

# Knowledge and awareness about oral cancer: A descriptive study in Lagos state

Oyapero A., Akinleye A. I., Owoturo E.O.

## ABSTRACT

**Introduction:** Oral cancer, the most common malignancy in the head and neck region, is the eighth most prevalent cancer in the world. It is essentially preventable through avoiding known risk factors while many international guidelines emphasize the importance of early detection. The aim of this study was to determine the awareness level about oral cancer in a group of patients presenting for routine dental care at the Lagos State University Teaching Hospital, Ikeja, Lagos State (LASUTH). **Methods:** The study sample consisted of routine patients that presented for care at the oral diagnosis clinic of LASUTH. A 31-item structured interviewer administered closed-ended questionnaire in English language was used to obtain socio-demographic information, medical and dental history of the respondents and their knowledge about the risk factors for oral cancer. **Results:** Sixty-six percent of participants had heard about oral cancer but only 3% received this information from their dentists, while 10% had heard about it from their physicians. Eighty-two percent of the respondents had never had of an oral cancer examination and only 7% of them were sure they had received a tongue examination

for oral cancer. Only 28% of the respondents had a high knowledge of the risk factors for oral cancer. Older patients (>35 years of age) ( $p = 0.013$ ), those that were married ( $p = 0.009$ ) and secondary educated respondents ( $p = 0.001$ ) had a significantly lower level knowledge about the risk factors of oral cancer. The study participants that had heard of oral cancer ( $p = 0.027$ ) and those that had an oral cancer examination ( $p = 0.022$ ) had a significantly higher knowledge about the risk factors. **Conclusion:** There is urgent need for primary preventive initiatives to reduce exposure to the risk factors of oral cancer to every dental visit should be taken as an opportunity to provide information about oral cancer and to do a thorough mouth examination.

**Keywords:** Awareness, Oral cancer, Oral examination, Risk factors

### How to cite this article

Oyapero A, Akinleye AI, Owoturo EO. Knowledge and awareness about oral cancer: A descriptive study in Lagos state. Edorium J Epidemiol 2016;2:1–12.

Article ID: 100002E06OA2016

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doi:10.5348/E06-2016-2-OA-1

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Received: 27 February 2016  
Accepted: 06 April 2016  
Published: 14 May 2016

## INTRODUCTION

Cancer is one of the primary causes of death worldwide. Oral cancer, the most common malignancy in the head and neck region, is the eighth most prevalent cancer in the world [1]. Oral malignancies accounts for about 3–4% of all cancers and 2–3% of cancer-related deaths [2]. The

predominant malignant neoplasms in the oral cavity are squamous cell carcinomas (SCC), with the tongue and floor of mouth being the most common sites of occurrence. The aetiology of oral cancer is multifactorial with genetic, environmental, social and behavioral factors implicated in its development. It has been projected that nearly 75% of all cancers are due to tobacco or alcohol intake [3]. Evidence from case-control and cohort studies point to a causal association between these two risk factors and oral malignancy [4, 5]. Other risk factors for oral cancer include previous upper aero-digestive tract malignancy, an older age group, human papillomavirus infection, exposure to ultraviolet light, betel quid consumption and iron deficiency anemia.

Oral cancers mainly afflict men, with about 275,000 new cases diagnosed annually and it is associated with a high morbidity and mortality [6–8]. Equally troubling is the fact that the incidence of oropharyngeal cancer among women and younger patients continues to increase due to human papillomavirus (HPV) infection [9–10]. Oral cancer is essentially preventable through avoiding known risk factors and many international guidelines emphasize the importance of early detection [11]. Early detection of oral cancer is possible because it occurs mainly at sites that are visible or easily accessible to a painless and non-invasive examination [1]. Oral cancer is sometimes preceded by noticeable alterations in the oral mucosa like white or red lesions, ulcers or exophytic growths, with no other obvious signs or symptoms. If it is diagnosed and managed at this stage, it is curable and economical to treat with excellent treatment prognosis and outcome [12]. Most patients, however, do not seek medical care until the tumor is advanced with symptoms of persistent pain. Most oral cancer cases are thus detected at advanced stages that require complex and costly treatments which is associated with unfavorable outcomes [13]. Regrettably, the main modality of treatment in patients with oral cancer is surgery and this often leads to aesthetic and functional deformities, with severe impact on their quality of life. For these reasons, oral cancer remains a public health problem.

Irrespective of the risk factors implicated in oral cancer development, the most significant element that modifies patient survival is the stage at which it is detected [14]. In spite of improvements in diagnostic procedures in medical practice, the mortality of oral cancer has remained unchanged and a substantial diagnostic delay has continued over time [15, 16]. Some of the reasons given for this delay include lack of public awareness about the signs, symptoms and risk factors for oral cancer; non-attendance for routine oral examination in the community, absence of symptoms in early stages of the disease; growth of cancer in areas of oral cavity which are not normally inspected by the patients and/or physician and absence of prevention initiatives by health care providers [15, 16]. A lack of knowledge of oral cancer, its symptoms, and risk factors has also been correlated with late diagnosis and poor prognosis/outcome [3]. The

inadequacy of public awareness of the signs, symptoms and risk factors related to oral cancer has been reported [17]. It is possible that improvement in early diagnosis of oral cancer can be achieved by raising the awareness of the population towards seeking dental care upon identification of oral lesions. Only a few studies [18, 19] have been done in Nigeria to determine the level of awareness about oral cancer in Nigeria and there is further need to determine the knowledge of the signs and risk factors for oral cancer as well as attitudes towards oral examination and early diagnosis.

The aim of the study was to determine the awareness level of oral cancer in a group of patients presenting for routine dental care at the Lagos State University Teaching Hospital, Ikeja, Lagos State (LASUTH).

## MATERIALS AND METHODS

This descriptive and cross-sectional study was conducted at the Oral Diagnosis Clinic of the Lagos State University Teaching Hospital, Ikeja, Lagos State (LASUTH).

### Sample selection

The study sample consisted of routine patients that presented for care at the Oral diagnosis clinic of LASUTH. A simple random sampling technique using the balloting method was used to determine the study participants using the attendance register for each clinic day as the sampling frame. Selected participants were screened for eligibility by set inclusion and exclusion criteria and those that met these criteria and were ready to give their informed consent were enlisted into the study.

### Sample size

The sample size was calculated using a formula for cross sectional studies:  $n = Z pq/d^2$ .

where n= Sample size;

Z = Standard normal Deviate (1.96)

p= prevalence value from reference study.

q= 1-p

Using the prevalence of 72% for level of awareness from a reference study [18], a sample size of 77 was determined. One hundred respondents were, however, recruited during the study period.

### Study Setting and location.

This study was done at Oral Diagnosis clinic of the Lagos State University Teaching Hospital, (LASUTH), Ikeja, Lagos, Nigeria. Lagos State University Teaching Hospital is a tertiary health facility situated in the capital of Lagos State. It is a multi-specialist hospital with a bed complement of 741. The oral diagnosis clinic is the first point of contact with patients in the dental facility of the hospital after their registration and an average of 30 patients are seen at the oral diagnosis clinic on each day.

## Inclusion and Exclusion criteria

Patients included in the study were those that were presenting at the clinic for the first time and were above 18 years old. Patients that were excluded from the study were those that were previously registered for care at the dental clinic and had undergone a session of oral health education and those that had features that were suggestive of malignancy.

## Ethical aspects

All the study participants completed a written informed consent form which contained names and affiliation of investigators and a plain language description of the study. The study was based on questionnaire which did not involve any clinical examination nor any form of intervention.

## Data collection

A 31-item structured interviewer administered closed-ended questionnaire in English language was used for data collection. The structured self-administered questionnaire was adapted from a previous study [20] and it had three sections. The first part of the questionnaire obtained the socio-demographic information of the respondents such as age, gender, marital status, level of education, and ethnicity. The second section of the questionnaire obtained the medical and dental history of the respondents while the third section recorded their responses to questions on the risk factors for oral cancer.

## Data analysis

The data obtained was analyzed using the statistical package for social sciences (SPSS version 20). Categorical variables were summarized as frequencies and percentages. The level of knowledge of oral cancer was assessed among the respondents was rated and each correctly answered question earned one mark giving a maximum obtainable score of 15. Scores 0–7 were graded as inadequate knowledge on oral cancer while scores 8 and above were graded as adequate knowledge on oral cancer. Statistical significance for association between variables was assessed using chi-square statistical test. Level of significance in this study was set at 0.05 or lower than this value.

## RESULTS

The sample of 100 patients comprised of 61 (61%) female subjects and 39(39%) male subjects. Most of the respondents were between 18–34 years of age (43%), were married (53%) and had a tertiary level of education (78%) (Table 1).

Sixty-six percent of participants had heard about oral cancer and the public media (television, newspapers,

and radio) were the main sources of information (76%). Only 3% had heard about oral cancer from their dentists, while 10% had heard about it from their Doctors. Most of the respondents (10%) obtained health advice from a physician, while only 10% said they obtained health advice from a dentist. Other sources of health information mentioned included the newspapers, television, the Church and Health Centers (Table 2).

Only 3% of respondents were current smoker while 6% had previously smoked or were currently smoking. About 5% reported past use of smokeless tobacco, chewing tobacco or snuff while none of the respondents was presently using smokeless tobacco. Twenty-nine percent of the respondents reported drinking alcohol currently while 45% had a history of past and present consumption. The majority of respondents (31%) said they had seen a dentist within the previous six months and that the dentist enquired about their use of tobacco (72%) and alcohol (86%). Only 9% of respondents had been vaccinated for HPV (Table 3).

Eighty-two percent of the respondents had never had about an oral cancer examination while only 7% of them were sure they had received a tongue examination for oral cancer. Majority of the respondents (65%) had not had the examination because they were never informed of the need for it. Forty-four percent of the sample felt that a dentist's recommendation was required for an examination (Table 4).

When asked who they would see if they found a "lump" in their mouth, 59% said they would see a dentist while 33% said they would see a doctor. Most of the sample (97%) was willing to have a free oral cancer examination but felt that the community centre should be the site of the examination (Table 5).

The risk factors that were correctly identified by majority of the respondents in the development of oral cancers were cigarettes smoking (72%); smoking marijuana (73%); chewing tobacco or using snuff (63%); HPV infection (55%); smoking local cigarettes (42%); alcohol consumption (42%), and oral sex (45%). Only 28% of the respondents had a high knowledge of the risk factors for oral cancer (Table 6).

Older patients (>35 years of age) ( $p = 0.013$ ), those that were married ( $p = 0.009$ ) and secondary school educated respondents ( $p = 0.001$ ) had a significantly lower level knowledge about the risk factors of oral cancer (Table 7).

Respondents that saw a dentist ( $p = 0.043$ ) or their medical doctor ( $p = 0.000$ ) within six months to three years had significantly higher knowledge of oral cancer risk factors than those who had never had a visit or who visited more than three years ago. Similarly, the participants whose dentists ( $p = 0.012$ ) or medical doctors ( $p = 0.003$ ) enquired about tobacco use had significantly higher knowledge of oral cancer risk factors. Respondents that had been vaccinated against HPV also had a significantly higher knowledge ( $p = 0.038$ ) than those who had not been vaccinated or were not sure (Table 8).

The study participants that had heard of oral cancer ( $p = 0.027$ ) and those that had had an oral cancer examination ( $p = 0.022$ ) had significantly higher knowledge of the risk factors for oral cancer. Respondents who have never smoked were also significantly more likely to have high knowledge of the risk factors of oral cancer ( $p = 0.011$ ). Similarly, those who rarely or do not consume alcohol also had a significantly higher knowledge of the risk factors ( $p = 0.005$ ) (Table 9).

## DISCUSSION

The present study examined the level of awareness and knowledge about oral cancer in dental patients in LASUTH. Majority of the subjects were female, between 18–34 years of age, and had a tertiary level of education possibly indicating a higher level of health seeking behavior among females and highly educated patients. The level of participants' awareness about oral cancer was average, with only about 66% of them knowing about oral cancer. Research has demonstrated that nations with a high prevalence of oral cancer, such as India, Sri Lanka, and Malaysia had a greater level of community awareness about the condition [21–23] which was in contrast to the low level of awareness in a country with a low prevalence [24]. However, only 3% of the respondents in the index study heard about oral cancer from their dentist while 10% received the information from their physicians. This was similar to the observation made by Lawoyin et al. [18] in a previous Nigerian study where only 20.1% of patients heard about oral cancer from health professionals.

The public media such as television, newspapers and radio were the main sources of information for those who had heard. Even though more than 70% of the dentists obtained information about tobacco and alcohol use from the respondents, only a few educated them about oral cancer or linked the use of alcohol and tobacco use with the development of oral malignancy. They thus missed an opportunity to provide a one-on-one education to link the risk factors of oral cancer to the development of the disease. Previous studies have shown that the public lack knowledge that an oral cancer examination exists, and do not ask for it and that there is an increase in the number of patients requesting for oral cancer examination once it is described to them [20]. This may indicate that dental surgeons are doing oral cancer examinations without educating their patients about it [25]. This indicates that the public is not properly informed about the risk factors for oral cancer, the importance of oral examination, and the significance of early detection [26]. Dental surgeons have an important role to offer counseling on the prevention of oral cancer. Similarly, patients attending the dental clinic for treatments unrelated to oral cancer can be incorporated into a preventive recall schedule if they are observed to be in the high risk category [27].

Unlike 29% of the respondents who admitted to alcohol consumption and 45% with a history of past and

Table 1: Demographic characteristics of the study participants

Variable	Frequency	Percentage
<b>Age group</b>		
18–34	43	43.0
35–44	26	26.0
45–54	3	3.0
55–64	11	11.0
65+	17	17.0
<b>Gender</b>		
Male	39	39.0
Female	61	61.0
<b>Ethnic group</b>		
Yoruba	53	54.0
Hausa	4	4.0
Igbo	29	29.0
Others	14	14.0
<b>Religion</b>		
Christianity	85	85.0
Islam	15	15.0
<b>Marital status</b>		
Single	47	47.0
Married	53	53.0
<b>Education level</b>		
secondary	22	22.0
Tertiary	78	78.0
<b>Total (Each Sub-section)</b>	<b>100</b>	<b>100.0</b>

Table 2: Oral cancer awareness and sources of health advice

Variable	Frequency	Percentage
<b>Heard of oral cancer</b>		
<b>Yes</b>	66	66.0
<b>No</b>	34	34.0
<b>Source of information (Multiple answers)</b>		
<b>Bill board</b>	3	3.0
<b>Newspaper</b>	38	38.0
<b>Television</b>	24	24.0
<b>Radio</b>	14	14.0
<b>Dentist</b>	3	3.0
<b>Doctor</b>	10	10.0
<b>Internet</b>	1	1.0
<b>Source of health advice (Multiple answers)</b>		
<b>Doctor</b>	38	38.0
<b>Dentist</b>	10	10.0
<b>Community Leader</b>	3	3.0
<b>Church</b>	10	10.0
<b>Health Centre</b>	9	9.0
<b>Newspaper/ Magazine</b>	16	16.0
<b>Television</b>	10	10.0
<b>Radio</b>	7	7.0
<b>Fiends</b>	7	7.0
<b>Internets</b>	16	16.0
<b>Total (Each Sub-section)</b>	<b>100</b>	<b>100.0</b>

Table 3: Cancer related health practices of the respondents

Variable	Frequency	Percentage
<b>Cigarette smoking currently</b>		
Someday	3	3.0
Not at all	94	94.0
Refused	3	3.0
<b>Past smoking status</b>		
Yes	6	6.0
No	94	94.0
<b>Current Use of smokeless tobacco, chewing tobacco or snuff</b>		
Not at all		
Refuse	97	97.0
	3	3.0
<b>Past Use of smokeless tobacco, chewing tobacco or snuff</b>		
Yes	5	5.0
No	95	95.0
<b>Present alcohol consumption</b>		
Everyday	3	3.0
Someday	26	26.0
Not at all	71	71.0
<b>Past alcohol consumption</b>		
Yes	41	41.0
No	55	55.0
Do not know/Not sure	4	4.0
<b>last time at dentist</b>		
Never	18	18.0
Within the last 6 months	31	31.0
Within the last 12 months	8	8.0
More than one year	20	20.0
within the last 3 years	8	8.0
More than 3 years	12	12.0
Do not remember	3	3.0
<b>Dentist ask of tobacco use</b>		
Yes	72	72.0
No	28	28.0
<b>Dentist ask of alcohol consumption</b>		
<b>Yes</b>		
No	86	86.0
	14	14.0
<b>Last time at doctor</b>		
Never	4	4.0
within the last 6 months	49	49.0
Within the last 12 months	12	12.0
More than one year	16	16.0
within the last 3 years	11	11.0
More than 3 years	8	8.0
<b>Doctor ask of tobacco use</b>		
Yes	58	58.0
No	39	39.0
Do not recall	3	3.0
<b>Doctor ask of alcohol consumption</b>		
Yes	64	64.0
No	29	29.0
Not sure	7	7.0
<b>Vaccination for HPV</b>		
Yes	9	9.0
No	72	72.0
Not Sure	19	19.0

Table 4: Knowledge about oral cancer examination

Variable	Frequency	Percentage
<b>Heard of test for oral cancer</b>		
Yes	18	18.2
No	82	82.0
<b>Ever had a test or exam where the doctor or dentist pull tongue sometime with gauze wrapped around it</b>		
Yes, I am sure	7	7.0
No	84	84.0
Do not know, not sure	9	9.0
<b>Last oral cancer examination</b>		
Never had one	97	97.0
Do not know, no sure	3	3
<b>Reason for not having oral cancer examination</b>		
No reason or never taught about it/ did not know	65	65.0
Not needed/ have not had any problem	23	23.0
Doctor/ Dentist did not recommend	9	9.0
Do not go to doctor/Dentist/ Do not like	3	3.0
<b>What will it take to have an oral cancer examination</b>		
Recommendation from doctor	27	27.0
Recommendation from dentist	44	44.0
Oral cancer information on TV/radio/print	9	9.0
Talking to someone who have oral cancer	3	3.0
Knowing that an examination is quick and painless	5	5.0
Knowing where you should get the free oral cancer examination	12	12.0

Table 5: Knowledge about oral cancer examination

Variable	Frequency	Percentage
<b>If you found a lump or sore in your mouth who would you go to see</b>		
Doctor		
Dentist	33	33.0
Dental hygienist	59	59.0
Others	3	3.0
	5	5.0
<b>If a free oral cancer exam was available in your area would you go and have examination</b>		
Yes	93	93.0
No	7	7.0
<b>Primary reason you have not take advantage of a free oral examination</b>		
Not at risk of oral cancer		
Seek care from private health provider	4	4
	3	3
<b>Where do you think would be good place to hold a free oral cancer exam in your area</b>		
Health Center	64	64.0
Community Centre	15	15.0
Church	4	4.0
School	5	5.0
Senior centers	6	6.0
Others	3	3.0
Do not know	3	3.0

Table 6: Knowledge of oral cancer risk factors

Variable	Frequency	Percentage
<b>Spending too much time in the sun</b>		
Increases chance of getting oral cancer	9	9.0
Does not increase the chances	41	41.0
Do not know	40	50.0
<b>Excessive drinking of alcohol beverages</b>		
Increases the chance of getting oral cancer	42	42.0
Does not increase chances	26	26.0
Do not know	32	32.0
<b>Excessive coffee drinking</b>		
Increases the chance of getting oral cancer	23	23.0
Does not increase the chances	26	26.0
Do not know	51	51.0
<b>Smoking cigarettes, cigar or a pipe</b>		
Increases the chance of getting oral cancer	72	72.0
Does not increase the chances	7	7.0
Do not know	21	21.0
<b>Chewing tobacco or using snuff</b>		
Increases the chance of getting oral cancer	63	63.0
Does not increase the chances	2	2.0
Do not know	35	35.0
<b>Smoking local cigarettes</b>		
Increases the chance of getting oral cancer	42	42.0
Do not know	58	58.0
<b>HPV virus</b>		
Increases the chance of getting oral cancer	55	55.0
Do not know	45	45.0
<b>Smoking marijuana</b>		
Increases the chance of getting oral cancer	73	73.0
Does not increase chances	2	2.0
Do not know	25	25.0
<b>Eating hot spicy food</b>		
Increases the chance of getting oral cancer	10	10.0
Does not increase the chances	46	46.0
Do not know	44	44.0
<b>Biting your lips or cheek</b>		
Increases the chance of getting oral cancer	17	17.0
Does not increase chances	38	38.0
Do not know	45	45.0
<b>Poor oral hygiene</b>		
Increases the chance of getting oral cancer	66	66.0
Does not increase chances	13	13.0
Do not know	21	21.0
<b>Oral sex</b>		
Increases the chance of getting oral cancer	45	45.0
Does not increase chances	5	5.0
Do not know	50	50.0
<b>Knowledge of early signs of oral cancer</b>		
Correct Responses	59	59.0
Wrong Responses	41	41.0
<b>Category for knowledge of risk factor</b>		
Low (7 or fewer questions correct)	72	72.0
High (8 or more questions correct)	28	28.0

Table 7: Association between socio-demographics and knowledge of oral cancer risk factors

Age group	Knowledge of Risk factors		X <sup>2</sup>	p-value
	Low	High		
18–34	12(27.9)	31(72.1)	12.591	0.013
35–44	13(50.0)	13(50.0)		
45–54	3(100.0)	0(0.0)		
55–64	11(100.0)	0(0.0)		
65+	14(82.4)	0(0.0)		
<b>Gender</b>			0.176	0.674
Male	29(74.4)	10(25.6)		
Female	43(70.5)	18(29.5)		
<b>Marital status</b>			6.791	0.009
Single	28(59.6)	19(40.4)		
Married	44(83.0)	9(17.0)		
<b>Educational level</b>			10.969	0.001
Secondary	22(100.0)	0(0.0)		
Tertiary	50(64.1)	28(35.9)		

Table 8: Association between information on oral cancer and knowledge of oral cancer risk factors

	Knowledge of Risk factors		X <sup>2</sup>	p-value
	Low	High		
<b>Last time seen by a dentist</b>			10.842	0.043
Never	12(66.7)	6(33.0)		
Within the last 6 month	21(67.7)	10(32.3)		
Within the last 12 month	4(50.0)	4(50.0)		
More than one year ago	11(55.0)	9(45.0)		
Within the last 3 years	4(50.0)	4(50.0)		
More than 3 years ago	9(75.0)	3(25.0)		
Do not remember	3(100.0)	0(0.0)		
<b>Dentist asks about tobacco use</b>			6.331	0.012
Yes	58(67.4)	28(32.6)		
No	14(100.0)	0(0.0)		
<b>Dentist asks about alcohol consumption</b>			0.833	0.361
Yes	50(69.4)	22(30.6)		
No	22(78.6)	6(21.4)		
<b>Last time seen by a doctor</b>			31.126	0.000
Never	4(100.0)	0(0.0)		
Within the last 6 months	12(24.5)	37(75.5)		
Within the last 12 months	3(25.0)	9(75.0)		
More than one year ago	15(93.8)	1(6.2)		
Within the last 3 years	9(81.8)	2(18.2)		
More than 3 years ago	8(100.0)	0(0.0)		
<b>Doctor asks about tobacco use</b>			11.445	0.003
Yes	39(67.2)	19(32.8)		
No	33(84.6)	6(15.4)		
Do not recall	0(0.0)	3(100.0)		
<b>Doctor ask about alcohol consumption</b>			1.626	0.444
Yes	45(70.3)	19(29.7)		
No	23(79.3)	6(20.7)		
	4(57.1)	3(42.9)		
<b>Vaccination for HPV</b>			6.519	0.038
Yes	0(0.0)	9(100.0)		
No	47(65.3)	25(34.7)		
Do not recall	16(84.2)	3(15.8)		

Table 9: Association between behavioral factors and knowledge of oral cancer risk factors

	Knowledge of Risk factors		c2	p-value
	Low	High		
Heard of cancer			0.060	0.027
Yes	47(71.2)	19(28.8)		
No	25(73.5)	9(26.5)		
Had oral cancer examination			5.270	0.022
Yes	9(50.0)	9(50.0)		
No	63(87.5)	19(67.9)		
Smoking cigarette status			8.973	0.011
Some days	3(100.0)	0(0.0)		
Not at all	69(73.4)	25(26.6)		
Refuse	0(0.0)	3(100.0)		
Smokeless tobacco			1.203	0.273
Not at all	69(71.1)	28(28.9)		
Refuse	3(100.0)	0(0.0)		
Alcohol consumption			10.790	0.005
Everyday	3(100.0)	0(0.0)		
Some days	16(61.5)	10(38.5)		
Not at all	56(78.9)	15(21.1)		
If lump is found, who will you see			2.541	0.111
Dentist	46(77.9)	13(22.1)		
Others	26(63.4)	15(36.6)		

present use of alcohol, only 3% and 6% of the respondents admitted to present or past history of tobacco smoking respectively. This is lower than the prevalence for smoking in the general population in Nigeria which is estimated at 8.9%. Some segments of the Nigerian population, however, have higher prevalence which is as high as 37.9% in Northern Nigeria [28]. The lower prevalence recorded in the index study could be due to deliberate recall bias on the part of the participants because of the social undesirability of cigarette smoking in Nigeria or to the higher percentage of female respondents who are known to smoke less in Nigeria. Tobacco consumption is the most important modifiable cancer risk and about 30% of all cancers in developed countries are tobacco-related [29]. A previous study had observed that medical doctors are twice more likely to initiate tobacco smoking cessation for their patients than dentists [30]. Tobacco use cessation should be encouraged in dental clinics to reduce the effect of this major risk factor for oral and systematic diseases.

Furthermore, 82% of the respondents had never heard of an oral cancer examination and only 7% of them were sure they had received a tongue examination for oral cancer. Majority of the respondents had not had the examination because they were never informed of the need for it by their dentist or physician. Only over half of the respondents also felt they needed to see their dentist if they had a lump in their mouth. In spite of improvements in treatment modalities over past decades, a significant

change in the prognosis of oral cancer has not achieved. This is possibly due to the failure to identify small and potentially malignant lesions early, which precludes successful treatment. Therefore, early detection is the key to improve survival rate in oral cancer patients [31]. The mortality associated with oral cancer can be reduced by clinical examination. One study described a 32% decline in mortality in high risk individuals, thus implying that about 40000 deaths can be prevented by oral examination worldwide [32].

Correspondingly, Only 28% of the respondents had a high knowledge of the risk factors for oral cancer even though majority of them correctly identified tobacco smoking as a risk factor. It is surprising that only 42% of the respondents were aware that alcohol was a risk factor and this is significant when one observes a higher level of alcohol consumption than cigarette smoking in the study population. The better awareness of tobacco as a risk factor can be ascribed to the public health messages associated with cigarettes sales packages and anti-tobacco advocacy by many groups in the country. Similar allocation of resources and effort to enlighten the public about the association between alcohol consumption and its synergistic effect with tobacco in the development of oral cancer is required to reverse this trend. Awareness of all the risk factors and symptoms of oral cancer could thus lead to early clinical presentation and a reduction in morbidity and mortality associated with this condition [33].

The results of the present study showed that older respondents had a lower awareness about the risk factors of oral cancer. This can be added to the fact that the mass media which the youth are more exposed to was the most common source of information. This is disheartening because the older participants who are more at risk due to age are less knowledgeable. Participants with a university education also had a significantly higher knowledge about the risk factors of oral cancer, a finding consistent with the results of other studies [34, 35]. Interestingly, high-risk groups, such as male subjects, smokers, alcohol drinkers, and participants >40 years of age, had much less knowledge about the risk factors and signs of oral cancer. Improving knowledge of these high-risk groups about oral cancer is therefore particularly important.

Regular dental attendance and positive health habits also appeared to be positively associated with knowledge of the risk factors of oral cancer. Respondents that saw a dentist or their medical doctor within six months to three years and those that had an oral cancer examination had significantly higher knowledge of oral cancer risk factors than those who had never had a visit or who visited more than three years ago. Similarly, the participants whose dentists or medical doctors enquired about tobacco use as well as those who do not smoke and rarely or did not consume alcohol had significantly higher knowledge of oral cancer risk factors. Respondents that had been vaccinated against HPV also had a significantly higher knowledge than those who had not been vaccinated or were not sure. It is thus essential to educate the public, particularly those in the high risk category about oral cancer and to use every dental visit for oral health promotion and opportunistic screening [36, 37].

## CONCLUSION

This study explored the level of awareness and knowledge about oral cancer in dental patients in LASUTH, deficits were observed in the knowledge of the participants on oral cancer and its associated risk factors. The level of knowledge was influenced by socio-demographic characteristics of the respondents, their dental or medical clinic attendance pattern and exposure to health education and cancer screening. A common risk factor approach which incorporates oral cancer information into national health surveillance systems should be explored since the perceived risk of experiencing a disease can modify behavioral responses that can limit its development. Approaches to increase public awareness about oral cancer and continuing professional development for oral health professionals about early detection and diagnosis must also be emphasized. Primary preventive initiatives should similarly be initiated to reduce exposure to these risk factors while every dental visit should be an opportunity to provide information about oral cancer and to do a thorough mouth examination.

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## Author Contributions

Oyapero A. – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Akinleye A.I. – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Owoturo E.O. – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

## Guarantor

The corresponding author is the guarantor of submission.

## Conflict of Interest

Authors declare no conflict of interest.

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