

Oral Cancer Education in Dental Schools: Knowledge and Experience of Nigerian Undergraduate Students

Omolara G. Uti, B.Ch.D., F.M.C.D.S.; A.A. Fashina, B.D.S.

Abstract: The objective of this study was to determine the knowledge and experiences of clinical dental students of the College of Medicine, University of Lagos, Nigeria related to the management and prevention of oral malignancy and premalignancy. A self-administered questionnaire was distributed to all clinical dental students. Most of the students (87.7 percent; n=57) had witnessed at least a patient with oral malignancy, while 61.5 percent (n=40) had witnessed or examined a patient with oral premalignancy. While 61.5 percent of the students had observed biopsies of malignant and premalignant lesions, only 13.8 percent (n=9) had ever performed one under supervision. All the respondents believed that oral malignancy is always or sometimes associated with pain, and most of the students were more familiar with the late signs of oral malignancy than the early signs. Almost two-thirds (64.6 percent) of the respondents believed that oral screening programs were effective for early diagnosis and management of oral malignancies. This study revealed a need for a more structured teaching program with increased emphasis on the early signs and symptoms of oral malignancies and involvement of the students in the examination and biopsies of malignant and premalignant lesions.

Dr. Uti is in the Department of Preventive Dentistry, College of Medicine, and Dr. Fashina is in the School of Dental Sciences, Lagos University Teaching Hospital, Idi-Araba, Lagos, Nigeria. Direct correspondence and requests for reprints to Dr. Omolara G. Uti, Department of Preventive Dentistry, College of Medicine, Idi-Araba, Lagos, Nigeria; 234-8035837360 phone; 234-14733199 fax; omolaraza@yahoo.com.

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Oral cancer is a major health problem in some parts of the world, especially in developing countries. Worldwide, the annual incidence exceeds 300,000 new cases.¹ Internationally, the incidence and site distribution within the mouth vary considerably, with very high rates found particularly in India and Sri Lanka where oral malignancy is the most common type of cancer, accounting for about 40 percent of all cancers.² It accounts for about 3.6 percent of all malignant tumors in Nairobi, Kenya,³ while in Nigeria, it accounts for 36.8 percent of head and neck malignancies.⁴

Burkitt's lymphoma is the most common childhood malignancy, with an incidence of 60.8 percent in 1986,⁵ but there are indications that the incidence may be declining at a significant rate (19.4 percent in 2002)⁶ as a result of greater control of malaria and improved living conditions in Nigeria.

The incidence of oral and pharyngeal cancers increases with age and is relatively uncommon before the age of forty.⁷ In the United Kingdom, 85 percent of cases are found in people aged over fifty

years of age.⁸ In recent years, there have been indications that the incidence and mortality rates have started to increase, especially among younger men.⁹ The reason for this change is not clear. It has also been reported that the five-year survival rate is only 50 percent and this improves to 80 percent when the lesion is detected at an early stage.^{8,10} The prospects of survival are considerably higher when the cancer is confined to a local lesion, as opposed to regional or distant spread having already occurred when the diagnosis is made.¹¹

Researchers in oral cancer agree that the early diagnosis of oral carcinoma greatly increases the probability of cure and survival rate with minimum impairment and deformity.^{12,13} It is therefore pertinent that dental practitioners possess good knowledge of the signs and symptoms of malignant and premalignant lesions for early and effective diagnosis. Ensuring that future dental practitioners are knowledgeable about malignant and premalignant lesions will improve the efficacy of screening and management of these lesions. There are no available

Table 1. Undergraduate experience of oral malignant and premalignant lesions by year of study

Experience	5 th Year	6 th Year	Total	P Value	Significance
Witnessed a patient with oral malignancy	19 (33.3%)	38 (66.7%)	57	0.0003	Significant
Witnessed a patient with premalignancy	12 (30.0%)	28 (70.0%)	40	0.016	Significant
Observed a biopsy being performed	16 (40.0%)	24 (60.0%)	40	0.750	Not significant
Performed or assisted in taking a biopsy	3 (33.3%)	6 (66.6%)	9	0.437	Not significant

published studies on the knowledge of Nigerian dental students regarding the management of oral malignancies. Our review of the literature identified only two studies that examined dental students' knowledge of oral cancer.^{14,15} In view of this paucity, the aim of this study was to determine the knowledge and experiences of clinical dental students of the University of Lagos College of Medicine on the management and prevention of oral malignancy and premalignancy.

Methodology

In March 2004, a self-administered questionnaire was distributed to all the clinical dental students of the College of Medicine, University of Lagos, Nigeria. The questionnaire, which consisted of twenty-two closed and open-ended questions divided into five sections, was designed to collect information on demography; knowledge of students in etiology, signs, and symptoms; undergraduate experience in examination and biopsy procedure; opinion on oral screening programs; and management of malignant and premalignant lesions. The questionnaire was pretested on ten clinical dental students for clarity, and modifications were made according to the responses before the final questionnaire was administered.

Data were analyzed using Epi info version 6.04 (Centers for Disease Control, Atlanta, GA, USA). The chi square test of association and Fisher's exact test when cell number was low were used. Differences were considered significant when $p < 0.05$.

Results

Seventy-three questionnaires were administered, and sixty-five were completed, giving a response rate of 89 percent. The respondents were thirty-nine (60 percent) male and twenty-six (40 per-

cent) female students whose ages ranged from twenty-two to twenty-eight years (mean=23.9 + 1.39 years). The majority (58.5 percent) were final-year (sixth-year) undergraduates.

A majority of students (87.7 percent; $n=57$) had witnessed at least one patient with oral malignancy, while 61.5 percent ($n=40$) had witnessed or examined a patient with oral premalignancy. The final-year students were more likely to have examined or witnessed a patient with oral malignancy ($p < 0.005$) or oral premalignancy ($p < 0.005$) than were the fifth-year students. (See Table 1.) Squamous cell carcinoma was the most commonly observed oral malignancy, reported by 36.8 percent, while leukoplakia was the most frequently reported (57.5 percent) premalignant lesion. Table 2 shows the malignant and premalignant lesions observed by the students. While 61.5 percent of the students had observed biopsies of malignant and premalignant lesions, only 13.8 percent ($n=9$) had ever performed one under supervision or assisted in a biopsy of oral malignant or premalignant lesions.

Tobacco smoking (89.2 percent) and alcohol consumption (69.2 percent) were the two most important etiological factors identified by the students (Table 3). The characteristics of oral malignant lesions as reported by the students are shown on Table

Table 2. Malignant and premalignant lesions most frequently observed by the students

Malignant Lesions	Frequency	Percentage
Malignant ameloblastoma	11	19.3
Carcinoma of antrum	9	15.8
Squamous cell carcinoma	21	36.8
Ameloblastoma	16	28.1
Premalignant Lesions		
Candida	14	35.0
Leukoplakia	23	57.5
Lichen planus	3	7.5

Table 3. Reported etiological factors by the students

Etiological Factors	Frequency	Percentage
Tobacco smoking	58	89.2
Alcohol	45	69.2
Sepsis	40	61.5
Trauma	23	35.4
Sunlight	28	43.1
Spices	16	24.6
Viral infections	13	20.0
Radiation	12	18.5
Drugs	7	10.8
Genetics	9	13.8
Betel nut chewing	7	10.8

Table 4. Likely characteristics of oral malignancy reported by the respondents

Characteristics	Frequency	Percentage
Site		
Tongue	48	73.8
Floor of mouth	26	40.0
Palate	21	32.3
Buccal mucosa	25	38.5
Antrum	12	18.5
Lip	23	35.4
Gingiva	3	4.6
Size		
5-10mm	31	60.8
11-20mm	8	15.7
21-30mm	2	3.9
>30mm	10	19.6
Presentation		
Ulcer	60	92.3
Erosion	42	64.6
Fissure	31	47.7
Induration	54	83.1
Fungation	61	93.8
Nodule	44	67.7
Color		
Speckled	2	3.1
Red	5	7.7
White	12	18.5
All of the above	43	66.2
Association with Pain		
Always	16	24.6
Never	0	0.0
Sometimes	48	73.8
Other Features		
Weight loss	22	33.8
Lymphadenopathy	16	24.6
Tooth mobility	9	13.8
Halitosis	5	7.7
Dyshagia	6	9.2
Swelling	12	18.5
Bleeding	8	12.3
Paraesthesia	7	10.8
Speech defects	4	6.2

4. Of the respondents, 73.8 percent reported the tongue as the most common site of occurrence, and a majority (76.5 percent) believed that a malignant lesion could be less than 20mm in diameter. More than half of the students also were aware that a malignant lesion could be white, red, or speckled in color. Weight loss and lymphadenopathy were the most common additional symptoms reported by the responding students. However, all the respondents believed that oral malignancy is always or sometimes associated with pain.

A majority of the students (71.4 percent) reported that they would routinely and immediately refer patients with malignant oral lesions to a specialist (Table 5). Only 7.5 percent of the students reported that they would observe a malignant lesion for six months before referring to a specialist; 67.2 percent would do a biopsy of malignant lesions routinely, while 32.8 percent would only do biopsy on selected cases. None of the students felt there was no need for a biopsy of malignant lesions.

A majority (64.6 percent) of the respondents believed that oral screening programs were effective for early diagnosis and management of oral malignancies, while 13.8 percent believed that they were ineffective (Table 6). However, more than half of the students also advocated a screening interval of six to twelve months. About 90 percent of the respondents routinely recorded their patients' tobacco and alcohol consumption habits during history taking, but only 38.5 percent always advised the patients on alcohol and tobacco cessation.

Discussion

Of all the conditions that dental professionals see and treat, oral cancer is the one that has life and death implications. The five-year survival rate is only 50 percent overall, but five-year survival is four times greater when tumors are diagnosed at localized stages rather than after metastasis has occurred.¹⁶ It follows that cancers and precancerous lesions should be diagnosed as early as possible if treatment is to have a good prognosis. It is therefore pertinent that dental undergraduate students possess adequate knowledge and skills for early diagnosis and referral of Stage I malignant oral lesions to reduce morbidity and mortality.

Our study showed that the majority of the students had examined patients with oral malignant and premalignant lesions. While 61.5 percent had ob-

served a biopsy of oral malignant lesions, only a few (13.8 percent) had actually performed or assisted in a biopsy. This result is similar to a survey of Texas dental students reported in 1996 in which just over half of the students had observed a biopsy but only about one quarter had actually performed the procedure.¹⁴ The same trend was reported in Spain where 79 percent of the students had examined malignant oral lesions but 24 percent had actually performed a biopsy.¹⁵

While the majority of the students identified tobacco and alcohol consumption as the major etiological factors in oral cancer, only 38.5 percent routinely counselled their patients on reducing their exposure to these factors. Primary prevention of oral cancers involves reducing exposure to etiological factors like tobacco and alcohol. Preventive activities such as risk reduction counselling and oral health education have been shown to be effective in reducing the incidence of oral cancer. Students and health care workers have an important role in the prevention of oral malignancies by educating their patients at each contact.

Squamous cell carcinoma was the most common oral malignant lesion examined by students in this study. This is not surprising as several retrospective studies of oral malignancies in Nigeria have reported squamous cell carcinoma as the most common oral malignancy.¹⁷⁻²⁰ While Burkitt's lymphoma is the most common childhood malignancy in Nigeria, none of the students had examined or biopsied Burkitt's lymphoma. This could be due to the reported decline in the incidence of Burkitt's lymphoma in Nigeria. It may also be due to a lack of referral to the Lagos University Teaching Hospital.

While studies have reported the lower lip as the most frequent site of oral cancer overall and the tongue as the most frequently affected site within the mouth, the few studies conducted in Nigeria have reported contrasting findings. Research done at Ibadan, Nigeria reported the palate as the most common site, while the buccal mucosa was the least common site.^{19,21} However, another study from Ile-Ife, Nigeria reported the alveolar ridge and gingiva as the most common site affected by oral malignancy.¹⁷ The majority of the students in this study, however, listed the tongue as the most common site, and only 4.6 percent of the students listed the gingiva as a common site. The students may have been more familiar with sites that are

Table 5. Management of malignant lesions

Management	Routinely	Selectively	Never	Total
Refer immediately	45 (71.4%)	0 (0.0%)	18 (28.6%)	63
Refer after six months	4 (7.5%)	29 (54.7%)	20 (37.7%)	53
Biopsy	41 (67.2%)	20 (32.8%)	0 (0.0%)	61

Table 6. Perception of undergraduate students on the efficacy of oral screening programs

	Frequency	Percentage
Oral screening for early diagnosis of malignancy		
Effective	42	64.6
Ineffective	9	13.8
Undecided	14	21.5
Advocated screening interval		
Every 3-6 months	25	39.7
Every 6-12 months	34	54.0
Every 12-18 months	4	6.3
Frequency of advice on smoking and alcohol		
Always	25	38.5
Never	3	4.6
Sometimes	37	56.9

commonly reported in their textbooks. It is also disappointing that 28.1 percent of the students cited Ameloblastoma as a malignant lesion. This misconception may have resulted from the ability of Ameloblastoma (a benign odontogenic tumor) to recur and the existence of a malignant variant.

None of the students believed that oral cancer was not associated with pain, and 24.6 percent of them believed that pain was always associated with oral cancers. This finding may be associated with the late presentation (Stage IV) of most of these cancers at the hospitals, as widely reported in Nigerian literature.^{17,21-24} Because students primarily saw patients with late stage oral cancers, they may have been more aware of the signs and symptoms associated with the late stages of malignancy rather than the early signs.

Secondary prevention of oral cancer involves screening for early detection and management. While screening can take many forms, clinical examination and biopsy allow the early detection of oral malignant and premalignant lesions. A majority (64.5 percent) of the respondents believed in the efficacy of screening programs for early detection of oral malignancy, and more than half advocated a screening interval of six to twelve months, consistent with

internationally recommended standards. Data indicate that the screening interval should not be greater than twelve months.²⁵ Annual visual oral cancer examinations have been recommended for dental patients, with specialist opinion obtained for suspicious lesions.¹² More frequent examinations are, however, recommended for treated oral cancer patients in order to monitor the development of secondary tumors.

Conclusion

Although Nigerian dental students' level of knowledge and experience increased with the academic year, educators and policymakers need to place greater emphasis on oral cancer education and training in dental schools. This study revealed a need for a more structured teaching program, with increased emphasis on the early signs and symptoms of oral malignancies and increased involvement in examination and biopsies of malignant and premalignant lesions by the students. Preventive activities through educating patients about the risks associated with etiological factors and smoking cessation need to be emphasized in the school curriculum to enable students to help their patients make choices for healthier lifestyles.

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