerous lesions can greatly impact general health and quality of life if not detected and treated [1]. Not the cancer's aggressiveness, but the delay in detection accounts for the increased morbidity and death rates in (OC) [2]. Oral cancerous diseases with potential for malignancy (OPMD) have a variety of etiologic causes that might be environmental or genetic in nature [3]. Oral cancer is the sixteenth most prevalent cancer globally and the fifteenth largest cause of death worldwide [4]. Around 400,000 fresh cases of lip and oral cavity cancer were reported globally in 2020 [5]. The most common presentation of OC, a silent, invasive disease, is an intra-oral red lesion without any noticeable signs or a persistent, painless ulcer on the side of the tongue [6]. A study has been conducted in government and private colleges in Saudi Arabia. showed that about 156 (87%) dental students out of 189 are considered that tobacco is a risk factor of oral cancer. Also, 100(53%) dental students out of 189 are considered that the limited consumption of fruit and vegetables as risk factor, A considerable rate of students was not aware that, and other factors are also potential risk factors [7]. In 2022, An institutional study by P.Ghimire, A.Khapung ,S.Ghimirehas been done, the results revealed that Only 24.1% dental students were found confident on their knowledge and skill required to diagnose, treat, and prevent the oral cancer [8]. Additionally, a cross-sectional survey conducted in er, Department of Oral Maxillofacial Surgery and Diagnostic Sciences, Riyadh Elm University, Riyadh, in Saudi Arabia, showed that 64% of participants were aware of the most common form of oral precancerous lesion, 87% of the participants could differentiate that leukoplakia was a white lesion [9]. Hitherto, a restricted number of studies have evaluated the knowledge and awareness of oral cancer and precancerous lesions in Saudi Arabia. The existing literature has revealed certain deficiencies, such as small sample sizes and discrepancies in findings.

Objective:
The purpose of conducting this study was to assess knowledge and awareness of oral cancer, precancerous lesions and associated risk factors among dental students, interns and general dentists in kingdom of Saudi Arabia.

Methodology:
Study design and Setting:
This is an observational cross-sectional study to be conducted between July 2024 and December 2024 in Saudi Arabia. The study's population consisted to acquire individuals from dental communities such as all the dental students, interns, dentists in Saudi Arabia.

Inclusion and Exclusion criteria:
The inclusion criteria for this study were as follows: undergraduate dental students, interns, postgraduate dental students and general dental practitioners from different cities of Saudi Arabia.

Method for data collection, instrument and score system:
A structured questionnaire in English was used as a study tool. This tool was developed after consulting relevant studies conducted in Saudi Arabia and elsewhere. The final version of the questionnaire consisted of 28 questions classified into 4 main sections. Section one contained socioeconomic background characteristic questions. It included questions related to age, gender, level of education, and living area in Saudi Arabia. The second section includes questions to assess the level of knowledge

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about risk factors of oral cancer. The third and fourth sections ask specific questions to assess the level of background knowledge about oral precancerous lesions and oral cancer, respectively.

Scoring system:
Part 1: This section consists of 8 questions to assess the participants' understanding of the risk factors for oral cancer. One point awarded for the right answer, and zero for the incorrect answer. The original Bloom's cut-off points, 80-100%, 60-79%, and 0-59%, are used to divide the results into 3 levels: 1- High level: 8-7 point; 2- Moderate level: 6 points; 3-Low level: 5-0 point.

Part 2: There are 8 questions in this section regarding level of knowledge of premalignant lesions. The questions are multiple choices and yes or no. Correct answer given (1point), the wrong answer given (0 point) The original Bloom's cut-off points, 80-100%, 60-79%, and 0-59%, are used to divide the results into 3 levels: 1- High level: 8-7 point; 2- Moderate level: 6 points; 3-Low level: 5-0 point.

Part 3: This section consists of 8 questions to assess the participants' level of knowledge of oral cancer. The questions vary between multiple choices, yes and no questions and Likert scale. Correct answer given (1point), the wrong answer given (0 point) The original Bloom's cut-off points, 80-100%, 60-79%, and 0-59%, are used to divide the results into 3 levels: 1- High level: 8-7 point; 2- Moderate level: 6 points; 3-Low level: 5-0 point.

Pilot test:
Twenty people each received a questionnaire and were asked to complete it. This was done to assess the study's viability and the questionnaire's ease of use. The pilot study's data were not included in the study's final data set.

Analyzes and entry method:
The computer was used to enter data using the "Microsoft Office Excel Software" (2016) Windows software. After that, data was moved to be statistically analysed using the Statistical Package of Social Science Software (SPSS) program, version 20 (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.).

Results:

Table (1) displays various demographic parameters of the participants with a total number of (256). Most participants have means (mean age 23.7 years, standard deviation 3.6) that fall within younger age brackets (23 to 25 years), constituting 44.5% of the sample. It also indicates a gender skew when we consider the 86.7% female participation, that is likely skewed in the sampled population. The participants' educational background is diverse, with dental students making up the largest group at 61.7%, before the group of interns and practicing dentists, which defines the study since they are engaged with dental education and practice. The participants are largely regionally derived, and together the southern and western regions make up over 70% of the sample.

Table (1): Sociodemographic characteristics of participants (n=256)

Parameter		**No.**	**Percent (%)**
Age	22 or less	88	34.4

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(Mean: 23.7, STD:3.6)	23 to 25	114	44.5
	More than 25	54	21.1
Gender	Female	222	86.7
	Male	34	13.3
Level of education	Dental students	158	61.7
	Dentists	34	13.3
	Interns	64	25.0
Region	Northern region	18	7.0
	Southern region	106	41.4
	Central region	12	4.7
	Eastern region	38	14.8
	Western region	82	32.0

As shown in figure 1, Findings from data collected on perceptions of tobacco as a risk factor for oral cancer from a total sample size of 256 respondents are significant. A substantial majority, 88.9% (228 individuals) unequivocally agree to consider tobacco as a risk factor for oral cancer, which indicates that the population surveyed knows all about the dangers of it. On the contrary, a minority of 3.9% (10 respondents) rejected the notion, perhaps due to an ignorance or resolve to ignore the humblings of tobacco. Additionally, 18 respondents (7.0 percent) are undecided, indicating a lack of understanding regarding the implications of tobacco consumption regarding oral health and need for further education and outreach to clarify.

Figure (1): Illustrates if tobacco is considered a risk factor for oral cancer among participants.

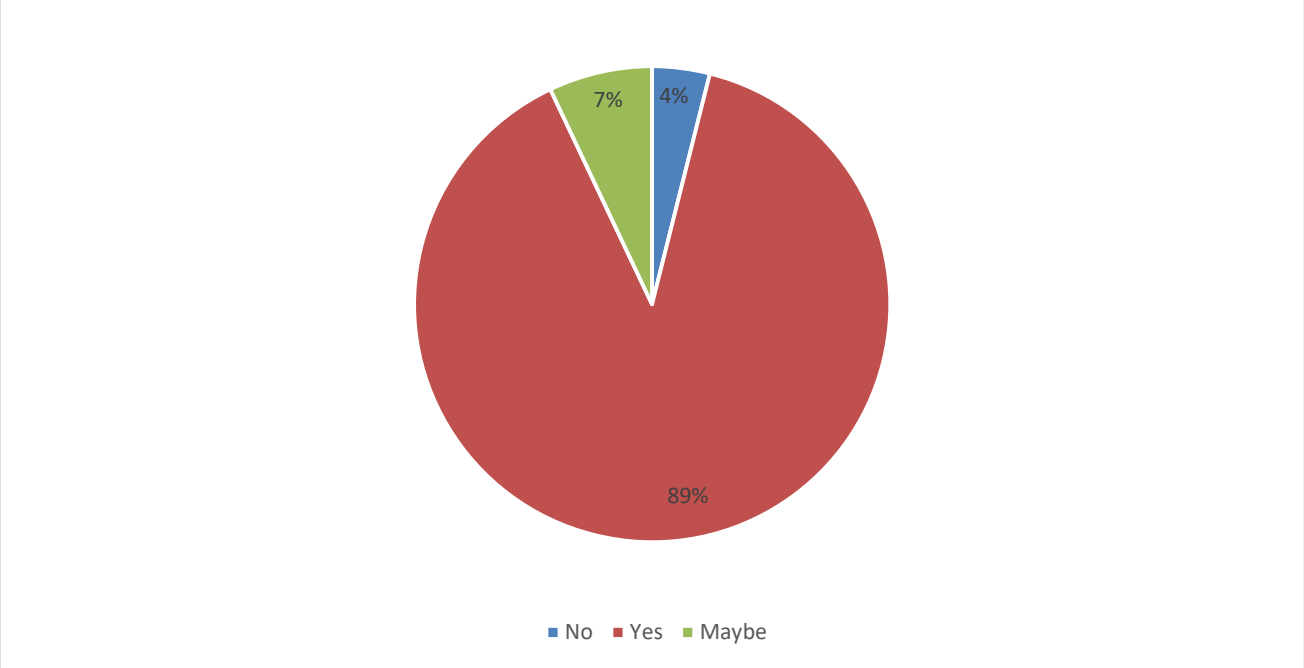

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Table 2 presents results that are of special value on the basis that they were gathered in an approximately 256 sample that was influenced by its perception on the risk factors of the oral cancer. Equivocally, 89.1% perceives tobacco to be an important risk factor and 7% is doubtful. Meanwhile, opinion regarding consumption of fruits and vegetables as a risk factor is more divided, with 42.2 percent of the respondents saying they deny that it's important. More importantly, 71.1% recognize ultraviolet exposure as a risk factor, which indicates knowledge of environmental causes of oral cancer. Nearly 26.6% of respondents neither inquired or were never asked about alcohol consumption by patients, while the patient alcohol consumption is inconsistent; an area for improvement on preventive healthcare practices. Additionally, almost one in two (65.6%) participants think good oral hygiene, quitting tobacco and attending regular check-ups will help reduce your risk of oral cancer.

Table (2): Parameters related to knowledge and practice about risks factor of oral cancer (n=256).

Parameter		***No.***	***Percent (%)***
1. Tobacco considered to be a risk factor for oral cancer	No	10	3.9
	Yes	228	89.1
	Maybe	18	7.0
2. Limited consumption of fruit and vegetables as risk factor	No	108	42.2
	Yes	84	32.8
	Maybe	64	25.0
3. Ultraviolet exposure as risk factor	No	26	10.2
	Yes	182	71.1
	Maybe	48	18.8
4. Do you ask the patient about their use of alcohol?	Always	86	33.6
	Usually,	50	19.5
	Sometimes	52	20.3
	Never	68	26.6
5. Do you inquire about the patient's tobacco consumption?	Always	126	49.2
	Usually,	70	27.3
	Sometimes	46	18.0
	Never	14	5.5
6. Human papilloma virus as risk factor	No	28	10.9
	Yes	170	66.4
	Maybe	58	22.7
7. Old age as risk factor	No	24	9.4
	Yes	162	63.3
	Maybe	70	27.3
8. How can oral cancer be avoided?	Good oral hygiene	18	7.0
	Quit tobacco use	56	21.9
	Regular check-up	14	5.5
	All the above	168	65.6

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As shown in figure (2), what is especially noteworthy about analysis of data derived from a sample of 256 individuals on what they considered the best ways to avoid oral cancer is that a majority (65.6%) singled out 'Quit tobacco use' to be most important preventative means, reflecting its established relationship with oral malignancies. On the other hand, 7 % of the participants promoted the strategy of continuation of "Good oral hygiene" for which there is established evidence of its usefulness in oral health. 5.5% stated 'Regular checkup' while an astounding 65.6% of respondents opted 'All the above' this depicting a total knowledge of oral cancer prevention.

Figure (2): Illustrates how oral cancer can be avoided according to participants.

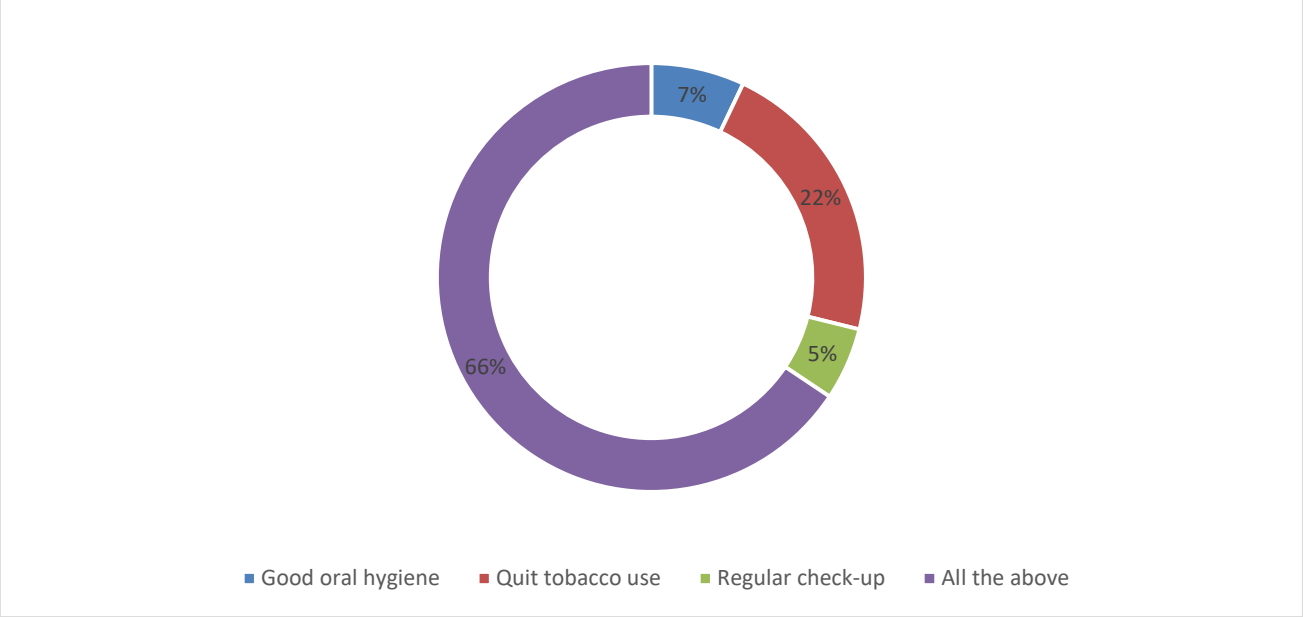

Table 3 presents the results of the comprehensive evaluation of the knowledge about the oral precancerous lesions and the background of the imaging in 256 patients' respondents and shows that there was different degree of knowledge and understanding among participants. Notably however, a major proportion, 52.3%, identified leukoplakia as the most encountered type of precancerous lesion, suggesting the recognition of the former type to be based on its conspicuousness clinically. The knowledge bestowed to the participants of early lesion characteristics was substantial as 82% of the population acknowledged the fact that early lesion can have ulcers as the clinical symptom. Additionally, 39.8% endorse the refinement of histopathological examination as the definitive method of diagnosis that is seen in oral pathology. But only 34.4 percent of participants identified early oral cancer as being asymptomatic.

Table (3): participants' knowledge about oral precancer imaging background (n=256).

Parameter		***No.***	***Percent (%)***
1. What is the most common type of precancerous lesion?	Erythroplakia	90	35.2
	Leukoplakia	134	52.3
	Lichen planus	32	12.5

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2. The most common site of Oral erythroplakia	Hard palate	52	20.3
	lip	48	18.8
	Soft palate	32	12.5
	Tongue	124	48.4
3. Ulcer describes the clinical appearance of early lesion of oral cancer.	No	46	18.0
	Yes	210	82.0
4. The clinical characteristics of an earlier oral cancer lesion	Small, painful, red area	48	18.8
	Small, painful, white area	60	23.4
	Small, painless, red area	52	20.3
	Small, painless, white area	96	37.5
5. Which symptoms are most frequently seen in the early stages of oral cancer?	Pain	54	21.1
	Swelling	42	16.4
	Ulceration	72	28.1
	None/Asymptomatic	88	34.4
6. Definitive diagnosis of oral lesions?	All three have the same value	74	28.9
	Clinical examination	44	17.2
	Histopathological examination	102	39.8
	Radiographic examination	36	14.1
7. An early oral cancer lesion's clinical appearance is referred to as a "red lesion."	No	68	26.6
	Yes	188	73.4
8. A case of suspected oral malignancy will be referred to Oral and Maxillofacial pathologist.	No	24	9.4
	Yes	232	90.6

Table 4 presents some key data of how some of the participants feel about oral cancer imaging and management, on a sample of 256 individuals. Notably, the tongue was the most identified structure to be examined during oral cancer diagnosis by the majority. They stress that patients can be asymptomatic and the need for increased awareness of screenings being extensive, even up to a mind blowing 60.9%! Those advocates include a notable 87.5 percent who support mandatory oral cancer screenings, an overwhelming consensus for finding intervention early. In addition, a strong 82.8% of participants say their knowledge of oral cancer is current, while 21.1% also did not feel sufficiently trained to conduct screenings. Of note, 80.5% are interested in receiving more information on oral cancer.

Table (4): participants' oral cancer imaging background (n=256).

Parameter		***No.***	***Percent (%)***
1. Which structure is most commonly assessed during the diagnosis of oral cancer?	Buccal mucosa	62	24.2
	Floor of the mouth	28	10.9
	Gingiva	50	19.5
	Palate	10	3.9

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	Tongue	106	41.4
2. Is the patient with oral cancer, in your opinion, asymptomatic at this early stage?	No	44	17.2
	Yes	156	60.9
	Maybe	56	21.9
3. To which specialist would you recommend a patient who may have an oral cancer?	Oncology specialist	52	20.3
	Oral and maxillofacial surgeon	136	53.1
	Otorhinolaryngology head and neck surgeon	14	5.5
	Plastic surgery specialist	54	21.1
4. Do you refer patient with suspected lesion to a specialist?	Always	138	53.9
	Usually,	70	27.3
	Sometimes	30	11.7
	Never	18	7.0
5. Patients should receive mandatory oral cancer screenings.	No	32	12.5
	Yes	224	87.5
6. Knowledge concerning oral cancer is updated.	No	44	17.2
	Yes	212	82.8
7. Adequate training to do an oral cancer screening.	No	54	21.1
	Yes	202	78.9
8. Interested in continuing education classes on oral cancer.	No	50	19.5
	Yes	206	80.5

Table 5 presents the data which makes a very good reading on the knowledge and the practice associated with oral cancer risk factors by the population surveyed. Importantly, 68.8% of the participants had a low level of knowledge about these significant health risks, indicating very serious worry about the lack of awareness and education of this preventable disease in the public. On the flip side, only 19.5 percent could be considered high, and only 11.7 percent moderate.

Table (5): Shows knowledge and practice about risks factor of oral cancer score results.

	Frequency	**Percent**
High level of knowledge	50	19.5
Moderate level	30	11.7
Low knowledge level	176	68.8
Total	256	100.0

In Table 6, data shows a worrisome trend for the knowledge of premalignant lesions with oral cancer among the surveyed population. Significantly, only 3.9% of participants reported high knowledge on these important indicators, and 12.5% reported a moderate level of knowledge. Unfortunately, 83.6% of respondents reported low knowledge about oral cancer risk factors, which is alarmingly high.

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Table (6): Shows knowledge of premalignant lesions of oral cancer score results.

	Frequency	**Percent**
High knowledge of premalignant lesions	10	3.9
Moderate knowledge of premalignant	32	12.5
Low knowledge of premalignant	214	83.6
Total	256	100.0

Table 7 presents data of the worrying trend in the knowledge level of the respondents in oral cancer. However, of the participants only 29.7% possessed a high level of knowledge regarding oral cancer meaning that awareness and understanding of oral cancer is still lacking in the population studied. In addition, the moderate level of knowledge, 21.1%, indicates that a fair proportion of individuals have some knowledge, but not a sufficient one regarding the important aspects of the disease. Moreover, almost half of the respondents (49.2%) had a low level of knowledge.

Table (7): Shows knowledge of oral cancer score results.

	Frequency	**Percent**
High knowledge level of oral cancer	76	29.7
Moderate knowledge level of oral cancer	54	21.1
Low knowledge level of oral cancer	126	49.2
Total	256	100.0

Table (8) shows that knowledge of risk factors has statistically insignificant relation to gender, age, level of education, and region of residence.

Table (8): Relation between knowledge of risk factors and sociodemographic characteristics.

Parameters		***Level of knowledge of risk factors***		***Total (N=256)***	***P value****
		High or moderate level knowledge	**Low knowledge level**		
Gender	Female	66	156	222	0.180
		82.5%	88.6%	86.7%	
	Male	14	20	34	
		17.5%	11.4%	13.3%	
Age	22 or less	26	62	88	0.446
		32.5%	35.2%	34.4%	
	23 to 25	40	74	114	
		50.0%	42.0%	44.5%	
	More than 25	14	40	54	

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		17.5%	22.7%	21.1%	
Level of education	Dental students	52	106	158	0.181
		65.0%	60.2%	61.7%	
	Dentists	6	28	34	
		7.5%	15.9%	13.3%	
	Interns	22	42	64	
		27.5%	23.9%	25.0%	
Region	From the northern region	8	10	18	0.308
		10.0%	5.7%	7.0%	
	From the southern region	26	80	106	
		32.5%	45.5%	41.4%	
	From the central region	4	8	12	
		5.0%	4.5%	4.7%	
	From the eastern region	12	26	38	
		15.0%	14.8%	14.8%	
	From the western region	30	52	82	
		37.5%	29.5%	32.0%	

****P value was considered significant if ≤ 0.05.***

Table (9) shows that knowledge of premalignant lesions has statistically insignificant relation to gender, age, level of education, and region of residence.

Table (9): Knowledge of premalignant lesions in association with sociodemographic characteristics.

Parameters		***Level of knowledge of premalignant lesions***		***Total (N=256)***	***P value****
		High or moderate knowledge of premalignant	**Low knowledge of premalignant**		
Gender	Female	40	182	222	0.075
		95.2%	85.0%	86.7%	
	Male	2	32	34	
		4.8%	15.0%	13.3%	
Age	22 or less	16	72	88	0.493
		38.1%	33.6%	34.4%	
	23 to 25	20	94	114	
		47.6%	43.9%	44.5%	
	More than 25	6	48	54	
		14.3%	22.4%	21.1%	
Level of education	Dental students	26	132	158	0.673
		61.9%	61.7%	61.7%	

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	Dentists	4	30	34	
		9.5%	14.0%	13.3%	
	Interns	12	52	64	
		28.6%	24.3%	25.0%	
Region	From the northern region	2	16	18	0.136
		4.8%	7.5%	7.0%	
	From the southern region	24	82	106	
		57.1%	38.3%	41.4%	
	From the central region	2	10	12	
		4.8%	4.7%	4.7%	
	From the eastern region	2	36	38	
		4.8%	16.8%	14.8%	
	From the western region	12	70	82	
		28.6%	32.7%	32.0%	

****P value was considered significant if ≤ 0.05.***

Table (10) shows that knowledge of risk factors has statistically significant relation to age (P value=0.009) and region of residence (P value=0.011). It also shows statistically insignificant relation to gender, and level of education.

Table (10): Level of knowledge of oral cancer in association with sociodemographic characteristics.

Parameters		***Level of knowledge of oral cancer***		***Total (N=256)***	***P value****
		High or moderate level knowledge	**Low knowledge level**		
Gender	Female	110	112	222	0.314
		84.6%	88.9%	86.7%	
	Male	20	14	34	
		15.4%	11.1%	13.3%	
Age	22 or less	38	50	88	0.009
		29.2%	39.7%	34.4%	
	23 to 25	70	44	114	
		53.8%	34.9%	44.5%	
	More than 25	22	32	54	
		16.9%	25.4%	21.1%	
Level of education	Dental students	80	78	158	0.848
		61.5%	61.9%	61.7%	
	Dentists	16	18	34	
		12.3%	14.3%	13.3%	
	Interns	34	30	64	
		26.2%	23.8%	25.0%	
Region	From the northern region	8	10	18	0.011
		6.2%	7.9%	7.0%	

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	From the southern region	66	40	106	
		50.8%	31.7%	41.4%	
	From the central region	4	8	12	
		3.1%	6.3%	4.7%	
	From the eastern region	12	26	38	
		9.2%	20.6%	14.8%	
	From the western region	40	42	82	
		30.8%	33.3%	32.0%	

P value was considered significant if ≤ 0.05.

Discussion:

The most common neoplasm of head and neck cancers is oral cancer arising within the squamous epithelial lining of the oral cavity, with greater than 90% being the squamous cell carcinoma. Oral cancer incidence is rising in an increasing number of countries, and incidence is predicted to increase by 62% by 2035 [10]. In general, there are primarily epidemiological studies indicating oral cavity cancer to be associated with great smoking and alcohol consumption. Precancerous and initial cancerous lesions in the oral cavity are usually asymptomatic and patients frequently present with disease at advanced stages when prognosis and survival rates are poor [11]. This is especially unfortunate because high risk precancerous lesions can be easily identified on a visual examination of the mouth. Leukoplakia, erythroplakia and erythroleukoplakia are common oral precancerous lesions. Oral cancers must be detected early to mitigate morbidity and mortality rates, lower treatment costs and to improve quality of life [12]. This can be achieved by dental health professionals who practice dentistry, in particular, being clinically incorporated to recognize oral cancer screenings into their routine and well versed about the pathogenesis of this disease and its initial clinical signs [13]. Nevertheless, some studies have shown that these professionals do not correctly identify oral cancer in relatively early stages because of poor attitudes and insufficient knowledge [14]. Thus, we aimed in this study to evaluate dental students', interns', and practitioners' knowledge and awareness of precancerous lesions, oral cancer, and related risk factors.

Comparing our study findings with the literature, we identify different patterns and subpatterns of knowledge regarding key factors for oral cancer risk and how to prevent it. Of note is that the great majority of the subjects (89.1 %) recognized tobacco as an important risk factor. This is different than what Anas Shamala et al., [15] found, where an even higher percentage (93.8%) viewed smoking as a risk factor for oral cancer, indicating consistent recognition of tobacco's risk between studies. Although there has been some awareness of fruits and vegetables in cancer prevention in our cohort (only 42.2 % did recognize it, which was not assessed in the references studies), this awareness of the connection appeared very low. We also looked at other recognised risk factors and found that 71.1% of our participants were aware that ultraviolet exposure is a risk factor, this is comparable to Soares et al. [16] who found 84.21% who were aware that alcohol consumption is a risk factor, both showing that significant but, more importantly, not universal awareness of lifestyle risk factors for oral cancer. Our participants were mixed in their competency regarding their ability to examine clinical signs suggestive of oral cancer. However, while 82% noted ulcers as possible symptoms of early lesions, only 52.3% attributed leukoplakia as a commonly related condition to precancerous problems. However, this implies a range of awareness that is somewhat similar to findings by Shamala et al., [15] who found

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that 84.1 per cent of women recognized oral cancer as potentially presenting as a non healing ulcer, however less than 2/3 recognized importance of white and red lesions as an indicator. Our study, however, found surprisingly low awareness at 34.4 % with respect to knowledge of oral cancer's potential asymptomatic nature that matches trend with Wimardhani et al. [17] where approximately half (46.7%) dentists did not know about early signs of oral cancer. Additionally, although 68.8% of our respondents demonstrated low knowledge of general oral cancer risk factors, this is consistent with the previous finding made by Huda Nazar et al. (2011), [18] that only 32% of patients reviewed oral cancer risk factors with their dentists. When we take into consideration that 87.5% of our participants supported mandatory screenings and that 80.5% were interested in more education, the data on perceived versus reported knowledge levels particularly we gain further context. In contrast with Alaizari et al., [19], 96.38% of dentists indicated that tobacco was a major risk factor but only 47.1 had adequate training for screening. Like ours, Fotedar et al. [20] found that 99 percent of participants felt there was a need for additional training, which is exactly what they found. Our research did not find any significant demographically based relationships to knowledge levels that are consistent with other studies and are similar to the conclusions of several prior studies. One example is that of Wimardhani et al. [17] which identify the variations in knowledge level resulting from the demographic features and the continuing education experience of the dentists in their study cohort do not show up in our study cohort. And it is right and due that we point out the blatant lack of training for doing such screenings in our population — 21.1 percent didn't feel they had what it took — which is reflected in the majority of the dentists surveyed by Alaizari et al., [19].

Conclusion:

Finally, this study highlights a primary knowledge gap with respect to oral cancer and the oral premalignant conditions practiced by dental students, interns and practitioners in Saudi Arabia. A great deal of tobacco recognition as an underlying risk factor was noted despite substantial gaps in understanding of other lifestyle factors, e.g. a protective role of fruits and vegetables and awareness of the asymptomatic presentation of oral cancer. The analysis shows that about 68.8% respondents had low knowledge levels and these findings confirm that there exists an urgent need for more educational programs on oral cancer awareness and screening protocols. Moreover, although almost everyone agrees that screenings should be required and that we should learn more, many respondents felt unprepared to perform screenings. Bridging the gap between oral cancer education and the dental curricula could lead to a more proactive rather than a retroactive approach to early detection and prevention of oral cancer, which could have a positive effect on the patients' oral health outcomes.

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Ethical approval

An informed consent was obtained from each participant after explaining the study in full and clarifying that participation is voluntary. Data collected were securely saved and used for research purposes only.

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Conflict of interests

The authors declare no conflict of interest.

Informed consent:

Written informed consent was acquired from each individual study participant.

Data and materials availability

All data associated with this study are present in the paper.

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