

Awareness and Knowledge of Oral Cancer among the Population of Jeddah, Saudi Arabia

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Received: May 31, 2021; Published: June 29, 2021

Abstract

Objectives: Oral cancer is ranked as the ninth most common tumor around the world and the third most common tumor in Saudi Arabia. The aim of this study was to determine levels of awareness and knowledge about oral cancer among the general population in Jeddah, Saudi Arabia.

Methods: In this cross-sectional study, 800 adult participants were recruited to assess levels of knowledge about oral cancer using a self-administered questionnaire. T-test, one-way analysis of variance (ANOVA), and linear regression were used for data analysis.

Results: The results showed that 34.3% of respondents were unaware of the existence of oral cancer, and 65.8% had previously heard about oral cancer. Correct answers for oral cancer risk factors had a mean of 5.47 and SD = 2.84 for 12 questions. Nonsmoking, Saudi female participants with university educations and family incomes higher than SAR 15,000, as well as participants who had previously learned about oral cancer, had significantly ($p < 0.05$) higher total correct answers. There were 80.50% of participants who identified smoking as a risk factor, but only 25% identified sun exposure as a risk factor. Red and white patches were the least identified signs of oral cancer, with only 22.50% and 24.38% correct responses, respectively.

Conclusion: Public knowledge about oral cancer in Saudi Arabia seems to be insufficient, and more health promotion campaigns should be conducted to boost community awareness.

Keywords: Oral Cancer; Saudi Arabia; Dentistry; Oral Health; Jeddah; Knowledge; Awareness

Abbreviation

OC: Oral Cancer

Introduction

The occurrence and frequency of cancer is rapidly increasing in all countries, with the worldwide incidence of cancer being 14.1 million new cases and 8.2 million deaths in 2012 [1]. Further, it is estimated that there will be 15 million new cases by the year 2020 [2]. Oral cancer is ranked as the ninth most common tumor around the world [3], and it is the third most common tumor in Saudi Arabia, after

lymphoma and leukemia [4]. As a result, it is considered a critical public health concern. Although the rates of mortality and morbidity associated with oral cancer are still high, developments and improvements in both surgical techniques and nonsurgical management have been moving forward [5].

Up to 95% of cancerous oral diseases are diagnosed as squamous cell carcinoma (OSCC) [6]. However, avoiding known risk factors could help to prevent or impede the progress of the disease [7-9]. Oral cancer is multifactorial, but the most significant risk factors are excessive alcohol use; smoking, use of smokeless tobacco, or use of chewing tobacco; sun exposure associated with lip cancer; infection with the human papilloma virus (HPV); infection with the human immunodeficiency virus (HIV); nutritional deficiency; and low socio-economic status [10-13]. Some articles have reported unsubstantiated risk factors, including race, poor oral hygiene, dental problems, chronic injury of oral mucosa, and candidiasis [10]. Smokeless tobacco, called “shammah” and “alqat” in Saudi Arabia and which is widely used in some areas of Saudi Arabia, is reported to act as an oral carcinogen [14-16].

Representative signs and symptoms of oral cancer include white and red patches on the oral mucosa, persistent oral ulcers, swelling of the mouth, teeth mobility, jaw pain or stiffness, painful throat, hoarseness of voice, and difficulty with speech [17]. These signs and symptoms should be alarming to health care providers to help early diagnosis of potentially malignant lesions.

Many studies have investigated the level of public awareness of oral cancer in various countries, including the United States (84.5%) [18], India (91.2%) [19], Yemen (71.5%) [20], Australia (72%) [21], Malaysia (84.2% - 92%) [22,23], and Sri Lanka (95%) [24]. Despite these somewhat high percentages, people showed variation in their levels of knowledge about oral cancer risk factors. One study found that only one out of three people could properly recognize a nonhealing ulcer as a sign of oral cancer [25]. Among a group of patients diagnosed with oral cancer, less than 50% were familiar with oral and pharyngeal cancers before their diagnosis [25]. Further, a study in India found that 89.3% of respondents identified smoking and smokeless tobacco as causes of oral cancer, but only 9% could identify other risk factors, such as family history and lifestyle [19].

Few studies have assessed the level of public awareness in Saudi Arabia. Two studies conducted in Riyadh found that only 62.4% to 53.6% of residents had heard of oral cancer [26,27]. More than half the participants in both studies were able to identify smoking as a risk factor, but less than one-third were able to identify other risk factors or symptoms, such as red lesions. Another study conducted in Jeddah found that only 32% of participants were aware of oral cancer [28]; however, the sample size in the study was small, and participants were recruited during an oral cancer campaign. Overall, the level of awareness in these Saudi studies is considered to be lower than in other countries, as can be seen from the statistics given above. These studies are not enough given that a systematic review concluded there is a gap in knowledge about the oral cancer research in Saudi Arabia [29].

Aim of the Study

The aim of this study was to determine the level of awareness of and knowledge about oral cancer among the general population in Jeddah, Saudi Arabia.

Materials and Methods

This cross-sectional study investigated the level of awareness of and knowledge about oral cancer among the general population in Jeddah, Saudi Arabia. Exclusion criteria included by younger than 18 years old. Sample size calculations indicated that 385 was the minimum number of individuals needed for this study when using an accuracy level of 5%, 50% of estimated popularity and 95% confidence level.

Data were collected through self-reported questionnaires in the Arabic language and distributed in hard copy format; data collectors were available to assist participants if any questions were unclear. Participants were recruited from shopping malls in each of the north,

south, west and east regions of Jeddah. Each participant needed 5 to 10 min to complete the questionnaire. All participants signed an informed consent form before beginning completion of the questionnaire. The data were collected with confidentiality, and any recognizable data were obliterated.

The questionnaire used was a validated one adopted from a previous study [20] that was itself adapted from other previous studies [19,21,22,30,31]. The questionnaire comprised 21 closed-ended questions, where the first part included eight demographic questions asking about gender, educational level, marital status, family income, nationality, age, current residence, and smoking status. The second part of the questionnaire asked if the participant had ever heard of oral cancer and, if so, the source of the information. Next, the participants were asked 12 questions about oral cancer general facts, risk factors, and signs and symptoms. All 12 questions had a range of answers that included “Yes,” “No” and “I do not know.” Wrong answers and “I do not know” were given values of zero and other responses were scored on a scale of 12 points, and the scores from all responses were added for a total score ranging from zero to 12. SSPS v.21 (IBM, Armonk, NY, USA) was used to conduct the data analysis. Frequency tables and descriptive statistics were generated and T-test and ANOVA were used for data analysis, and $p = 0.05$ was used as the statistically significant level.

Results

Data were collected from 800 participants with a mean (m) age of 32.45 and standard deviation (SD) of 10.25 years. Participant demographic data are displayed in table 1.

		Count	%
Gender	Male	374	46.75
	Female	426	53.25
Education	Illiterate/elementary	60	7.50
	Secondary	306	38.25
	University	434	54.25
Marital status	Single	352	44.00
	Married	394	49.25
	Divorced/widowed	54	6.75
Family income	Less than SAR 5,000	185	23.12
	SAR 5,000 - 15,000	388	48.50
	More than SAR 15,000	227	28.37
Nationality	Saudi	603	75.00
	Non-Saudi	197	25.00
Smoking	Smoker	358	44.75
	Nonsmoker	442	55.25

Table 1: Participant demographic variables.
SAR: Saudi Riyals.

Among the participants, 274 (34.3%) were unaware of the existence of oral cancer. The rest of the participants (n = 526) had come to be aware of oral cancer from different sources, which are displayed in figure 1, bearing in mind that some participants had heard about oral cancer from multiple sources.

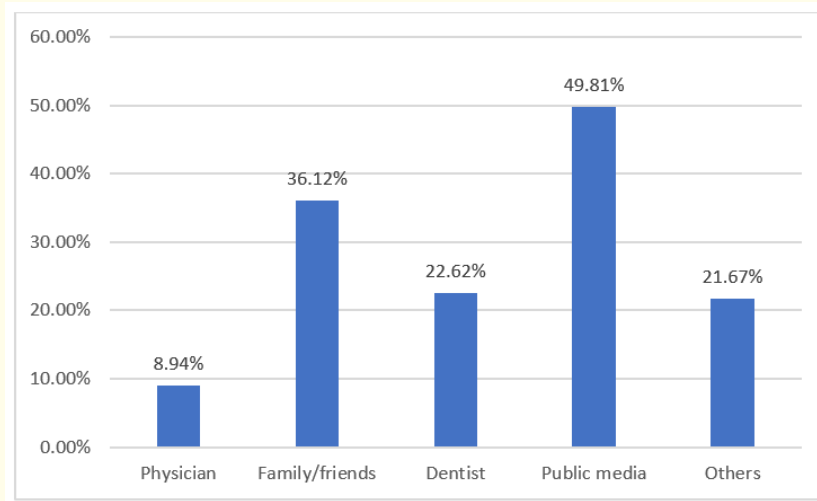


Figure 1: Source of information about oral cancer (n = 526).

Participants’ correct answers for oral cancer questions had a mean of 5.47 and SD = 2.84, where the lowest score was zero (meaning no knowledge about oral cancer) and the highest score was 12. Using t-test and ANOVA, it was determined that nonsmoking Saudi female participants with a university-level education and family income higher than Saudi Riyals (SAR) 15,000 and participants who had previously heard about oral cancer had higher total correct answer scores, as displayed in table 2.

		Correct answers score m (SD)
Gender	Male	5.1 (2.82)
	Female	5.8 (2.83)*
Education	Illiterate/elementary	4.88 (2.55)
	Secondary	4.92 (2.53)
	University	5.94 (3.01)**
Status	Single	5.64 (2.96)
	Married	5.32 (2.76)
	Divorced/widowed	5.46 (2.6)
Income	Less than 5,000 SR	5.16 (2.72)
	5,000 - 15,000 SR	5.12 (2.67)
	More than 15,000 SR	6.33 (3.06)***
Nationality	Saudi	5.64 (2.83)
	Non-Saudi	4.96 (2.83)*
Smoker	Smoker	5.24 (2.87)
	Nonsmoker	5.66 (2.81)*
Had heard about oral cancer before	Yes	5.9 (2.81)
	No	4.66 (2.73)*

Table 2: Differences in correct answer scores between different groups.

*: $p < 0.05$. **: Participants with university-level education had significantly higher scores ($p < 0.05$) than both illiterate/elementary and secondary education levels.

***: Participants with family income levels higher than SAR 15,000 scored significantly higher ($p < 0.05$) other family income groups.

A comparison of the proportions of participants who answered correctly for each question and participants with answered incorrectly as well as respondents who had prior knowledge of oral cancer and those who had not previously heard of it is given in table 3. Using the chi-square test, the significant difference in responses for each question is also shown in the table.

		Have heard about OC before (%)	Have not heard about OC (%)	Total (%)
General knowledge				
OC is preventable	Correct	57.41	41.61	52.00
	Wrong	42.59	58.39*	48.00
OC can be treated	Correct	58.56	45.26	54.00
	Wrong	41.44	54.74*	46.00
OC is contagious	Correct	58.17	43.43	53.13
	Wrong	41.83	56.57*	46.88
Risk factor				
Old age	Correct	34.41	25.55	31.38
	Wrong	65.59	74.45*	68.63
Smoking	Correct	82.89	75.91	80.50
	Wrong	17.11	24.09*	19.50
Smokeless tobacco	Correct	84.60	69.34	79.38
	Wrong	15.40	30.66*	20.63
Alcohol	Correct	52.66	54.01	53.13
	Wrong	47.34	45.99	46.88
Sun exposure	Correct	28.52	18.25	25.00
	Wrong	71.48	81.75*	75.00
Signs				
Non-healing sores	Correct	44.11	28.83	38.88
	Wrong	55.89	71.17*	61.13
Red patch	Correct	24.52	18.61	22.50
	Wrong	75.48	81.39	77.50
White patch	Correct	26.24	20.80	24.38
	Wrong	73.76	79.20	75.63
Lump	Correct	37.45	24.45	33.00
	Wrong	62.55	75.55*	67.00

Table 3: Percentage of correct and wrong responses to oral cancer questions and whether participant had heard of oral cancer before. OC: Oral Cancer. *: $p < 0.05$.

Discussion

The results of our study showed that two-thirds of participants were already aware of oral cancer, and one-third were previously unaware of its existence. However, the mean scores of oral cancer knowledge, risk factors, and signs and symptoms were lower than

midpoint, reflecting suboptimal levels of accurate information. Nonsmoking Saudi female participants with more education and higher income levels were found to be significantly more knowledgeable than other subgroups. In addition, participants who had previous knowledge about oral cancer answered significantly better on 9 of the 12 questions.

The percentage of aware participants in our study was lower than that in all previous studies conducted in other countries, which ranged from 71.5% to 95% in the United States, Australia, Malaysia, India, Sri Lanka, and Yemen. However, our levels of awareness were similar to previous local studies in Riyadh, Saudi Arabia [26,27], which gives external validity to our results. However, our percentage was better than the previous study in Jeddah, Saudi Arabia [28]. Nevertheless, we argue that our result might be more accurate given that Alhazzazi conducted his study with a relatively low sample size ($n = 112$) during an oral cancer awareness campaign.

Public media and information from family/friends were the two most important sources of information about oral cancer. Oral cancer information that came from health care professionals ranked lower, with only one-fifth of the participants getting information about oral cancer from dentists, and only 9% getting information from physicians. This might indicate that dentists do not participate enough in educating their patients and the community about oral cancer, highlighting the urgent need to foster the role of dentists and family medicine physicians in more active participation in oral cancer health campaigns and efforts. Further, it shows that public media is a good avenue for reaching the public in promising numbers. As we live in an era of social media, it might be useful to also use social media as venues for promoting awareness.

Answers to the questions regarding oral cancer general knowledge demonstrated that around half of the participants erroneously believed that oral cancer is contagious, cannot be treated, and is not preventable. This wrong information was found even among the 40% of participants who had previously heard about oral cancer. The lack of correct basic information shows that simply hearing about oral cancer is likely to be inadequate for the dissemination of proper knowledge.

With regard to oral cancer risk factors, four-fifths of the participants recognized tobacco and smokeless tobacco as risks, and around half of the participants recognized alcohol consumption as a risk factor of oral malignancy. However, it is difficult to be certain if participants linked smoking, smokeless tobacco, and alcohol consumption to oral cancer because they understood this information as fact or if it was the result of perceptions of the bad consequences of use of these products due to the fact that use of tobacco, smokeless tobacco, and alcohol are considered to be wrong "Haram" according to Islamic teachings. Further, participants had most likely been repeatedly warned about their negative impacts on various occasions during local events in schools, mosques, or public media. Nevertheless, the proportion of participants who answered these questions correctly is considered to be acceptable and was similar to previous local and international studies [20,23,24,26].

On the other hand, only 25% to 31.38% recognized sun exposure and/or old age as risk factors for lip cancer. The level of awareness of these risk factors is not acceptable and needs to be highlighted in future oral cancer campaigns.

Regarding signs of oral cancer, only 22.5% to 38.88% were able to recognize the signs correctly, which indicates poor overall knowledge about oral cancer symptoms. This suggests that around two-thirds of the participants cannot recognize oral cancer signs properly and might fail to mention them to their medical or dental practitioner. This is another area to be emphasized during awareness campaigns and health promotion programs.

One important result to note is that, despite the statistically significant differences in those who correctly answered oral cancer questions and the overall mean of correct answers between participants who had prior knowledge of oral cancer and those who did not, the differences were not very large. In other words, some participants could answer some of those questions through common knowledge. This emphasizes that recognizing oral cancer as a problem is also not enough, and more efforts need to be made to design health campaigns of adequate quality to ensure proper information delivery. Further, according to our results, health promotion activities should

focus more on male smokers and participants with lower educational and income levels, as they were found to give significantly fewer correct answers.

Despite the large sample size and validated questionnaire used in this study, limitations include the use of a self-reported questionnaire and convenient sample. Thus, more representative samples are needed for future studies.

Conclusion

Public knowledge about oral cancer in Saudi Arabia seems to be insufficient and is lower than in other countries. The quality of information about oral cancer in general and about its signs and symptoms, in particular, are inadequate. We recommend conducting more public campaigns to educate the population about oral cancer and to boost community awareness, similar to what has been done in previous campaigns [16]. Campaigns are also needed to boost the role of dentists and physicians in increasing public knowledge and awareness.

Acknowledgements

We would like to thank Shrooq Mohammed Alzahrani, Taghreed Atallah Almutairi, Samaher Abdulaziz Bedaiwi, Sarah Nami Alnefaie, Ibtihal Abdulrahman Alnuwaymi, and Saja Mansour Asiri for helping with data collection.

Conflict of Interest

Nil.

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Volume 20 Issue 7 July 2021

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