

## RESEARCH ARTICLE

# Oral Cancer Knowledge and Practice among Dental Patients and their Attitude Towards Tobacco Cessation in Iran

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### Abstract

**Background:** One of the main causes of delay in diagnosis of oral cancer is lack of awareness about aetiology and symptoms among the general population. The aim of this study was to assess the knowledge and practice of patients regarding oral cancer and their attitude towards tobacco cessation. **Materials and Methods:** This study was carried out in Isfahan-Iran in 2014. A 29-item self-administrated questionnaire was designed and piloted and distributed to patients attending dental clinics. Questions were focused on awareness about oral cancer risk factors, signs and symptoms, places in the mouth which are more susceptible and attitude toward tobacco cessation. Chi-square, T-test, ANOVA and logistic regression tests were used for statistical analysis. **Results:** A total of 546 valid completed questionnaires were obtained. The mean knowledge score of patients was 4.1(±2.7) out of 13. Some 80% of patients did not know about early manifestations of oral cancer. Only 18% knew the most likely sites of oral cancer. Only 43.1% and 65.2% of patients reported alcohol and tobacco consumption as the main risk factors but they had a fair knowledge about other risk factors. There was no significant difference in Knowledge level between patients regarding their sex, educational levels and age. Most patents (90%) expected their dentists to warn them about the harmful effects of smoking and showed willingness to quit if recommended. **Conclusions:** Knowledge about oral cancer was found to be quite low. It seems necessary to increase the level of public awareness using educational programs with cooperation of dentists in tobacco cessation programs.

**Keywords:** Oral cancer - knowledge - attitude - practice - patients - Iran

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### Introduction

Oral cancer is a growing concern in many countries specially in developing countries (Philip et al., 2013), comprising 3% of all cancers in men and 2% of all cancers in women (Warnakulasuriya, 2009). In 2012, the incidence of lip and oral cavity cancers was reported to be 2.2 in men and 1.8 in female, and the mortality rate was estimated 0.68/100000 in Iran (Ferlay et al., 2012). In 2010, a study conducted in Isfahan, Iran reported that the incidence of oral cancers had been increased (Razavi et al., 2012).

Common risk factors are tobacco and alcohol consumption. Oral cancers occur more commonly in people older than 40 years, with an average age of 60 at first diagnosis (Silverman et al., 2010). Tongue and floor of mouth are regions more susceptible to developing these lesions. In the early stages, oral cancer has no significant sign, and discomfort is the most common feeling in 85% of cases (Motallebnejadet et al., 2009).

Mortality rates depend on cancer stage, varying between 30% and 81% (Jemalet al., 2011). The 5-year survival rate of patients with oral cancer in Iran has been reported to be 12% to 51%, which is much lower compared

to that of developed countries (Sargeran et al., 2008). Delay in diagnosis especially on the part of the patient, the time between the initial detection of symptoms and the first visit to the health professional, are supposed to account for the detection of oral cancer lesions at advanced stages and high mortality (Sargeran et al., 2009).

One of the main causes of patient delay seems to be lack of awareness about oral cancer risk factors and its signs and symptoms among general population (Park et al., 2011). Some studies have shown that oral cancer is one of the least heard of cancers among other cancers with only about 50% participants being aware of its existence (Saleh et al., 2012). It is suggested that people are more aware of the association of tobacco use with oral cancers than that of alcohol consumption and other risk factors (Hertrampf et al., 2012). In another study conducted in India 89.3% and 75.4% of the subjects firmly believed that smokeless tobacco and smoking are risk factors for oral cancer but very few subjects (about 9%) were aware about the association of oral cancer with risk factors like 'family history of cancer' and 'sedentary life style' (Agrawal et al., 2012). This lack of awareness and information could result in the delay of patients with oral cancer to seek appropriate

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treatment. Also, surveys have shown that reinterpretation of symptoms without seeking professional help and use of self-treatment modalities provided by the pharmacy is not uncommon among patients (Al-Dakkak, 2010).

To reduce the morbidity and mortality associated with oral cancer, the public needs to be aware of this condition in terms of its early symptoms and risk factors. However, published data on awareness among the Iranian population are scarce (Pakfetrat et al., 2010). Therefore, the aim of this study was to assess the public's awareness about oral cancer, their knowledge about early symptoms and risk factors, their practice regarding early lesions and their attitude towards tobacco cessation in dental care settings as a mean to control and prevent oral cancer occurrence in Isfahan, Iran.

## Materials and Methods

This study was a cross-sectional study which was approved by the ethics committee of Isfahan University of Medical Sciences and was carried out in Isfahan-Iran in 2014. Patients also gave informed consent to participate in the study. Isfahan is the second biggest city in the country, located in a central region. It has two dental schools, about 800 active dentists and two professional centers for managing the patients with different kinds of oral cancers. Therefore, annually a lot of patients from the neighboring cities which have problems in access to such services refer to this city to receive dental and other professional health services.

### *Design of questionnaire*

To elicit the knowledge and opinions of patients, a self-administrated questionnaire was designed consisted of demographic questions such as age, educational level, sex, marital status of patients and their smoking behavior. Other sections included some questions to determine the knowledge and awareness of patients about oral cancer signs and symptoms, common locations of occurrence, risk factors and management. The patients' awareness of oral cancer was assessed by asking if they had ever heard of mouth and throat cancers. Response categories for the question were 'yes' and 'no'. Potential items for the survey instrument were developed based on the literature review of previous studies concerning the risk factors, signs and symptoms, and management (Pakfetrat et al., 2010; Agrawal et al., 2012; Hertrampf et al., 2012). Knowledge questions were in the form of "yes", "no" and "do not know". In order to calculate the total score, score of 1 was given to the correct responses and score of 0 to wrong answers and if "no idea" was selected.

The patients' smoking behavior was categorized into "non smokers", "light smokers" (1-9/day), "moderate smokers" (10-19/day) and "heavy smokers" ( $\geq 20$ /day) (Almeida et al., 2014). Some queries were designed to find out the practice scheme of patients when encountering precancerous and cancerous lesions in their mouth.

In the attitude section, some questions were designed to elicit the opinion of patients regarding tobacco cessation consultation in dental settings (as an effective way to prevent oral cancer occurrence). Questions of the attitude

section were mostly developed based on literature review and bases on the proposed and the recommended US clinical practice guidelines 5As for cessation of tobacco use in dental settings (Puschel et al., 2008). Participants were asked to determine their feelings when their dentists ask them about tobacco use, advise them about the harm effects of smoking and to quit smoking, assess their readiness to quit and assist with quitting. Other questions were to determine if smoking is a private decision and if they expect their dentists to warn them about smoking. Attitude questions were to be answered based on a 2-point Likert scale (1=agree and 0=disagree).

The questionnaire was validated (face and content) based on the judgment of a panel of experts in oral pathology and public oral health, and irrelevant or unimportant questions were eliminated. To assure the reliability of questionnaire, it was piloted on 10 percent ( $n=60$ ) of the targeted patients. The Guttman split-half coefficient and alpha-Cronbach's coefficient were 0.75 and 0.66 for the reliability of questions included in the knowledge and attitude sections, respectively.

The finalized questionnaire consisted of 29 questions; 14 questions about knowledge (2 questions about sign and symptom; 8 questions about risk factors including tobacco, alcohol, age, fresh fruit consumption, sex, oral hygiene; 4 questions about the prognosis and most likely sites of oral cancer occurrence), 8 questions about patients' attitude regarding tobacco cessation and 7 questions regarding demographic characteristics and their practice toward oral ulcers.

### *Design of survey*

According to the sampling formula and considering 16% for the percentage of knowledgeable patients with regard to the risk factors of oral cancer based on previous studies (Pakfetrat et al., 2010), it was estimated that 650 patients were required for the survey.

The included samples were adult patients ( $\geq 18$  years old) who had attended the public and private dental clinics in the city of Isfahan. The sampling method was multi-stage stratified sampling technique. From the 14 municipal regions in Isfahan and according to their average population, one to three clinics were randomly selected from each region and patients were chosen in each clinic conveniently. Three dental clinics related to the dental school were also included.

Questionnaires were distributed among patients in the selected dental clinics in the waiting rooms during May- August 2014, and they were asked to return the questionnaires in the same day. Data were collected until target numbers were acquired.

### *Statistical analysis*

Both descriptive and analytical statistical measurements were used to summarize the main results using SPSS (version 18) software. The frequency of responses to each question in the attitude and practice sections and the sum and mean of knowledge questions were calculated. Chi-square, ANOVA, t-test and logistic regression tests were used to compare the variables. The level of statistical significance was set at 0.05 for all the tests.

## Results

### General characteristics

546 valid questionnaires were finally obtained from the patients (response rate of 84%). Those questionnaires which were not completely filled were discarded. The demographic characteristics of patients are summarized in Table 1. The mean age of participants was 34.6±11.34 (Mean±SD). They were mostly female and 37% of them had academic education.

About 10% (n=56) of the patients were smokers (3.2% females and 21.6% males) and the mean of daily cigarette consumption was 10.12±8.1 in smokers. Most of the smokers (74.8%) were male (X<sup>2</sup>=46.8, P-value<0.001) and their occupation was trade or related to trade (X<sup>2</sup>=26.8, P-value<0.001) in comparison to other occupations. In the age group of 60-79, it was revealed that 25% of them were smokers. Based on their daily consumption, it was shown that 19% of smokers belonged to heavy smokers group. 32% of smokers reported their dentists had asked them about their smoking status in their last visit and 38% reported that they had been advised to quit tobacco use in dental offices.

### Knowledge and awareness

54.7% of patients were aware about the probability of cancer occurrence in the mouth region. 34% of them reported mass media and 7.8% of them reported doctors and dentists as the sources where they had heard of oral and pharyngeal carcinoma.

According to the findings of the logistic regression (Table 2) analysis (backward stepwise Wald), the participants' age group (Odds Ratio=1.68, P-value=0.003, 95%CI= 1.1-2.3), their educational level (Odds Ratio=1.4, P-value=0.001, 95%CI=1.1-1.86) and their gender (Odds Ratio=0.61, P-value=0.014, 95%CI=0.4-0.9) were significantly correlated with their awareness (aware or unaware) about oral cancer; Females, those who were older and those who had higher levels of education were more likely to have heard of oral cancer. Other variables such as occupation (as a categorical variable) and smoking behavior were not significantly correlated with the patients' awareness.

The mean score of the patients' knowledge was 4.16±2.7, slightly higher in females (4.2±2.8) although this difference was not significant according to the results of t-test. No significant difference was also observed in knowledge scores between patients based on their occupation and educational level according to the findings of ANOVA test.

Patients between ages 40-60 had the highest mean of knowledge (4.5±2.5) and the patients under the age of 20 obtained the least mean of knowledge (3.1±2.9). However, there was no significant difference between different age groups based on the results of ANOVA test. There was also a significant difference in the mean knowledge of patients according to their smoking status (T-test, P-value= 0.049), and current smokers were less knowledgeable (3.5±2.4 VS. 4.3±2.7), accordingly.

By analyzing the frequency of respondents' answers to each question in the knowledge section, more details

were clarified about the gaps in their knowledge about oral cancers. 20% of the respondents knew that the tongue and floor of the mouth are the most common sites of oral cancer; however, most of them (68.68%) did not know about the common sites. The majority of subjects (about 80%) were unaware of the symptoms of early lesions and 10% of them thought that malignant lesions could present as painful lesions or could cause dry mouth and mouth sores.

According to the risk factors, 65.2% of patients were aware of the association between smoking and oral cancer and 43.1% knew alcohol consumption was a main risk factor. Their knowledge about other risk factors is summarized in Figure 1. They mostly were not aware of the age group most susceptible to oral cancers and merely about 11.6% selected the age >60 as a risk factor. 25% knew that oral cancer is more common among men. 19.4%

**Table 1. Oral Cancer Knowledge and Practice among Patients and Their Attitude Towards Tobacco Cessation, Iran**

	Percentage	Frequency
Age Groups		
<20	3.1	17
20-39	67.9	371
40-59	26	142
60-79	2.7	15
≥80	0.2	1
Sex		
Female	65.1	355
Male	34.9	190
Education		
Illiterate	3.2	17
Less than diploma	17.6	93
diploma	41.4	219
Bachelor's and master's degree	35	185
PhD	2.8	15
Occupation		
Homemaker	31.7	173
Traders and related	21.4	117
Governmental employee	17.9	98
Student	16.7	91
Retired	3.8	21
Laborers and related	8.4	46
Smoking history		
Yes	9.6	51
No	90.4	479
Smoking quantity in smokers		
1-9 /day	47.6	20
10-19/day	33.3	14
≥20/day	19	8
Last visit to dentist		
During the previous year	70.2	374
1-2 years ago	11.4	61
More than 2 years ago	18.4	98

**Table 2. Multivariate Logistic Regression Model for Participants' Oral Cancer Awareness**

Variables	Exp(B)	95% CI		p-value
Sex	0.61	0.41	0.9	0.014
Education	1.48	1.19	1.87	0.001
Age groups	1.68	1.19	2.38	0.003
Constant	0.2			0.013

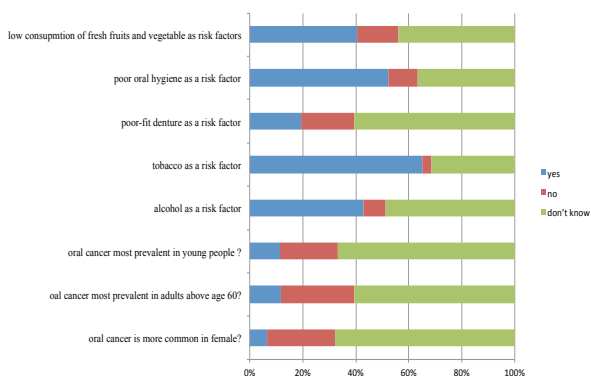
incorrectly identified poorly fitting dentures and poor oral hygiene (52.2%) as other major risk factors. About 40% of participants reported low consumption of fruits and vegetables as a risk factor for oral cancer.

48% of patients were aware of the risk of mortality related to oro-pharyngeal cancers and 44% had no idea about the mortality rate. Also, 45% knew that oral cancer has the potential to be transmitted to other tissues rather than mouth regions.

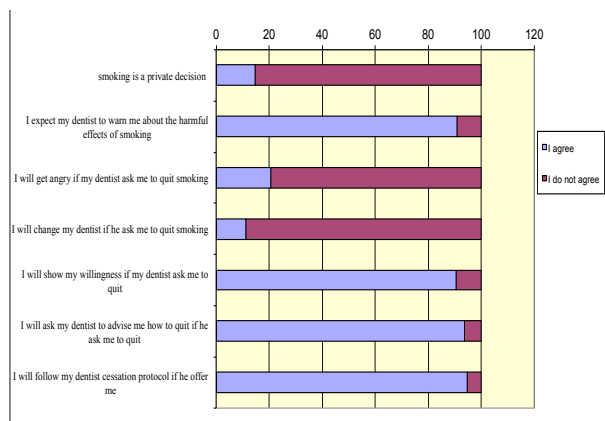
The results of chi-square test showed there was no significant difference between males and females, different age groups and different kinds of occupation regarding their responses to risk factor questions. Significant differences were observed among participants with different levels of education regarding most of the risk factors as shown in Table 3. It was shown that patients with university degrees were more knowledgeable about the oral cancer risk factors.

**Attitude towards tobacco cessation**

The attitude of participants towards tobacco cessation



**Figure 1. Knowledge of Participants about Oral Cancer Risk Factors**



**Figure 2. Attitude of Participants Towards Tobacco Cessation Programs in Dental Offices**

in dental offices is shown in Figure 2. Most of them (90.8%) expected their dentists to warn them about the harmful effects of smoking; the majority of them also (90.6%) reported they would show their willingness to quit if their dentists asked them to. 94.6% of them said that they would follow their dentists cessation protocol in dental offices. Merely, about 21 % of participants thought the advice of their dentists about tobacco cessation would annoy them.

Comparison of the attitude of participants according to their demographic characteristics indicated that females ( $X^2=12.24$ ,  $P\text{-value}=0.001$ ) more frequently believed smoking is not a private decision and expected ( $X^2=3.7$ ,  $P\text{-value}=0.039$ ) their dentists to warn them about the harms of smoking. Participants who believed they would not become annoyed by the cessation advice were mostly governmental employees ( $X^2=23.3$ ,  $P\text{-value}<0.001$ ) with university degrees ( $X^2=40.7$ ,  $P\text{-value}<0.001$ ). Also, following the cessation protocols in dental offices, participants with higher educational levels (university degrees) showed more enthusiasm.

**Practice scheme**

Approximately 81% of the respondents reported they preferred to visit a dentist if there was a painless ulcer for more than two weeks in their oral cavity. Most of the patients (70%) reported that they had dental visits over the last year (Table1).

**Discussion**

Almost two-third of oral cancer patients are diagnosed at late stages, leading to extensive treatment and low survival rates (Prelec andLaronde, 2014). Lack of public knowledge has been considered to be an important barrier to the early detection of oral cancer (Waranakulasuriya et al., 1999).

This study demonstrated general lack of knowledge about (Oral Cancer) among the participants. Only 54% of patients were aware of the probability of oral cancer, which is not a satisfactory rate compared with oral cancer awareness in most of other studies. In Sri Lanka (Ariyawardana and Vithanaarachchi, 2005), South India (Srikanth Reddy., 2012), and Gorakhpur city in India (Agrawalet al., 2012) 95%, 60.2% and 90% of the respondents had heard of oral cancer, respectively. However, a research in Turkey revealed that 60.7% of participants had never heard of oral cancer (Peker and Alkurt, 2010).

According to the source of their knowledge, about 8% of people who were aware of oral cancer existence reported they acquired their knowledge from doctors and

**Table 3. Participants’ Knowledge about Oral Cancer Based on their Level of Education**

	Illiterate	Less than diploma	diploma	University degree (bachelor, master and PhD)	P-value, X <sup>2</sup> value
OC more common in men	3.00%	24.20%	27.30%	45%	0.028, 17.1
OC most common in age>60	10.00%	18.30%	30.00%	41%	<0.001, 58.8
Alcohol as a main risk factor	3.10%	16.60%	40.40%	42%	0.01, 20.1
Low consumption of fresh fruits and vegetables as risk factors	3.80%	15.80%	37.80%	42.50%	0.006, 21.4



dentists. In Nigeria (Lawoyin et al., 2003), 20.1% and in South India (Srikanth Reddy., 2012) 26% of people gained their knowledge from these health professionals. Razavi et al reported that only 34% of dentists in Isfahan were knowledgeable about oral cancer, which could be the reason why they did not inform their patients (Razavi et al., 2013).

Regarding the risk factors and sign and symptoms, more than 60% of participants in our study did not have knowledge about most common sites of oral cancer. In another study in Iran, only 8.8% were aware of the likely sites (Pakfetrat et al., 2010). Our study showed that 80% of people were unaware of the symptoms of early lesions, which is almost similar to the report in Turkey (Peker et al., 2010) and in Germany (Hertrampf et al., 2012). Surprisingly, in Italy about 80% of people were aware of this subject (Villa et al., 2011). In our study, most of participants were knowledgeable about the association between tobacco and alcohol consumption and oral cancer, which is a much level higher than another study conducted in Iran (Pakfetrat et al., 2010), but less than those of the studies conducted in India (Srikanth Reddy et al., 2012), Sri Lanka (Ariyawardana and Vithanaarachchi, 2005), Mersey and Italy (Villa et al., 2011).

The results of our research demonstrated a general lack of knowledge about gender and age groups mostly at risk of oral cancer. Also, there is a misunderstanding about other risk factors such as poorly fitting denture and poor oral hygiene among patients. Surprisingly, about 40% of patients were knowledgeable about low consumption of fresh fruits as a risk factor in comparison to the 6% knowledge of dentists about this issue in our previous study (Razavi et al., 2013). Although mortality rate is 181 annually in Iran (Mousaviet al., 2009), less than half of participants knew it can be mortal.

The present study found that among socio-demographic factors, there was a significant correlation between the participants' level of education and knowledge about risk factors. This result is in agreement with those of other studies conducted in India (Devadiga and Prasad, 2010) and in contrast to the results of a study recently conducted in American adults (Luryi et al., 2014). Also, current smokers were less knowledgeable about oral cancer. Other socio-demographic factors such as age, gender and alcohol history did not appear to exert any influence on the knowledge of OC.

Therefore, it is crucial to inform the public, especially smokers about the considerable increase in OC risk with tobacco and alcohol consumption and with other risk factors. Informing the public through the media appears to be effective. Also, as a high percentage (81%) of patients reported they would visit a dentist if they encountered ulcer lesions, it is necessary to improve educational programs on oral cancer for dentists in university and to include it in educational courses. On the other hand, since most of the patients (70%) mentioned they had dental visit during the previous year, it could be a great opportunity to have oral cancer examinations and to inform the patients about pre-malignant lesions and risk factors in dental settings.

In Iran, there are an estimated 10 million smokers,

and the death rate due to tobacco consumption is now estimated to be about 60000 people a year (Kelishadi et al., 2006). Overall, the prevalence of daily cigarette smoking among Iranians aged 15-64 years is estimated to be 12.5 percent (23% in males and 1.4 % in females) (Meysamie et al., 2012). In our study, 9.6% of patients had a history of smoking; 3.2% in females (higher than national statistics) and 21.6% in males. Moreover, more than 90% of participants expected their dentist to warn them about the harms of smoking. About 80% of them, mostly governmental employees and people with higher educational degrees did not feel annoyed if they were asked to quit smoking. In contrast to our results, Razavi et al (Razvi et al., 2015) reported dentists believe that patients would feel discomfort if they provided them with tobacco cessation advice. On the other hand, although 80% of participants in our study said smoking is not a personal issue, 30% of dentists believed that smoking is a personal decision.

Therefore, it seems necessary to inform dentists about the patients' willingness and expectation about tobacco cessation assistance. Despite high tobacco consumption rate in Iran, only 32% of current smokers reported that their dentist had asked them about their smoking status during their last visit.

In conclusion, we investigated the awareness and knowledge of OC among adult dental patients attending dental clinics, which revealed deficits in their knowledge of signs, symptoms and risk factors of cancer. The level of knowledge was influenced by socio-demographic factors. Both professional efforts and public education are obviously required to improve the awareness and knowledge of OPC risk factors, signs and symptoms.

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