

Oral cancer knowledge, attitudes and practices among dental and medical students in Saudi Arabia

Abstract

Background: Oral cancer had important public health concern, ranking as the world's 16th most common cancer. Despite being highly preventable, oral cancer is associated with multiple risk factors and a high mortality rate and contributes significantly to the global cancer burden. The 5-year survival rate for oral cancer remains low (50%), and it has not improved in recent decades. The prognosis is relatively good when caught in the early stages, but it deteriorates dramatically in the advanced stages.

Objective: The aim of this study was to investigate and assess the knowledge, attitude and practices of dental and medical students in Saudi Arabia towards oral cancer.

Methods: A pre-designed questionnaire had been distributed to 1033 dental and medical student in Saudi Arabia, and data were analysed using IBM SPSS Statistics 26.0. The participants' confidentiality was maintained.

Results: This study included 1033 participants (males = 558 [54.0%] and females = 475 [46.0%]). Medical students represented 734 (71.1%) of the participants and dental students represented 299 (28.9%) of the participants. Overall, 686 (66.4%) participants thought they had good aware about oral cancer, and 771 (74.6%) were concerned about its prevention. Both dental and medical students thought that oral cancer is more common in people over the age of 60 years, with no difference between medical and dental students (degrees of freedom [df] = 1, $p = 0.793$). Regarding risk factors, both smoking tobacco and alcohol consumption were mentioned by 66.1% of the sample, with no difference between medical and dental students (df = 1, $p = 1.000$). In addition, 29.9% of students identified the buccal mucosa as the most common site of oral cancer, with no difference between medical and dental students (df = 1, $p = 0.691$). No significant differences in the mean total score (number of correct answers) between dental students and also medical students at each study level except for the fifth-year students. At this level, the mean score was higher in dental students (6.05 ± 1.88) than medical students (5.13 ± 2.01) ($p < 0.01$).

Conclusions: Medical and dental students had similar knowledge, attitude and practices towards oral cancer. Furthermore, fifth-year dental students from the northern region of Saudi Arabia had the highest mean score on the questionnaire.

Keywords: oral cancer; knowledge, attitude, and practice; Saudi Arabia.

Introduction

Oral cancer is defined as any cancerous tissue within the oral cavity which includes the front two-thirds of the tongue, floor of the mouth, buccal mucosa, gingiva, lips, retromolar trigone, and hard palate. Oro - pharyngeal Cancers include the base of the tongue, soft palate, tonsils, and posterior

pharyngeal wall [1]. Oral cancer ranked as the sixteenth most common cancer worldwide and the fifteenth leading cause of death worldwide [2] with approximately 600,000 new cases estimated for 2030 [3]. The incidence ratio between male and female are 5.8 for men and 2.3 for women per 100,000 [4], and men from 40 to 70 years old have the highest rate of incidence [3]. The most common type of oral cancer lesion is squamous cell carcinoma (SSC) [1]. The predisposing factors include smoking, use of tobacco, alcohol consumption, sun exposure, poor oral hygiene [3], and human papillomavirus (HPV) type 16 and 18 [1]. Dental professionals are in a unique position to opportunistically inspect the oral cavity and, to a lesser extent, the oropharynx during routine patient examinations and interactions. Additionally, having dental tools, as well as having training in both the normal and pathological appearance of oral subsites improves their capacity to assess the clinical status of oral tissues [5]. Patients with early-stage oral cancer have increased chances of survival and better quality of life. However, early-stage cancers are frequently asymptomatic and mimic benign conditions, reducing the likelihood that the public will seek medical attention. As a result, screening offers a chance for early detection [6]. Surgical biopsy for histopathology is the gold standard for oral cancer diagnosis [7]. Treatment options for oral cavity cancer (OCC) include single-modality surgery, radiation, or different combinations of these modalities with or without systemic agents. The choice of treatment is made based on the disease stage, disease control factors, expected functional and cosmetic outcomes, and expertise. Surgery is the standard method of oral cavity cancer (OCC) treatment [8]. Since the oral cancer cases rate is increasing and the mortality rate is due to lack of knowledge, we find it essential for health care providers to improve their knowledge and awareness to reduce the mortality rate. Therefore, in this study, we aim to examine the knowledge, attitudes, and practices of undergraduate medical and dental regarding oral cancer.

Materials and Methods

This is a cross sectional study that was carried out to cover the assessment of knowledge, attitudes and practices of oral cancer among medical and dental students in Saudi Arabia.

This research targeted population is clinical year's undergraduate medical and dental

students in Saudi Arabia, a total of 1033 participants involved in this study. The sample data was collected by using standardized online questionnaire and the standardized questionnaire was distributed to all clinical years medical and dental students in all regions in different Saudi Arabia universities. Statistical Analysis was analyzed using Statistical Package for Social Sciences (SPSS) program.

The required ethical clearance was obtained for the conduction of the study from the ethical committee of Hail university. The objectives of the research were clarified to each participant. Everyone had the choice whether to take part in this study or to abstain. Participants were notified that their comments will be confidential and will be used for research purposes only. Data analysis after data were collected, it was modified, coded and entered to statistical software IBM SPSS version 22(SPSS, Inc. Chicago, IL).

Statistical analysis

IBM SPSS Statistics 26.0 was used to analyse the data. The data were checked for normality using the X test and showed a normal distribution. The chi-square (χ^2) test was used to compared between the medical and dental students in terms of the questions towards oral cancer. An independent samples t-test was used to compared the number of correct answers between medical and dental students. The significance level was set at $p < 0.05$.

Results

Table 1 shows the demographics of the study participants. There were 1033 participants, with 558 men (54.0%) and 475 women (46.0%). The medical college had 734 students (71.1%) and the dental college had 299 students (28.1%). Only 67 (6.5%) of the participants were from Saudi Arabia's northern region; the majority of the students (331, 32.0%) were from the country's eastern region. Out of 1033 participants, 686 (66.4%) believed they were aware of oral cancer, and 771 (74.6%) were concerned about its prevention. The majority of participants (407, 39.4%) preferred continuing

education lectures to gain knowledge, followed by information packages (247, 23.9%), and webinars were the least preferred (109, 10.6%).

Table 1 Demographics of the study participants

Variable	Category	Frequency	(%)
Gender	Male	558	54.0%
	Female	475	46.0%
College	Medical	734	71.1%
	Dental	299	28.9%
Level	Fourth-year students	313	30.3%
	Fifth-year students	223	21.6%
	Sixth-year students	246	23.8%
	Interns	251	24.3%
Region	Eastern	331	32.0%
	Western	273	26.4%
	Central	262	25.4%
	Southern	100	9.7%
	Northern	67	6.5%
Are you aware of oral cancer?	No	262	25.4%
	Yes	771	74.6%
Are you concern about preventive management of oral cancer?	No	262	25.4%
	Yes	771	74.6%
What is your preferred way of gaining	Webinars	109	10.6%

knowledge?

Continuous education lectures	407	39.4%
Information package	247	39.4%
Seminars	146	14.1%
Participation in organised research	124	12.0%

Knowledge of oral cancer among medical and dental students

Q1–Q9 of the questionnaire asked the participants about their knowledge of oral cancer. The chi-square test was used to determine differences between medical and dental students in terms of knowledge of oral cancer (Table 2). There were no significant differences between medical and dental students for any question. The most common answers provided by the participants to each question are discussed below. For Q1, 'Which structure is mostly examined during the diagnosis of oral cancer?' 31.3% of students answered the buccal mucosa (medical 32.02%, dental 29.43%, $\chi^2 = 0.148$, degrees of freedom [df] = 1, $p = 0.701$). For Q2, 'Which age group is diagnosed more frequently with oral cancer?', most of the students selected 'Older than 60 years' (medical 27.52%, dental 30.10%, $\chi^2 = 0.069$, df = 1, $p = 0.793$). For Q3, 'What do you think the aetiological factors are for oral cancer?', the majority of students in both groups selected 'both' referring to tobacco and alcohol consumption (medical 66.35%, dental 65.55%, $\chi^2 = 0.000$, df = 1, $p = 1.000$). For Q4 'Where do you think is the common site for oral cancer? Most of the medical students selected the buccal mucosa (30.39%)s followed by the tongue (27.11%). On the other hand, the same percentage of dental students chose the buccal mucosa (27.42%) and tongue (27.42%). However, the differences between medical and dental students were not significant for the tongue ($\chi^2 = 0.000$, df = 1, $p = 1.000$) or buccal mucosa ($\chi^2 = 0.158$, df = 1, $p = 0.691$). For Q5, 'What do you think is the most common presentation of oral cancer?', most of the medical and dental students thought that an abnormal mass in the mouth is the most common presentation (medical 28.07%, dental 34.78%, $\chi^2 = 0.778$, $p = 0.378$). For Q6, 'Do you think the oral malignancy patient is asymptomatic in the early stage?', both medical (46.05%) and dental (53.85%) students thought that oral malignancy is asymptomatic in the early stage ($\chi^2 = 0.640$, $p = 0.424$). For Q7, 'Do you think the oral cancer patient can be diagnosed in the advanced stage?', 76.3% of medical students chose 'Yes' and 76.59% of dental students chose 'Yes' ($\chi^2 = 0.007$, df = 1,

$p = 0.936$). For Q8, 'Are erythroplakia and leukoplakia the most common lesions associated with oral cancer?', 77.5% of students selected 'Yes' (medical 76.84%, dental 79.26%, $\chi^2 = 0.058$, $p = 0.810$). Finally, for Q9, 'Does the early detection of oral cancer improve survival?', 60.95% of the students selected 'Yes' (medical 61.44%, dental 59.53%, $\chi^2 = 0.019$, $p = 0.891$).

Table 2 differences between medical and dental students with different questions on knowledge of oral cancer

Variable Question	College (N, %)		Total (1033, 100%)	df	χ^2	P
	Medical (734, 71.1%)	Dental (299, 28.9%)				
Q1: Which structure is mostly examined during the diagnosis of oral cancer?						
Tongue	220 (29.97%)	90 (30.10%)	310 (30.0%)	1	0.000	1.000
Gingiva	72 (9.81%)	20 (6.69%)	92 (8.9%)	1	0.529	0.467
Buccal mucosa	235 (32.02%)	88 (29.43%)	323 (31.3%)	1	0.148	0.701
Palate	56 (7.63%)	26 (3.54%)	82 (7.9%)	1	1.333	0.248
Floor of the mouth	151 (20.57%)	75 (25.08%)	226 (21.9%)	1	0.348	0.555
Q2: Which age group is diagnosed more frequently?						
30–40 years	145 (19.75%)	57 (19.06%)	202 (19.6%)	1	0.026	0.873
41–50 years	187 (25.78%)	74 (24.75%)	261 (25.3%)	1	0.020	0.889
51–60 years	200 (27.25%)	78 (26.09%)	278 (26.9%)	1	0.019	0.891
> 60 years	202 (27.52%)	90 (30.10%)	292 (28.3%)	1	0.069	0.793
Q3: What do you think the aetiological factors for oral cancer?						
Smoking tobacco	175 (23.84%)	66 (22.07%)	241 (23.3%)	1	0.087	0.768
Alcohol consumption	72 (9.81%)	37 (12.37%)	109 (10.6%)	1	0.182	0.670
Both	487 (66.35%)	196 (65.55%)	683 (66.1%)	1	0.000	1.000
Q4: Where do you think is the common site for oral cancer?						
Tongue	199 (27.11%)	82 (27.42%)	281 (27.2%)	1	0.000	1.000

Gingiva	91 (12.40%)	34 (11.37%)	125 (12.1%)	1	0.043	0.835
Buccal mucosa	227 (30.39%)	82 (27.42%)	309 (29.9%)	1	0.158	0.691
Palate	77 (10.49%)	39 (13.04%)	116 (11.2%)	1	0.391	0.532
Floor of the Mouth	140 (19.07%)	62 (20.74%)	202 (19.6%)	1	0.100	0.752

Q5: What do you think is the most common presentation of oral cancer?

White/red patch in mouth	175 (23.84%)	87 (29.10%)	262 (25.4%)	1	0.472	0.492
Mouth sore that does not heal	161 (21.93%)	59 (19.73%)	220 (21.3%)	1	0.095	0.758
Difficulty in chewing and swallowing	111 (15.12%)	22 (7.36%)	133 (12.9%)	1	2.909	0.088
Slow change of voice quality	81 (11.04%)	27 (9.03%)	108 (10.5%)	1	0.200	0.655
Abnormal mass in mouth	206 (28.07%)	104 (34.78%)	310 (30.0%)	1	0.778	0.378

Q6: Do you think the oral malignancy patient is asymptomatic in the early stage?

No	114 (15.53%)	55 (18.39%)	169 (16.4%)	1	0.118	0.732
Yes	338 (46.05%)	161 (53.85%)	499 (48.3%)	1	0.640	0.424
Maybe	282 (38.42%)	83 (27.76%)	365 (35.3%)	1	1.515	0.218

Q7: Do you think the oral cancer patient can be diagnosed in the advanced stage?

No	174 (23.71%)	70 (23.41%)	224 (23.6%)	1	0.021	0.884
Yes	560 (76.29%)	229 (76.59%)	789 (76.4%)	1	0.007	0.936

Q8: Are erythroplakia and leukoplakia the most common lesions associated with oral cancer?

No	170 (23.16%)	62 (20.74%)	232 (22.5%)	1	0.091	0.763
Yes	564 (76.84%)	237 (79.26%)	801 (77.5%)	1	0.058	0.810

Q9: Does the early detection of oral cancer improve survival?

No	84 (11.44%)	43 (14.38%)	127 (12.3%)	1	0.360	0.549
Yes	451 (61.44%)	178 (59.53%)	629 (60.95%)	1	0.008	0.928
Maybe	199 (27.11%)	78 (26.09%)	277 (26.8%)	1	0.019	0.891

Attitude and practices of medical and dental students towards oral cancer

Q10–Q13 of the questionnaire asked about the participants' attitudes and practices towards oral cancer. The chi-square test was used to compare between medical and dental students (Table 3). There were no significant differences between medical and dental students. For Q10, medical and dental students mostly chose that early detection of oral cancer can be done by 'biopsy' (medical 36.65%, dental 35.45%, $\chi^2 = 0.056$, $df = 1$, $p = 0.814$). For Q11, 'How can we prevent oral cancer?', medical and dental students chose 'All of the above' most often (medical 69.07%, dental 67.89%, $\chi^2 = 0.007$, $df = 1$, $p = 0.932$). For Q12, 'Which specialist would you refer a patient suspecting oral malignancy?', an oncology specialist was selected by most dental and medical students to refer a patient with suspected malignancy (medical 41.28%, dental 38.80%, $\chi^2 = 0.050$, $df = 1$, $p = 0.823$). For Q13, 'Are you concerned about the prevention and management of oral cancer?', 75.07% of medical students and 73.58% of dental students selected 'Yes' ($\chi^2 = 0.007$, $df = 1$, $p = 0.935$).

Table 3 Attitude and practices towards oral cancer among medical and dental students

Variable Question	College (N, %)		Total (1033, 100%)	df	χ^2	P
	Medical (734, 71.1%)	Dental (299, 28.9%)				
Q10: Early detection of oral cancer can be done by?						
Clinical exam	195 (26.57%)	82 (27.42%)	227 (26.8%)	1	0.000	1.000
Regular check-up	186 (25.34%)	83 (27.76%)	269 (26.0%)	1	0.170	0.680
Biopsy	269 (36.65%)	106 (35.45%)	375 (36.3%)	1	0.056	0.814
Patient education	84 (11.44%)	28 (9.36%)	112 (10.8%)	1	0.200	0.655
Q11: How can we prevent oral cancer?						
Quit tobacco use	96 (13.08%)	36 (12.04%)	132 (12.8%)	1	0.040	0.841
Good oral hygiene	66 (8.99%)	26 (8.70%)	92 (8.9%)	1	0.000	1.000
Regular check-up	65 (8.86%)	34 (11.37%)	99 (9.6%)	1	0.200	0.655
All of the above	507 (69.07%)	203 (67.89%)	710 (68.7%)	1	0.007	0.932

Q12: Which specialist would you refer a patient suspecting oral malignancy?

Plastic surgery specialist	80 (10.90%)	37 (12.37%)	117 (11.3%)	1	0.043	0.835
Oral and maxillofacial surgeon	225 (30.65%)	98 (32.78%)	323 (31.3%)	1	0.063	0.803
Oncology specialist	303 (41.28%)	116 (38.80%)	419 (40.6%)	1	0.050	0.823
Otorhinolaryngology head and neck surgeon	126 (17.17%)	48 (16.05%)	174 (16.8%)	1	0.030	0.862

Q13: Are you concerned about the prevention and management of oral cancer?

No	183 (24.93%)	79 (26.42%)	262 (25.4%)	1	0.020	0.889
Yes	551 (75.07%)	220 (73.58%)	771 (74.6%)	1	0.007	0.935

Finally, an independent samples t-test was performed to find the differences between medical students and dental students regarding the total score on the questionnaire (the number of correct answers) (Table 4). There were no significant differences in the mean number of correct answers between medical students and dental students at each study level, except for the fifth-year students. At this level, the mean was higher in dental students (6.05 ± 1.88) than in medical students (5.13 ± 2.01) ($p < 0.01$).

Table 4 Differences in the total score of medical and dental students for each study level

Study level	Medical students		Dental students		Mean difference	Mean difference (95% CI)	p
	Mean	(SD)	Mean	(SD)			
Fourth-year students	5.38	1.80	5.37	2.45	0.02	(-0.49, 0.52)	0.95
Fifth-year students	5.13	2.01	6.05	1.88	-0.92	(-1.46, -0.39)	0.001*
Sixth-year students	5.66	1.93	5.30	1.93	0.36	(-0.20, 0.93)	0.21
Interns	5.68	1.77	5.38	1.78	0.30	(-0.18, 0.78)	0.22

Normality assumption is fulfilled based on CLT

Independent samples t-Test was applied

* $p < 0.05$

CI, confidence interval; SD, standard deviation

The differences in the total scores of medical and dental students were also compared based on the region where the students were attending school (Table 5). There were significant differences between medical and dental students in the eastern region ($p < 0.05$) and the southern region ($p < 0.05$). The dental students of the eastern region had a higher mean score compared with the medical students. On the other hand, medical students in the southern region had a higher mean score compared with dental students. The other regions did not show any significant differences between medical and dental students.

Table 5 shows that dental students in the southern region had the lowest mean score (4 ± 1.87), while dental students in the northern region had the highest mean score (6.09 ± 1.87). According to the results of the questionnaire, dental students from the northern region have the best knowledge of oral cancer among the student participants.

Table 5 Differences in the total score of medical and dental students for each region of Saudi Arabia

Study level	Medical Students		Dental Students		Mean Difference	Mean difference (95% CI)	p
	Mean	(SD)	Mean	(SD)			
Eastern region	5.50	1.90	5.99	2.03	-0.49	(-0.95, -0.03)	0.04*
Western region	5.54	1.89	5.12	2.24	0.42	(-0.15, 0.99)	0.14
Central region	5.31	1.83	5.29	1.70	0.02	(-0.45, 0.48)	0.94
Northern region	5.57	1.77	6.09	2.03	-0.52	(-1.28, 0.24)	0.18
Southern region	5.55	2.13	4.00	1.87	1.55	(0.46, 2.64)	0.007*

Normality assumption is fulfilled based on CLT

Independent samples t-Test was applied

* $p < 0.05$

CI, confidence interval; SD, standard deviation

According to the results, medical and dental students have the same level of knowledge, attitude, and practices regarding oral cancer. Furthermore, fifth-year dental students from the northern region demonstrated the greatest knowledge.

Discussion

The knowledge, attitude and practices of dental and medical students towards oral cancer is a very important issue because they are considered the first contact to patients who are seeking oral health care. Hence, they help to detect oral cancer early, promoting early treatment and a good prognosis [9] [10]. There are limited data regarding the knowledge, attitude and practices of medical and dental students towards oral cancer. A very recent study examined this topic in undergraduate medical and dental student at the University of Hail, Saudi Arabia [11].

In this study, there were slightly more male students than female students, and almost three quarter of the participants were medical students. While the participants came from all regions of Saudia Arabia, the majority were from the eastern region and the fewest were from the northern region. Two-thirds of the students thought that they are aware of oral cancer. In Kuwait, 65%–81.5% of dental students thought they had good knowledge of oral cancer [12]. Hence, the level of awareness of oral cancer in this study is similar to previous studies. The students' most preferred method to gain information about oral cancer was lectures (39.4%) and the least preferred was webinars (10.6%). This finding is consistent with other studies There is a need for routine continuing education programmes for dental professionals [13]. In addition, there is a need for good training and workshops to increase the awareness and abilities of health care professionals to diagnose oral cancer [14].

Regarding knowledge of oral cancer among medical and dental students, 31.3% of students answered that the buccal mucosa is the most examined structure during oral cancer diagnosis, with no significant difference between medical and dental students. This

slightly lower than in another study in which 34.9% of participants answered the buccal mucosa, followed by the floor of the mouth (25.3%), the tongue (22%), the gingiva (9.1%) and the palate (8.7%) [11].

A plurality of students selected 'Older than 60 years' as the age group diagnosed with oral cancer most frequently, with no difference between medical and dental students. In a similar study, the participants selected > 60 years most often (39.8%), followed by 51–60 years (26.1%), 41–50 years (18.3%) and 30–40 years (15.8%) [11].

In relation to the aetiological factor for oral cancer, two thirds of the students selected 'both' referring to smoking tobacco and alcohol consumption, with no difference between the groups. This is lower than in another study where 81.3% of the students selected alcohol consumption and smoking, 15.4% selected smoking only and 3.3% selected alcohol consumption only. In another study, almost all participants (95.8%) identified smoking and alcohol consumption as very important risk factors for oral cancer. Thus, there was very good level of knowledge about oral cancer risk factors among practitioners [11]. The findings are consistent with earlier studies in which a majority of dentists stated tobacco use and alcohol consumption are common factors for oral cancer occurrence [15] [16]. In another study done in Kuwait, the majority of dental and medical students reported that tobacco smoking had a vital effect on the occurrence of oral cancer [17]. However, alcohol was identified less often as important risk factor for oral cancer among Japanese oral health workers [18].

In relation to the common site for oral cancer, most of the medical students selected the buccal mucosa (30.39%) followed by the tongue (27.11%). On the other hand, an equal number of dental students selected the buccal mucosa (27.42%) and the tongue (27.42%). The differences between the groups were not significant. In another study, 93.5% of dentists correctly recognised the most common site of oral cancer [16]. However, in a Brazilian study, only 55.5% of dentists knew the most frequent anatomical region for oral cancer [19].

More than two thirds (71.9%) of the dentists in Brazil reported that the tongue and floor of the mouth were common sites of oral cancer [20].

The majority of dental students (79.3%) in Spain stated that they routinely examine the oral mucosa of their patients [21].

In this present study, 30.0% of the medical students and dental students thought that an abnormal mass in the mouth is the most common presentation of the oral cancer, with no differences between the groups. In another study, 30.3% of the students selected abnormal mass in the mouth, 29% selected a mouth sore than does not heal, 22% selected white/red patch in mouth, 10.4% selected difficulty in chewing and swallowing and 8.3% selected slow change in voice quality.

More than three quarters of both medical and also dental students knew that oral cancer can be diagnosed in advanced stages. In addition, more than three quarters of the students knew that erythroplakia and leukoplakia are the most common lesions associated with oral cancer. In another study, the participants reported that erythroleukoplakia has the highest premalignant potential to develop into oral cancer [17]. However, in a study of dentists in Brazil, one third of them did not know about regional oral cancer metastases [19].

Like this study, about 54.9% of dentists in Iran replied correctly the most common symptoms of cancerous lesions [22].

In a recent systematic review study, the authors reported a relatively low frequency of oral squamous cell carcinoma screening by oral health care providers throughout the world [23].

A high percentage (68%–70%) of dentists in Sri Lanka indicated that their oral cancer/pre-cancer knowledge was current [23]. In the same study, about 81% agreed that they had sufficiently trained in the screening of the oral cancer but 70% felt they required more training.

There were no significant differences between dental and medical students in terms of their attitude and practices towards oral cancer. Most students chose biopsy as the means for early detection of oral cancer. In addition, most students selected 'All of the above' – quit

tobacco use, good oral hygiene, and regular check-up – as the way to prevent oral cancer. Finally, most students selected an oncology specialist as the medical professional to refer a patient with a suspected malignancy. In another study evaluating early detection of oral cancer improves survival, most participants selected biopsy (34.9%), then regular check (34%), clinical examination (23.2%) and patient education (7.9%). Regarding prevention of oral cancer, 79.3% selected all of them, followed by stop tobacco use (10.4%), good oral hygiene (5.4%) and regular check-up (5%) [11]. In another study, 37.3% of students selected an oncology specialist, 30.7% selected an oral and maxillofacial surgeon, 27.4% selected an otorhinolaryngologist and 4.6% selected a plastic surgery specialist. Overall, 67.2% of the students had enough information concerning prevention and management of oral cancer.

There were no more important differences was found in the mean total score on the questionnaire (the number of correct answers) among the medical and the dental students at each study level except what was found in the fifth-year students. At this level, the dental students had scored significantly higher than the medical students. There were important differences among the medical and the dental students in the eastern region and the southern region: dental students in the eastern region scored higher than medical students, while medical the students of the southern region had scored higher than the medical students. The other regions did not show any higher significant differences among the medical and the dental students. Dental students in the southern sector had the lowest mean total score while the dental students from the northern sector had the highest mean total score. This finding is indicating that dental students of the northern region had the best knowledge in relation to oral cancer.

Conclusion

It was found that oral cancer knowledge, attitude and practices were similar between both of medical and dental students in Saudi Arabia. But it was found that there were no important differences in the mean correct answers among the medical students and dental students, The fifth-year dental students from the northern region had the highest mean correct answers on the questionnaire.

Overall, a majority of the dental and medical student in this study were good aware and knowledgeable about different types of oral cancer. There is a need to prepare training programmes related to oral cancer education mainly in relation to the prevention and early prediction . Continuing education programs and also the workshops are recommended to increase the level of the awareness of the dentists regarded the main risk factors and management of oral cancer.

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Authors contributions

All the authors contributed to the selection of the idea, proposal writing, data collection, data entry and analysis, results and discussion writing and final revision of the article.

Consent and ethical approval

The research is approved by The Research Ethics Committee at university of Hail reference No.:H-2022-017.

During the research activities, each participant studied was informed of the objectives of the study while ensuring the confidentiality of the data collected and obtaining consents from the study participants.

Conflicts of interest

The authors declare that they have no conflict of interest.

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Data and materials availability

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

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