

RESEARCH ARTICLE

Oral Cancer: Knowledge, Practices and Opinions of Dentists in Yemen

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Abstract

Background: Oral cancer presents with high mortality rates, and the likelihood of survival is remarkably superior when detected early. Dental professionals have an important role and responsibility in prevention and early detection of oral cancer. **Purpose:** The aim of this study was to assess the knowledge, practices and opinions regarding oral cancer among dentists in Yemen. **Materials and Methods:** A cross-sectional survey was conducted using a self-administered questionnaire involving private and public dental practitioners, working in different governorates in Yemen. **Results:** Of the 800 dentists surveyed, a total of 221 questionnaires were completed and returned (response rate 27.6%). A vast majority of dentists (96.38%) identified tobacco as the major risk factor for oral cancer, and 82.8% knew that squamous cell carcinoma is the most common form. While 47.1% of the dentists agreed that they were adequately trained in oral cancer screening, the majority (86%) believed that they need further training in oral cancer screening. **Conclusions:** These results suggest that additional training and continuing educational programs on prevention and early detection of oral cancer for dentists are to be highly recommended.

Keywords: Oral cancer - dentists - knowledge - practices - Yemen

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Introduction

Oral cancer is reported to be the eighth most common cancer worldwide, but global incidence varies widely (Boyle and Levin, 2008). Globally, the age-standardized incidence rate (per 100,000) for lip/oral cavity cancer is 3.8 (Ferlay et al., 2010). The incidence and mortality rates as a result of oral cancer are higher in developing countries than in the developed world (Warnakulasuriya, 2009a; Ferlay et al., 2010). In Yemen, a recent study revealed a quite high relative frequency of oral cancer among Yemenis, 3.7%, when compared to the neighboring countries. Besides, the majority of cases were detected at advanced stages (Halboub et al., 2012).

Squamous cell carcinoma (SCC) accounts for 95% of oral cancers. The etiology of oral cancer is multifactorial, but the most important risks factors are: tobacco smoking and chewing, excess alcohol consumption, betel quid chewing, and sun exposure in the case of lip cancer. Other emerging risk factors are human papilloma Virus (HPV) infection, immunodeficiencies, diet and nutrition and socio-economic status. Unconfirmed risk factors are ethnicity and race, poor oral hygiene, dental conditions, chronic candidiasis and chronic trauma of the oral mucosa (Warnakulasuriya, 2009b).

Although the oral cavity is a potentially accessible site for examination, up to 50% of oral cancers are not detected until the disease is well advanced (McGurk et al.,

2005). The recognition and the early detection of OC not only guarantees an increase in the survival rate, but also an improvement in the quality of life as a result of less aggressive, mutilating and costly treatments (Downer et al., 2006).

In this regard, dentists can increase knowledge of about oral cancer among their patients. Therefore, a decrease of risk factors, early diagnosis and increasing the survival rate in patients can be achieved (Andishe Tadbir et al., 2013). Efforts are required for the prevention of oral cancer among the community by the means of a variety of outreach programs related to education and awareness of oral cancer. Dental students may be particularly important in this context (Halawany et al., 2013). In addition to that, secondary oral cancer prevention i.e. early detection through screening is particularly important to significantly reduce the burden of oral cancer, (Speight et al., 2010).

Several studies in the USA, Canada, Europe, Kuwait and Malaysia (Yellowitz et al., 2000; Clovis et al., 2002; Alonge and Narendran, 2003; Patton et al., 2005; Gajendra et al., 2006; Lopez-Jornet et al., 2010; Hertrampf et al., 2010; Joseph et al., 2012; Saleh et al., 2014) have assessed dentists' knowledge and practices regarding oral cancer. These studies showed the need to improve the knowledge on preventing and detecting oral cancer. To date, there has been no published detailed analysis assessing dentists' oral cancer knowledge and practices in Yemen. Therefore, this study was carried out to assess the knowledge, diagnostic

concepts, practices and opinions of dentists in Yemen regarding oral cancer prevention and early detection.

Materials and Methods

This descriptive, cross-sectional study was conducted using a self-administered questionnaire involving private and public dental practitioners, working in different governorates in Yemen. These questionnaires were sent to 800 Yemeni dentists, selected randomly from the Yemeni Dental Association register. A cover letter was also included with the questionnaire, which described the study in detail and identified the members of the work team. Instructions were given for completing the questionnaire and the confidentiality and anonymity of the data provided was assured.

The questionnaire was developed from previously validated items (Yellowitz et al., 2000; Macpherson et al., 2003; López-Jornet et al 2010; Decuseara et al., 2011, Joseph et al., 2012) with modifications to suit the local population, especially in the area of risk factors associated with the disease. The questionnaire was first pre-tested among a convenient sample to ensure clarity of interpretation and ease of completion.

The questionnaire comprised of 44 items divided into several sections. The first section included demographic variables of the responding practitioners (gender, age, time from graduation, type of practice, qualification). The next section focused on the risk factors and diagnostic procedures of oral cancer with “yes”, “no” and “don’t know” responses. Furthermore, opinions of the dentists regarding knowledge and prevention of oral cancer were assessed by means of 9 items, and the respondents were asked to indicate their responses in a 5-point scale: strongly agree, agree, disagree, strongly disagree and don’t know. The final section of the questionnaire assessed the practice of dentists regarding oral cancer examination by asking the dentist about complete oral examination, taking biopsies and oral cancer screening with “yes”, “no” or “don’t know” responses.

The data management and statistical analysis were performed using the statistical software SPSS version 19.0. Frequencies and percentages were obtained for categorical data, and Chi-square test was used to determine the association between variables. P value < 0.05 was considered significant.

Results

Of the 800 dentists approached, a total of 221 questionnaires were completed and returned (response rate 27.6%). The majority (61.1%) of the responding dentists were male, and most of the dentists (82.8%) were graduates. Most of the respondents (79.2%) graduated within the past 10 years.

Among the various risk factors for causing oral cancer, smoking and smokeless tobacco usage were identified as the major risk factors by 96.3% and 91.8% of the dentists, respectively. However, only 47.9% of the dentists identified older age as a risk factor (Table 1).

Regarding the diagnostic knowledge, the majority of the dentists (82.81%) knew that squamous cell carcinoma

Table 1. Knowledge of the Risk Factors of Oral Cancer among Dentists

	Yes N (%)	No N (%)	Don't Know N (%)
Use of tobacco	213 96.4	5 2.3	3 1.4
Qat chewing	175 79.2	34 15.4	12 5.4
Shammah usage	203 91.9	7 3.2	11 5
Prior oral cancer lesion	170 76.9	26 11.8	25 11.3
Use of alcohol	162 73.3	31 14	28 12.7
Ultraviolet exposure	148 67	32 14.5	41 18.6
Older age	106 48	70 31.7	45 20.4
Low consumption of fruit and vegetables	92 41.6	76 34.4	53 24
Viral infection	146 66.1	36 16.3	39 17.6
Autoimmunity	144 65.2	37 16.7	40 18.1
Poorly fitting dentures	155 70.1	48 21.7	18 8.1
Obesity	53 24	116 52.5	52 23.5

Table 2. Opinions Expressed by Respondents Regarding Health care Professionals' OC Attitude

	Agree %	Disagree%	Uncertain%
My knowledge of oral cancer is current (up-to-date)	69.7	19.9	10.4
I am comfortable palpating lymph nodes in the neck	68.3	23.5	8.2
I am comfortable referring suspicious oral lesions to specialists	94.1	3.7	2.2
I feel confident to diagnose oral cancer from clinical appearance	58.3	34.8	6.9
I am adequately trained to provide tobacco cessation education	72	20.8	7.2
I am adequately trained to examine patients for oral cancer	72.4	24	3.6
My patients are sufficiently informed on risk factors for oral cancer	76.1	14.9	9
Dentists should inform patients about their findings	86.4	11.3	2.3

Table 3. Practices of Dentists Regarding Oral Cancer Screening

	n (%)
Complete oral cavity examination besides palpating lymph nodes is practiced routinely on patients	151 (68.3)
Biopsy is taken in patients with suspicious lesions	166 (75.1)
Patient's medical history related to tobacco use is recorded	176 (79.6)
I advise my patients with suspicious oral lesions	197 (89.2)
I am adequately trained in oral cancer screening	104 (47.1)
Dentist need further training in oral cancer screening	190 (86.0)

is the most common form of oral cancer, and 87.3% knew that early diagnosis of oral cancer improves the survival rate. In contrast, only 45.7% of the dentists identified the tongue and floor of the mouth as the most common sites for oral cancer. Other diagnostic items and their knowledge are shown in figure 1.

Table 2 illustrates respondents' opinions regarding health care professionals' OC attitude. While most respondents (94.1%) believed that 'they were comfortable referring suspicious oral lesions to specialists, only 58.3% of the respondents felt confident to diagnose oral cancer from clinical appearance. Moreover, more than two thirds (69.7%) of the dentists felt that their knowledge about oral cancer is current.

With respect to oral cancer screening procedures by conducting oral examination, slightly more than two thirds of the dentists (68.3%) responded that they provide this examination routinely. However, only 47.1% of the dentists agreed that they were adequately trained in oral cancer screening. A large number of dentists (86%) believed that they need further training in oral cancer screening (Table 3).

Further analysis showed that dentists aged <40 years were significantly more confident to diagnose oral cancer from clinical appearance than dentists aged 40 years and older ($p < 0.01$). Furthermore, recently graduated dentists showed significantly better knowledge on diagnosis of oral cancer and clinical practices in comparison to dentists who graduated much earlier ($p < 0.01$).

Discussion

Understanding the knowledge, attitudes, practices and confidence of dental health care professionals is crucial to assess their effectiveness in the prevention and early detection of oral cancer, thus helping to reduce its mortality and morbidity (Horowitz et al., 2000). This study reports the overall knowledge, attitudes, and self-reported behavior patterns regarding oral cancer among practicing dentists in Yemen.

This study achieved a response rate of 27.6%. Worldwide the response rates of similar studies were between 16% and 68% (Macpherson et al., 2003; Gajendra et al., 2006; Kujan et al., 2006; Ariyawardana and Ekanayake, 2008; Colella et al., 2008; LeHew et al., 2010; Decuseara et al., 2011; Klosa et al., 2011; Saleh et al., 2014); this low response rate may have introduced non-response bias into the results as it is generally assumed that respondents compared to non-respondents are those who are likely to be interested in the topic under study. Thus, it is difficult to generalize the findings to all dentists working in Yemen. Nevertheless, despite these limitations, the study provides some important information about Yemeni dentists' knowledge, opinions and practices regarding oral cancer.

The results of this study revealed that dentists were seriously unknowable about the key factors that place an individual at risk for oral cancer. This coincides with the study of Al Dobai et al. (2012) on Malaysia students, which revealed that instead of satisfactory awareness and knowledge of oral cancer and its clinical presentations,

inadequate knowledge was observed about its risk factors. Although the vast majority of dentists identified tobacco use as the main risk factor, similar to previous studies conducted in Kuwait, USA, Canada and Ireland (Yellowitz et al., 2000; Clovis et al., 2002; Gajendra et al., 2006; Applebaum et al., 2009; Decuseara et al., 2011; Joseph et al., 2012), a smaller proportion of dentists were aware that alcohol, HPV, low consumption of fruits, prior oral cancer lesions and sun exposure in the case of lip cancer are also potential risk factors.

The majority of oral cancer cases occur in patients 45 years or older, with most patients at the time of diagnosis being at their sixties (Yellowitz et al., 2000; Decuseara et al., 2011), though there is an increased incidence in patients under 45 years of age (Llewellyn et al., 2001); to our surprise, only 48% of dentists indicated older age as a potential risk factor for development of oral malignancy, a percentage lower than that reported in similar studies elsewhere (López-Jornet et al., 2010; Decuseara et al., 2011; Joseph et al., 2012; Saleh et al., 2014). Moreover, nearly two thirds of the respondents (70.1%) had the misconception that ill-fitting dentures could pose a risk for oral cancer which is consistent with previous reports (Kumar & Suresan 2012; Joseph et al., 2012). These findings confirm the urgent need for continuing education programs with emphasis on oral cancer risk factors.

Dentists' knowledge of oral cancer diagnosis was found relatively better when compared to the knowledge of risk factors. Around 82.81% identified squamous cell carcinoma as the most common type of oral cancer, and over 87% of dentist knew that erythroplakia and leukoplakia are the main precancerous lesions associated with oral cancer. Erythroplakia was identified by a higher percentage of dentists in comparison to leukoplakia. Although both lesions have malignant potential, erythroplakia has a greater chance to progress to oral cancer (Scully and Porter, 2000). In addition, it has been reported that on histopathological assessment over half of erythroplakias were invasive carcinoma, and 40% showed carcinoma in situ (Reichart and Philipsen, 2005). Moreover, the majority of the dentists (87.7%) knew that early detection improves survival rate, similar to results seen among dentists surveyed in the USA, Canada, Kuwait, and Germany (Clovis et al., 2002; Patton et al., 2005; Hertrampf et al., 2010; Joseph et al., 2012). Two thirds of the dentists knew that oral cancers are most often diagnosed in the advanced stage in contrast to only 50% reported in most of other studies (Yellowitz et al., 2000; Clovis et al., 2002; Patton et al., 2005).

The survey revealed that 69.7% of dentists agreed that their knowledge regarding oral cancer is current; this finding is higher than that reported in similar studies in Spain and Ireland, where only 50% agreed that their knowledge is current (López-Jornet et al., 2010; Decuseara et al., 2011). Around a quarter of the respondents believed that their patients were not knowledgeable either about risk factors or signs and symptoms of oral cancer/precancer. This highlights the need for patient education on risk factors for oral cancer and oral screening in the dental clinic setting.

As oral cancer/precancer can be prevented by

controlling risk factors such as use of tobacco and consumption of alcohol, it is necessary that dentists educate their patients on the importance of quitting these behaviors. Thus opinions of dentists with respect to their training and ability to provide tobacco and alcohol cessation education were assessed in this study. The majority agreed that they were competent to educate patients on tobacco cessation, which is in line with results reported among dentists in Sri Lanka and Malaysia (Ariyawardana and Ekanayake 2008; Saleh et al., 2014). However, a large percentage of the dentists in UK, Ireland, Europe and USA found providing tobacco and alcohol cessation advice to their patients challenging (Horowitz et al., 2000; Alonge and Narendran, 2003; Kujan et al., 2006; Applebaum et al., 2009; Decuseara et al., 2011) and further perceived themselves insufficiently trained to incorporate these interventions within their practices (Decuseara et al., 2011).

Oral visual screening can reduce mortality in high risk individuals and has the potential to prevent at least 37,000 oral cancer deaths worldwide (Sankaranarayanan et al., 2005; Joseph et al., 2012). In the present study, a great number of dentists (68.3%) reported performing routine oral examination during routine visits indicating that they feel responsible, and want to be actively involved in oral cancer prevention through early detection. It was heartening that 94.1% of our study respondents agreed that they do not hesitate to refer a patient to a specialist if a suspicious lesion is found. If such cases are confirmed as positive by a specialist, it will allow treatment to be initiated at an early stage ensuring better prognosis. It has been reported in previous studies that increased referral and biopsy practices are significantly associated with greater knowledge of oral cancer (Patton et al., 2005).

This study clearly showed that the time of graduation and age of the dentists significantly affect dentists' knowledge on oral cancer. Significantly, the dentists of a younger age group and recent graduates demonstrated better knowledge. These findings are also consistent with those reported by other authors (Decuseara et al., 2011; Joseph et al., 2012; Saleh et al., 2014). With increasing time since graduation, dentists tend to have a slightly lower level of knowledge regarding the diagnosis concepts and risk factors. It has been reported that the knowledge acquired in medical and dental schools tend to decrease with time, and that the half-life of this knowledge is approximately 5 years (Lindsay et al., 1974). This highlights the need for continuing professional education with a focus on both risk factors and clinical diagnostic and intervention concepts.

It is well established that dentists' knowledge, attitudes and practices can be positively influenced by continuing education courses (Silverman and Rankin, 2010). Moreover, Hertrampf and his colleagues (2010) reported that dentists, who had attended a continuous education course within the past year scored higher on diagnostics and risk related knowledge on oral cancer. The need for continuous medical education is also increased by changes in scientific knowledge, advances in tools for early detection and changes in the pattern of oral cancer incidence that is associated with emerging risk factors

(LeHew et al., 2010). A great number of dentists in this study expressed their interest in furthering their education and training in oral cancer, which is consistent with other published reports (Yellowitz et al., 2000; Applebaum et al., 2009; Joseph et al., 2012; Saleh et al., 2014).

In summary, similar to studies in other countries, the findings of this survey suggest that dentists practicing in Yemen appear to have a reasonable knowledge of the early signs and symptoms and the main risk habits of oral cancer. Young age and recent graduation were significantly associated with better knowledge. We believe that more education programs for dentists would serve to address the knowledge deficits and practice shortcomings with regards to oral cancer screening for early detection and disease prevention.

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