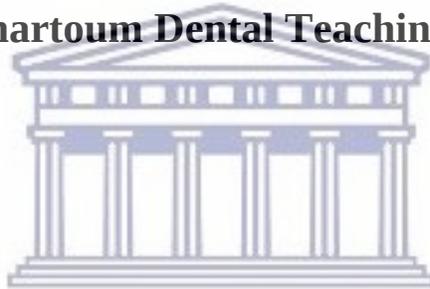




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**Awareness and Knowledge of Oral Cancer Among Dental Patients  
visiting Khartoum Dental Teaching Hospital**



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A thesis submitted in partial fulfillment of the requirements for the degree of MSc  
(Dent) in Dental Public Health at the Faculty of Dentistry,  
University of the Western Cape.

**Supervisor**

**Professor Neil Myburgh, MChD**

# Abstract

**Background:** Oral cancer is a major global healthcare problem. Its prevalence is increasing, and late-stage presentation is common. More than 500,000 patients are estimated to have oral cancer worldwide. Oral cavity squamous cell carcinoma (SCC) accounts for 90-94% of oral cancers. Survival rates for oral cancer are very poor, at around 50% and has not improved considerably in the previous decades even with advances in therapeutic interventions.

Screening programs have been introduced for a number of major cancers and have demonstrated a compelling effect in their early detection. It's now well established that the early detection of the malignancies is a competent way of improving the clinical outcome for patients. It's believed that to reduce death and morbidity from this disease it is important to detect it at an early stage, when lesions are localized.

**Aim:** To assess the level of awareness and knowledge of oral cancer among dental patients visiting Khartoum dental teaching Hospital.

**Method:** A cross-sectional survey using a self-administered questionnaire with 18 questions was distributed to 193 patients between 18 and 65 years to collect the information.

**Results:** The results indicate that there were more females (107; 55%) than males (86; 45%). There was a non-significant difference between alcohol consumption and awareness of oral cancer. However, the frequency results revealed that the majority of participants (98; 92 %), who reported they has heard about oral cancer, were females, while almost a quarter of participants (18; 21%) who had never heard about it, were males. This suggested that female patients were more aware of oral cancer than males. Participants, who declared hearing about oral cancer were more highly qualified educationally, whereas a quarter of them who declared they had never heard about it, were poorly qualified educationally.

**Conclusion:** The findings of the present study indicate that there is a need for educational programs to help advance awareness and knowledge of oral cancer.

**Keywords:** Awareness, Dental patients, Oral cancer, Knowledge.

# Dedication

Dedicated to,

My beautiful family including my parents and brothers, thank you for always believing in me and engorging me to do more, without them I would have not become the person I am today. My husband Aziz and his continuous motivation and support, I am truly lucky to have you.

My daughter Kenzy, you are the reason for happiness and joy, it is such a blessing and gift from god having you in my life.



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# Declaration

I declare that “*Awareness and Knowledge of Oral Cancer Among Dental Patients visiting Khartoum Dental Teaching Hospital*” is my own work, that it has not been submitted before for any degree or examination in any other university, and that all sources I have used or quoted have been indicated and acknowledge as complete references.

Full name: Samah Abdelaziz Elsheikh Babiker

9 November 2018

Signed: Samah A. Babiker



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# 1. Introduction

Oral cancer is one of the most common health problems in the world, being the sixth most common cause of cancer-related deaths worldwide (Ferley J et al., 2010). More than 500,000 patients are estimated to have oral cancer globally with approximately 389,000 new cases per annum (Kazim F et al., 2011). About 90% of oral cancers are squamous cell carcinomas. The most prevalent predisposing factors of oral cancer are smoking, alcohol abuse, smokeless tobacco and human papilloma virus infections. Since, most of these causes are due to lifestyle factors, such as alcohol abuse, these behaviors are changeable by use of effective primary preventive programmes (Vora et al., 2000). Cancer programmes are held in a number of countries but there is more emphasis on other types of cancers such as cervical, prostate and breast cancer.

It is unfortunate that the majority of oral cancer patients are discovered in advanced stages, requiring aggressive intervention and related morbidity, bringing higher mortality rates. However when the disease is detected at an early stage, the survival rates are about 80% and compared to less than 30% in cases presenting with distant metastasis (Pett Si and Scully C, 2007). The majority of the patients who went through successful treatment for oral cancer have to face some functional and cosmetic deterioration that include difficulties in eating, swallowing, speaking and disfigurement. This will have a serious and unfortunate impact on their quality of life (Chundu A et al., 2006). As the mouth is conveniently reachable for self-examination, early diagnosis of the disease is possible and would greatly increase the survival rate. The prognosis of oral cancer is poor, with the lowest survival rate less than 50% within a five-year period. Therefor the detection of oral cancer at an early stage will not only improve the prognosis of the disease but it will also improve the morbidity and reduce the likelihood of disfigurement (Scott S et al., 2008).

1.1 This study will assess the awareness, attitude and knowledge regarding the signs, symptoms and risk factors related to oral cancer. **Problem statement**

Oral cancer is a well-known malignancy dangerous and a life-threatening disease it can occur in any part of the oral cavity, for an example; cancer of the lips, mouth, cheeks, floor of the mouth, hard and soft palate and tongue. The most common characteristic sign of oral cancer is a bleeding

non-healing ulcer or a lump on the cheek and white or red patches found in the oral cavity. The best way of treating this disease is by early detection because late detection allows the disease to spread making the treatment very difficult and increases the morbidity and mortality rate. The number of oral cancer victims has increased in number, resulting in 130,000 deaths per year. The public should be aware of the risk factors, habits and the signs and symptoms of oral cancer. Health professionals and mass media should aid in spreading the knowledge and awareness of oral cancer (Pett Si and Scully C, 2007).

In this study, knowledge and awareness of oral cancer will be measured and assessed among dental patients in Khartoum Dental hospital.

## **1.2 Aim and Objectives**

The aim of this study was to assess the level of awareness and knowledge among dental patients visiting Khartoum Dental Teaching Hospital.

**The objectives of the study were:**

- To evaluate the level of awareness and knowledge of oral examination and screening of oral cancer as well as the risk factors of oral cancer.
- To correlate the level of awareness according to age, gender and level of education.

## 2. Literature Review

According to Sadeq (2015), 50% of oral cancer cases are diagnosed at advanced stages. Unfortunately, the lack of knowledge towards the risk factors and early signs of oral cancer leads to the late detection of the disease. A survey conducted by Sadeq (2015), amongst dental patients in Riyadh, Saudi Arabia reported that 62% of patients showed a lack of knowledge of oral cancer. (Ref. Despite this percentage of awareness is somewhat higher than that reported among other hospital-based populations in Australia (52.3%; Formosa J et al., 2015), Jordan (45.6%; Hasoona Y et al., 2015) and the UK (56%; Warnakulasuriya KA et al., 2015). These numbers are much lower than the ones reported in India (91.2%; Agrawal M et al., 2012), Sir Lanka (95%; Ariyawardana and Vithanaarachchi, 2005) and the USA (84%; Tomar and Logan, 2005). High levels of oral cancer awareness have been found in some countries with a high prevalence of oral cancer such as India and Sir Lanka. This may be due to the displayed educational material e.g. posters and pamphlets in hospitals to which the whole public is exposed, and seems to be contributing to the high level of awareness (Ariyawardana and Vithanaarachchi, 2005).

This study by Sadeq (2015) revealed an alarming lack of knowledge about risk factors and early signs of oral cancer that needs to be urgently addressed. To improve oral cancer knowledge all over the country, mass media should be enforced to raise awareness, public health promotion and educational initiatives. The lack of public awareness of the signs, symptoms and risk factors with oral cancer is considered to be an influential barrier for early detection of oral cancer (Sadeq A et al., 2015).

Another study conducted at, Hyderabad, India to assess the awareness level and knowledge of oral cancer. Questions on oral cancer awareness were asked and it was found that 60% knew what oral cancer was and only 19.9% of them had a decent amount of information about mouth, tongue and lip cancer. The knowledge on oral cancer for 43.2% of the study population was through mass media e.g. television, radio and newspapers. However, the dentist's contribution to cancer awareness was only reported by 26% of the sample. Half of the study population noted that they

would ask assistance from dentists if they did in fact suspect having oral cancer. 1.6% of the study population said they had an oral cancer examination, with 85.5% unaware whether they had an oral examination (Srikanth Reddy B et al., 2011).

According to Srikanth Reddy (2011) found the level of awareness in this study population was satisfactory. However, it has been emphasized that the need for more structural oral cancer preventive programs using mass media and dental professionals seem to play a major role in early diagnosis and subsequently reducing the morbidity and mortality rates for oral cancer.

Their questionnaire contained information about the patients' age, gender, education and occupational degree. The questions also enquired about habits, signs and symptoms, the clinical presentation of oral cancer and how oral cancer is treated. They were also asked about their source of information about oral cancer. There were 25.4% smokers, 26.2% were alcohol consumers and 5.4% of the study population used chewing tobacco. Patients with the habit of both smoking and alcohol intake were 76 patients, and 20 patients were seen with the habit of tobacco chewing and alcohol consumption. 96% of the study population said they would see a dentist if they notice a painless and non-healing ulcer and 59.6% think that oral cancer is a contagious disease (Saraswathi K and Duraiselvi, 2014).

These studies suggest that the primary risk factor for cancer present in India, is tobacco and alcohol which are taken in several forms. Oral smokeless tobacco is a product that is situated in the mouth (cheek and lip) where it could be sucked or chewed. The composition of this produce is tobacco powder and various mixtures (Saraswathi K and Duraiselvi, 2014).

It is very unfortunate that educational programs focus on the association between smoking and lung cancer, while neglecting oral cancer. The percentage of oral cancer patients diagnosed at an early stage is less than 50%. The outcome of the India study stated that 52.4% of the patients were unaware of a type of cancer called oral cancer. Most of the study population were aware of oral cancer from the mass media (63.2%), while 23.4% learnt from their dentist and 7.8% learnt about it elsewhere (Saraswathi K and Duraiselvi, 2014). In conclusion, the study population of Meenakshiammal Dental Collage, Chennai, India, still had a lack of knowledge towards the bad

habits, early signs and symptoms, and the importance and benefit of detecting the disease at an early stage. Patients should know the complications of oral cancer and how the risk habits have a role in the development of the disease.

However, this research was in adult patients visiting the Islamic International Dental Hospital, Islamabad, Pakistan. Most of the population living in Islamabad are well aware of oral cancer, its causes and the risk factors. The results of this study showed that only 54% of the study population were knowledgeable about oral cancer while 17% had an acceptable amount of information about oral cancer. The study showed that 29% had a lack of knowledge regarding oral cancer. In relation to risk factors, 95% knew that smoking and smokeless tobacco were the cause of oral cancer. There was a 3% that had insufficient knowledge about oral cancer, and there was 2% who were unaware of the risk factors (Shakoor A et al., 2014).

Oral cancer is a very dangerous disease and dentists are capable of detecting and treating this disease. When oral cancer is diagnosed at an early stage there is an 80% chance of success rate and a 30% chance that it is metastasized (Petti and Scully, 2007). Sadly, studies have revealed that 37% of oral and pharyngeal cancer were caught at an early stage without it spreading in America (Oh J et al., 2008). In order to accomplish a better outcome and long-term survival the disease should be diagnosed as early as possible (Omalara G, 2011). The reason for the increase of oral cancer is the inadequacy of public awareness that results in late detection. The outcome of their study revealed that 48% of the patients knew the signs and symptoms of oral cancer and 29% of the study population knew the most common locations of oral cancer. West R et al., (2011) said that the red and white patches were manifestations of oral cancer. On the other hand, 50% of patients did not know that the red and white lesions found in the mouth might be cancerous (Tomar SL and Logan HL, 2009) and 44.9% of the study population in Sir Lanka were attentive to the red and white lesions in the mouth (Ariyawardana and Vithanaarachchi, 2005).

A total of 85% of the population knew that early diagnosis of the disease can result in a better prognosis. 66% of the patients did not know about cancer treatment procedures, 6% referred to radiology, 13% said surgery and 12% said medication (Shakoor A et al., 2014).

A review was done by Waranakulasuriya in London showing 94% of the population recognize the

seriousness of early detection and treatment of the disease. Unfortunately, 29% of the population favored going to the doctor if they noticed any changes in the oral cavity rather than a dentist. This approach could lead to a late referral and late diagnosis of the disease (2008).

In conclusion, the review by Shakoor A et al., (2014) showed that the population had a good level of awareness (54%) in comparison with other studies, such as the one conducted in Iran showing a percentage of only 2.5% (Pakfetrat A et al., 2010).

A study in the Department of Dentistry at the University of Jordon Hospital had a study population older than 16 years of age and patients who were diagnosed or were suspected to have cancer were not involved with study. This study tested the knowledge about oral cancer. The level of awareness in this study was quite shocking, and only 45.6% knew that oral cancer existed. This study also showed that most of the study population who were aware of oral cancer were the young patients (those less than 40 years of age). This was thought to be related to exposure of young adults to mass media. In this study, the awareness was not related to the level of education (Hasoona Y et al., 2015). In other studies, participants with higher degrees were well aware of the predisposing factors of oral cancer (Patton LL et al., 2004). More than 59.8% of the study population knew about oral cancer through mass media. It is important to use media to educate the community and to aid in the delivery of information on health issues (Hasoona Y et al., 2015).

The main predisposing factors for oral cancer are tobacco smoking or chewing, and alcohol intake (Muwonge R et al., 2008). This review presented that one-third of the study population smoke cigarettes and 8.1% are alcohol consumers. Although most of the participants were well aware that tobacco use is linked to cancer and only 33.8% knew that alcohol is associated with oral cancer (Hasoona Y et al., 2015). The participants point of view towards early detection was mostly positive, 86.1% of them think that routine checkups can help in the early detection and 67.5% understood that the dentist is certified to detect oral cancer. The routine checkup should be capable of pointing out to the public if there is an unusual lesion in the oral cavity (Hasoona Y et al., 2015). The review of Hasoona Y was a hospital-based study that explained the critical aspects about oral cancer (2015).

In most of the studies the method that has been used for collecting information from the patients attending dental hospitals was a self-administered questionnaire. A cross sectional data was a method used by Sadeq A (2015) with the patients of public dental hospitals in Riyadh using the SPSS software to analyze his results. In another study, a quantitative study design was chosen because its less time consuming and affordable (Shakoor A et al., 2014). Hasoona Y selected his study population randomly with an 18-item close-ended questionnaire and the chi-square test was used for descriptive statistics (2015).

In conclusion, it is clear that awareness of oral cancer varies greatly across global communities. Where awareness of oral cancer and its diagnostic and treatment features are well known, early detection and treatment is possible. This study seeks to determine what the level of awareness is in a Khartoum hospital patient sample. Knowledge of community awareness levels could be really useful in guiding future oral cancer education strategies in the community.



### 3. Methodology

A questionnaire was designed and distributed to dental patients in Khartoum teaching hospital. All patients were above the age of 20. If they were willing to participate and gave the required informed consent (see attached at end of dissertation), they were included in the study. Information on the demographic characteristics, habits, along with the extent of knowledge about the risk factors and signs of oral cancer of the study population was collected using a close-ended questionnaire (attached at end of dissertation), formatted in both English and the local language Arabic. The questionnaire consisted of questions on demographic factors such as age, gender, level of education as well as habits, awareness of oral cancer, knowledge of the risk factors, signs and symptoms of oral cancer. The duration of this study was three months. Responses to knowledge questions were assessed and knowledge scores were calculated for each respondent using the SPSS (IBM Statistical Package for Social Studies) for data entry and analysis. A knowledge score was calculated for each participant based on the answers to the questions. A knowledge score was computed for each participant. The quantitative data was presented as means and standard deviations and presented in the form of tables and charts.

A total of 200 patients above the age of 20 years of age were randomly chosen and the self-administered questionnaire was given to the respondents. For illiterate patients, an interview was used to transfer the answers to the questionnaire. The questionnaire requested information about patients age, gender, education level and habits of what. The second section contained questions regarding oral cancer. The questions regarding risk factors and patient's assumption of oral cancer were closed ended.

The sample Inclusion Criteria required participants to be males and females above the age of 20 years, in order to be included in the study. The Exclusion criteria meant that disabled patients and patients with major illness or systemically seriously affected patients were excluded.

The research design was a cross-sectional study using convenience sampling from patients available in the hospital waiting areas.

## 4. Results

### 4.1 Introduction

This chapter is focused on the quantitative results. It specifically presents demographic information on the participants and results on some factors associated with awareness of oral cancer, awareness of dentists' skills in detecting signs of oral cancer, awareness about oral cancer and awareness of participants on routine dental screening.

### 4.2 Demographic results

The demographic profile of the population in this study is displayed in Table 4.1. There were more females (107; 55%) than males (86; 45%). The table further indicates that most of the respondents were single (127; 66%) and that 61 participants were married (32%), four participants were divorced (2%), and only one participant was widowed (1%). The majority of participants (168; 87%) were over 40 years, and 13% of them were below 40 years. The results showed that of 61% of participants had high qualifications and 39% had lower qualifications.

Table 4.1: Demographic features

Variables		N	%	M	SD
Gender	Male	86	45		
	Female	107	55		
Marital status	Single	127	66		
	Married	61	32		
	Divorced	4	2		
	Widowed	1	1		
Age	<40	168	87		
	>40	25	13		
Educational qualifications	Higher	117	61		
	Lower	76	39		

### 4.3 Factors associated with awareness of oral cancer

There were significant differences between awareness of oral cancer, gender, age, level of qualification and smoking among participants ( $p < .05$ ) (Table 4.2). There was a non-significant association between alcohol consumption and awareness of oral cancer ( $p > .05$ ). However, the frequency results in the same table revealed that the majority of participants (98; 92%), who reported to have heard about oral cancer were females, while almost quarter of participants (18; 21%) who had never heard about it, were males. Most participants (110; 94%), who declared hearing about oral cancer, were highly educationally qualified whereas a quarter of them who declared they had never heard about it, had lower educational qualifications. Most (90%) of the participants who had heard about oral cancer were over 40 years old while 40% of them who had no knowledge of oral cancer were less than 40 years. A quick perusal of Table 4.2 shows that the majority of participants (125; 92%), who never smoked cigarettes declared they had heard about oral cancer, and almost a quarter of them (6; 21%), who smoked had not heard about it.

**Table 4.2: Factors associated with awareness of oral cancer**

Factors	Have you ever heard of oral cancer?		p-value	
	Yes (N, %)	No (N, %)		
<b>Gender</b>	<b>Male</b>	68 (79)	18 (21)	0.013
	<b>Female</b>	98 (92)	9 (8)	
<b>Educational qualification</b>	<b>Higher</b>	110 (94)	7 (6)	0.000
	<b>Lower</b>	56 (74)	20 (26)	
<b>Age</b>	<b>&lt;40</b>	151 (90)	17 (10)	0.000
	<b>&gt;40</b>	15 (60)	10 (40)	
<b>Current smoking status</b>	<b>Yes</b>	22 (79)	6 (21)	0.039
	<b>No</b>	9 (75)	3 (25)	
	<b>Never</b>	125 (92)	11 (8)	
<b>Alcohol consumption</b>	<b>Yes</b>	8 (100)	0 (0.0)	0.261
	<b>No</b>	151 (86)	24 (14)	

### 4.4 Awareness that dentists are trained to check for signs of oral cancer

There were statistically significant associations between the awareness that dentists are trained to check the signs of oral cancer and gender, age, and level of qualification among participants ( $p < 0.05$ ) (Table 4.3). Alcohol consumption and current smoking status were not significantly associated with the awareness that dentists are trained to check for oral cancer signs ( $p > 0.05$ ). Seventy-three per cent (73%) of the participants, who reported that they were aware that dentist was trained to check for the signs of oral cancer were females, while only 17% were males. Almost 79% of participants who had some awareness of the dentist's training to check for the signs of oral cancer had higher educational qualifications, while 21% of them had no awareness had lower educational qualifications. Twenty-eight per cent (28%) of the respondents indicated that they were not sure.

**Table 4.3: results of awareness that dentists are trained to check for signs of oral cancer**

Factors	Aware that Dentists are trained to check for signs of oral cancer			<i>p-value</i>	
	Yes (N, %)	No (N, %)	Not Sure (N, %)		
<b>Gender</b>	Male	53(63)	10(12)	23(27)	0.010
	Female	78(73)	18(17)	11(10)	
<b>Educational qualification</b>	Higher	92(79)	12(10)	13(11)	0.000
	Lower	39(51)	16(21)	21(28)	
<b>Age</b>	<40	120(72)	21(13)	27(16)	0.020
	>40	11(44.0)	7(28)	7(28)	
<b>Current smoking status</b>	Yes	17(61)	5(18)	6(22)	0.182
	No	6(50)	4(33)	2(17)	
	Never	100(74)	15(11)	21(15)	
<b>Alcohol consumption</b>	Yes	6(75)	1(13)	1(13)	0.909
	No	119(68)	25(14)	31(18)	

The results further indicated that 72% of participants claim to know that dentists were trained to detect signs of oral cancers with their ages ranged up to 40 years old. The 28 % of the respondents who acknowledged that they were not sure about it, were less than 40 years old. This finding suggests that older patients were more informed about the dentist's ability to check for the oral cancer's signs than the younger ones.

#### 4.5 Results of having information about oral cancer

Most of the subjects reported that they have no knowledge about oral cancer (Table 4.4). There were significant differences conversely between having information about oral cancer, and gender, age and level of qualifications among participants ( $p < .05$ ). The current smoking status and alcohol consumption of respondents were insignificant in relation to respondents' knowledge about oral cancer ( $p > .05$ ) (Table 4.4). Both the 32% of the participants, who stated having a lot of information about oral cancer, and 51% that claimed to have little knowledge about oral cancer were females, whereas the 37% who indicated that they had knowledge of oral cancer were males. The frequency results in the same table further showed that 32% of participants acknowledged having a lot of information about oral cancer, and 58% of them indicated that they have little, were those with higher educational qualifications. Fifty-one per cent (51%) of participants who reported having any information about oral cancer, were those with lower educational qualifications. The results depicted in Table 4. 4 showed that the majority of participants for both having a lot (45; 27%) and little (87; 52%) information about oral cancer, were more than 40 years old, while 64% of them declared not having any information about oral cancer.

Results presented in Table 4.4. below, shows that that there were statistically significant differences between awareness of screening routinely by dentists and gender, age, and level of qualification ( $p < .05$ ) (Table 4.5). The current smoking status and alcohol consumption of respondents were however insignificant to the respondents' awareness of screening routinely done by their dentist ( $p > .05$ ). The frequency results reported Table 4.4 revealed that 53% of the participants claim that they have knowledge of screening routinely carried out by Dentist, and 30% of them have not awareness were females.

**Table 4.4: Results of having any information about oral cancer**

Factors	have any information about oral cancer			<i>p-value</i>	
	Yes a lot (N, %)	Yes a little (N, %)	No (N, %)		
<b>Gender</b>	<b>Male</b>	12 (14)	41(49)	31(37)	0.001
	<b>Female</b>	34 (32)	54 (51)	19(18)	
<b>Educational qualifications</b>	<b>Higher</b>	37(32)	67(58)	11(10)	0.000
	<b>Lower</b>	9(12)	28(37)	39(51)	
<b>Age</b>	<b>&lt;40</b>	45(27)	87(52)	34(21)	0.000
	<b>&gt;40</b>	1(4)	8(32)	16(64)	
<b>Current smoking status</b>	<b>Yes</b>	4(14)	15(54)	9(32)	0.412
	<b>No</b>	3(25)	5(42)	4(33)	
<b>Alcohol consumption</b>	<b>Never</b>	34(25)	74(55)	26(19)	0.177
	<b>Yes</b>	4(50)	3(38)	1(13)	
	<b>No</b>	38(22)	89(51)	46(27)	

#### 4.6 Results for awareness of screening routinely by their dentist

While 38% of participants, who have not sure for the awareness of screening routinely by their dentist were males. 61% of the participants, who declared having some awareness of screening routinely by their dentist were highly qualified, while 36% of them stated do not having and not sure having awareness of screening routinely by their dentist were lower qualified (Table 4.5).

Finally, the descriptive results showed that 52% of participants, who are aware of routine screening by their dentist were aged of up to 40 years old, while both have not (44%) and not sure (32%) about the awareness of screening routinely by their dentist were under aged of 40 years old.

**Table 4.5: results for the awareness of screening routinely by their Dentist**

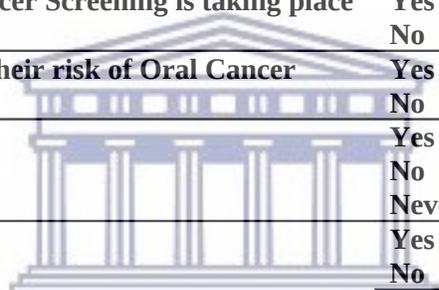
Factors	Awareness of screening routinely by their dentist			<i>p-value</i>	
	Yes (N, %)	No (N, %)	Not Sure (N, %)		
<b>Gender</b>	<b>Male</b>	37 (43)	16 (19)	33 (38)	0.002
	<b>Female</b>	56 (53)	32 (30)	18 (17)	
<b>Educational qualification</b>	<b>Higher</b>	71 (61)	21 (18)	24 (21)	0.000
	<b>Lower</b>	22 (29)	27 (36)	27 (36)	
<b>Age</b>	<b>&gt;40</b>	87 (52)	37 (22)	43 (26)	0.018
	<b>&lt;40</b>	6 (24)	11 (44)	8 (32)	
<b>Current smoking status</b>	<b>Yes</b>	10 (36)	9 (32)	9 (32)	0.168
	<b>No</b>	4 (33)	5 (42)	3 (25)	
<b>Alcohol consumption</b>	<b>Yes</b>	6 (75)	1 (13)	1 (13)	0.335
	<b>No</b>	84 (48)	44 (25)	46 (26)	



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**Table 4.6: Factors associated with awareness and knowledge of oral cancer**

<b>Items</b>	<b>Responses</b>	<b>N (%)</b>
<b>Would you say you know a lot, some, a little, or nothing at all about mouth cancer?</b>	<b>A lot</b>	38 (20)
	<b>Some</b>	72 (38)
	<b>A little</b>	56 (30)
	<b>Nothing at all</b>	11 (6)
	<b>Never</b>	12 (6)
<b>If you have any information, where did you get it?</b>	<b>Media</b>	30 (18)
	<b>Friends</b>	13 (8)
	<b>Environment, etc.</b>	24 (14)
	<b>Internet</b>	13 (8)
	<b>Dentist</b>	88 (52)
<b>Most recent screening for signs of oral cancer. Today (Current Visit)?</b>	<b>1-2</b>	31 (17)
	<b>2-3</b>	9 (5)
	<b>3 and more</b>	13 (7)
	<b>Not Sure</b>	46 (25)
	<b>Never</b>	84 (46)
<b>Patients want to be told Oral Cancer Screening is taking place</b>	<b>Yes</b>	79 (43)
	<b>No</b>	104 (57)
<b>Patients want support to reduce their risk of Oral Cancer</b>	<b>Yes</b>	109 (64)
	<b>No</b>	62 (36)
<b>Current Smoking Status</b>	<b>Yes</b>	28 (16)
	<b>No</b>	12 (7)
	<b>Never</b>	136 (77)
<b>Alcohol consumption</b>	<b>Yes</b>	8 (4)
	<b>No</b>	175 (96)



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#### **4.7 Factors associated with awareness and knowledge of oral cancer**

The results revealed that 38% of participants knew about oral cancer. The results showed almost half of participants (52%) have information about the month cancer from dentists, followed by 46% of participants who have never been screened for signs of oral cancer. The descriptive results demonstrated that the majority of the participants (57%) do not want to be told about oral cancer screening, while 64% of participants want to be assisted in order to reduce their risk of oral cancer. The majority of participants (136, 77%) never had currently smoking status, while almost fifth of participants (28, 16%) were currently smoking. The vast majority of the participants (175, 96%) were never been alcohol consumption, as only 4% of them were alcohol consumption.



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## 5. Discussion and Conclusion

### 5.1 Introduction

This final chapter discusses the results of the study and aligns it with findings from previous studies. As stated from the outset, this study set out to assess the awareness and knowledge of oral cancer among dental patients in Khartoum Dental Teaching Hospital. It sought to specifically determine the correlation between: (a) oral cancer awareness and age, gender, level of educational qualification and smoking status and to (b) evaluate the level of awareness and knowledge of oral examination, screening of oral cancer and risk factors of oral cancer.

### 5.2 Factors associated with awareness of oral cancer

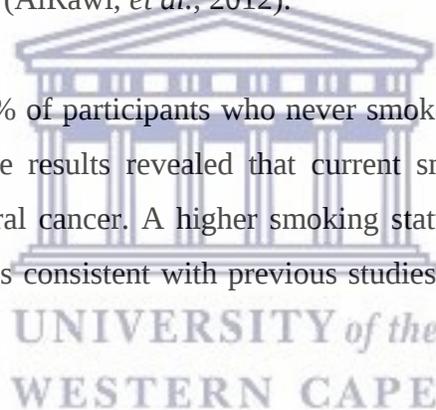
The results have shown there was no significant association between alcohol consumption and awareness of oral cancer. Furthermore, it has been shown that a significant difference exists between awareness on oral cancer and gender, age, level of qualification and smoking status among participants. Over 92% of the female participants claimed to have heard about oral cancer (section 4.2; Table 4.2). These results suggested that gender differences were associated with awareness of oral cancer, even though female patients were more aware of oral cancer than males. Previous studies conducted from various countries, have interestingly revealed consistent results on awareness about oral cancer and gender differences in the United States of America (Rice, 2006; Ek, 2013), in India (Gopal, & Duraiselvi, 2014), in a Malaysian population (Ghani, Doss, Jamaluddin, Kamaruzaman, & Zain, 2013), in Trinidad (Prayman, Yang, & Warnakulasuriya, 2009) and in the United Arab Emirates (UAE) (AlRawi, AlKawas, & Imad, 2012).

The results further indicated that 90% of the participants aged up to 40 years old were aware of oral cancer. This finding suggests that age difference is positively associated with awareness of oral cancer. It can be concluded from the above that older patients were more aware than the younger one. These results are consistent with that reported in Agrawal, Pandey, Jain, and Maitin's 2012 study, where it was found out that age group differences have positive relationship with awareness of oral cancer in the Indian population. The findings also agree with the results reported

in Ghani, *et al.*, (2013) in Malaysia, Prayman, *et al.*, (2009) in Trinidad and the study by AlRawi, *et al.*, (2012) which was conducted in UAE.

Approximately 94% of the more highly educationally qualified participants declared hearing about oral cancer. These results suggest that educational qualification differences do affected the awareness of oral cancer. Previous research evidence suggested that the level of educational qualification has a positive effect on oral cancer awareness in India (Elango, Sundaram, Gangadharan, Subhas, Peter, Pulayath, & Kuriakose, 2009; Agrawal, *et al*, 2012), and in Malaysia (Ghani, *et al.*, 2013). Similarly, it was found out that there is a lack of oral cancer awareness for participants with lower levels of education. This finding is consistent with that repoted in previous research that education is a factor in creating awareness on how to prevent oral cancer in the Oporto city, Portugal (Monteiro, Warnakulasuriya, Cadilhe, Sousa, Trancoso, Antunes, & Pacheco, 2016), and in the UAE (AlRawi, *et al.*, 2012).

The data indicated that over 92% of participants who never smoked cigarettes, declared that they were aware of oral cancer. The results revealed that current smoking status differences were associated with awareness of oral cancer. A higher smoking status was associated with a lower awareness of oral cancer. This is consistent with previous studies conducted in Malaysia (Ghani, *et al.*, 2013).



### **5.3 Awareness that dentists are trained to check for signs of oral cancer**

The results revealed that there was significant difference between awareness that dentists are trained to detect signs of oral cancer, and gender, age and level of qualification. Alcohol consumption and current smoking status were found to be not significantly associated with the awareness that dentists are trained to check for the signs of oral cancer.

Almost 73% of female participants reported that they were aware that dentists were trained to diagnose oral cancer. The result further indicated that gender differences was positively associated with awareness about dentist trainings to detect the oral cancer. This finding suggests that, female patients were more aware about dentists being trained to check for oral cancer, than males.

The results also revealed that 72% of participants with ages within the range of up to 40 years old are aware of dentists training to check for the signs of oral cancer. This finding implies that age has an influence on participants' awareness about dentist training on oral cancer detection. It can therefore be concluded that the older patients were more aware about dentists training to check the oral cancer's signs than the younger one.

The results further indicated that over 79% of the higher educational qualification participants had an awareness of dentists' training to check for the signs of oral cancer. This suggests that the level of educational qualification also impacted the awareness of dentist training to check for the signs of oral cancer. It can also be concluded that the higher the level of educational qualification the lower the awareness level of participants on knowledge of dentists' training to check for the signs of oral cancer. In India, the role of dentists has been extended to educate and train the patient or population about oral cancer and its risk factors, and to perform oral self-examination (Elango, *et al.*, 2009).

#### **5.4 Participants' access to information about oral cancer**

There were significant differences between having information about oral cancer and gender, age and level of educational qualification. In addition, the current smoking status and alcohol consumption were had no significant association with having information about oral cancer.

In the current study, almost 51% of female participants stated that they have little information about oral cancer. This revealed that gender a predictor of a person's information about oral cancer. It can be concluded that female patients were more knowledgeable about oral cancer than males. This result is consistent with the findings reported in previous empirical studies (Muscat, Richie, Thompson, & Wynder, 1996; Ek, 2013), and in the Mersey region (Rogers, Hunter, & Lowe, 2011).

Over 64% of the participants who were less than 40 years old indicated that they have no information about oral cancer. This implies that age is correlated with access to information about oral cancer. It is therefore safe to conclude that younger patients had less information about oral cancer than older ones. This finding is consistent with a number of findings reported on the risk

factors associated with oral cancer among young people (Llewellyn, Linklater, Bell, Johnson, & Warnakulasuriya, 2004).

The results further show that 58% of participants who had lower educational qualification, acknowledged having no information about oral cancer. This implies that the level of educational qualification of participants has a relationship with participant's knowledge about oral cancer. It can be concluded that the higher the level of educational qualification, the higher the access to information about oral cancer. This finding replicates the results of a study conducted in Britain which revealed that patients with low educational qualification are at a higher risk of developing oral cancer (West, Alkhatib, McNeill, & Bedi, 2006). Therefore, there is a need to create greater awareness of oral cancer among the less-educated patients, However, Petti and Scully (2007) suggested that the information must be well presented and easily understandable at the lower level of educational qualification to increase awareness about oral cancer, and should embrace various media, including TV and radio broadcasts, newspaper articles, advertisements and billboards.

### **5.5 Awareness of screening routinely by their dentist**

Results reported on the awareness on routine dental screening indicates that there were significant differences between awareness of dental screening from time to time, and gender, age and level of qualification. However, the current smoking status and alcohol consumption were not significantly associated with having an awareness of screening routinely by their dentist.

The results further reported that 53% of female participants claim that they were not aware of routine dental screening. This means that females were more aware of routine dental screening than their male counterparts. These results are in accordance with the findings of a number of empirical studies which suggests that, a greater proportion of women (60%) are familiar with routine dental screening for oral cancer, in the City of Valongo, Portugal (Monteiro, *et al.*, 2012).

The results showed that 52% of participants aged up to 40 years old, are aware of the need for routine dental checkups. In other words, age difference has an influence on routine dental screening. It can therefore be safe to conclude that older patients were more aware s of screening routinely by their dentist than the younger ones. The results indicated that 61% of more highly

educationally qualified participants declared having an awareness of screening done routinely by their dentist. This demonstrated that the level of educational qualification is associated with an increased awareness of the routine dental checkup.

## **5.6 Factors associated with awareness and knowledge of oral cancer**

This study revealed that participants knew about oral cancer (38 %), the majority of them (52%) had some information about it from dentists, and 46% never have had a routine checkup for signs of oral cancer. This finding is consistent with previous studies which reports that 90% of patients had some awareness about oral cancer, in Sri Lanka (Ariyawardana, & Vithanaarachchi, 2005) and the United Kingdom (Warnakulasuriya, Harris, Scarrott, 1999). The majority of the participants (57 %) do not want to be told about oral cancer, while 64 % of participants want be supported in order to reduce their risk of oral cancer. Almost 77 % of participants do not currently smoke, while the majority have never been alcohol consumers.

## **5.7 Conclusion**

The awareness level and knowledge of risk factors and early signs of oral cancer in Khartoum dental teaching hospital were less than satisfactory. Therefore, there must be a great concern on implementing oral cancer preventive programs using mass media. Dental professionals also have a great role in early diagnosis therefore reducing the high morbidity and mortality rates associated with oral cancer.

General comments

Put page numbers on the entire thesis

Add on table of contents

Add a page on;

List of Abbreviations and Acronyms

## Literature review and Methodology

Guidelines on writing literature review were not followed. Rewriting of this section is recommended

Questions on the questionnaire does not address the objectives of the study. For an example there is no question on family history (any members of family who has or died due to oral cancer). Have the patient seen pictures at the hospital, have they received education on OC. The patient cannot know what is extra oral or intra oral examination

However, seeing is it not possible to go back and collect data, re-organize your questionnaire so that awareness questions are grouped together and knowledge questions are grouped together.

## Results and Discussion

Since less than 40 and above 40 is wide. I am recommending additional categories and re-analyses I did not review the rest of the results and discussion section since reanalyses will change reporting of the findings

## Limitation section

The way the questionnaire was constructed, it falls under limitation



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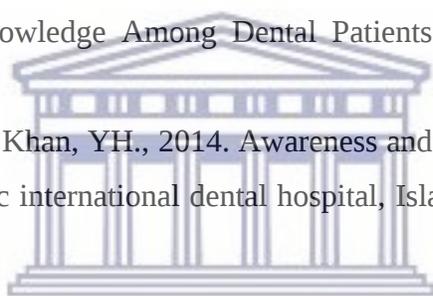
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## 7. Questionnaire

Age .....

Record no.....

Gender

Male	Female
------	--------

### 3. Marital Status

Single, never married	Married and living with spouse	Married but separated from spouse
Divorced	Widowed	Other

### 4. Educational Qualification

Degree or Degree Equivalent	Higher Educational Qualification (below degree)	A Levels, Vocational Level 3 & Equivalents	Trade Apprenticeships
Qualifications at Level 1 or below	Other Qualification: Level Unknown	No Qualifications	

### 5. Have you ever heard of mouth cancer?

Yes	No	Don't Know/Not Sure
-----	----	---------------------

### 6. Would you say you know a lot, some, a little, or nothing at all about mouth cancer?

A lot	Some	A little	Nothing at all	Never heard of mouth cancer
-------	------	----------	----------------	-----------------------------

### 7. Do you have any information about mouth, tongue, or lip cancer?

Yes, a lot	Yes, a little	No
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### 8. If you have any information, where did you get it?

TV, radio, or newspaper	Friends	Environment, etc.	Internet	Dentist
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### 9. Aware that Dentists are trained to check for signs of oral cancer

Yes	No	Don't Know/Not Sure
-----	----	---------------------

### 10. Awareness of screening routinely by their Dentist

Yes	No	Don't Know/Not Sure
-----	----	---------------------

11. Awareness of ever being screened by any Dentist

Yes	No	Don't Know/Not Sure
-----	----	---------------------

12. Most recent screening for signs of oral cancer. Today (Current Visit)?

1-2 years ago	2-3 years ago	Over 3 years ago	Don't know/Not Sure	My mouth has never been checked
---------------	---------------	------------------	---------------------	---------------------------------

13. Awareness of extra oral examination

Yes	No	Don't Know/Not Sure
-----	----	---------------------

14. Received an explanation for extra oral examination

Yes	No	Don't Know/Not Sure
-----	----	---------------------

15. Patients want to be told Oral Cancer Screening is taking place

Yes	No	Don't Know/Not Sure
-----	----	---------------------

16. Patients want support to reduce their risk of Oral Cancer

Yes	No	Don't Know/Not Sure
-----	----	---------------------

17. Current Smoking Status:

Yes, I smoke cigarettes	No, but I used to smoke cigarettes	No I have never smoked cigarettes
-------------------------	------------------------------------	-----------------------------------

18. Alcohol consumption:

Yes	No
-----	----



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## **8. Consent Form**

**Title of Research Project:** **Awareness and knowledge of oral cancer among dental patients  
in Khartoum Dental Teaching Hospital.**

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits.

**Participant's name.....**

**Participant's signature.....**

**Date.....**