THE KNOWLEDGE OF ORAL CANCER AMONG HOUSE OFFICERS IN THE UNIVERSITY COLLEGE HOSPITAL, IBADAN.

BY

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ABSTRACT

Oral cancer is the 6th most common malignancy in the world and an important cause of morbidity and mortality with varying incidence according to geographical location, gender or age. The role of health care professionals particularly the medical practitioner in the diagnosis of oral cancer is important especially in the early stages when symptoms of malignancy are not florid, treatment is most effective and morbidity is minimal at this stage. There is the need for a high index of suspicion among medical doctors because most patients visit the medical practitioners who are more in number compared to dentists. Therefore, it is necessary to assess the knowledge and opinions of both dental and medical house officers in order to determine areas of deficiency in oral cancer knowledge.

A cross-sectional survey of all the House officers in the employment of the University College Hospital, Ibadan between August 2011 and July 2012 was done. A total sample of 170 House officers were recruited in order to get a statistically significant number. A pretested semi-structured, self-administered questionnaire was used to obtain information on socio-demographics, perceived and true knowledge of oral cancer and level of competency in the management of oral cancer. Likert scale was used to determine perceived knowledge level. Very well, well and reasonably informed were categorized as good knowledge level while poorly and not informed were categorized as poor knowledge level. True knowledge and competency level were assessed on 100% scale and scores of 50% and above were categorized as good knowledge and competent level and less than or equal to 49% as poor knowledge and competent level. Data was analyzed using SPSS version 15.

A total of 170 respondents participated in the study, 58.5% were males and 41.2% were females. Majority (72.9%) of the respondents were medical doctors; overall mean age was 26.04; 72.4% obtained information about oral cancer from academic meetings; 62.1% of the medical doctors obtained their information from a single source while 52.2% and 32.6% of the dentist had their information from double and multiple sources respectively. ($X^2 = 39.8$; p-value <0.0001). It was also observed that 59.3% of the medical doctors claimed to be reasonably informed while 47.8% of the dentist claimed to be well informed ($X^2 = 30.9$; p-value <0.0001). Assessment of true knowledge of oral cancer with respect to the knowledge of risk factors, 89.1% the dentists and 58.9% of the medical doctors had good knowledge ($X^2 = 13.91$; p-value < 0.0001). Majority of the respondents both medical doctors (71.8%) and dentists (76.1%) had good knowledge on the clinical features of oral cancer. For knowledge of the preventive role of micronutrients on oral cancer and approach to management, it was generally a poor outcome. Overall, the relationship between true and perceived knowledge of respondents was a positive but very weak association ($R = 0.167$; $X^2 = 5.495$; p-value = 0.240).

Educators need to place more emphasis on oral cancer education and training of undergraduate medical and dental students.

Key words: Oral cancer knowledge, house officers

Word count: 495

DEDICATION

This research project is dedicated to Trinity; God the Father, God the Son and God the Holy Spirit the giver of life, fulfiller of my destiny, chief consultant and constant helper. To you be all the glory, honour and adoration.

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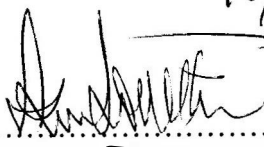
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CERTIFICATION

We certify that the project titled **"The Knowledge of Oral Cancer Among House Officers in the University College Hospital Ibadan"** was carried out by Dr. Annabel Ambeke at the Faculty of Dentistry, University of Ibadan.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Oral cancer consists of diverse histological types of malignant neoplasm of the oral cavity; the oral cavity is the region extending from the lips to the anterior pillars of the fauces. Oral cancer may be of epithelial, mesenchymal or lymphoid in origin. Majority of oral cancer are of epithelial origin and these include Squamous cell carcinoma (SCC), Adenocarcinoma and Melanoma. However, majority of the epithelial ones are SCC, therefore SCC is often referred to as oral cancer. Other types which are epithelial in origin are the salivary gland carcinomas, but these are often considered as a separate entity. Oral cancer is a multi-factorial disease where no single clearly recognizable cause has been found (Dimitroulis & Avery, 1998). These factors include genetic, environmental, social and behavioral. (Anmol et al, 2007)

Oral cancer is the 6th most common malignancy in the world. (Parkin et al, 1993), and an important cause of morbidity and mortality with varying incidence according to geographical location, gender or age. (Chima & Chukwuneke 2006). The global geographical variation in oral cancer prevalence is as follows: there is 2-4% prevalence in the United States of America, 2% in Britain, 3% in Australia and 12-40% in Asia (especially in India). The geographic variation reflects levels of involvement of the risk social habit of tobacco use either in smoke or smokeless forms. India shows the highest prevalence due to high involvement in habits such as use of betel quid (pan) consisting of areca nut, processed or unprocessed tobacco, aqueous CaOH (slaked lime) and some spices wrapped in leaf of piper betel vine. Others include gutka, zarda, kharra, mawa and khainni which are all dry mixtures of lime, areca nut flakes and powdered tobacco. Typically, the pan or the gutka is kept in the cheek and chewed or sucked for 10-15mins, with some users keeping it in overnight. (Kuriakose, 2010). Among South African females and males, it accounts for 1.8% and 5% of all malignancies, respectively. In Harare, Zimbabwe, cancer of the lip and oral cavity account for 2.1% and 1.8% of all cancers in female and male, respectively. (Chidzonga, 2006). The ratio of cases in men and women is now about 2 to 1 as

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against the previous ratio of 3 to 1, and this shift has been attributed to an increase in smoking by women and to their longer life expectancy. (Regezi et al, 2003)

Early studies from Africa suggest a low prevalence of oral cancer when Burkitts lymphoma is excluded (Edington and Sheehan, 1966). The authors documented 30 cases of oral squamous cell carcinoma (SCC) from the University College Hospital (UCH), Ibadan, over a 6-year period. A relatively low incidence was observed. Other works on oral cancer prevalence include; a review by Arotiba et al (Arotiba et al, 1999), where 246 oral SCC patients were reviewed in UCH, Ibadan. It was reported that 1.2% of all malignant lesions were oral SCC. In 2007, an Eastern Nigeria study conducted at the University of Nigeria Teaching Hospital (UNTH), Enugu, reported that oral cancer accounted for 2.7% of all cancer cases over a 6year period (Oji et al, 2007). Previously in 2005, a study conducted at Maiduguri, North Eastern Nigeria, reported an average rate of 20 cases per annum over a 6year period (Otoh et al, 2005). It has been suggested that these rates may be under reported in Nigeria because of the low dentist population ratio, poor and inadequate hospital services and a poor (and almost non-existent) cancer registry. (Lawal et al, 2013).

Age is recognized to be an important factor in the onset and outcome of cancers. Though oral cancer may occur at any age, it is essentially a disease of the elderly. Intra-oral SCC is commonly seen in patients aged 50 and above. A recent report in the Nigerian population placed the mean age of occurrence of the disease at 50.7 years for male and 49.6 years for females. (Lawoyin et al, 2005). Ealier report had been found that more than 95% of oral cancers occur in persons older than 40 years of age in most regions of the world (Johnson, 1991). Possible explanations to the increased incidence of cancer with advancing age could be partly as a result of increasing levels of free radical with age, also, there is said to be a diminishing ability of the immune system to eliminate altered cells because of immune tolerance, thus the effectiveness of cancer surveillance by immune cells is reduced with advancing age (Enwonwu and Meeks, 1995). However, less proportion of oral cancer cases occurring in persons older than 40 years have been reported in Africa by Chidzonga in Zimbabwe and Ajayi in Lagos, reporting 70.8% and 75% of oral carncinomas occurring above 40 years of age respectively (Chidzonga, 2006; Ajayi et al., 2007)

Several studies were conducted on the risk factors for oral cancer; many factors have been implicated, among these are: tobacco which is regarded by most authors as the most important risk factor. Alcohol use and all forms of tobacco smoking are linked to oral cancer with cigar and pipe smoking said to be associated with greater risk of oral cancers. Other important aetiological factors include genetic factors, nutritional deficiency and infection by oncogenic viruses. (Adeyemi et al, 2008)

Reports on site prevalence of oral SCC shows some geographical variation with the highest extra oral and intra oral site incidence among Caucasians being the lower lip and the tongue respectively. (Cawson & Odell, 2002). In the oral cavity, the majority of cancers are concentrated in the lower part of the mouth, particularly the lateral borders of the tongue, the adjacent floor of the mouth and lingual aspect of the alveolar margin, forming a U-shaped area extending posteriorly towards the oropharynx. This accounts for only about 20% of the intra oral area, but 70% of oral cancers are concentrated at these sites. This distribution may be because carcinogens pool and concentrate in the lower mouth when substances containing them are in contact with the oral cavity for some time. For the same reason, the hard palate and central dorsum of tongue are very rarely affected. (Cawson & Odell, 2002). However, some studies from Ibadan, Nigeria showed that the tongue, palate and the Mandibular alveolus are the site most commonly affected with the floor of the mouth and buccal mucosa being the least affected. (Lawal et al, 2013)

Oral cancer has diverse presenting signs and symptoms especially in the early stages. It may present as red patch (erythroplakia), white patch (leukoplakia), white and red patch (erythroleukoplakia), ulceration or erosion, lymphadenopathy, or a combination of these, or it may present as asymptomatic swelling, (Regezi et al, 2003) or sometimes an ill-fitting denture may be the presentation (Soames & Southam, 2005). Although, 95% of cancer in the head and neck region are SCCs they tend to have different clinical behavior depending on the affected site. Oral cavity SCC is known for early metastasis and high rates of loco-regional recurrence, thus the need for early diagnosis and treatment. (Schmidt et al, 2004.). The most important determinant of prognosis is the stage of the disease at diagnosis. (Oliver et al, 1996).

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The role of health care professionals particularly the medical practitioner in the diagnosis of oral cancer is important especially in the early stages when symptoms of malignancy are not florid. This is so because treatment is most effective and morbidity is minimal. (Krutchkoff et al, 1990). There is the need for a high index of suspicion among medical doctors since more patients visit the medical practitioners for complaints compared to the dentist who are fewer in number. (Yellowitz & Goodman, 1995). Therefore, it is necessary to assess the knowledge and opinions of both dental and medical practitioners in order to determine areas of deficiency in oral cancer knowledge.

In a study done in Italy assessing the knowledge of oral cancer among dentists, the results revealed that many of the dentists showed significant gaps in knowledge with respect to the diagnostic procedures (Giuseppe et al, 2007). Another study done in Brazil showed that dentist lack good understanding of the common causes and clinical features of oral cancer. (Leao et al, 2008). In 2009, Applebaum et al also carried out a survey on the knowledge, attitude and practices of dentists and primary care physicians in Massachusetts. They found that physicians were knowledgeable about the risk factors associated with oral cancer and were diligent about assessing them when taking a medical history. The physicians also described themselves as capable of managing the behavioral risk factors through patient education regarding tobacco- and alcohol-use cessation. However, despite the perceived high level of knowledge about risk factors, most physicians demonstrated poor knowledge of the signs and symptoms associated with oral cancer and felt inadequately trained to perform oral cancer examinations.

Several studies have shown lack of oral cancer knowledge both by the physicians and dentists; therefore, this study is designed to assess the knowledge of house officers at the University College Hospital, (U.C.H.) Ibadan, Nigeria, about the predisposing factors, clinical presentation, prevention and management of oral cancer. Medical and Dental house officers are the study group because they are often the first line of health professionals to see patients attending the hospital. These house officers are medical and dental graduates, who opted to have their mandatory one-year internship programme at the U.C.H., Ibadan.

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1.2   Problem Statement

Oral cancer is associated with very poor prognosis due largely to delayed patient management. Several factors have been linked to this observation one of which is inability of health care professionals to recognize early lesions resulting in delayed diagnosis.

Most people with oral cancer present late and late presentation is an important determinant for poor prognosis. This could be as a result of lack of awareness on the part of the patient or due to a misdiagnosis of oral cancer in its early stage by the health care professional (Kolude et al, 2013).

Studies have shown that health care professionals, including dentist, showed significant lack in knowledge with respect to diagnostic procedures for oral cancer.

This study therefore seeks to improve the management of oral cancer patients through knowledge assessment because it is the health care professional who is knowledgeable about oral cancer that will ultimately be of positive impact to the care of these patients.

1.3   Rationale for the Study

This study is important because, despite the serious and life threatening nature of oral cancer, the knowledge about prevention and early detection by health care professionals will have a high impact on the reduction of the disease burden. Also, dental practitioners are few compared to the vast population and the population is more likely to visit a physician than a dentist; therefore, this research is essential among the medical interns as well.

This is a pioneer study to assess the knowledge of house officers on oral cancer; especially knowledge related to early diagnosis and prevention of the disease. These house officers represent a ready vanguard between the populace and health care personnel.

1.4   Research Questions

The research questions formulated to guide this study were as follows:

1. What is the perceived knowledge of oral cancer among house officers?

2. What is the true knowledge of oral cancer among house officers?

3. What is the competence level of house officers in the management of oral cancer?

1.5   Research Hypothesis

1. There is no association between age of house officers and their knowledge of oral cancer.
2. There is an association between age of house officers and their knowledge of oral cancer.
3. There is no association between gender of house officers and their knowledge of oral cancer.
4. There is an association between gender of house officers and their knowledge of oral cancer.
5. There is no association between the profession (i.e. Medical and Dental) of house officers and their knowledge of oral cancer.
6. There is an association between the profession of house officers and their knowledge of oral cancer.
7. There is no association between institution of undergraduate training of house officers and their knowledge of oral cancer.
8. There is an association between institution of undergraduate training of house officers and their knowledge of oral cancer.

1.6   Aim and Objectives

1.6.1   Aim:

The aim of the study is to assess house officers in the University College Hospital, Ibadan, Nigeria on their knowledge of oral cancers among house officers.

1.6.2   Objectives:

The specific objectives of this study are to:

1. Determine the perceived knowledge of oral cancer among house officers.

2. Assess house officers' true knowledge of oral cancer.

3. Ascertain the competency level of house officers in the management of oral cancer.

CHAPTER TWO

LITERATURE REVIEW

2.1   Oral Cancer Knowledge

Oral cancer is a global health problem with increasing incidence and rising mortality rates (Gillison, 2007), particularly in certain regions of Europe (France, Hungary, Spain and Croatia), and in South East Asia and Brazil. Oral cancer also has one of the lowest survival rates that remain unaffected despite recent therapeutic advances, mainly because of late presentation or due to delays in the diagnosis (period elapsed since the first symptom or sign until the definitive diagnosis). Almost half of the oral cancers are diagnosed at advanced stages, with resulting low 5-year survival rates of 20-50% among Caucasians, (Brandizzi et al, 2005) and similarly at UCH, Ibadan, Nigeria, almost all the oral cancer diagnosed are at advanced stage (Kolude et al, 2013). Early diagnosis is therefore a foremost step for reducing cancer mortality.

Globally, various professional organizations carry out campaigns aimed at increasing information and awareness among the public and health care providers about the challenges of oral cancer (Seoane-Lestón et al, 2010). Such campaign emphasizes regular clinical oral examination (screening) and provision of guidelines for investigation (including biopsy). Furthermore, the criteria for referral of patients with suspicious lesions were also suggested by oral cancer experts (Seoane-Lestón et al, 2010).

In a Spanish study (Giuseppe et al, 2008) conducted on General Dental Practitioners' (GDP) about knowledge and preventive attitudes towards oral cancer, it was observed that most practitioner perform a systematic examination of oral soft tissues to rule out precancerous/cancerous lesions. This finding is similar to another study in Europe (Lopez-Jornet et al, 2010) and USA (Boroumand et al, 2008). Despite this fact, the ability of the examiner to make a correct positive detection of oral cancer remains low worldwide (Kujan et al, 2006). Although, smoking cessation, alcohol moderation and healthy eating is an essential and ethical part of the dentist informative role, several gaps in knowledge have been identified in GDPs' awareness of oral cancer risk factors and the application of preventive measures (Kujan et al, 2006).

Family physicians are critical to the efforts of oral cancer prevention because they are more likely than dentists to care for individuals at risk for oral cancer. Populations at risk for oral cancer are more likely to visit a physician than a dentist (Yellowitz & Goodman, 1995). Seoane-Lestón et al reported that over 80% of individuals 65 years and older visit a physician annually, while only 43% visit a dentist. In addition, among individuals over 65 years who go to both physicians and dentists, the frequency of physician visits is five to seven times greater than dental visits. Thus, the best opportunity for most individuals to undergo a routine examination of the mouth is during a physician's visit (Seoane-Lestón et al, 2010). Reducing the mortality rate requires comprehensive educational, behavioral, and procedural interventions for oral cancer that target health care providers and the public.

To achieve these objectives, health care providers and the public must become knowledgeable about the risk factors for and signs and symptoms of oral cancer. Health care providers need to conduct oral cancer screening examinations and make it readily accessible to the public.

2.2   Oral Cancer Screening

Of all the treatment options available for oral cancers, none has affected survival as much as early detection. Case finding and targeting is a viable and cost-effective intervention for oral cancer screening when it is part of the routine practice of primary care providers (Goodman et al, 1995). Unlike other parts of the body, the oral cavity is easily accessible; the oral cancer screening examination causes less discomfort and embarrassment than other screening procedures. Theoretically, dentists are the health care practitioners of choice to conduct oral cancer examinations. However, there is an apparent need for physicians, especially family physicians, to assume more responsibility to ensure that people receive oral cancer screening examinations on a routine basis. The rationale for health care providers to perform routine oral cancer screenings is as follows:

(1) Despite the severity, oral cancer is treatable in its early stages.

(2) Treatment in the early stages of oral cancer is usually acceptable to asymptomatic patients and provides benefit compared with the outcome of later treatment of symptomatic patients.

(3) The screening examination is inexpensive and safe (Barry & Katz, 1989)

In addition, oral cancer screenings provide health care professionals an opportunity to counsel their patients on personal habits that may influence their cancer risk (Robie, 1989).

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The systematic oral cancer screening examination entails both palpation and/or visual assessment of the extra oral head and neck areas, perioral and intraoral soft tissues, and dental and periodontal tissues (Robie, 1989).

The procedure of oral cancer examination usually entails the patient being in a seated position, eyeglasses and any removable full or partial dentures are removed before the examination is started. Clinical signs of lesions and the presence and shape of palpable lymph nodes as well as changes in color, symmetry, texture, size, and contour of these tissues are noted. The majority of early oral cancerous lesions are red (erythroplakia), and red lesions should be viewed with a higher degree of suspicion than white (leukoplakia) lesions. However, both types of lesions need to be thoroughly evaluated to rule out malignant neoplasms (Robie, 1989).

Early suspicious lesions usually present with subtle changes in surface color and texture, ranging in appearance from non-elevated erythematous areas to velvety or granular patches (Mashberg & Samit, 1989). The lesions are usually less than 1.0 cm in diameter, ill defined, asymptomatic, and not easily noticeable by palpation, and they have minimal extension into the underlying tissues. Patients with suspicious oral lesions should undergo biopsy to make a definitive diagnosis and, if the lesion is malignant, to determine stage and grade. Any painless, non-healing ulcer that persist for more than three weeks should be biopsied (Paler et al, 2010). Many family physicians refer patients to oral surgeons for biopsy, but some perform the procedure themselves. Although, exfoliative cytological examination lacks the sensitivity and specificity of biopsy, it has been used as an alternative diagnostic tool when a biopsy is impractical and/or not indicated. (Silverman, 1988)

A diagnostic adjunct to oral cancer screening is use of toluidine blue dye; a mouth rinse that stains a suspicious lesion blue (Mashberg & Samit, 1989), although, several studies for the past decades have shown variation in its sensitivity and specificity in cancer detection (Nielbel & Chomet,1964, Shedd et al, 1965, Reddy et al, 1973 and Mashberg, 1983)

2.3   Risk Factors in the Development of Oral Cancer

The aetiology of cancer of the oral tissues is still obscure. However, it is known that many patients with oral cancer are heavy alcohol and tobacco users (Pinholt et al, 1997).

The major risk factors for oral malignant neoplasms are the use of tobacco products and excessive alcohol consumption estimated to account for 75% of all oral malignant neoplasms in

the United States of America, France and Italy (Chidzonga, 2006). Chidzonga also reported that tobacco products and excessive alcohol use are also major risk factors in Africa (Chidzonga, 2006).

The difficulty of assessing the influence of alcohol in the aetiology of oral cancer stems from the fact that most people who drink heavily also smoke. In addition, it can be difficult to obtain accurate measurement from the patient on intake of alcohol; this is because it is likely to vary considerably from day to day in quantity, type and concentration. (Ogden & Wight, 1998)

Research shows that alcohol consumption is linked to an increased chance of developing certain cancers. The mechanism by which alcohol causes cancer is not completely understood. It could be that alcohol itself causes cancer by increasing hormone levels or it may be carcinogenic because of the way it is metabolized, which can make cell more vulnerable to other carcinogens, like tobacco (American Cancer Society 2007). The strongest association between alcohol use and cancer are with the mouth, esophageal, laryngeal, pharyngeal, breast and liver cancers.

Oral and pharyngeal cancers are more common in alcohol users than in non-alcohol users. Smokers who also drink are at much higher risk. Although the combination of tobacco and alcohol use significantly increases the risk of developing esophageal cancer, alcohol use alone also increase the risk of developing the disease. (American Cancer Society, 2007) Heavy drinking, defined as more than four standard drinks on a single occasion. A standard drink in the United States is equal to 14.0g (0.6 ounces) of pure alcohol. Generally, this amount of pure alcohol is found in: 12-ounces of beer (5% alcohol content), 8-ounces of malt liquor (7% alcohol content), 5-ounces of wine (12% alcohol content) or 1.5-ounces or a "shot" of 80-proof (40% alcohol content) distilled spirits or liquor (e.g. gin, rum, vodka, whisky). (Centre for Disease Control and Prevention, 2014)

Specific alcoholic beverages have been shown to contain specific impurities and contaminants which can be carcinogenic. Although pure ethanol has not been shown to be carcinogenic, it has been concluded that contaminants and congeners are responsible for its association with oral cancer, acting as a promoter. However, some researchers have concluded that the main carcinogenic agent in alcoholic beverages is ethanol. Alcohol is metabolized by alcohol dehydrogenase to acetaldehyde, a highly toxic substance suspected to cause the tissue damage attributed to alcohol ingestion. Acetaldehyde is then rapidly metabolized to a non-toxic product (acetate) by acetaldehyde dehydrogenase, thereby preventing the dangerous effect of

acetaldehyde. Due to individual variation, the activity of acetaldehyde dehydrogenase may be less than alcohol dehydrogenase; making it possible for cytotoxic acetaldehyde to accumulate in the oral tissues. (Ogden and Wight, 1998).

Ethanol is believed to exert a direct effect on the phospholipid bilayer of the cell membrane. It is widely thought that an extracellular layer of lipids situated in the superficial region of the epithelium, act as a permeability barrier towards water and harmful compounds in the oral cavity. Ethanol removes some of the lipids in the lipid barrier and the mucosa becomes considerably more permeable (Ogden and Wight, 1998). It has also been demonstrated that chronic ethanol consumption interferes with the repair of alkylated DNA (Ogden and Wight, 1998). Smoking and alcohol are important risk factors and when combined can further increase a person's likelihood of developing oral cancer (Stitch et al, 1992).

Numerous epidemiological studies have pointed the linkage between oral cancer development and excessive use of tobacco, either in form of smokeless tobacco or cigarette smoking (Stitch et al, 1992). Tobacco consumption is positively correlated with accumulation of DNA damage, and exposure to tobacco-related chemical carcinogens could provide direct damaging effects on the cellular DNA in the human oral cavity (Park and Kang, 2000). In fact, damaged genomic DNA has been detected as adducts in various tissues of cigarette smokers. These findings strongly suggested a causal role of tobacco use in oral carcinogenesis. Tobacco contains N-nitroso compounds, well-known carcinogens, which play a key role in the malignant transformation of squamous epithelium, (Patel et al, 2005). Other tobacco carcinogens include the polycyclic aromatic hydrocarbons (PAH) and 4-(methylnitrosoamino)-1-(3-pyridyl)-1 butanone (NNK). They can induce specific mutations, particularly G: T transversions, (Walker et al, 2003). Chronic exposure to tobacco carcinogens causes genetic changes in the epithelial cells. Cumulative genetic changes lead to genomic instability, development of premalignant lesions, and eventually invasive carcinoma. However, continued intraoral placement of smokeless tobacco failed to evoke malignant conversion of oral mucosa cells of animals in vivo; indicating that tobacco use alone may not suffice for the development of oral cancer (Park and Kang, 2000). Other environmental factors including alcohol consumption, sunlight exposure, nutritional deficiencies, and DNA tumour viruses have been implicated in oral carcinogenesis (Park and Kang, 2000).

The human papilloma virus (HPV) is frequently found in oral cancer specimen (Park and Kang, 2000) HPV (type 16), has recently been associated with a 2.2-fold increase in the risk of oral squamous cell carcinoma, after adjusting for smoking (Chidzonga, 2006). Patients with HPV positive Head and Neck SCC are clinically distinct from their HPV negative counterparts; they are younger at age of presentation, less inclined to be heavy smokers and drinkers and highly curable with ionizing radiation with or without chemotherapy. (Kolude and Akang, 2014) HPV associated Head and Neck SCC arises mostly in palatine and lingual tonsils. HPV target the highly specialized tonsillar crypt epithelium and once the virus DNA genome is integrated within the host cell nucleus, it deregulates the expression of oncoprotein E6 and E7. E6 induces deregulation of p53 through proteolysis with resulting loss of p53 activity; E7 binds and inactivates pRb causing the cell to enter S-phase leading to cell cycle disruption, proliferation and malignant transformation. (Kolude and Akang, 2014)

Sunlight, through actinic radiation, may introduce carcinogens along the vermilion border of the lip. Because these "sunlight" induced cancers are much more common in fair-skinned individuals exposed to the outdoor life than in individuals with darker pigmentation, it appears that darker pigment (Johnson NW and Blomqvist et al, 1991) protects against actinic radiation damage. (The wavelengths of the light thought to be responsible for the actinic damage are in the 2900-3200nm range.) Oral cancer from UV exposure has declined over the last decades, most likely due to the increased awareness of the damaging effects of prolonged exposure to sunlight and the use of sunscreen for protection. *(*Schmidt BL et al, 2004*)*

To reduce the risk of oral and pharyngeal cancer especially squamous cell carcinoma, diet must be optimized, primarily to reduce calorie intake, monounsaturated fat, and red or processed meat. Consumption of fruits, vegetables, and cereals, which are the major source of vitamins and fiber, should be adequate in the daily diet. Optimal levels of daily allowance of micronutrients like vitamin C, E, antioxidants, zinc, β- carotene, and folate are effective in prevention of oral cancer. (Taghavi & Yazdi 2007). There is considerable evidence that diet rich in fresh fruits and vegetables, and particularly in vitamin A, has a protective effect against oral cancer and precancerous lesions. (Scully and Bedi 2000). In a study on Black Americans by Scully and Bedi (2000), lower consumption of fruits and vegetables was also found to be related to oral cancer,

but not all cases. Several researches done has demonstrated the roles of vitamins in cellular changes (Packer, 1991, Byers & Perry, 1992, El-Bayoumy, 2001 and Lawal et al, 2011).

Vitamin A has been found to influence cellular changes through the following mechanisms:

-inhibiting terminal differentiation of epidermal cells

-enhancing cellular immunity i.e. promoting an increase in the number of T-helper cells and NK cells

-aiding the arrest and reversal of leukoplakia progression

-inducing cytotoxic and cytostatic effects on cancer cells, promoting apoptosis and interfering with cancer DNA and RNA gene expression.

Vitamin C reduces vitamin E degradation and enhances chemotaxis, phagocytosis, and collagen synthesis. It also inhibits nitrosamine formation and reduces oncogene expression.

Vitamin E is a free radical and scavenger; it maintains membrane integrity and inhibits cancer cell growth and differentiation. It also inhibits mutagenicity and nitrosamine formation. Synergism between vitamin E, Selenium and ascorbate inhibits DNA and RNA protein synthesis in cancer cells.

2.4   Cancer Management

Cancer management in developing countries is still at the primordial stage, mostly due to lack of facilities. Therefore, community education, and early detection are key to management and improvement of post management survival rate (Lawoyin et al, 2005)

The standard treatment for head and neck cancer is surgery with or without radiotherapy, but cure rates are low - <30% (Adeyemi et al, 2008). They reported that this is due to the complex anatomy and function of this region, which makes total excision or adequate delivery of radiation therapy to tumour site difficult without compromise to function and /or aesthetics, as well as late presentation of most patients. Chemotherapy is also getting more popular in the management of head and neck cancer. Newer treatment modalities include gene therapy, immunotherapy and photodynamic therapy (Adeyemi et al, 2008)

CHAPTER THREE

METHODOLOGY

This section deals with the research design, study population, sampling technique, methods and instruments for data collection and data analysis.

3.1   Study Design and Scope

The design of the study is a cross-sectional survey which lasted for a period of 12months, starting from Aug. 2011- July. 2012.

3.2   Study Location

The study was conducted at the University College Hospital (U.C.H.) which is strategically located within the city of Ibadan. It was established in 1952 in response to the need for the training of medical personnel and other health care professionals for the country and the West African sub-region.

The hospital services range from management of patients, to training and re-training of students, health care workers as well as researchers.

3.3   Study Population

Study population was the house officers in the employment of the U.C.H., Ibadan. During the study period, all house officers employed by the U.C.H. participated in the study. Total number of house officers was obtained from the department of Human resources and this was 170.

3.4   Sample size

Total sampling was used to recruit respondents for the study because the house officers in the U.C.H. Ibadan are a small group. Hence, to get a statistically significant number, total sampling of all the house officers was carried out within the time frame of the study i.e. from Aug. 2011- July 2012. This resulted in 170 respondents.

5   Eligibility Criteria

5.1   Inclusion Criteria: All consenting house officers who were undergoing their internship U.C.H. Ibadan.

5.2   Exclusion Criteria: Non-consenting house officers in the employment of the U.C.H. Ibadan.

.6   Ethical matters: Ethical approval was obtained from the University of Ibadan/University College Hospital Ethical Review Committee (Appendix IV). Informed consent form was filled and signed by each participant in the study after adequate explanation about the study was given.

.7   Data Collection

Data was collected using semi structured, self-administered questionnaires. The questionnaire comprised of the following: the socio-demographic section, a section for self-evaluation and source(s) of knowledge, a section that assessed knowledge of clinical features of oral cancer, another section that assessed knowledge of risk factors, diagnostic criteria and preventive measures for oral cancer.

3.7.1   Reliability of Data Collection Instrument

Reliability of the instrument was assessed using the Cronbach alpha technique on SPSS. Data from the pretest were entered into SPSS in order to determine the reliability of the instrument. The Cronbach alpha scale determines the reliability of an instrument from a scale of 0.1 to 1.0. Less than 0.5 is considered not reliable and greater than 0.5 is considered reliable with 1.0 being the most reliable. The instrument's Cronbach alpha scale was 0.8 which makes it reliable.

3.7.2   Validity of Data Collection Instrument

Validity was ensured in 3 ways:

- Literature was reviewed extensively in developing the instrument.
- The questionnaire was given to specialists in oral pathology, public health and other professionals for evaluation and review for appropriateness.
- The questionnaire was pretested at the Obafemi Awolowo University, Ife, which shares a very similar setting to U.C.H. Ibadan.

.8   Data management

The following was put in place to ensure proper and effective management of data:

3.5.1 Inclusion Criteria: All consenting house officers who were undergoing their internship in U.C.H. Ibadan.

3.5.2 Exclusion Criteria: Non-consenting house officers in the employment of the U.C.H. Ibadan.

3.6 Ethical matters: Ethical approval was obtained from the University of Ibadan/University College Hospital Ethical Review Committee (Appendix IV). Informed consent form was filled and signed by each participant in the study after adequate explanation about the study was given.

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The following was put in place to ensure proper and effective management of data:

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- Data collected and kept from unauthorized persons.
- It was protected by saving them in several other storage devices other than the computer.
- The research assistant was trained and adequately remunerated.
- The questions were serially numbered for recall purposes.
- Data collected and checked for completeness and accuracy
- The data was sorted, edited and coded manually.
- Data was imputed into a computer spread sheet and analyzed using software of Statistical Package of Social Sciences (SPSS) version 15.
- Frequency counts were run to detect missing cases while the data underwent cleaning.
- Continuous variable of age was summarized using mean, standard deviation and confidence interval and compared using student T-test while categorical variables of sex, profession, institution of training, knowledge level, competence level and awareness level were summarized using percentages and proportion and compared using Chi square statistics.
- The relationship between true and perceived knowledge was analyzed using Pearson's correlates.
- The results were represented in appropriate graphical illustrations, charts and tables.
- Licart scale was used to determine perceived knowledge level. Very well, well and reasonably informed were categorized as good knowledge level while poorly and not informed were categorized as poor knowledge level.
- Values were assigned to questions which assessed true knowledge and competence level. Each question was scored a maximum of 2 points and a minimum of 0. The details of the scoring are shown in the table below:

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Table 3.1:   Scoring for true knowledge and competence level

Variable	No of question	Minimum score	Maximum score
True Knowledge	29	0	58
Competence level	2	0	4

- A maximum total score of 58 was equated to 100%. Respondent having 50% and above were categorized as having good knowledge level. While respondents having less than or equals to 49% were categorized as having poor knowledge level. Assessment of knowledge level was grouped into three, with each group assigned certain number of questions. Each question is multiplied by 2 and a maximum score on each group is equated to 100%. Also, respondent having 50% and above were categorized as having good knowledge level for that particular group and respondents having 49% or below were categorized as having poor knowledge level.

    - Knowledge on clinical features = 10 questions (x 2) =20
    - Knowledge on risk factors = 9 questions (x 2) = 18
    - Knowledge on the preventive role of micronutrients = 10 questions (x 2) =20

- A maximum score of 4 was equated to 100%. Respondents who had 50% or more were reported as being competent, while those with a score less than 50% (0) were reported as being not competent.

RESULTS

This chapter presents the assessment of house officers in the University College Hospital concerning their knowledge of oral cancer using a questionnaire survey. The survey included respondents' socio-demographic characteristics, sources of knowledge, self-evaluation of perceived knowledge of oral cancer and a four-component assessment of true knowledge of oral cancer which include risk factors, clinical features, chemoprevention and approach towards oral cancer management.

4.1 Respondents' Socio-Demographic Characteristics

A total of 170 respondents participated in the study of which 100 (58.5%) were males and 70 (41.2%) were females. The majority (72.9%) of the respondents were medical doctors.

4.1.1 Age, Gender and Profession of Respondents

The overall mean age of all respondents was 26.04, while the mean age for medical and dental house officers was 26.07 and 25.96 respectively. There was no significant difference in the mean ages of medical and dental house officers, p-value = 0.79

Approximately half (49.1%) of the respondents were in the age group of 21-25. Slightly less than this percentage, (47.9%) were in the age group of 26-30. The remaining 1.8% and 1.2% were in the age groups of 31-35 and 36-40 respectively. Among the male respondents, slightly above half (55%) were in the age group of 26-30, while almost two-third of the female respondents were in the age group of 21-25. There was no significant difference in the age group distribution of male and female respondents. ($X^2 = 7.40$; p-value = 0.06)

Among the medical doctors, 73 (58.9%) were males while 51 (41.1%) were females. Among the male medical doctors, slightly over half (56.2%) were in the age group of 26-30years, while

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41.1% were in the age group of 21-25years. There was no male medical doctor in the age group of 31-35years, while the remaining 2.7% of the respondents were in the age group of 36-40years. Among the female medical doctors, majority (61.2%) of them were in the age group of 21-25years, while 36.7% were in the age group of 26-30years. There was no female medical doctor above age 35 years. There was no significant difference in the age group distribution of male and female medical doctors. (X^2 = 7.54; p-value = 0.06).

Among the dentist, 27 (58.7%) were males while 19 (41.3%) were females. Among the male dentist, a little over half (51.9%) were in the age group of 26-30years, while 44.4% were in the age group of 21-25years. No male dentist was found above age 35. Among the female dentist, slightly above half (55.6%) were in the age group of 21-25years, while 38.9% were in the age group of 26-30years. There was no dentist above age 35 years. There was no significant difference in the age group distribution of male and female dentists. (X^2 = 0.75; p-value = 0.69)

4.1.2 Respondents' Institution of Undergraduate Training

Majority, 114 (69.1%) of the respondents had their undergraduate training at the University of Ibadan, 19 (11.5%) were trained at the Obafemi Awolowo University, while 11 (6.7%) had their training at the Ladoke Akintola University of Technology. The remaining minority had their training from various other universities with University of Benin and University of Ilorin contributing 4 (2.4%) each of the respondents. University of Nigeria Teaching Hospital, Olabisi Onabanjo University Teaching Hospital, University of Ghana and Ambrose Ali University contributed 2 (1.2%) each, while University of Jos, Igbinedion University, Belize University, Lagos University Teaching Hospital and Madona University contributed 1 (0-6%) each of the respondents.

4.1.3 Relationship between Participants' Institution of Undergraduate Training and Knowledge

There was no significant difference between house officer's institution of undergraduate training and knowledge (X^2 = 4.04; p-value =1.33).

4.2   Assessment of Respondents' Knowledge and Clinical Expertise

4.2.1   Sources of Knowledge on Oral Cancer

Distribution of sources of knowledge showed that 123 (72.4%) of respondents obtained information about oral cancer from academic meetings such as formal undergraduate lectures, conferences and seminars. About 56.5% (96) obtained their information through personal study. However, there were those who obtained some information from close associates and the media consisting of 25.3% (43) and 20% (34) respectively. Among the medical doctors, 41.8% obtained information about oral cancer from academic meetings. About one-third (30.7%) of the respondents obtained some information from personal study, a few (14.8%) obtained theirs from close associates, while fewer proportion (12.7%) obtained their information from the media alone. Among the dentist, 41.1% obtained information about oral cancer from academic meetings, 35.5% obtained their information from personal study, a few (14.0%) obtained theirs from close associates, while fewer proportion (9.3%) still obtained information from the media.

There was an almost equal distribution between those who had single source of information and those who had it from more than one source amongst all participants, however, it was observed that majority (62.1%) of the medical doctors obtained their information about oral cancer from a single source, while 52.2% and 32.6% of the dentists had their information from double and multiple sources respectively. There was a significant difference in the number of sources of information about oral cancer between medical doctors and dentist. (X^2 = 39.8; p-value <0.0001)
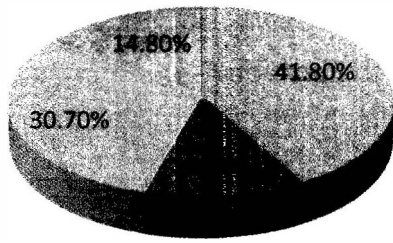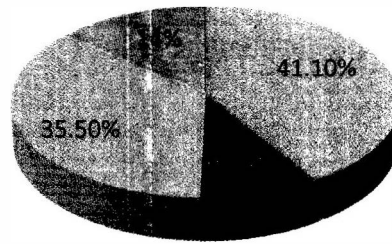
Medical doctors　　　　　　　　Dentist

Academic meetings
■ Media
Personal study
■ Close associates

Figure 4.1:　Reported Source(s) of Information about Oral Cancer
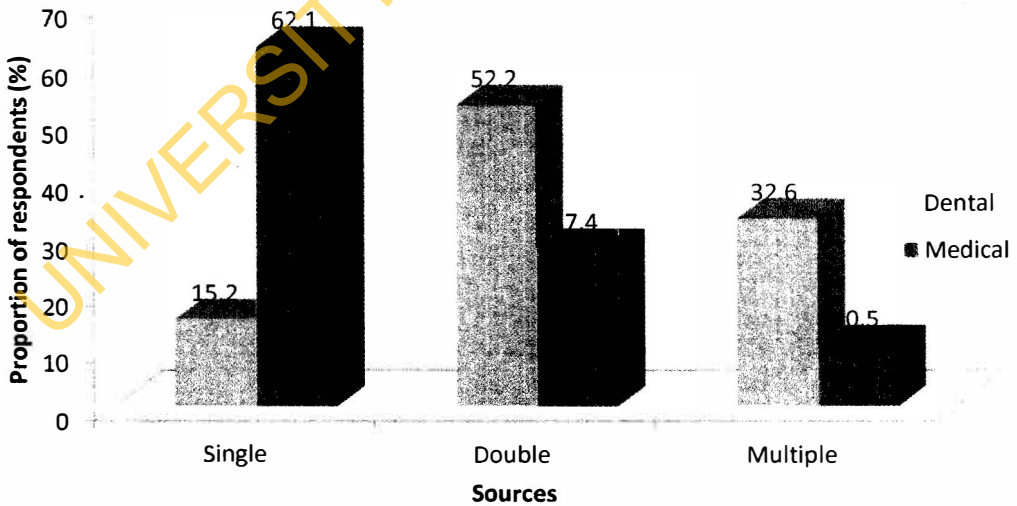
Figure 4.2:　Frequency distribution of sources of information about oral cancer

4.2.2 Assessment of Respondents Perceived Knowledge of Oral Cancer

Up to 50.9% (86) of respondents claimed to be reasonably informed about oral cancer, another 20.7% (35) claimed to be well informed, while 5.3% (9) claimed to be very well informed. However, 22.5% (39) and 0.6% (1) claimed to be poorly informed and uninformed respectively. It was also observed that more than half 73 (59.3%) of the medical doctors claimed to be reasonably informed, while almost half 22 (47.8%) of the dentist claimed to be well informed. There was a significant difference in the perceived knowledge of oral cancer between medical doctors and dentist. (X^2 = 30.9; p-value <0.0001)

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Table 4.1: Distribution of perceived level of knowledge about oral cancer according to profession of respondents.

Variables	Medical		Dental		Total
Perceived knowledge	Frequency	%	Frequency	%	Frequency
Very well informed	1	0.8	8	17.4	9
Well informed	13	10.6	22	47.8	35
Reasonably informed	73	59.3	13	28.3	86
Poorly informed	36	28.5	3	6.5	39
Not informed	1	0.6	0	0.0	1
Total	124	100	46	100	170

Chi square comparison of perceived knowledge according to participant's profession was significant. ($X^2 = 30.9$ $p < 0.0001$).

4.2.3 Assessment of Respondents True Knowledge of Oral Cancer

4.2.3.1 Knowledge of risk factors for oral cancer.

Use of tobacco

Almost all of the respondents (90.3% of medical doctors and 95.7% of dentists.) were in agreement that tobacco increases the risk of oral cancer.

Use of alcohol

A significantly higher proportion of dentist (84.8%) than medical doctors (54.0%) agreed that alcohol use is a risk factor for oral cancer. ($X^2 = 13.53$; p-value < 0.0001)

Exposure to sunlight

Although, most of the dental participants (76.1%) agreed that sunlight exposure increases the risk of oral cancer, only a minority of medical doctors believed so. (30.6%) There was a significant difference about sunlight exposure as a risk factor for oral cancer between medical doctors and dentists. ($X^2 = 28.82$; p-value < 0.0001)

Erythema Multiformes (EM)

A small proportion, 33 (19.4%) of the respondents were of the opinion that EM is not a risk factor for oral cancer, among which 20 (16.1%) of them were medical doctors while 13 (28.3%) were dentists.

Previous personal history of oral cancer

A high proportion, (94.1%) of the respondents considered previous personal history of oral cancer as a risk factor for oral cancer, of which 115 (92.7%) are medical doctors while 45 (97.8%) are dentists.

Previous family history of oral cancer

Majority (86.5%) were aware that previous family history of oral cancer is a risk factor for oral cancer, of which 104 (83.9%) are medical doctors while 43 (93.5%) are dentists.

Herpes Simplex Virus (HSV) infection of the oral mucosa

Only a very small proportion (15.9%) of the respondents agreed that HSV infection of the oral mucosa is not a predisposing factor for oral cancer, of which (12.9%) are medical doctors while (23.9%) are dentists.

Human Papilloma Virus (HPV) infection of the oral mucosa

A large proportion (81.8%) of the respondents were in agreement that HPV infection is a risk factor for oral cancer, of which (80.6%) are medical doctors while 39 (84.8%) are dentists.

Repeated episodes of apthous ulcer (RAU)

A smaller proportion, (28.2%) of the respondents opined that RAU is not a risk factor for oral cancer, of these, a little above half, (56.5%) of the dentists agreed while only (17.7%) of the medical doctors agreed. There was a significant difference about RAU not being a risk factor for oral cancer between medical doctors and dentists. ($X^2 = 26.53$; p-value < 0.0001)

Collectively, as regards the knowledge of the risk factors of oral cancer, almost all (89.1%) the dentists had good knowledge, while slightly over half (58.9%) of the medical doctors had good knowledge. There was a significant difference in the knowledge level about the collective risk factors for oral cancer between medical doctors and dentists. ($X^2 = 13.91$; p-value < 0.0001)

4.2.3.1.1 Relationship between Participants' Age and True Knowledge of Risk Factors

There was no significant difference between the age of house officer's and their true knowledge of the risk factors of oral cancer ($X^2 = 2.17$; p-value =0.318).

4.2.3.1.2 Relationship between Participants' Gender and Knowledge of Risk Factors

There was no significant difference between gender of house officer's and their true knowledge of the risk factors of oral cancer ($X^2 = 3.58$; p-value =0.167).

Table 4.2: Distribution of participants with the correct knowledge of risk factors of oral cancer according to profession

Knowledge of risk factors	Medical		Dental		Total	X^2	P-value
	N	%	N	%	N		
Use of tobacco	112	90.3	44	95.7	156	3.19	0.203
Use of alcohol	67	54.0	39	84.8	106	13.53	<0.0001
Exposure to sunlight	38	30.6	35	76.1	73	28.82	<0.0001
Erythema multiformes	20	16.1	13	28.3	33	3.32	0.190
Previous personal history of oral cancer	115	92.7	45	97.8	160	3.59	0.166
Previous family history of oral cancer	104	83.9	43	93.5	147	3.35	0.188
HSV infection of the oral mucosa	16	12.9	11	23.9	27	5.92	0.052
HPV infection of the oral mucosa	100	80.6	39	84.8	139	1.93	0.382
Repeated episodes of apthous ulcer	22	17.7	26	56.5	48	26.53	<0.0001

4.2.3.2   Knowledge of clinical features of oral cancer

Oral Lesions

Majority, 117 (68.8%) of the respondents agreed that oral cancer can present as a painful white lesion of which 86 (69.4%) are medical doctors while 31 (67.4%) are dentists.

A larger proportion, 148 (87.1%) of the respondents also agreed with the possible presentation of oral cancer as a painless white lesion of which 110 (88.7%) are medical doctors and 38 (82.6%) are dentists.

It was also observed that most, 120 (70.6%) of the respondents were in agreement that oral cancer can present as a painful red lesion of which 88 (71.0%) are medical doctors while 32 (69.6%) are dentists.

In addition, there was high level of agreement among 116, (68.2%) of the respondents that it was possible that oral cancer can present as a painless red lesion, of these, 89 (71.8%) are medical doctors and 27 (58.7%) are dentists.

Only a small proportion 39 (22.9%) of the respondent agreed that oral white lesion in a non-smoker is more sinister than in a smoker. Twenty-nine (23.4%) of those who agreed are medical doctors while the remaining 10 (21.7%) are dentists.

Most, 107 (62.9%) of the respondents also opined that oral white lesion in male is more likely to be sinister than in females, only 41 (28.3%) of the respondents agreed that oral white lesion in a female is more sinister of which 28 (22.6%) are medical doctors and 13 (28.3%) are dentists.

About one-third, 60 (35.3%) of the respondents considered oral white lesion on the dorsum of the tongue to be more sinister than on the ventral surface of which 47 (37.9%) are medical doctors while 13 (28.3%) are dentists. There was a significant difference in knowledge about oral white lesion on the dorsum of the tongue being more sinister than on the ventral surface between medical doctors and dentists. ($X^2 = 8.67$; p-value $= 0.013$)

Majority, 113 (66.5%) of the respondents believed that painless oral ulcers are more sinister than painful oral ulcers of which 92 (74.2%) are medical doctors while 21 (45.7%) are dentists. There was a significant difference about painless oral ulcers being more sinister than painful ones between medical doctors and dentists. (X^2 = 20.61; p-value <0.0001)

Less than half, 78 (45.9%) of the respondents agreed that solitary ulcer in the mouth is more sinister than multiple ulcers of which 49 (30.5%) are medical doctors while 29 (63.0%) are dentists. There was a significant difference about solitary oral ulcer in the mouth being more sinister than multiple ulcers between medical doctors and dentists. (X^2 = 7.78; p-value = 0.020)

Oral Hygiene

A little over half 90 (52.9%) of the respondents believed that an isolated mobile tooth in the elderly with good oral hygiene is more sinister than in the elderly with poor oral hygiene of which 53 (42.7%) are medical doctors while 37 (80.4%) are dentists. There was a significant difference in knowledge about an isolated mobile tooth in the elderly with good oral hygiene being more sinister than that with poor oral hygiene between medical doctors and dentists. (X^2 = 19.45; p-value <0.0001)

In general, majority of the respondents both medical doctors (71.8%) and dentists (76.1%) had good knowledge on the clinical features of oral cancer.

4.2.3.2.1 Relationship between Participants' Age and True Knowledge of Clinical Features

There was no significant difference between the age of house officer's and their true knowledge of clinical features of oral cancer (X^2 = 1.91; p-value =0.382).

4.2.3.2.2 Relationship between Participants' Gender and Knowledge of Clinical Features

There was no significant difference between gender of house officer's and their true knowledge of clinical features of oral cancer (X^2 = 3.34; p-value =0.188).

Table 4.3: Distribution of participants with the correct knowledge of clinical features of oral cancer according to profession.

Knowledge of clinical features	Medical		Dental		Total	X²	P-value
	N	%	N	%	N		
Painful white patch	86	69.4	31	67.4	117	0.52	0.769
Painless white patch	110	88.7	38	82.6	148	1.57	0.456
Painful red patch	88	71.0	32	69.6	120	0.22	0.897
Painless red patch	89	71.8	27	58.7	116	4.43	0.109
Oral white lesion in a non-smoker	29	23.4	10	21.7	39	0.09	0.955
Oral white lesion in a female	28	22.6	13	28.3	41	2.15	0.341
Painless oral ulcer	92	74.2	21	45.7	113	20.61	<0.0001
Oral white lesion on the dorsum of the tongue	47	37.9	13	28.3	60	8.67	0.013
Solitary ulcer in the mouth	49	39.5	29	63.0	78	7.78	0.020
An isolated mobile tooth in the elderly with good oral hygiene	53	42.7	37	80.4	90	19.45	<0.0001

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1.2.3.3 Knowledge of the preventive role of micronutrients on oral cancers

ACE vitamins

Majority of respondents were aware that the **A, C** and **E** vitamins can protect against oral cancer. Concerning vitamin A, as many as 116 (68.2%) respondents agreed that vitamin **A** plays a preventive role against oral cancer, of which 80 (64.5%) were medical doctors and 36 (78.3%) were dentists. A greater number, 124 (72.9%) of the respondents considered vitamin C to be protective against oral cancer, of which 90 (72.6%) were medical doctors and 34 (73.9%) were dentists. Another larger proportion, 122 (71.8%) of the respondents agreed that vitamin E can prevent oral cancer, of which 87 (70.2%) were medical doctors and 35 (76.1%) were dentists

BDK vitamins

Most of the respondents were either not sure or didn't know that vitamins B, D and K do not play any preventive role against oral cancer. Only a few, 35 (20.6%) of the respondents knew that vitamin B does not play a role in the prevention of oral cancer, of which 25 (20.2%) were medical doctors and 10 (21.7%) were dentists. Another smaller proportion 44 (25.9%) of the respondents knew that vitamin D also does not play a role of which 36 (29.0%) were medical doctors and 8 (17.4%) were dentists. A little lower than one-third, 47 (27.6%) of the respondents also knew that vitamin K does not play a role of which 39 (31.5%) were medical doctors and 8 (17.4%) were dentists.

Other micronutrients

Slightly more than one-third, 35.9% (61) of the respondents believed that iron (**Fe**) protects against oral cancer, of which 39 (31.5%) were medical doctors and 22 (47.8%) were dentists.

Only a very minute proportion, 10 (5.9%) of the respondents opined that zinc (**Zn**) does not prevent oral cancer, of which 8 (6.5%) are medical doctors and 2 (4.3%) are dentists.

About one-third, 59 (34.7%) of the respondents agreed that magnesium (**Mg**) has protective effect against oral cancer, of which 49 (39.5%) were medical doctors and 10 (21.7%) were dentists. There was a significant difference about the preventive role of Mg against oral cancer between medical doctors and dentists. ($X^2 = 6.59$; p-value = 0.037)

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Nearly half, 78 (46.2%) of the respondents were of the opinion that selenium (**Se**) protects against oral cancer, of which 57 (46.0%) are medical doctors and 21 (46.7%) are dentists.

With regards to the general knowledge level of the preventive role of micronutrients on oral cancer, slightly more than half (54.8%) of the medical doctors and majority (64.7%) of the dentist had poor knowledge level.

4.2.3.3.1   Relationship between Participants' Age and Knowledge of Preventive role of Micronutrients

There was no significant difference between the age of house officer's and their knowledge of preventive role of micronutrients on oral cancer ($X^2 = 2.05$; p-value =0.360).

4.2.3.3.2   Relationship between Participants' Gender and Knowledge of Preventive role of Micronutrients

There was no significant difference between gender of house officer's and their knowledge of preventive role of micronutrients on oral cancer ($X^2 = 3.56$; p-value =0.171).

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Table 4.4: Distribution of participants with the correct knowledge of micro-nutrients' role in oral cancer prevention according to profession

Knowledge of preventive role of micro-nutrients	Medical		Dental		Total	X^2	P-value
	N	%	N	%	N		
Vitamin A	80	64.5	36	78.3	116	3.83	0.148
Vitamin B	25	20.2	10	21.7	35	0.11	0.947
Vitamin C	90	72.6	34	73.9	124	2.03	0.363
Vitamin D	36	29.0	8	17.4	44	3.28	0.194
Vitamin E	87	70.2	35	76.1	122	0.59	0.744
Vitamin K	39	31.5	8	17.4	47	3.55	0.169
Iron	39	31.5	22	47.8	61	4.05	0.132
Zinc	8	6.5	2	4.3	10	4.96	0.084
Magnesium	49	39.5	10	21.7	59	6.59	0.037
Selenium	57	46.0	21	46.7	78	1.92	0.383

4.2.3.4 Knowledge of approach towards oral cancer management

A smaller proportion, 64 (37.6%) of the respondents are of the opinion that an elderly woman with a painless oral ulcer, should only be observed for 2 weeks, of which 47 (37.9%) are medical doctors and 17 (37.0%) are dentists.

More than half, 97 (57.1%) of the respondents agreed that the next line of action for an elderly woman with painless oral ulcer after 2-week observation, is to refer to the specialist, of which 83 (66.9%) are medical doctors and 14 (30.4%) are dentists. There was a significant difference in the next line of action between medical doctors and dentists. ($X^2 = 28.08$; p-value < 0.0001)

In general, majority (64.5% and 62.5%) of the participants' approach to the management of oral cancer was poor for medical doctors and dentist respectively.

Table 4.5: Distribution of participants with the right management approach to risk factors of oral cancer according to profession.

Management Approach	Medical		Dental		Total	X^2	P-value
	N	%	N	%	N		
An Elderly woman presenting with a painless oral ulcer should be observed for 2 weeks	47	37.9	17	37.0	64	6.38	0.271
The next line of action for the above-mentioned patient is to refer to a specialist	83	66.9	14	30.4	97	28.08	< 0.0001

3   Comparison of True Knowledge for Medical Doctors and Dentist

Following the assessment of participants' true knowledge of oral cancer, overall, a little above half (53.5%) of respondents had good knowledge. According to profession, majority (67.4%) of the dentist and slightly below half (48.4%) of the medical doctors had good knowledge of oral cancer. There was a significant difference in the true knowledge of oral cancer between medical doctors and dentists. ($X^2 = 4.871$; p-value = 0.02).

4   Relationship between True and Perceived Knowledge

Overall, the relationship between true and perceived knowledge revealed that there was a positive but very weak association between true knowledge and perceived knowledge of respondent; however, the relationship was not statistically significant. ($R = 0.167$; $X^2 = 5.495$; p-value = 0.240). According to profession, among the medical doctors, there was a very weak but positive association between perceived and true knowledge. Also among the dentist, the association was very weak but positive. The relationships were not statistically significant ($R = 0.102$; $X^2 = 3.074$; p-value = 0.545) and ($R = 0.081$; $X^2 = 1.976$; p-value = 0.577) for medical doctors and dentist respectively.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1   Discussion

Oral cancer is the 6th most common malignancy in the world. It is associated with one of the most dismal five-year survival rate of the major cancer type. A good knowledge of oral cancer is vital for both the prevention and early detection. Studies have shown that early diagnosis greatly increases the chances of cure and survival rate with minimal impairment and deformity. It is pertinent that both medical and dental practitioners possess adequate knowledge of the signs and symptoms of malignant and premalignant oral cavity lesions, for early and effective diagnosis. It is a common belief that dentists are more likely to examine their patient for oral cancer as part of their routine dental examination. However, most of the population at greater risk for oral and pharyngeal cancer, visit the medical practitioners who are also more in number compared to the dentist (Yellowitz and Goodman, 1995). As first line doctors, medical and dental house officers, may be faced with the challenge of examining patients who might have oral cancer, therefore, their knowledge on this subject is critical for the accurate and timely diagnosis of and referral for this condition. This study therefore, assessed the knowledge and opinions of both medical and dental practitioners who are qualified and will be expected to give advice about oral cancer and its prevention.

One hundred and seventy respondents participated in this study, 58.5% (100) were males and 41.2% (70) were females. This disparity could be linked with the fact that in Nigeria, there is gender inequality with respect to education (Johnson and Markham, 2004). There is also continuous discrimination against women with a wide socio-economic inequality in the country resulting in disastrous effects like lack of development and political empowerment for the female gender. These have ultimately set in motion low employment rate among women and also limited their potential for sustainable economic development. (Johnson and Markham, 2004). Similar observations were made in a study among University of Lagos dental students with 60% being male and 40% being female (Uti and Fashina, 2006) and another one done among recently graduated medical and dental professionals in Jordan where only about 23% were females and 77% were males (Alamin et al, 2012). In many countries, women still tend to be concentrated in

the lower-status health occupations, and are a mere minority among more highly trained professionals. Specifically, the distribution of women by occupational category tends to be skewed in favour of nursing and midwifery personnel and other 'caring' cadres such as community health workers. Women are often poorly represented in other categories, e.g. physicians, dentists, pharmacists and managers (Spotlight on Statistics, 2008). Many gains have been made with regards to overall level of education worldwide and more children than ever are now attending school, however, gender parity in education is yet to be achieved (King, 2013). In every economic bracket, there are more female children not attending schools than male children. Generally, girls in the poorest 20% of households have the lowest chance of education (Jensen, 2010). And this inequality does not necessarily change in adulthood.

From the findings of this study, majority (72.4%) got information from academic meetings such as formal undergraduate lectures, conferences and seminars. It was also observed that respondents most especially the dentist acquired knowledge from multiple sources including personal study. A possible explanation could be due to the fact that the subject matter is included in the dental curriculum and as such the dentists have developed more interest in personal study on the topic. Most studies are silent or have no emphases on the actual source of health care professionals' knowledge about oral cancer, but this study has identified various sources of knowledge; apart from formal undergraduate lectures, others are the media, personal study and close associates. However, in a study done among Asian males in Leicester, England, on their understanding of the risk factors of oral cancer, emphases were also made on their sources of knowledge, and these included school/college education, the press/ media and health education leaflets (Vora et al, 2000). Lawoyin et al also in 2009, found out in their study among dental patients in South – west Nigeria, that they had sources of knowledge; including media and other health care professionals. It has become necessary to enlighten undergraduate student on the subject of oral cancer with emphasis on risk factors and prevention because of recent increase in exposure to risk factors for oral cancers with attending devastating effect worldwide. Cancer is one of the major threats to public health in the developed world and the threat is also increasing in the developing nations, (Motallebnejad et al, 2009).

Globally, tobacco use in any form is associated with increased risk of intra oral cancer (Johnson, 1991). Chidzonga (2006) emphasized the use of tobacco products and excessive alcohol

consumption as the major risk factors for oral cancer. Several studies have confirmed the association between oral cancer and these two life style habits, smoking and alcohol. Findings in this study show that majority have good knowledge of this global belief as they were often in agreement. Previous studies found evidence of the synergistic effects of smoking and drinking on the risk of developing oral cancer (Wen-Jiun et al, 2011).

It has been observed that some viruses, particularly HPV interact with oncogenes and tumor suppressors by altering their function. HPV appears to play an etiologic role in many cancers of the oropharynx and possibly a small subgroup of cancers of the oral cavity. HPV, particularly type 16, has been established as a causative agent in up to 70% of oropharyngeal cancers (Westra, 2009). Increase in the incidence and survival of oropharyngeal cancers in the United States since 1984 are associated with HPV infection (Chaturvedi et al, 2011). Park and Kang (2000) stated in their study that HPV (type 16 and 18) is frequently found in oral cancer specimen. Hennessey et al in 2009 reported that previous studies have consistently shown that HPV infection conferred a higher risk of oropharyngeal cancer when compared with oral cavity cancer. This is completely in contrast to what Akinyamoju et al found in the University College Hospital, Ibadan where Polymerase Chain Reaction was used to detect HPV, it showed that all the oral cancer cases studied were HPV negative, and concluded that HPV may play little or no role in the aetiogenesis of oral cancer in Nigerians (Akinyamoju et al, 2014). The findings in this study showed that larger numbers of respondents were in agreement that there is a strong association between the Human Papilloma virus, the type 16 and 18 variant and oral cancers, which is in line with the generally accepted belief.

Ultra-violet radiation (UVR) exposure is a known risk factor for skin cancer (Moan et al, 2015). Anyone with a history of substantial sun exposure is at an increased risk of SCC of the lip (Skin Cancer Foundation, 2016). This corroborates with the report of Godar et al (2014) that there is a significant positive correlation between UVR exposure and oral, pharyngeal and cervical cancers. In this study, only 42.9% of the respondents agreed that exposure to sunlight is a risk factor for oral cancer. The larger proportions were made up of those who disagreed and those who were not sure. This unsatisfactory knowledge outcome could be because there were more medical doctors than dentist in this study and that may have affected the data on overall knowledge outcome of UVR as a risk factor for oral cancer. This is contrary to a report in a study

lone by Soares et al (2014) among dental students, where they found 66.17% of the respondents identifying solar radiation as a risk factor for cancer of the lip. However, a more recent study by Adams et al (2016) found a significant inverse association between UVR exposure and the incidence of oral, pharyngeal and cervical cancers, leaving the subject to more debate and research.

A family history of head and neck cancer is a marker of an increased risk of oral cancer and should be considered to target prevention efforts and screening (Radoi et al, 2013). Family history is relevant because it reflects an interaction between shared exposure (environmental and behavioral) and genetic susceptibility (Cerhan et al, 2014). Cerhan et al, found an increased risk of Diffuse Large B-Cell Lymphoma with those who had a family history of Non- Hodgkins Lymphoma. Fabio et al in an earlier study confirms that the incidence of some groups of neoplasm like skin cancer, salivary gland and lung cancers, Hodgkins and Non-Hodgkins Lymphoma are increased among subjects previously diagnosed of SCCs. Majority of the respondents had this knowledge and agreed. In a study done in Quebec by Foulkes et al, they found a relative risk of SCC of the head and neck with those who had a family history of SCC of the head and neck. Although in a similar study earlier done in Brazil, they did not find any significant difference in patients with familial history of head and neck cancer.

Oral cancer may present as red, white or discoloured lesions. It is typically painless in its early stages, but as the cancer spreads and destroys healthy oral tissues, the lesion may become painful (Regezi et al, 2003). A larger proportion (87.0%) agreed that it can be painless. This is a commendable finding as it goes to show that most of them will be expected not to overlook a lesion because it is painless, because their index of suspicion will be raised, causing them to examine the patient further. This is also in agreement with Ahmed and Uddin (2010); they found that painless oral ulcers are more sinister than painful ones, for instance, SCCs typically presents as non-healing, painless ulcers presenting for greater than 3 weeks. Uti and Fashina in 2005, reported a contrasting finding among dental schools in Nigeria where none of the respondents believed that oral cancer was not associated with pain and this finding may provide an explanation with late presentation of oral cancer. Those who did not agree that oral cancer can be painless and those who were not sure, however, displayed deficient knowledge and were a minority.

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Gao et al (2012), suggested that oral white lesion in females may be at a higher risk for malignant transformation than in males. In this study, most (62.9%) of the respondents believed that oral white lesion in males is more sinister than in females, this shows a deficiency in knowledge. Neville and Day in 2002 reported that leukoplakia is more common in men than in women, studies have shown that women with leukoplakia have a higher risk of developing oral cancer. This could be because more men smoke than women, smoking has been known to cause mucosal irritation. There is a natural tendency for the epithelium to become more hyperkeratotic as a protective phenomenon. Therefore, more male smokers will likely have hyperkeratotic epithelium than females, or it may indicate that females who develop leukoplakia, do so because of other more potent carcinogenic factors. For instance, it has been found that there are people with certain genetic syndromes caused by inherited mutations in certain genes; who have higher risk of oral and oropharyngeal cancer. For example, Fanconi anaemia – a condition caused by inherited defects to DNA repair genes. Patient with this condition are prone to having leukemia, aplastic anaemia and a higher chance of having oral and pharyngeal cancer (American Cancer Society, 2016).

Greenspan and Jordan (2004), observed that a type of leukoplakia which is the Proliferative Verrucous Leukoplakia (PVL), is predominantly found in those who do not use tobacco, but its rate of transformation to oral cancer is very high, making oral white lesion in non-smokers more sinister. Silverman et al (1984), also found that leukoplakia in patient with a smoking habit seems to have less malignant potential than those not related to a smoking habit. Neville and Day also reported this uncommon variant of leukoplakia, the PVL. It is characterized by multifocal sites of involvement which is widespread and often seen in patient without known risk factors. This lesion begins conventionally as a flat white patch, but over time tend to become much thicker and papillary in nature. At this stage, it can be categorized microscopically as a verrucous carcinoma. It eventually transforms into more aggressive SSC despite attempts at treatment. A gap in knowledge was observed in this study as almost all the respondents believed that oral white lesion in a smoker is more sinister.

More than half (58.9%) agreed that oral white lesion on the ventral surface of the tongue is more sinister. Epidemiology have established that about 70% of SCC are concentrated in about 20% of the surface of the oral cavity which is a U-shaped area involving the lateral borders of the

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tongue, floor of the mouth and lingual aspect of the alveolar margin, extending posterior towards the oropharynx. Squamous Cell Carcinoma of the dorsal surface of the tongue rarely occurs as it contains higher content of keratin. Keratin is a strong, fibrous protein that coats the skin; it protects the host by providing a barrier against carcinogens or other infections. About half of the respondents were ignorant of the intraoral site distribution of SCC, which is a rather poor outcome.

A good proportion (47.0%) opined that multiple oral ulcers is more sinister than a solitary one. This shows quite a significant gap in knowledge because SCC typically present as solitary ulcers, amongst others like, tuberculous ulcers, syphilitic ulcers, major aphthae which could be caused by trauma or infection (Schneider and Schneider, 1998). Solitary oral ulcers should be further investigated and diagnosed with histopathological examination. Solitary ulcers should raise suspicion of malignancy, making them more sinister than multiple ones (Ahmed and Uddin, 2010). Most multiple ulcers are viral ulcers and are self-limiting.

About one-third (37.1%) of the respondents believed that an isolated mobile tooth in the elderly with poor oral hygiene is more sinister than in the elderly with good oral hygiene. This must have stemmed from the current belief that poor oral hygiene is one of the risk factors for oral cancer (Warnakulasuriya, 2009). Oji and Chukwuneke in 2012, also found a strong association between poor oral hygiene and oral cancer. Gonzalez-Henandez (2000) found that daily tooth brushing is a preventive factor against oral cancer. Talamini et al (2000) in contrast, found that poor oral hygiene had a weak or negligible bearing with oral cancer. It is likely that chronic irritation from dental factors which include plaque and calculus, may facilitate exposures to carcinogens, as co-factors in especially high risk individuals. Chronic irritation will cause chronic inflammation and inflammatory mediators contribute to neoplasia by inducing pre-neoplastic mutations, adaptive responses, resistance to apoptosis, and environmental changes such as stimulation of angiogenesis (Shacter and Weitzman, 2002). Average and poor oral hygiene and inadequate dental status are independent risk factors for oral and oropharyngeal squamous cell carcinoma, irrespective of tobacco and alcohol consumption, (Rosenquist et al, 2005)

A substantial body of evidence supports the conclusion that chronic inflammation can predispose an individual to cancer, this was also demonstrated by the association between chronic

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inflammatory bowel diseases and the increased risk of colon carcinoma from ulcerative colitis and hepatocellular carcinoma from infective Hepatitis A. (Shacter & Weitzman, 2002

Research studies suggest a link between diets low in fruits and vegetables and an increase in oral cancer risk. (*Schmidt BL et al, 2004*) Majority of the respondents in this study also opined that the ACE vitamins and Zn have protective role against oral carcinogenesis, this agrees with the study of Taghavi and Yazdi, 2007, that optimal levels of daily allowance of nutrients like vitamins C and E antioxidants, Zn, B-carotene and folate are effective in the prevention of oral cancer. This is also in accordance with what Lawal et al found in their study in 2012, that low levels of vitamins A, C and E in the serum were associated with increased risk of oral cancer by 10.89, 11.35 and 5.6 times respectively.

The roles of vitamins in cellular changes have been shown in several studies. Vitamin A inhibits terminal differentiation of epidermal cells, helps in the arrest and reversal of leukoplakia progression, induces cytotoxic and cytostatic effects on cancer cells, promotes apoptosis and interferes with cancer DNA and RNA gene expression. (Enwonwu and Meeks, 1995). Vitamin C however, enhances chemotaxis, phagocytosis and collagen synthesis. It also inhibits nitrosamine formation and reduces oncogenic expression. Vitamin E scavenges free radicals, inhibits cancer cell growth and differentiation and maintains membrane integrity. It also inhibits mutagenicity and nitrosamine formation. (Enwonwu and Meeks, 1995). Those who disagreed and those who were not sure displayed inadequate knowledge and were a minority.

Our findings reveal that only about half of the respondents will refer patients to the specialist following a 2-week observation of a painless oral ulcer. Among this group, it was observed that majority of the medical doctors will refer to the specialist, as against only a 3rd of the dentists who will do so; rather majority of the dentist said they will do a biopsy. A possible explanation could be because they had a better head knowledge that in confirming the diagnosis of an oral lesion is to do a biopsy; and that could be the reason for chosing that option. This is in contrast with what Uti and Fashina in 2006 found among a group of dental students, where most of them said they will routinely and immediately refer patient with oral ulcer to the specialist. Ulceration that does not show any sign of improvement within 2 weeks should be considered for biopsy. Also, one of the acceptable referrals include patient's complaint of persistent/recurrent oral

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ulceration or following detection of an ulcer lasting more than 2 weeks. In detecting an abnormal area in the mouth, biopsy is necessary for definitive diagnosis which can only be done in a specialist referral center. (National Institute for Health and Clinical Excellence. 2005). In this study, a true test for clinical expertise was to choose the option of referral to the specialist than doing a biopsy.

5.2   Limitation of the study

The limitation of this study is the non-proportionality of dentists to the medical doctors as this may have reflected a higher level of knowledge among the dentists.

5.3   Conclusion

Majority of the dentist and a significant proportion of the medical doctors had good knowledge of risk factors of oral cancer. Overall, the relationship between respondents' true and perceived knowledge of oral cancer showed positive but weak association.

Knowledge of preventive approach to oral cancer and competency in the management of oral cancer was generally poor.

5.4   Recommendation

In view of the above findings, there is the need for educators to place more emphasis on oral cancer education and training of undergraduate medical and dental students, emphasizing the knowledge of risk factors, preventive factors and management.

There should be proper exposure and training of house officers on patient management through clinical attachment at oncology unit before proceeding to the compulsory one-year service under the National Youth Service Scheme where these corps members are often independent to exercise discretion concerning oral cancer management.

There is also need for improved knowledge on preventive measures by intern doctors as a strategy for reduction of oral cancer burden.

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APPENDICES

QUESTIONNAIRE FOR INTERNS (HOUSE OFFICERS)

Sir/Ma, I am a post graduate student of the Faculty of Dentistry, University of Ibadan, requesting that you complete this questionnaire concerning oral cancers. The information obtained will go a long way in cing the management of oral cancer patients. I thank you for your time and understanding.

response will be treated with utmost confidentiality.

.... years)   Sex   Male/Female   Tick appropriately: Dentist/ Medical Doctor

tion   of   undergraduate   medical   or   dental   training:
....

1.) How do you evaluate your knowledge and clinical expertise regarding oral cancers?
   a.) Very well informed   b.) Well informed   c.) Reasonably informed   d.) Poorly informed
   e.) Not informed

2.) What is/are your source(s) of information about oral cancers? (You may tick more than one option)
   a.) Formal lectures, seminars or conferences   ☐
   b.) Media (TV, radio, etc.)   ☐
   c.) Personal Study (i.e. internet/Textbooks etc.)   ☐
   d.) Close associates.   ☐

3.) Oral cancers may present as a painful white patch.   (Yes/No)

   Oal cancers may present as a painless white patch.   (Yes/No)

4.) Oral cancers may present as a painful red patch (Yes/No)

   Oral cancers may present as a painless red patch (Yes/No)

For questions 5-10, tick the one you consider more sinister of these pair of statements.

5.) Oral white lesion in a smoker	☐	Oral white lesion in a non-smoker	☐
6.) Oral white lesion in a male	☐	Oral white lesion in a female	☐
7.) Painless oral ulcer	☐	Painful oral ulcer	☐
8.) Oral white lesion on the ventral surface of the tongue	☐	Oral white lesion on the dorsum of the tongue	☐
9.) Multiple ulcers in the mouth	☐	Solitary ulcer in the mouth	☐
10.) An isolated mobile tooth in the elderly with poor oral hygiene	☐	An isolated mobile tooth in the elderly with good oral hygiene	☐

1.) Which of these do you consider as risk factors in the development of oral cancers:

	True	False	Not sure
a.) Herpes simplex virus infection of the oral mucosa			
b.) Repeated episodes of apthous ulcer			
c.) Previous personal history of oral cancer			
d.) Previous family history of oral cancer			
e.) Exposure to sunlight			
f.) Use of alcohol			
g.) Erythema Multiformes			
h.) Use of the Tobacco			
i.) Human Papilloma Virus infection of the oral mucosa			

12.) Which of these may reduce the risk of developing oral cancer:

	True	False	Not sure
a.) Vitamin A			
b.) Vitamin B,			
c.) Vitamin C			
d.) Vitamin D			
e.) Vitamin E.			
f.) Vitamin K.			
g.) Iron.			
h.) Zinc.			
i.) Magnesium			
j.) Selenium			

13.) For an elderly woman presenting with a painless oral ulcer, how long should you observe?
   a.) 2 weeks ☐
   b.) 4 weeks ☐
   c.) 6 weeks ☐
   d.) 2 months ☐
   e.) 6 months ☐

14.) For the above-mentioned patient, what should be your next line of action?
   a.) Observe for a longer period ☐
   b.) Refer to specialist. ☐
   c.) Biopsy ☐
   d.) Give Antibiotics. ☐

Thank you!

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ETHICAL CONSIDERATION

The study followed the ethical principles guiding the use of human participants in research.

Confidentiality: All completed questionnaires were kept in secured settings where no other persons had access to the information obtained from the respondents. No identifiers like name of respondents, addresses were required.

Beneficence: All necessary information in the research that participants needed was provided. Their complaints and inquiries were attended to with honesty.

Translation of protocol: There was no need for translation of the protocol since the subject participants are doctors who already have good command of English language.

Non-maleficence: There was no risk involved because no invasive procedure was done, samples were not taken from participants and in terms of loss of time, it was minimal as the questions have been designed to be easily understood.

Voluntariness: the house officers were made to understand that they are free to participate or decline and those who consented were required to fill the designed consent form after the aims and objectives were explained to them.

INFORMED CONSENT FORM

THE KNOWLEDGE OF ORAL CANCERS AMONG HOUSE OFFICERS IN THE UNIVERSITY COLLEGE HOSPITAL, IBADAN.

I, Ambeke Annabel, a post graduate student of the Faculty of Dentistry, College of Medicine, University of Ibadan, want to carry out a study with the aim of assessing house officers' knowledge about oral cancer with regards to aetiology, diagnosis and prevention, for enhancing the management of oral cancer patients.

For the purpose of this research, all house officers will be inclusive and data will be collected using semi structured, self-administered questionnaires.

Your participation in this research will cost you only your time, participation is completely voluntary. You may choose to withdraw from the research at any time. Your responses and opinions will be kept confidential and no name is required for identification. You are requested to please give the honest responses to the questions as much as possible.

 I have fully explained this research to _____ and have given sufficient information including risks and benefits, to make an informed decision.

Date: _____   SIGNATURE:……………………………

NAME: ....

Statement of person giving informed consent:

I have read the description of the research. I understand that my participation is voluntary. I know enough about the purpose, methods, risks and benefits of the research study to judge that I want to take part in it. I understand that I may freely stop being part of this study at any time. I have received a copy of the consent form and additional sheet to keep for myself.

Date:………………………………….. Signature:……….……………………………………..

Name:…………………………………….................................

Detailed contact information including contact address, telephone, e-mail and any other contact information of the researcher(s), institutional HREC and head of institution:

This research has been approved by the Health Research Ethics Committee of the University of Ibadan and University College Hospital and the chairman of this committee can be contacted at BIODE building, Room T10, 2nd floor, Institute for Advanced Medical Research and Training (IMRAT), College of Medicine, University College H ospital. E-mail: uiuchirc@yahoo.com If you have any question about your participation in this research, you can contact the principal investigator; Ambek Annabel, at the Faculty of Dental Surgery, College of Medicine, University of Ibadan. Her phone number and e-mail address are 08023334042 and annabeljoy@yahoo.com respectively. You can also contact the Dean School of Dentistry, College of Medicine, University of Ibadan.

PLEASE KEEP A COPY OF THE SIGNED INFORMED CONSENT.

Thank you.