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Knowledge on Oral Cancer in a Group of Undergraduate Dentistry Students

Conhecimento Sobre Câncer Oral em um Grupo de Acadêmicos de Odontologia

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Abstract

Oral cancer is a multifactorial disease with a high occurrence rate considered to be an important public health problem. The knowledge of the Dentist is essential in the early diagnosis process, with preparation beginning since graduation to know the pathology, carry out accurate examinations, and act correctly in the face of suspected oral cancer cases. This study aimed to evaluate the knowledge of undergraduate students in Dentistry at a university regarding oral cancer and its risk factors. This was an observational, cross-sectional, qualitative and descriptive study, with use of forms on students from the 4th to the 9th semester. After data collection, the results were submitted for statistical analysis in the IBM SPSS2018 program. The total number of correct answers related to ten questions, nine with a single correct answer and one with six possibly correct answers. The correlation between the number of correct answers and the progress of the semesters (from the 4th to the 9th) was tested with Kendall's tau b coefficient. The analysis for each question used was performed by Fisher's exact test with Monte Carlo approximation. There was no significant difference (p = 0.334; rt = -0.093) in the evolution of knowledge surrounding the questions applied. In the analysis for each question, there was a significant difference in questions two and five (p = 0.000). The level of knowledge of dentistry students was considered good, needing improvement. It is essential to implement continuous educational measures throughout the course.

Keywords: Mouth Neoplasms. Oral Health. Delivery of Health Care.

Resumo

O câncer bucal é uma doença multifatorial com alta incidência, é considerado um problema de saúde pública. O conhecimento do cirurgião-dentista é fundamental no processo de diagnóstico precoce, está preparado desde a graduação para realização de exames precisos, conhecer acerca da patologia e agir corretamente frente aos casos suspeitos de câncer bucal. Este estudo teve como objetivo avaliar o conhecimento dos graduandos em Odontologia da UNIME Lauro de Freitas a respeito do câncer bucal e seus fatores de risco. Metodologia: Tratou-se de estudo observacional, do tipo transversal, qualitativo e descritiva, aplicando formulários a alunos do 4º ao 9º semestre. Após a coleta, os dados foram submetidos à análise estatística no programa IBM SPSS2018. O índice total de acertos relacionados a dez questões, sendo nove com uma única resposta correta e uma com a possibilidade de seis respostas corretas. A correlação entre o número de acertos e o avançar dos semestres (do 4º ao 9º) foi testada com o coeficiente tau b de Kendall. E a análise para cada questão empregada foi realizada pelo teste exato de Fisher com aproximação de Monte Carlo. Não foi observada diferença significante (p=0,334; rt=-0,093) na evolução do conhecimento sobre as questões aplicadas. Na análise para cada questão houve diferença significativa nas questões dois e cinco (p=0,000). O nível de conhecimento dos estudantes de Odontologia foi considerado bom, necessitando melhorar. É imprescindível a implementação de medidas educativas contínuas ao longo do curso.

Palavras-chave: *Neoplasias Bucais. Saúde Bucal. Atenção à Saúde*

1 Introduction

Cancer is synonymous with malignancy. It corresponds to a type of aggressive pathology, which has high rates of incidence and mortality in the world population[1]. Such diseases are characterized by the ability to invade the organism's structures through the disorderly increase of the body's cells, justified by the loss of control of cell division[2]. Considered a chronic condition distributed worldwide, cancer presents an important public health problem, taking into account the high prevalence of the disease and the impact it causes on the lives of individuals[3].

Cancer represents the second leading cause of mortality in the world today, with the prospect of occupying the first leading cause of death in Brazil in 2020. In 2018, 18,078,957 cases were estimated worldwide, of which 354,864 cases were in the oral cavity, thus being eighteenth in the world ranking, with mortality in 2018 estimated at 177,384 deaths worldwide, occupying the sixteenth position[3]. In Brazil in 2018, cancer ranked second in morbidity[4].

Malignant neoplasms can develop in any cell and tissue in the body. It is considered oral cancer, any type of malignancy that affects the regions of the tongue, gums, hard palate, floor of mouth and buccal mucosa[4]. In countries that have a low to medium Human Development Index (HDI), like some countries in Latin America, men have an incidence rate of oral cancer by standardized age of 8.7%[3].

Among the various types of malignant neoplasms in the mouth, more than 90% are of the variant squamous cell carcinoma, considered the most common histological type. The main risk factors for oral cancer are smoking and alcoholism, increasing the chances for the disease to occur if there is a combination of both[5]. Alcoholism and smoking are considered public health problems, increasing the morbidity and mortality of cancer cases[6]. In addition, excessive exposure to sunlight without the necessary protection is a considerable risk factor for oral cancer, and recent studies claim that types sixteen and eighteen of human papillomavirus (HPV) infections are related to the causes of mouth cancer and mainly, oropharyngeal cancer[7,8].

In Brazil, oral cancer is the fifth most common in men and the ninth most common in women in the Northeastern region, affecting people over the age of forty and in most cases leukoderma individuals[2]. In 60% of oral cancer cases, the diagnosis is only reached in the advanced stages of the disease, which reduces the chances of survival and gives a worse prognosis, increasing the costs and complexity of treatment. Late diagnosis can be related to some factors such as poor professional training and/or lack of specialized services[9,10,11].

Taking into account the high mortality caused by this disease, prevention and early diagnosis are fundamental to improve prognosis, allowing for a 90% chance of cure, taking into consideration that the Dentist is the most appropriate health professional for such actions[12]. Thus, it is essential that undergraduate dentistry students have, throughout their academic experience, a qualified training regarding oral cancer. Considering that the educational process contributes to reducing morbidity and mortality statistics, this study aimed to identify the level of knowledge of undergraduate dentistry students at a university in relation to lesions with potential for malignancy, oral cancer, their risk factors and treatment of this disease.

2 Material and Methods

2.1 Study design and study population

This was an observational, cross-sectional, qualitative and descriptive study. The Dentistry course at the university where this study was conducted consists of nine academic semesters. Forms were applied to students from the fourth to the ninth semester of this institution. The sample was chosen at random and consisted of 236 students of both sexes, regularly enrolled in the course, with forty students from each semester from the fourth to the eighth and thirty-six students from the ninth semester, as there were only this number of students enrolled in that semester in the period the research was conducted.

2.2 Ethical approval and informed consent

The Research Ethics Committee approved this study under protocol: 4.114.723. The form was applied by only one researcher, thus eliminating issues related to the standardization of questions and answers, with cordiality, in no way forcing the participation of students as to not make this moment unpleasant or leave participants feeling coerced. After explanation of the objective, method, guarantee of data confidentiality and the possibility of giving up at any stage of the research, students were invited to participate in the study, being asked to sign the Informed Consent Form.

2.3 Inclusion and exclusion criteria

The exclusion criteria for the study was students of age less than eighteen years (in view of the impossibility of signing the informed consent form). The form consisted of ten objective questions in relation to the perception, knowledge, etiology, symptoms, diagnosis and treatment of oral diseases, especially in oral cancer. Questions were raised that were seen as important and necessary to identify the knowledge of students in the sample, such as the signs and symptoms of oral cancer, which professional to look for when presenting cancerous signs and how to conduct treatment after diagnosis.

The inclusion criteria were students aged eighteen and over, who were duly enrolled from the fourth to the ninth semester of the dentistry course.

2.4 Data collection and analysis

After collection, the data was input in the Windows Excel Software and submitted for statistical analysis in the IBM SPSS 2018 program. The total index of correct answers related to ten questions, nine with a single correct answer and one with the possibility of up to six correct answers was measured in each semester evaluated. The correlation between the number of correct answers and the progress of the semesters (from fourth to ninth) was tested with Kendall's tau b coefficient. Then, an analysis was performed for each question, considering the proportions of responses for each choice provided in the structured questionnaire. Fisher's exact test with Monte Carlo approximation was used. Graphs and tables representing the values found with their respective percentages were constructed from the data collected.

3 Results and Discussion

236 students regularly enrolled in the Dentistry course participated in the study. Thirty-six students attending the ninth semester and 200 between the fourth and eighth semesters (forty per semester). Of the total respondents, 176 (74.58%) were female and sixty (25.42%) were male. Regarding the age group, the students were between eighteen and forty-eight years old, with the average age of the participants being twenty-three years old, with a standard deviation of 3.96.

The total number of correct answers related to ten questions, nine with a single appropriate answer and one with the possibility of up to six correct answers was measured in each semester evaluated. The correlation between the number

of correct answers and the progress of the semesters (from the fourth to the ninth) was tested with Kendall's tau b coefficient. There was no statistically significant difference (p = 0.334; rt = -0.093), that is, there was no difference in the evolution of knowledge about the questions used throughout the tested semesters, with results shown in Table 1.

Table 1 - Distribution of the number and percentages of responses, per semester, on factors related to knowledge of oral cancer, 2020

Correct Answers per Semester								
Variable N (%)		4TH Semester	5TH Semester	6TH Semester	7TH Semester	8TH Semester	9TH Semester	Correct Answers
		N (%)	N (%)	N (%)	N (%)	N (%)	Total (%)	
1	What is the most common type of oral cancer?	28 (70%)	34 (85%)	30 (75%)	25 (62.5%)	32 (80%)	29 (80.56%)	**178 (75.42%)**
2	What is the most common anatomical region affected by oral cancer?	8 (20%)	20 (50%)	6 (15%)	8 (20%)	5 (12.5%)	16 (44.44%)	**63 (26.69%)**
3	What is the most common clinical presentation of oral cancer in early-stage patients?	26 (65%)	29 (72.5%)	29 (72.5%)	27 (67.5)	33 (82.5%)	29 (80.56%)	**173 (73.31%)**
4	What are the features of the lymph node in regional metastasis?	12 (30%)	11 (27.5%)	15 (37.5%)	15 (37.5%)	17 (42.5%)	22 (61.1%)	**92 (38.98%)**
5	Which type of pre-cancerous lesion is the most frequent?	30 (75%)	34 (85%)	31 (77.5%)	17 (42.5%)	20 (50%)	18 (50%)	**150 (63.56%)**
6	The highest prevalence of oral cancer occurs in:	34 (85%)	36 (90%)	31 (77.5%)	27 (67.5%)	34 (85%)	21 (58.33%)	**183 (77.54%)**
8	Which professional should be sought in case of suspected oral cancer?	28 (70%)	31 (77.5%)	33 (82.5%)	33 (82.5%)	30 (75%)	32 (88.89%)	**187 (79.24%)**
9	Assuming that a patient comes to your practice with a lesion that has been present for more than 15 days, abscesses and darkened parts, what would be the best course of action?	26 (65%)	37 (92.5%)	37 (92.5%)	27 (67.5%)	29 (72.5%)	27 (75%)	**183 (77.54%)**
10	In the case of a lesion with suspected malignancy or with potential for malignancy, what type of biopsy is indicated?	35 (87.5%)	34 (85%)	32 (80%)	23 57.5%)	29 (72.5%)	27 (75%)	**180 (76.27%)**

Source: Resource data.

An analysis was performed for each question employed, considering the proportions of responses for each choice provided in the structured questionnaire. For this, Fisher's exact test with Monte Carlo approximation was used.

There was no difference between semesters in the proportions of responses to the first question "What is the most frequent type of oral cancer?" (p = 0.069). In the fourth semester, 70% of students answered the question correctly; there was an adjustment to

As for the second question, as shown in table 2, there was a difference between the semesters in the proportions of the answers when asked, "What is the most common anatomical region for the presentation of oral cancer?" (p = 0.000). It was observed that 20% of students in the fourth semester answered the question correctly, 50% in the fifth semester, 15% in the sixth semester, 20% in the seventh semester, 12.5% in the eighth semester and 44.4% in the ninth semester.

Table 2 - Distribution of the number and percentage of responses per semester, surrounding the anatomical region with the highest prevalence in oral cancer, 2020

	Semester of Participant at Time of Interview						
What is the most common anatomical region for occurrence of oral cancer?	**4th semester**	**5th semester**	**6th semester**	**7th semester**	**8th semester**	**9th semester**	**Total**
Number count Bucal Mucosa % of semester of participant at time of interview	8 20.0%	10 25.0%	8 20.0%	10 25.0%	5 12.5%	4 11.1%	**45 19.1%**
Number count TONGUE % of semester of participantat time of interview	8 20.0%	20 50.0%	6 5.0%	8 0.0%	5 12.5%	16 44.4%	**63 26.7%**

	Semester of Participant at Time of Interview						
What is the most common anatomical region for occurrence of oral cancer?	**4th semester**	**5th semester**	**6th semester**	**7th semester**	**8th semester**	**9th semester**	**Total**
Number count FLOOR OF MOUTH % of semester of participant at time of interview	21 52.5%	7 17.5%	24 60.0%	21 52.5%	28 70.0%	15 41.7%	**116** **49.2%**
Number count OROPHARYNX % of semester of participant attime of interview	0 0.0%	2 5.0%	1 2.5%	0 0.0%	1 2.5%	0 0.0%	**4** **1.7%**
Number count GINGIVA % of semester of participant at time of interview	1 2.5%	1 2.5%	0 0.0%	0 0.0%	1 2.5%	1 2.8%	**4** **1.7%**
Number count NO ANSWER % of semester of participant at time of interview	2 5.0%	0 0.0%	1 2.5%	1 2.5%	0 0.0%	0 0.0%	**4** **1.7%**
Number count TOTAL % of semester of participant at time of interview	40 100%	40 100%	40 100%	40 100%	40 100%	36 100%	**236** **100%**

Source: Resource data.

There was no difference between semesters in the proportions of responses to the third question "What is the most common clinical presentation of oral cancer in patients at an early stage?" (p = 0.143). In the fourth semester, 65% of students got it right, in the fifth semester 72.5%, in the sixth semester 72.5%, in the seventh semester 67.5%, in the eighth semester 82.5% and in the ninth semester 80.6%.

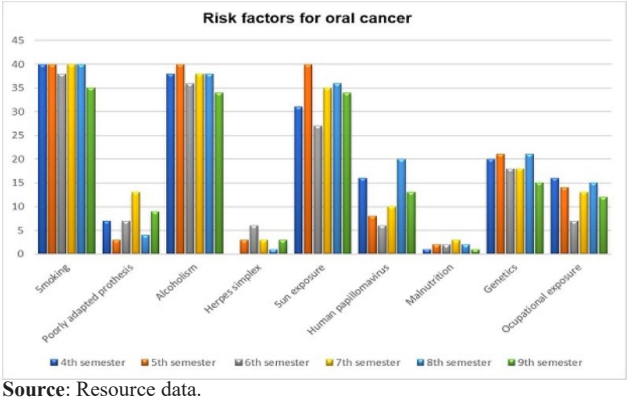
There was no difference between the semesters in the proportions of the answers to the fourth question "What are the characteristics of the lymph node in regional metastasis?" (p = 0.116). The percentage of correct answers among students in the fourth semester was 30%, in the fifth semester it was 27.5%, in the sixth and seventh semester it was 37.5%, in the eighth semester it was 42.5% and the ninth semester was 61.1%.

There was a difference between the semesters in the proportions of the answers to the fifth question "Which type of pre-malignant lesion is the most frequent?" (p = 0.000). In the fourth semester, 75% of students answered the question correctly, while in the fifth semester 85%, 77.5% in the sixth, in the seventh semester it was 42.5%, in the eighth it was 50% and the ninth semester was 50%.

There was no difference between the semesters in the proportions of the answers to the sixth question "The highest prevalence of oral cancer occurs in ..." (p = 0.156). Of the students in the fourth semester 85% answered "males", in the fifth semester 90% gave this answer, in the sixth semester 77.5%, in the seventh semester 67.5%, in the eighth semester 85% and in the ninth semester 86,1%.

There was no difference between the semesters regarding the proportions of the answers to the seventh question "Check the correct alternative(s) surrounding the risk factors of oral cancer" (p = 0.663). For this question, each interviewee had the possibility to give more than one answer, and there was more than one correct answer, as illustrated in Figure 1.

Figure 1 - Graph that presents the factors for oral cancer and the number of students who opted for each one



Source: Resource data.

There was no difference between the semesters in the proportions of the answers to the eighth question "Which professional should be sought in case of suspected oral cancer?" (p = 0.409). The correct answer was given by 70% of students in the fourth semester, 77.5% of students in the fifth semester, 82.5% of students in the sixth semester, 82.5% of students in the seventh semester, 75% of students in the eighth semester and 88.9% of ninth semester students.

There was no difference between the semesters in the proportions of the answers to the ninth question "Assuming that a patient arrives at your practice presenting a lesion that has been present for more than fifteen days, abscesses and darkened parts, what would be the best course of action?" (p = 0.095). The percentage of students who gave the correct answer in each semester was 65% for the fourth semester, 92.5% for the fifth semester, 92.5% for the sixth semester, 67.5% for the seventh semester, 72.75% for the eighth semester and 75% for the ninth semester.

Dentistry students are the future workforce and they are responsible for diagnosing oral cancer and disseminating patient education on the subject, although other professionals can contribute[13]. It is essential to act in the community in

order to achieve health promotion. Therefore, in order to work efficiently in the prevention of a certain disease, it is plausible to know how to identify its characteristics, and thus create effective measures that can favorably reach individuals, thereby reducing its occurrence. For this reason, it is vitally important to carry out research that evaluates the knowledge of dentistry students, verifying their preparation and qualification to execute their role with competence[14].

According to the consulted literature, women have greater participation in questionnaires, possibly due to their willingness to contribute to research[15,16], this statement corroborates the data of this study in which the majority of participants, 176 (74.58%), were female. However, there was a lack of interest from the students in collaborating with the study. Some justified it with feelings such as fear and insecurity, especially those finalizing their course. Others showed disinterest in answering the questions, justifying that there was no need, remembering that all students interviewed had already attended or were taking the Clinical Propaedeutics class, which covers contents of Stomatology and Oral Pathology.

Dental students should not treat the subject of oral cancer as isolated from their curriculum, but as a necessity for their daily practice[17]. Thus, this study is of fundamental importance, since the ability of Dental Surgeons to make an early diagnosis of oral cancer is directly proportional to the knowledge and skills acquired during the period of their studies[18]. Therefore, it is of utmost importance to evaluate student learning and to be able to propose the carrying out of extension activities that provide continuity of learning, improving the knowledge of future professionals.

To favor the prevention of a disease, it is important to know how to identify the population and the risk factors involved, then establishing measures that are beneficial and favorable to the individual, in order to reduce the probability of its occurrence[19]. In this sense, in the seventh question, students were asked the factors that cause oral cancer and no statistically significant difference was found for this questioning. Most students were able to answer at least one of the main factors.

The results showed that all students interviewed in the fifth semester were unanimous in responding to smoking and exposure to sunlight as predisposing factors to oral cancer, and thirty-eight of the students from that period, also responded to alcoholism. In relation to the entire sample, 233 (23.5%) signaled smoking, 222 (22.4%), alcoholism and 203 (20.5%) exposure to sunlight.

According to literature, smoking, drinking and solar radiation are the main triggers for the development of oral cancer[6]. Scheidt et al.[20] affirm that tobacco is a major factor for the development of oral cancer, with about 50 substances with carcinogenic potential in its composition, such as nitrosamines and aromatic hydrocarbons, in addition to the great increased temperature in the oral cavity, promoting harmful effects. Alcohol consumption, on the other hand, is closely related to cellular hyperproliferation, increasing the fragility of inhaled or ingested carcinogens and also in DNA repair, especially in the consumption of ethanol.

Alcoholism and smoking have synergistic effects, however, in previous studies it was found that alcohol can be an independent factor for the cause of oral cancer, depending on the dose and consumption routine[21]. In a study carried out by SOARES et al.[22], which aimed to describe the epidemiological and clinical profile of people with oral cancer treated at reference hospitals in Brazil during from 2005 to 2014, 62.52% were smokers and 48.77% alcoholics, a result that also draws attention and shows the importance of dental professionals in raising awareness to their patients and general population.

Another factor related to pathogenesis of oral cancer is infection by the Human Papilloma Virus (HPV), being placed as one of the alternatives to be marked by the students. In 1987, Syrjänen[24] first reported the possibility of HPV acting as an etiological factor in oral cancer. In this study, students showed that they did not know this information, since the statement presented one of the lowest rates of choice by students, with only seventy-three markings, corresponding to 7.4% of the total. There are approximately 120 virus subtypes that can be associated with benign and malignant lesions, and in the oral cavity, HPV subtypes six and eleven can be associated with benign lesions, while subtypes sixteen and eighteen with potential malignancy and squamous cell carcinoma. HPV-16, mainly, has been considered as a factor in the development of a subset of squamous cell carcinoma, mainly at the base of the tongue[25].

Recognizing excessive exposure to solar radiation as a risk factor for development of lip cancer is a pre-requisite. Ultraviolet (UV) rays damage the cells of the epithelium as well as the connective tissue, increasing the possibility of triggering lip carcinoma[26]. For the prevention of this type of cancer, there are measures that range from the population's awareness and guidance on the disease, to encouraging the use of hats and sunscreens. It is important to avoid exposure to sunlight during the period from ten in the morning to four in the afternoon, and mainly, to have the routine use of lip sunscreen, more precisely fifteen to thirty minutes before exposure to sunlight, performing its reapplication after accentuated activities, in which the product may have been removed and its effect reduced or even cancelled[27].

Another aspect that is important to discuss is related to the students' doubts and difficulty in responding to the characteristics of the lymph node in regional metastasis. In this regard, only ninety-two students in the sample (39.00%) answered correctly. This result corroborates the findings by Soares et al.[28], who conducted a survey with dental students, in order to observe the level of knowledge on oral cancer

and, when asked about the characteristics of lymph nodes in regional metastasis, only 44.36% of students were able to answer that metastatic lymph nodes are firm and painless.

In both studies, less than half of the sample answered the question correctly, which shows not only the difficulty of the suspected diagnosis of metastasis, but also the difficulty in performing the examination of the lymphatic chains, emphasizing the need to further explore the content in specific disciplines. This thinking also corroborates with the study by Awojobi et al.[29] who, when investigating the opinion of patients regarding the practice of Dentists, found that only 13% of the participants stated that they had received a physical examination in the neck region, and that 44% of these had received explanations of the procedure. The presence of metastases to lymph nodes and distant metastases are important factors that can determine the prognosis for oral cavity and oropharynx carcinomas. Therefore, it is very important that professionals know how to perform an adequate palpation, as well as know the standard signs of neoplastic lymphadenopathy.

The anatomical region most affected by oral cancer is the tongue[15]. Keeping an eye on the most common locations of oral cancer development is of paramount importance, as these locations need to be examined more accurately. Research shows that, after the tongue, the regions most affected are the lip, the floor of the mouth and the hard palate[22]. In this study, this question showed a statistically significant difference ($p = 0.000$). It was observed that the majority of students (73.3%) are unaware that the tongue is the region most affected by the lesion. A large percentage of the sample (49.2%) reported that the main region affected by oral cancer is the floor of the mouth, which can be justified by being a location that is also often affected by cancer; while the tongue, which according to the literature is the most affected region, presented a percentage of 26.7% answers. It can be noted that students still do not have sufficient knowledge on it.

4 Conclusion

It is concluded that the students of this institution have a good level of knowledge on oral cancer. However, some doubts are still raised by future professionals, requiring a specific approach aimed at this gap. The creation of educational-preventive extension activities such as courses, lectures, clinical internships, oral cancer prevention campaigns, among others, is suggested, in order to allow academics to review the content throughout the course and consolidate their learning about such an important topic in the dental field.

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