

Oral cancer knowledge and awareness among dental students at Sirte University

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Abstract

Oral cancer is a multifactorial disease that belongs to a larger group of cancers commonly referred to as head and neck cancers. The alarming increase in incidence rate of oral cancer globally has made it a major public health issue, in which prevention and early diagnosis are the best ways to reverse this situation. A dental practitioner's ability to recognize signs and symptoms of the malignancy in its early stage is crucial. **Aim:** To assess the knowledge and attitude of undergraduate dental students about oral cancer. **Material and Methods:** A cross-sectional study was conducted on third- and fourth-year students of the Faculty of Dentistry-Sirte University in Libya. A total 64 of students participated in the survey. This study is based on a questionnaire contains 40 questions about risk factors, clinical aspects, prevention and attitudes towards oral cancer. Data were collected and analyzed with SPSS18 using independent t-test. Significance level was considered as $p < 0.05$. **Results:** The vast majority of students identified smoking tobacco use and alcohol as the major risk factors for oral cancer. Squamous cell carcinoma was listed as the most common cancer by 91.8% of students, and the tongue and floor of the mouth are the most likely sites. Non-healing ulcer was recognized as the common clinical change pertaining to oral cancer. While the majority showed willingness to advise their patients on risk factors. More than 92.2% of students admitted that they need further information regarding oral cancer. **Conclusions:** The findings of the present study suggest that here is a need to reinforce the undergraduate dental curriculum with regards to oral cancer education, particularly in its prevention and early detection.

Keywords: Dental students - awareness - oral cancer-Sirte University.

1. Introduction

Oral Cancer (OC) is the cancer that affects the lips, the floor of the mouth, the lining of the cheeks, the gums, the tongue, or the palate ⁽¹⁾. The incidence of oral cancer is notably rising, especially in developing countries ^(2, 3). It is the sixth most common cancer in the world and accounts for approximately 2% of cancer-related deaths worldwide ⁽⁴⁾, with an estimated 657,000 new cases of

oral and pharyngeal cancer and more than 330,000 deaths each year⁽⁵⁾.

The etiology of OC has been linked tightly to excessive consumption of alcohol, tobacco products and chewing betel. A combination of these factors significantly increases the risk of developing oral cancer⁽⁶⁻⁸⁾. Other risk factors have been suggested including human immunodeficiency virus (HIV), human papillomavirus (HPV), candida infections, unhealthy diet, and regular use of alcohol containing mouthwashes⁽⁹⁾. Men are more likely to develop oral cancer than women. Moreover, it predominantly affects people older than 40 years and more prevalent in low socioeconomic groups^(10, 11).

More than 90% of oral cancers are squamous cell carcinomas (SCCs), Twenty percent of SCCs are originated from or associated with previous premalignant lesions including leukoplakia, erythroplakia, and submucous fibrosis. With a prevalence of 2.6%, leukoplakia occurs in patients aged over 50; while the prevalence of erythroplakia is lower, ranging from 0.02% to 0.1%⁽³⁾.

An aspect that attracts attention is that the number of patients arriving at oral diagnosis services with advanced disease is very alarming, and since oral cancer is generally asymptomatic at early stages, patients usually fail to identify the problem and do not seek professional help early enough⁽¹²⁾. Thus, treatment becomes more difficult, sometimes leading to patient disfigurement, psychological trauma and dysfunction, affecting prognosis and quality of life. Therefore, despite the significant progress in the treatment of SCC, the five-year survival rate has not been considerably raised since 50 years ago⁽³⁾. Variables such as comorbidities, nutritional or immune status, tumor site, and oncogene expressions are reported, but the disease stage at diagnosis remains the most important prognostic indicator for oral cancer.

The causes of late diagnosis include unpreparedness of dental professionals without specific training to diagnose cancer at early stages and misinformation of the population about health care^(2,13). The early diagnosis is essential to achieve the best results, it reduces rates of morbidity, mortality and mutilation, increases the quality of life and lowers treatment costs. To achieve this, it is important that health professionals, especially dentists, perform oral cancer examinations as part of their clinical practice and be especially aware of not only the pathogenesis of the disease, but also the first clinical signs^(14, 15).

It is expected that dentists, on top of having an extensive understanding of the etiology of oral and clinical aspects of cancer, feel able to make a prompt diagnosis of this condition. Nevertheless, some studies have suggested that these professionals are not able to adequately detect oral cancer in its early stages due to their ineffective attitudes and lack of knowledge⁽¹⁶⁻²¹⁾. Additionally, information regarding the performance of dental students on this issue tends to be limited and unsatisfactory^(2, 3, 13, 21-23).

The above issues as well as the importance of this subject derived us to study dental student's knowledge about oral cancerous lesions, because well understanding of this issue during education could affect their inclination to examine their patients aiming at finding mouth cancer signs in future. Therefore, the primary objective of this study was to assess the knowledge of dental students regarding the risk factors, clinical aspects and their attitudes about oral cancer and to assess their awareness of the prevention and early detection of oral cancer.

2. Material and Methodology

A cross-sectional study was conducted on third- and fourth-year students of the Faculty of Dentistry-Sirte University in Libya. For the purpose of this research, a questionnaire was taken from the study of **Carter and Ogden**⁽³⁾ and modified. A total 64 of students participated in the survey, each student gave a verbal consent for use of the data for research purposes. Oral cancer awareness, knowledge about risk factors, signs and symptoms of oral cancer, attitude and practices towards oral cancer were assessed using 40 questions. The questionnaire was distributed, after lecture hours, to a total of students, the objectives of the study were explained to the students before administration of the questionnaire. The students were informed that no incentives would be provided for participation in the study and that their personal data would not be disclosed. Participants were given enough time to complete the questionnaire.

Statistical Analysis:

Data were analyzed using descriptive statistics (frequency, percentage, mean and standard deviations) using chi-squared test in the SPSS version 18. Any difference and/or relationship found were considered significant at $P < 0.05$.

3. Results

Questionnaires were distributed in a total of 64 students, out of which 21.9% (n=14) were males and 78.1% (n= 50) were females. All questionnaires were returned and response rate was found to be 100% as students who participated were instructed to answer all the questions. As the objective of the study was to assess the participants' knowledge, the responses 'No' and 'do not know' were combined into one response, 'No', during the statistics analysis.

Regarding knowledge on risk factors of oral cancer, students of both years gave a great number of different answers. The distribution of various risk factors is shown in (Table 1). There was no statistically significant difference in identification of smoking, tobacco use and alcohol as a risk factors for oral cancer between both groups of students (96.8% ,95.3% ,90.6% respectively of total student body altogether). However, the students of the fourth year showed statistically significant difference (third year 17.8% and fourth year 77.8%, ($p = 0.000$) in identification of sun exposure in the case of lip cancer as a risk factors.

With reference to the diagnostic knowledge, the majority (91.8%) knew that squamous carcinoma is the most common form of oral cancer. When asked to state the most common site in the mouth for oral cancer, 82.1% third year students reported that the tongue is the most common site for oral cancer, followed by the floor of the mouth 42.8%. By comparison, fourth year students reported that the floor of the mouth is the most common site for oral cancer 72.2%, followed by the tongue 36.1%. However, only 68.6% of the students were aware that oral cancer is most often diagnosed at an advanced stage. No statistical correlation was noted according to academic year ($p > 0.5$).

In response to the information related the clinical presentation of oral cancer, the commonly identified cancerous change in oral mucosa was non-healing ulcer (90.6%) was the most frequent change identified, followed by red patch (87.5%) and white patch (82.8%). No statistically significant between the students 'knowledge about clinical signs of oral cancer, other oral mucosal changes associated with oral cancer are shown in (Table 2).

Practices and opinions of dental students regarding oral cancer screening and prevention are illustrated in (Table 3). About 57.8% reported that they would advise their patients on risk factors for oral cancer in the future and 87.5% of the respondents routinely recorded their patients' tobacco and alcohol consumption habits during history taking, with no significant differences according to the academic year.(20.3%) of the students reported performing routine oral examination during routine visits, 8.3% of students of fourth year and 3.1%, of students of third year reported that they had the opportunity to examine patients with oral lesions.

Regarding the knowledge on prevention and early detection of oral cancer 67.9% of the third year students and 47.2% of the fourth year students, respectively, felt that they did not have sufficient knowledge (Table 3). Majority of the respondents (92.2%) wanted to have additional knowledge and information on different aspects of oral cancer such as patient counselling, clinical presentation of oral cancer, its management and treatment. With lectures and seminars being the most popular forms of further information shown in (Figure1).

For referring patients and who should treat patients suspected with oral cancer lesions, it was noted that oral maxillofacial surgery department (26.6%) was the most preferred by both third and fourth year students, followed by oral medicine department(23.4%) (Figure 2).

Table 1: Knowledge of the Risk Factors among Students According to the Academic year (Yes answer)

Variable	Third year n=28 Students N (%)	Fourth year n=36 students N (%)	Total N (%)	Mean	P-value
Tobacco	26 (92.8%)	35 (97.2%)	61(95.3%)	1.2	.421
Smoking	27(96.4%)	35(97.2%)	62(96.8%)	1.2	.859
Alcohol	26(92.9%)	33(91.7%)	58(90.6%)	1.1	.861
Immunosuppression	24 (71.4%)	21 (58,3%)	45(70.3%)	1.2	.572
older age	21 (75%)	29 (80.6%)	50(78.1%)	1.3	.751
viral infection	22 (78.6%)	25 (69.4%)	47(73.4%)	1.5	.877
Sun exposure	5 (17.8%)	28 (77.8%)	33(51.6%)	1.8	.000
family history of cancer	20 (75.4%)	25(69.1%)	45(70.3%)	1.4	.572
low consumption of fruits	16 (57.1%)	20 (55.6%)	36(56.2%)	1.5	.568
Poor oral hygiene	15(53.6%)	18(50%)	33(51.6%)	1.4	.877
Obesity	10(35.7%)	12(33.3%)	22(34.4%)	1.2	.198

Independent t Test.95% Confidence Interval of the Difference.

Table 2: Rate of students' answers to the questions concerning main clinical aspects of oral Cancer:

	Thirdyear n=28 Students N (%)	Fourthyear n=36 students N (%)	Total Mean	P-value
Non-healing ulcer	25(89.3%)	35(97.2%)	60(93.8%)	1.2.199
White lesion	23(82.1%)	30(83.3%)	53(82.8%)	1.1.902
Red lesion	24(85.7%)	32(88.8%)	56(87.5%)	1.1.903
Speckled	20 (71.4%)	28(77.7%)	48(75%)	1.2 .568
Swelling	24(85.7%)	35(97.2%)	59(92.2%)	1.2.199
Numbness	20(71.4%)	26(72.2%)	46(71.9%)	1.3.567
Bleeding	12(42.8%)	24(66.6%)	36(56.2%)	1.4.443

95% Confidence Interval of the Difference.Independent t Test

Table 3:Practices and Opinions of the Students Regarding Oral Cancer Screening

3rd year students N (%)	4thyear students N (%)	Total N (%)	P-value
Practices:			
I will advise my patients about OC risk factors	24(85.7%)	30(83.3%)	54(84.4%)NS
I always ask my patients if they use tobacco or alcohol	23(82.1%)	33(91.7%)	56(87.5%)NS
My patients sufficiently know signs and symptoms of OC	13 (46.4%)	29(45.3%)	16 (44.4%)NS
I examine patients' oral mucosa routinely	5 (17.9%)	8 (22.2%)	13 (20.3%) NS
I always screen the oral mucosa of high risk patients group	13 (46.4%)	22(61.1%)	35 (54.7%) NS
I had had the opportunity to examine patients with oral lesions	2 (7.1%)	3 (8.3%)	5(7.8%)NS
Opinions:			
I have sufficient knowledge about prevention and detection of OC	9 (32.1%)	28(43.8%)	19 (52.8%) NS
knowledge level about clinical appearance of oral cancer:			
a. Very well informed	1(3.6%)	3 (8.3%)	4(6.3%)
NS			

b. Well informed	4 (14.3%)	11(30.6%)	15(23.4%)	NS
c. Adequately informed	10 (35.7%)	9 (25%)	19(29.7%)	NS
d. Poorly informed	13 (46.4%)	13 (36.1%)	26 (40.6%)	NS
I would you like more information oral cancer	26 (92.9%)	34 (91.7%)	60 (92.2%)	NS

OC = oral cancer, NS = Not significant

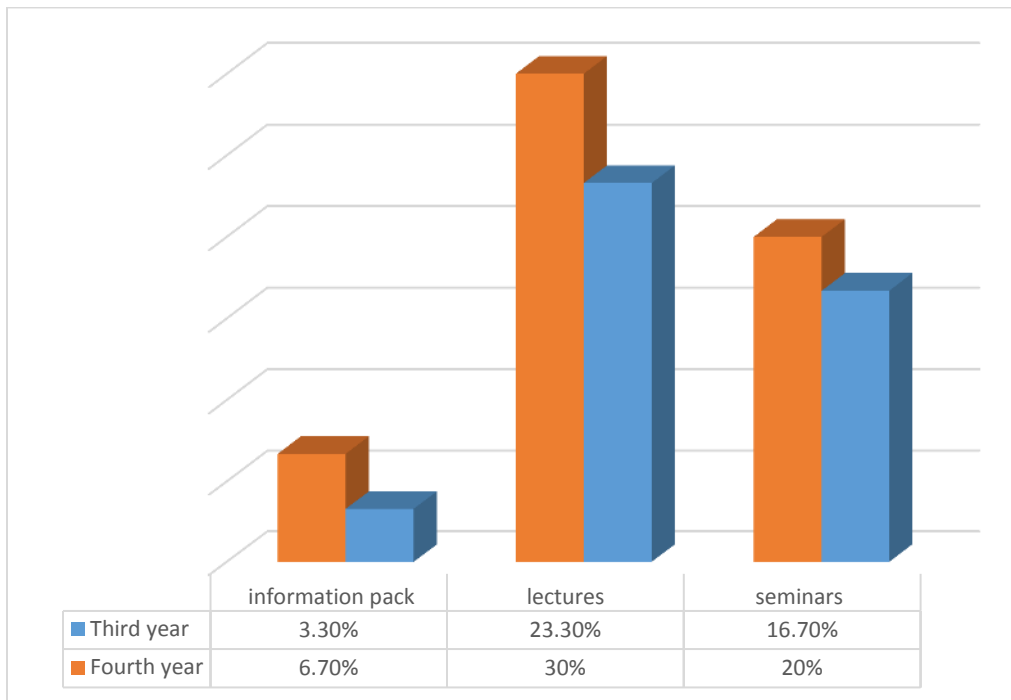


Fig.(1) : Source of Information Requested by Students According to the Academic Year

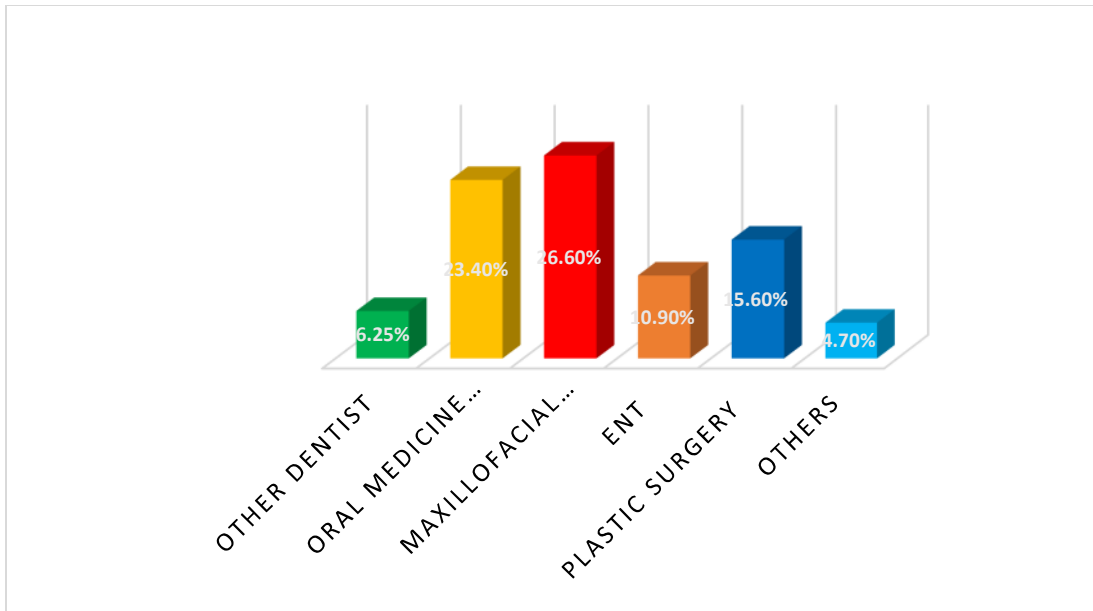


Fig.(2):Point of Referral Selected by Dental Students

4. Discussion

The early diagnosis of oral cancer is crucial to achieve the best results since it reduces rates of morbidity and mortality and increases the quality of life ⁽¹⁴⁾. Nevertheless, some studies have suggested that these professionals are not able to adequately detect oral cancer in its early stages due to their ineffective attitudes and lack of knowledge ⁽²¹⁾.

In addition, information regarding the performance of dental students on this issue tends to be limited and unsatisfactory ^(2, 3, and 21). Thus, the aim of this study is to investigate the knowledge of dental students regarding the risk factors, clinical aspects, and their attitudes about oral cancer.

The majority of participants were female, accounting for 78.1%, with mean age of 22.7 years. The results found here are similar to those reported by **Lima et al.**⁽²⁴⁾,

Martins et al.⁽²⁵⁾ and the most individuals included in the sample were non-smokers, which is an important feature when considering preventive attitudes on oral cancer, because it is much easier for a nonsmoker professional to establish guidance measures to combat smoking among patients^(25,26).

Although the vast majority of students identified smoking, tobacco use and alcohol as the main risk factors, similar to previous studies done in Yemen⁽²⁷⁾, Kuwait⁽²⁸⁾, Saudi Arabia⁽²⁰⁾ and Iran⁽¹³⁾ a considerable proportion of students were not aware that, sun exposure, HPV, low consumption of fruits, prior oral cancer lesions, obesity, and other lifestyle factors are also potential risk factors. Most of oral cancer cases occur in patients 40 years or older, with most patients at the time of diagnosis being at their sixties, about 78% of students indicated older age as a potential risk factor for development of oral malignancy. These results highlight the need to revise the current curriculum

with emphasis on oral cancer risk factors. As expected, fourth year dental students showed better knowledge regarding some items of risk factors, probably due to curricular factors making them more exposed to topics related to oral cancer, which is in accordance with previous reports .

Regarding the most common mouth cancer type, location and stage of diagnosis,(91.8%) identified squamous cell carcinoma as the most common type of oral cancer, and they identified tongue and floor of the mouth as the most common sites of oral cancer, these findings are consistent with previous studies among dental students elsewhere^(3,28-30) . Slightly more than two thirds of the students knew that oral cancers are most often diagnosed in the advanced stage in contrast to half of the students in most of the other surveys^(30, 31). A review of Hospital Cancer Registry (HCR) reveals that 60% of individuals come to services with advanced disease, when the chances for cure are greatly reduced and treatment is expensive ⁽²⁵⁾. These data may reflect the lack of professional knowledge in early detection of oral cancer as well as limited access to health units and services provided to the population, especially in the dental field ⁽²⁵⁾. Early recognition of the most common clinical presentations of oral cancer is of utmost importance in the diagnosis of oral cancer, regarding clinical manifestations of oral cancers, 93.8% of students believed that ulcers that lasted for more than 2 weeks and had irregular margins were the signs of oral cancers. In previous study ⁽³²⁾, ulcers lasting for more than two weeks were reported to be due to oral cancers with the highest frequency, these results have been confirmed by studies in UK ⁽¹³⁾,and Nigeria ⁽³³⁾.However, red lesion was identified by a higher percentage of students (87.5. %) in comparison to white lesion (82.8%), although both lesions have malignant potential. The significance of red lesion, white lesion and mixed lesion (red and white lesions) needs to be emphasized in future teaching of both medical and dental students.

As oral cancer can be prevented by controlling risk factors such as smoking, use of tobacco and consumption of alcohol, it is necessary that dentists educate their patients on the importance of quitting these behaviors. It is encouraging that majority of students (84.4%) in our study indicated a willingness to deliver advise to their patients in the future regarding risk factors of oral cancer. In our study, a surprisingly high number of students responded that they rarely have an opportunity to see patients with potentially malignant lesions(7.8%).This is consistent with previous studies of dental and medical students where confidence about oral cancer knowledge was attributed to a lack of training ^(3,31). Emphasis on hands-on training for oral cancer examinations is critical for improving dental students' skills and confidence in this area.

In line with other studies^(3,13), only a few students either felt very well or well informed regarding clinical appearance of oral cancer, and around56.3% of students felt they did not have sufficient knowledge regarding prevention and early detection of oral cancer. In the present study, more than 92.2% of students admitted that they need further information regarding oral cancer, which is very similar to the results of previous studies ^(3, 13, and 30). The most wanted types of information reported by our students were lectures and seminars.

Maxillofacial surgery and Oral Medicine were the most commonly selected proposed points of referral for patients with a suspected oral cancer, which confirmed results of previous studies from Iran⁽³⁾, UK⁽¹³⁾, Yemen⁽²⁷⁾ and Kuwait⁽²⁸⁾. **Hollows et al.** in his study, concluded that majority of the medical and dental practitioners refer suspected patients to oral maxillofacial surgery department within a week, as delays in referral to appropriate department can significantly affect the prognosis of the disease⁽³²⁾.

Some limitations of the study included small the sample size. A survey with a larger sample size and more universities across the country will give more insight into the actual requirement of awareness on the subject of oral cancer and improvements that are required in our teaching strategies nationwide.

5. Conclusions

The role of dental practitioners in early detection and prevention of oral cancer is very important. A dentist is often the first to see suspicious but asymptomatic oral lesions, Therefore dental students should get sufficient knowledge during their undergraduate education about clinical appearance, risk factors and prevention of the oral cancer. Smoking, tobacco use and alcohol consumption are the main risk factors for oral and oropharyngeal cancers and dental practitioners should be included in risk advising and screening programs. This study highlights the need to improve dental students' knowledge about the appearance of oral cancer, and appropriate early diagnostics of patients with such oral lesions as well as strengthening the curriculum in practical and theoretical classes.

RECOMMENDATIONS:

Our study highlights that students prefer interactive methods of teaching over the traditional lectures, hence, our teaching methodologies should be modified accordingly.

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