

## RESEARCH ARTICLE

# Oral Cancer Awareness in Sudan: Assessment of Knowledge, Attitude and Treatment Seeking Behavior

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### Abstract

**Objective:** This study was aimed to assess oral cancer awareness among a selected Sudanese population and to evaluate their knowledge and treatment seeking behavior. **Methods:** A questionnaire- based survey was performed on the general population who attended the oral cancer awareness campaigns carried between 2015 and 2016 in different geographic areas of the Sudan. It was focusing on general awareness of oral cancer, oral cancer risk factors, oral cancer clinical signs/symptoms and treatment seeking behavior. Data were entered by Microsoft excel 2007 and analyzed by SPSS (version 20) using chi square test with P value <0.05. **Result:** There were 1,370 participants, 634(46.3%) were males and 736(53.7%) were females. The responses of participants revealed that 66.6% have heard about oral cancer and the media was the common source of information (75.7%). Of all participants only 45.3% mentioned that they don't have enough knowledge on oral cancer. Some participants believe that oral cancer is treatable (66.5%) whilst 30.4% respond by I don't know. More than 80% of the respondents were aware that smokeless tobacco (toombak) is a risk factor for oral cancer. While 60.1% were aware of alcohol as a risk factor and 66.2% were aware of smoking as a risk factor. When qui square test was done, smokers were found to be the least to seek help in comparison to non-smokers. The same result was obtained from alcohol consumers but it was different in snuff dippers, as the latter response was similar to that of the non-snuff dippers. **Conclusion:** This study revealed a level of around 66.6% of oral cancer awareness in different states of Sudan. Counseling sessions should be conducted when necessary with further investigations to find out the reasons behind the continued practice of high risk habits, despite knowledge.

**Keywords:** Oral Cancer- awareness- signs and symptoms- risk habits

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### Introduction

Oral cancer is a health problem world-wide. The estimated annual incidence for oral cancer was around 275,000 with the majority of these cancers occurring in the developing countries (Warnakulasuriya, 2009). In Sudan, oral cancer is the sixth most prevalent cancer (Saeed et al., 2014); it is strongly attributed to the use of local type of smokeless tobacco called Toombak which is formed of ground leaves of *Nicotianarustica* mixed with natron or atron (sodium bicarbonate) and water. The Tobacco-specific nitrosamines (TSNA) levels in Toombak were found to be higher than other smokeless tobacco (Edris et al.,1991). Moreover, the etiologic association between Toombak use and oral cancer has been investigated by several studies (Ahmed, 2013; Elbashir et al., 1989; Osman et al., 2010). Risk factors for oral cancers include alcohol use, smoking, smokeless tobacco products and human papillomavirus infections (Agrawal et al., 2012). Since at least two thirds of all cases appear due to lifestyle factors, such as tobacco and alcohol use

(Room et al., 2005). Oral cancer should be a preventable disease, that why the international guidelines have stressed the importance of early detection (Johnson et al., 2000).

Oral cancer public awareness is generally low as reported by Peker and Alkurt(2010) and is lesser than other types of cancers (Rogers et al., 2011a). Lack of awareness of the public about oral cancer and its associated risk factors usually result in delayed presentation and increased treatment morbidity and reduced survival rates (Warnakalasuriya et al., 1999). Failure to recognize the early signs and symptoms of oral cancer has been reported in many studies (West et al., 2006; Amarasinghe et al., 2010; Devadiga et al., 2010), Rogers et al., 2011b reported that the patients thought their symptoms were trivial and would resolve on its own. Mcleod et al., (2005) reported a low level of awareness among general dental practitioners as suggested by the high rate of referral delay. The situation is similar amongst students of medicine (Reed et al., 2005).

A major challenge to treatment of cancer in Sudan is that most patients first present with advanced stage

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disease. Cancer in many countries may carry a stigma that prevents people from seeking medical care in the early stages of the disease. In Sudan, there is a common perception that cancer is transmissible which will lead to patient isolation and hesitation to seek proper treatment. As a result, patient will present with advanced disease. Also, Ignorance about the signs and symptoms of cancer aids in the delayed presentation means (Hamad, 2006). Oral cancer awareness studies in Sudan were mainly a hospital based studies which were limited to Khartoum; the capital of Sudan. two studies were done where a 57.7%(22) and 57.5% (23) of oral cancer awareness were reported.

This study was aimed to obtain baseline information on the level of oral cancer awareness among a selected Sudanese population in different geographic area, signs and symptoms, early detection and prevention of oral cancer. The finding of this study will help in the implementation of an effective health education program in order to reduce the practice of the high risk habits and eventually the incidence of oral cancer.

## Materials and Methods

A questionnaire- based survey was performed on the general population who attended the dental treatment campaign which was carried by BASMA Society for oral cancer patients in different geographic areas of Sudan. The campaign was providing a free dental treatment, oral cancer screening followed by oral cancer information leaflets. The questionnaire was divided to three sections: (1) General awareness of oral cancer. (2) Oral cancer risk factors. (3) Oral cancer clinical signs and symptoms and treatment seeking behavior. Socio-demographic information such as age, sex and educational level were also recorded. Individuals who were diagnosed with oral cancer at any point of their lifetime were excluded from the study.

### Sampling procedure

Participants above the age of 10 years (n=1370) were randomly selected during the period from January 2015 and January 2016 in different geographic areas of the Sudan (Khartoum, Dongula, Shandi, Gadarif, Kosti, Senar and North Kurdufan). Questionnaires were distributed among participants while they are waiting for dental treatment by a group of 10 graduates from the dental college who were trained on how to administer the questionnaire by face to face interview.

### Ethical approval

Ethics approval was obtained from the Khartoum Teaching Dental Hospital Ethics Committee, Ministry of Health of Sudan. Written consent was obtained from all participants prior to the administration of the questionnaire. Participation was voluntary, and participants were informed that their responses would be treated confidentially. An educational brochure was provided to the participants with description of the risk factors, signs and symptoms of oral cancer, and the importance of early detection of the disease.

### Statistical analysis

Data were entered, cleaned and coded by Microsoft excel 2007 and analyzed by Statistical

Package for Social Science, version 20 (IBM. Chicago Illinois, USA. The level of significance was set at p-value <0.05 and 95% confidence intervals.

## Results

### Demographic data

There were 1370 participants, 634 (46.3%) of them were males and the remaining 736 (53.7%) were females. About one third of the participants were aged between 14-24 years old. The highest percentage of participants had a secondary school education (31.2%) and 15.4% were illiterates. Regarding the habits, Toombak snuffing had the highest percentage among other habits followed by tobacco smoking. A socio-demographic characteristic of participants are summarized in Table 1.

### General awareness of oral cancer

Table 1. Frequencies and Percentage of Demographic Characteristics and Habits of the Participants (N= 1370)

Characteristic	Total n (%)
Age	
14-24 Years	428(31.2%)
25-34 Years	230(16.8%)
35-44 Years	301(22%)
45-54 Years	187(13.6%)
55-64 Years	138(10.1%)
+65 Years	86(6.3%)
Gender	
Male	634(46.3%)
Female	736(53.7%)
Marital status	
Unmarried	539(39.3%)
Married	806(85.8%)
Divorced/widow	25(1.8%)
Education level	
None	211(15.4%)
Primary school	390(28.5%)
Secondary school	428(31.2%)
University	341(24.9%)
State	
Khartoum	300(21.9%)
Dogula	255(18.6%)
Shandi	101(7.4%)
Kordufan	370(27%)
Kosti/Senar	118(8.6%)
Gadarif	226(16.5%)
Habits	
Smoking	225(16.4%)
Toombak suffing	338(24.7%)
Alcohol drinking	105(7.7%)

Table 2. General Awareness of Oral Cancer

	Frequency	Percent
Did you hear about OC:		
yes	912	66.6
no	458	33.4
If yes, from where:		
GP	51	5.6
Dentist	3	0.3
media	690	75.7
people and family	168	18.4
How do you rate your knowledge about OC?		
Sufficient Knowledge	61	6.7
Fair Knowledge	185	20.3
Not enough knowledge	413	45.3
I don't know	253	27.7
Do you think OC curable?		
yes	552	60.5
no	83	9.1
I don't know	277	30.4
If yes, what is the treatment?		
surgery	64	11.6
Medication(antibiotic)	90	16.3
chemotherapy	220	39.9
radiotherapy	21	3.8
I don't know	157	28.4
Do you think treatment delay will affect the final results?		
yes	487	88.2
no	16	2.9
I don't know	49	8.9

General awareness of oral cancer (OC) was assessed via close ended questions (have you heard of oral cancer, do you think you have sufficient knowledge, is it treatable, if yes what is the treatment, does delay in treatment seeking affect the prognosis). Participants' responses revealed that 66.6% have heard about oral cancer. Media was the common source of information for all age groups 690 (75.7%) (Table 2).

Awareness of oral cancer varied significantly across various age groups. The age groups below 24 years and above 55 years had significantly less knowledge in comparison to other groups (95% CI: P-value 0.001). A significant difference in the general awareness was found between males and females as 73.5% of the males have heard about oral cancer in contrast to 60.6% of the females (95% CI: P-value 0.001). Around 17.8% mentioned a positive family history of cancer with breast cancer being the most mentioned (28.4%) followed by oral cancer (23.5%). Of all participants 45.3% mentioned that they don't have enough knowledge regarding oral cancer, and only 6.7% mentioned that they have sufficient knowledge. Some respondents believe that oral cancer is treatable (66.5%) whilst 30.4% respond by I don't know. Chemotherapy was mentioned by (39.9%) while surgery by (11.6%).

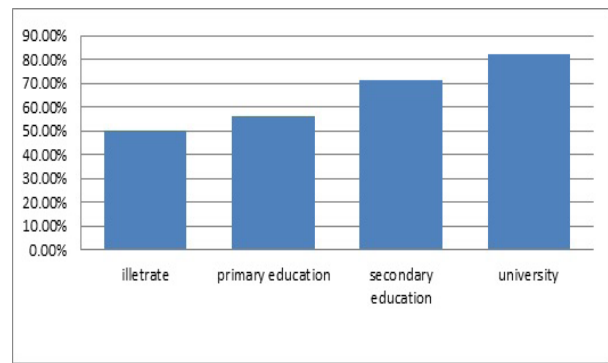


Figure 1. Oral Cancer Awareness among Different Education Level

When participants were asked if they heard about oral cancer, a significant difference was found between different education levels (95% CI: P-value 0.001) since only half of illiterates have heard about it in comparison to 82.4% in participants with university education (Figure 1). A significant difference was also found between different geographic areas (95% CI: P-value 0.001). Dongula which is in the north of Sudan reported the higher percent of participants who heard about oral cancer.

*Awareness with regards to risk factors*

There were many questions assessing knowledge of respondents pertaining to risk factors for oral cancer (Smoking, alcohol, smokeless tobacco, history of cancer, age and male gender, etc). More than 80% of the respondents were aware that smokeless tobacco (toombak) is a risk factor for oral cancer. While 60.1% were aware that alcohol consumption is a risk factor and 66.2% were aware that smoking as a risk factor. The values were much less for other risk factors as shown in Figure 2.

Awareness with regards to treatment seeking behavior: The questions assessed treatment seeking behavior of respondents pertaining to signs/symptoms of oral cancer (abnormal oral swelling, non-healing oral ulcers/sores, white or red patches, pain in mouth) are depicted in Table 3.

Of the entire respondents, 16.4% were smokers, 24.7% were snuff dippers and 7.7% were alcohol consumer. When chi square test was done to correlate between people with habits and their treatment seeking behavior (95% CI:

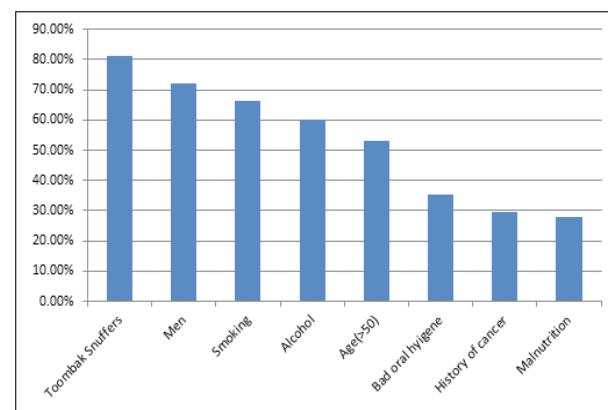


Figure 2. Signs and Symptoms of Oral Cancer as Recognized by Participants

Table 3. Correlation between Habits and Treatment Seeking Behaviors among Participants

Toombak snuffers	will seek medical help	will not seek help	P value
Red/white patch			
Yes	314 (92.9)	24 (7.1)	0.601
No	969 (93.9)	63 (6.1)	
Swelling in oral cavity			
Yes	315 (93.2)	23 (6.8)	0.74
No	969 (93.9)	63 (6.1)	
Ulcer			
Yes	315 (93.2)	23 (6.8)	0.595
No	972 (94.2)	60 (5.8)	
Pain			
Yes	315 (93.2)	23 (6.8)	0.46
No	975 (94.5)	57 (5.5)	
Tobacco smoking			
Red, white or yellow patch			
Yes	200 (88.9)	25 (11.1)	2
No	1,083 (94.6)	62 (5.4)	
Swelling in oral cavity			
Yes	201 (89.3)	24 (10.7)	0.005
No	1,083 (94.6)	62 (5.4)	
Ulcer			
Yes	201 (89.3)	24 (10.7)	0.003
No	1,086 (94.8)	59 (5.2)	
Pain			
Yes	199 (88.4)	26 (11.6)	0.001
No	1,091 (95.3)	54 (4.7)	
Alcohol consuming			
Red, white or yellow patch			
Yes	88 (83.8)	17 (16.2)	0.001
No	1,195 (94.5)	70 (5.5)	
Swelling in oral cavity			
Yes	88 (83.8)	17 (16.2)	0.001
No	1,196 (94.5)	69 (5.5)	
Ulcer			
Yes	88 (83.8)	17 (16.2)	0.001
No	1,199 (94.8)	66 (5.2)	
Pain			
Yes	86 (81.9)	19 (18.1)	0.001
No	1,204 (95.2)	61 (4.8)	

P-value was from Pearson's chi-square test; P-value <0.05 is significant

P-value 0.001), smokers were found to be the least to seek help in comparison to non-smokers. The same result was obtained from alcohol consumers but it was different in snuff dippers, as the latter response was similar to that of the non-snuff dippers (Table 3).

## Discussion

Oral cancer can be preventable by avoiding known risk

factors. National and international guidelines stress the importance of early detection (Llewellyn, 2004). Public education toward risk factors and symptoms may result in reducing the oral cancer burden on the community and can possibly lead to early clinical presentation. The lack of knowledge in identifying early signs of oral cancer may result in ignoring early pre-cancerous lesions whereas misconception about risk factors reduces the chance of making intelligent decisions regarding personal habits.

The Percentage of respondents who heard about oral cancer in this study were 66.6% which is less than what was reported in previous studies Nigeria 72% (Adebola et al., 2013), India 86% (Elango et al., 2009), Sri Lanka 95% (Ariyawardana et al., 2005) and Britain 95.6% (West et al., 2006), but more than the 52.3% of the respondents who were aware of the existence of oral cancer in Far North Queensland, Australia (Formosa et al., 2015).

This study showed that age, education level, sex and state of residence were independent predictors of the awareness of oral cancer. The general awareness regarding oral cancer was observed to be more in the younger age groups (25-54). It was also observed that there was a significant difference of knowledge among various age and education groups. It was more for those respondents with higher education and lower among those with primary education or illiterate. This finding is in agreement with the earlier studies (Patton et al., 2004; Elango et al., 2009; Agrawal et al., 2012). As for the difference in knowledge between both sexes, it was statistically significant, as more males had heard about oral cancer than females. However, it was insignificant with regard to the treatment seeking behavior. The media was the common source of information (75.7%) a similar finding was reported from a study from Malaysia (Ghani et al., 2013).

The findings of this study revealed that a large proportion of the selected sudanese population was aware about oral cancer to varying extents. Although awareness of smokeless tobacco (toombak) as a risk factor was very high, a considerable proportion was not aware about other habits that could increase the risk of oral cancer such as smoking and alcohol consumption. Alcohol was identified to a lesser degree as a risk factor; this finding was also reported by others (Warnakalasureiya et al., 1999; Prayman et al., 2009; Cruz et al., 2002). It may explain by the general health campaigns that primarily promoted tobacco cessation.

Although the overall awareness of oral cancer is good, there is a relative misconception regarding the treatment seeking behavior which is not satisfactory. Firstly, small percentage of respondents (3.5%) in the present study chose the traditional healers as their treatment choice. This is explain by the cultural nature of our communities which allowed a deep influence of traditional caregivers on people's healthcare-seeking behavior and many a times they are the first option of care. Secondly, most of respondents' choices were between physicians and dentists. This should highlight the importance of implementing oral cancer screening campaigns that involve the physician, nurses and other health care professional as many subjects did not go to the dentist

regularly. Primary healthcare professionals can contribute to efficient oral cancer screening (Warnakalasuriya et al., 1984).

In conclusion, this study revealed a level of around 66.6% of oral cancer awareness in different states of Sudan. Health education needs to be carried out to fill the gap between the knowledge and awareness of oral cancer and the practice of its risk habits. Counseling sessions should be conducted when necessary with further investigations to find out the reasons behind the continued practice of high-risk habits, despite knowledge.

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