# Knowledge, attitude and behavior about oral cancer, among a group of adult Jeddah population

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الغرض من الدراسة الحالية هو تقييم مدى دراية وموقف وسلوكيات شرائح مختلفة من سكان مدينة جدة ، المملكة العربية السعودية تجاه سرطان الفم . أجابت عينة من ١٠٨٠ شخص الاستبيان الذي بحث في ثلاث نواحي ذات علاقة بسرطان الفم وهي: ١) إدراكه (حصوله ـ أسبابه ـ أشكاله السريرية ـ علاجه ـ مصادر المعلومات الصحية الفمية). ٢) الموقف تجاه زيارة طبيب الأسنان المنتظمة، وقدرة طبيب الأسنان في تشخيص المرض وامكانية الشفاء منه. ٣) السلوك تجاه الكشف المنتظم والفحص السريري للكشف عن سرطان الفم. تم تحليل البيانات الناتجة ومقارنتها، أخذ في الاعتبار البيانات الديموغرافية والحالة الصحية والتدخين. أظهرت النتائج أن كثيرًا من المشاركين (٨,٧٤٪) لم يسمعوا بوجود سرطان الفم إطلاقًا ، ومعظم الباقي لا يعرفون الكثير عن هذا المرض ، متمثلاً بالنسبة العالية التي أجابت بـ " لا أعلم " أو إجابات خاطئة . كما أن النتائج أشارت إلى أن مستوى الإدراك عند الذكور كان أفضل من عند النساء، وعند المتعلمين أكثر من الأقل تعليمًا (P < ٠,٠٥). اعتبر المشاركين أن التلفاز ثم الكتب والمجلات ثم أطباء الأسنان بالترتيب التنازلي هم المصادر الأولية لمعلوماتهم الصحية الضموية. تبين أن كثيرًا من المشاركين (٧,٤٨٪) يميلوا إلى طلب العناية من أطباء الأسنان تجاه آفات الفم المشبوهة . وأن الأغلبية (١,١٩٪) موافقون أن سرطان الفم المبكر ممكن شفائه. تبين أيضاً أن (١,٧١٪) من المستجيبين يقومون بزيارة طبيب الأسنان كل ستة أشهر وأن منهم (١,٢٪) فقط قد أجريت لهم فحوصات سريرية للكشف عن سرطان الفم. نستنتج أن هناك سوء فهم شديد وفقدان للمعرفة والمواقف والسلوكيات الإيجابية عمومًا تجاه سرطان الفم لدى مجموعة من المشاركين في الدراسة. لذا نوصي بتخطيط أفضل لطرق تعليم العامة تجاه الوقاية والكشف المبكر لسرطان الفم.

The purpose of the current study was to assess the level of knowledge, opinion and practice regarding oral cancer (OC), among various sections of Jeddah general population, Saudi Arabia. A sample of 1,080 individuals answered a self-administered questionnaire that investigated three parts related to OC: (1) Knowledge (OC occurrence, causes, clinical presentation, treatment, sources of information); (2) Attitude (regular dental visit, capability of the dentist to screen for OC and curability of the disease); (3) Behavior (OC check up and examination). The collected data were analyzed and variable relations expressed considering the demographic data, medical status and smoking habit. Results showed that 47.8% of the respondents had never heard of OC existence, and most of the others did not know very much about it as reflected by the high percentage of "don't know" answers and incorrect responses. Results also indicated that the greater awareness of OC was among males compared and higher among highly educated individuals ($P$<0.05). Television, books and journals as well as the dentist in descending order were the primary sources of the subjects' oral health information. Many participants (84.7%) tended to seek care regarding suspicious oral lesions from their dentist and the majority (91.1%) agreed that early OC is curable. Only 17.1% of the respondents visited dentist regularly every six month for check up and only 2.1% of the respondents reported that they had OC examination. We concluded that there was extensive misinformation and a general lack of knowledge and positive attitude and behavior among the participants in this study regarding OC and that the best approaches to informing the public on OC prevention and early detection should be planned and is recommended.

## INTRODUCTION

Oral cancer (OC) is defined as neoplasms involving the oral cavity which anatomically begins at the lips and ends at the anterior pillar of the fauces.[1] More than 90% of OC cases are squamous cell carcinomas; with the tongue and floor of the mouth being the most common sites (75-85%).[2] Oral cancer typically occurs in the elderly people during the fifth through eight decades of life,[3] although recent reports showed an increasing incidence in younger population.[1,3-5]

Predisposing factors of OC include tobacco use, alcohol consumption, a diet poor in fresh fruits and vegetables, infective agents (candida, viruses), immunodeficiency and continued exposure to sunlight (lip cancer).[4,6,7] Oral cancer may present as a solitary chronic ulceration, red or white or mixed lesions, indurated lump, fissures or enlarged cervical lymph node.[4] It is now treated largely by surgery or irradiation. Photodynamic and chemotherapy have occasional applications.[4,8] OC survival rate for patients with advanced stage is generally 50% or less.[9] Treatment at an early stage may improve survival rate to above 80%.[10]

Received 19 May 2004; Revised 6 October 2004
Accepted 18 October 2004

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Raising public awareness about OC may assist in early diagnosis; however, public awareness in this regard as compared with other types of cancer is low to nil even in the developed countries and this contributes to delay in the diagnosis and spread of the disease worldwide.[5,11-15] According to the last report of the Saudi National Cancer Registry: OC (lips, tongue, mouth, oropharynx) among Saudis, accounts for about 2.2% of all the different newly diagnosed cancers.[16] Although it is the sixth most common cancer in most of the world,[17] it was not among the ten most common cancers in Saudis populations.[16] However, there was marked regional variation, such that in Jizan province, where OC is the most common malignancy in female and the most common cancer overall.[16,18,19] This was attributed in some investigations to local habits of using shamma.[18,19] Regarding this high prevalence of such a serious disease in some sections of Saudi community, it was considered important to describe the population awareness status on this regard. The purposes of this project were (1) to assess the level of knowledge, opinions and practice regarding OC among various sections of the general population of Jeddah, the second largest city in Saudi Arabia, and (2) to increase public awareness for the early detection and prevention of these cancers. Information gathered from such a study be used to develop, implement and monitor a comprehensive OC education and screening program.

## MATERIALS AND METHODS

Various sections of Jeddah population were represented in the present sample. A total size of 1,080 adults were interviewed, having been selected from population clusters such as those in reception areas of major general hospitals, in the Universities, comprising students, employees, and staff, to as well as productive groups of workers from factories, thus obtaining a quasi-representative sample of Jeddah adults' population.[20] A time sampling method was used, such that each of the above places was visited 8 times. The subjects were stratified by age, sex, socio-economic status and further classified by health status and smoking habit. They were above 17 years of age and able to understand and answer the Arabic questionnaires. The developed questionnaire included demographic data, medical condition, smoking habit and 13 questions related solely to OC. The questionnaire was revised by various specialist academic staff of the Faculty of Dentistry, King Abdul Aziz University, Jeddah. Furthermore, a pilot pretest study was conducted on 50 subjects and modifications as necessary, were done accordingly. The OC questions comprised three parts; the first part had 8 questions to assess the respondents' knowledge regarding OC (occurrence, causes, signs & symptoms, site, age, sex, treatment modalities and sources of oral health information). The second part included questions to investigate the attitude of the respondents regarding the regular dental visits and capability of the dentist to screen for OC as well as the participants opinion towards the curability of the disease. The third part included questions to disclose the public practice with regard to OC check up in comparison to other cancers. After obtaining a verbal consent, an average of 10-15 minutes was needed to answer the entire questionnaire.

### Statistics

The data collected were analyzed using SPSS program version 11. Variable relations were expressed about the socio-demographic data, medical status and

smoking habit. The Chi-Square test was used to detect differences between various distributions and the *P* value was set at < 0.05 for significance throughout the study. Responses were analyzed for all the demographic data, namely: gender, nationality, age-groups, marital status, educational level, work status, income groups, medical condition and smoking habits. However, only the table showing gender differences is shown here. The statistical analysis for other demographic data is mentioned in the result section without showing in tables.

**Table 1.** Sample description by socio-demographic characteristics, medical background and smoking habit

| Variable | Female | Male | Total |
|---|---|---|---|
| **Number** | 600 (55.55%) | 480 (44.44%) | 1080 (100%) |
| **Nationality** | | | |
| Saudi | 388 (65%) | 313 (67%) | 701 (65.9%) |
| Non Saudi | 209 (35%) | 154 (33%) | 363 (34.1%) |
| **Age** | | | |
| ≤19 | 39 (6.6%) | 19 (4.4%) | 58 (5.7%) |
| 20-29 | 224 (38.1%) | 187 (43.2%) | 411 (40.3%) |
| 30-39 | 205 (34.9%) | 125 (28.9%) | 330 (32.3%) |
| ≥40 | 120 (20.4) | 102 (23.6%) | 222 (21.7%) |
| **Marital status** | | | |
| Single | 67 (11.3%) | 175 (37%) | 242 (22.7%) |
| Married | 501 (84.2%) | 295 (62.4%) | 796 (74.5%) |
| Divorced | 17 (2.9%) | 1 (0.2%) | 18 (1.7%) |
| Widow | 10 (1.7%) | 2 (0.4%) | 12 (1.1%) |
| **Education level** | | | |
| No | 39 (6.5%) | 4 (0.8%) | 43 (4%) |
| Primary | 84 (14%) | 27 (5.7%) | 111 (10.4%) |
| Middle | 105 (17.6%) | 70 (14.9%) | 175 (16.4%) |
| High school | 155 (25.9%) | 136 (28.9%) | 291 (27.2%) |
| Diploma | 46 (7.7%) | 41 (8.7%) | 87 (8.1%) |
| University | 159 (26.6%) | 170 (36.1%) | 329 (30.8%) |
| Post. grad | 10 (1.7%) | 23 (4.9%) | 33 (3.1%) |
| **Work status** | | | |
| Yes | 123 (20.7%) | 291 (62.6%) | 414 (39.1%) |
| No | 471 (79.3%) | 174 (37.4%) | 645 (60.9%) |
| **Salary income (SR/m)** | | | |
| <1500 | 107 (18.4%) | 75 (16.9%) | 182 (17.7%) |
| 1500-3000 | 151 (25.9%) | 132 (29.7%) | 283 (27.6%) |
| 3000-6000 | 151 (29.9%) | 103 (23.1%) | 254 (24.7%) |
| 6000-10000 | 89 (15.3%) | 76 (17.1%) | 165 (16.1%) |
| >10000 | 84 (14.4%) | 59 (13.3%) | 143 (13.9%) |
| **Medical condition** | | | |
| Health | 539 (90.7%) | 420 (92.5%) | 959 (91.5%) |
| Chronic illness | 55 (9.3%) | 34 (7.5%) | 89 (8.5%) |
| **Smoking habit** | | | |
| Yes | 45 (7.6%) | 118 (24.9%) | 163 (15.3%) |
| No | 546 (92.4%) | 356 (75.1%) | 902 (84.7%) |
| **Smoking type** | | | |
| Cigarette | 17 (42.5%) | 97 (85.1%) | 114 (74%) |
| Shisah or muasel | 23 (57.5%) | 17 (14.9%) | 40 (26%) |

## RESULTS

A total of 1080 subjects, 600 (55.6%) females and 480 (44.4%) male were recruited for the study. Table 1 summaries the sample characteristics by demographic data, medical background and smoking habit. Forty-five (7.6%) females were smokers in comparison to 118 (24.9%) male subjects. Cigarette (85.1%) was the predominant smoking type in the male group, while shisha and muasel (57.5%) were the first among female group. Mean (cigarette per day) and duration in males were 14.8 ± 10.5 (cigarette/day) and 12.1 ± 8.7 years, respectively while they were 2.4 ± 2.03 (shisha or muasel/day) and 11 ± 9.1 years for the female group, respectively. Tables 2 and 3 summarize the sample responses regarding the first two parts of the OC questionnaire (knowledge, attitude and behavior respectively).

The result of knowledge questionnaire showed that, only 52.2% of the respondents were aware of OC existence compared to 91.9%, 62.2% and 51.5%, respectively for those who were aware of cancers affecting the breast (female only), lung and skin. There were no statistically significant difference in gender regarding awareness to oral cancer existence (*P*=0.074) however, the greatest awareness was among those with upper socio-economic status represented in work positions, higher education and higher salary income (*P*<.05).

Regarding the OC risk factors, smoking was the highest risk factor most adults identified correctly (64.4%) compared with alcohol consumption (53.4%) and

**Table 2.** Number and percentage of respondents' answers toward OC knowledge questionnaires by gender

| Variable | Female | Male | Total | *P*-value |
|---|---|---|---|---|
| **1) Have you ever heard about the following cancer?** | | | | |
| Breast | 541 (91.9%) | - | - | |
| Lung | 353 (59.9%) | 287 (65.2%) | 640 (62.2%) | .083 |
| Skin | 300 (50.9%) | 230 (52.3%) | 530 (51.5%) | .671 |
| Mouth | 293 (49.8%) | 244 (55.5%) | 537 (52.2%) | .074 |
| **2) What are the causes of OC?** | | | | |
| Smoking | 351 (59.7%) | 327 (70.5%) | 678 (64.4%) | .000 |
| Alcohol | 300 (51.0%) | 262 (56.5%) | 562 (53.4%) | .079 |
| Smokeless tobacco | 296 (50.3%) | 276 (59.5%) | 572 (54.4%) | .003 |
| All of the above | 265 (45.1%) | 231 (49.8%) | 496 (47.1%) | .128 |
| I don't know | 202 (34.4%) | 107 (23.1%) | 309 (29.4%) | .000 |
| **3) How does oral cancer look like in the mouth?** | | | | |
| Ulcer | 69 (11.8%) | 53 (11.5%) | 122 (11.7%) | .872 |
| Redness | 19 (3.2%) | 21 (4.5%) | 40 (3.8%) | .277 |
| Whiteness | 7 (1.2%) | 15 (3.2%) | 22 (2.1%) | .022 |
| Mixed red and white | 44 (7.5%) | 39 (8.4%) | 83 (7.9%) | .584 |
| Swelling | 72 (12.3%) | 65 (14.1%) | 137 (13.1%) | .401 |
| I don't know | 431 (73.7%) | 325 (70.3%) | 756 (72.2%) | .233 |
| **4) The most common site for oral cancer** | | | | |
| Tongue | 58 (10%) | 38 (8.1%) | 96 (9.2%) | .289 |
| Floor of the mouth | 56 (9.5%) | 66 (14.1%) | 122 (11.6%) | .026 |
| Palate | 42 (7.2%) | 36 (7.7%) | 78 (7.4%) | .784 |
| Cheek | 22 (3.8%) | 24 (5.1%) | 46 (4.4%) | .298 |
| I don't know | 433 (74.5%) | 336 (71.6%) | 769 (73.2%) | .294 |
| **5) The most common age for oral cancer patients** | | | | |
| ≤ 19 years | 12 (2.1%) | 3 (0.6%) | 15 (1.4%) | .056 |
| 20-40 years | 62 (10.7%) | 69 (14.9%) | 131 (12.5%) | .039 |
| ≤ 41 years | 124 (21.3%) | 109 (23.5%) | 233 (22.3%) | .388 |
| I don't know | 408 (70.1%) | 293 (63.3%) | 701 (67.1%) | .02 |
| **6) The common sex for oral cancer patients** | | | | |
| Male | 160 (27.4%) | 158 (34.5%) | 318 (30.5%) | .046 |
| Female | 42 (7.2%) | 28 (6.1%) | 70 (6.7%) | |
| I don't know | 382 (65.4%) | 272 (59.4%) | 654 (62.8%) | |
| **7) What are the methods of O.C treatment?** | | | | |
| Surgery | 166 (28.4%) | 137 (29.8%) | 303 (29%) | .619 |
| Chemotherapy | 212 (36.2%) | 178 (38.7%) | 390 (37.3%) | .226 |
| Radiotherapy | 144 (24.6%) | 135 (29.3%) | 279 (26.7%) | .08 |
| All of the above | 132 (22.6%) | 111 (24.1%) | 243 (23.3%) | .552 |
| I don't know | 343 (58.6%) | 249 (54.1%) | 592 (56.7%) | .145 |
| **8) What are the sources of your oral health information?** | | | | |
| Television | 315 (54.1%) | 246 (52.7%) | 561 (53.5%) | .641 |
| Radio | 80 (13.7%) | 93 (19.9%) | 173 (16.5%) | .007 |
| Physicians | 28 (4.8%) | 40 (8.6%) | 68 (6.5%) | .014 |
| Dentist | 255 (43.8%) | 201 (43%) | 456 (43.5%) | .802 |
| Books and journals | 260 (44.7%) | 218 (46.7%) | 478 (45.6%) | .516 |
| Schools and college | 85 (14.6%) | 88 (18.8%) | 173 (16.5%) | .068 |
| Mothers and previous experiences | 86 (14.8%) | 65 (13.9%) | 151 (14.4%) | .694 |
| Primary care centers | 42 (7.2%) | 40 (8.6%) | 82 (7.8%) | .419 |
| I don't have information about oral health | 45 (7.7%) | 37 (7.9%) | 82 (7.8%) | .915 |

**Table 3.** Number and percentage of respondents' opinions toward OC attitude questionnaire by gender

| Variable | Female | Male | Total | *P*-value |
|---|---|---|---|---|
| **1) Why do you think visiting a dentist regularly is important?** | | | | |
| - To have regular cleansing of the teeth | 397 (67.2%) | 317 (69.8%) | 714 (68.3%) | .361 |
| - To have early teeth check up | 462 (78.2%) | 351 (77.3%) | 813 (77.8%) | .74 |
| - To have early oral mucosal disease check up | 339 (57.4%) | 274 (60.4%) | 613 (58.7%) | .33 |
| - To have all of the above | 309 (52.3%) | 255 (56.2%) | 564 (54%) | .212 |
| - I don't think it is necessary | 59 (10%) | 50 (11%) | 109 (10.4%) | .589 |
| **2) Do you think early oral cancer is curable?** | | | | |
| - Yes | 537 (92.1%) | 409 (89.3%) | 946 (90.9%) | .118 |
| **3) What should you do if you have abnormal swelling in your mouth for more than two weeks:** | | | | |
| - Go to the dentist | 514 (87.4%) | 380 (81.2%) | 894 (84.7%) | .005 |
| - Go to the physician | 66 (11.3%) | 83 (17.7%) | 149 (14.1%) | .003 |
| - I don't care | 17 (2.9%) | 20 (4.3%) | 37 (3.5%) | .229 |

smokeless tobacco (54.4%). Evaluation by gender indicated that men had better knowledge than women ($P<.05$) regarding the bad effects of tobacco use. There was a high awareness of smokeless tobacco as an etiology factor of OC among singles and workers ($P<.05$). However, respondents with higher education were more knowledgeable ($P<.05$) about the different causes of OC.

Survey results showed that less than 13% of the respondents correctly selected one of the signs and symptoms of OC, while 72.2% answered that they did not know the signs of OC. Statistical analysis indicated that being a Saudi male, younger age group and a higher educational level were more significantly related to awareness of OC signs than non-saudi females, older age group and lower educational level, respectively ($P<0.05$).

Few respondents could identify correctly the common sites of OC occurrence i.e. the tongue and the floor of the mouth (9.2% and 11.6% respectively), while 73.2% of the respondents answered that they did not know. Statistical results also indicated better knowledge among the males, highly educated groups, lower salary income as compared to female lower educated group as higher salary income respectively ($P<0.05$).

Almost 22.3% of the respondents indicated correctly the age group of 40 years and older as the cohort in whom OC commonly occur, but still the majority (67.1%) indicated that they didn't know the common age for OC.

Although one third of respondents correctly identified the male sex, as the common sex of OC patients, a considerable proportion (62.8%) didn't know that answer. The correct answer was significantly higher among males, singles, highly educated and healthy respondents ($P<.05$).

Results showed that the respondents were not only ill informed but also misinformed about OC treatment modalities. Of the total sample surveyed, 31.3% answered incorrectly chemotherapy was the treatment and only a few indicated correctly surgery and radiotherapy (29% and 26.7%, respectively). The majority did not know the treatment of OC (56.7%). The higher socio-economic group (higher education and salary income) was the more knowledgeable group in this regard.

The most important sources for the participants' oral health informations were, in descending order: television books and journals as well as the dentist; the reported frequencies being 53.5%,

45.6% and 43.5%, respectively. About, 7.8% of the sample reported that they do not have previous oral health information. People with higher socio-economic status (working people with higher education level and salary income) indicated that reading books and journals was the major source of their information. Although few (7.8%) reported that primary care centers are their sources of oral health information, but the majority of them were from the low economic group.

Regarding the participant's attitude, little more than half believed in the importance of regular check ups for oral mucosal changes compared to teeth check up (77.8%). The socio-demographic data of the participants had no statistically significant effect on the people's attitudes in the regard.

When asked about the curability of early OC the majority of respondents (90.9%) agreed that early OC is curable. However, participants who were smokers believed more than non-smokers on the curability of the disease ($P<.05$).

Most of the respondents (84.7%) agreed that examination and management of suspicious lesions should be provided by a dentist. Statistical analysis indicated that males and smokers believed in physicians more than dentists in this regard ($P<.05$).

The result regarding the prevalence of regular dental check up visits among the participants indicated that only 17.1% of the total sample visited a dentist regularly every 6 months. The greatest proportion fell in the oldest group as well as those with higher socio-economic status (working people with high education and salary income).

There were 1.5% in the female group and 2.8% in the male group who reported that they have undergone OC examination; in comparison to 11.8% of the females who have had parallel breast cancer examination and 3.6% of the males who had any cancer check up examination. Non Saudi participants showed significantly higher proportion of OC examination than Saudi participants ($P<.05$).

## DISCUSSION

Oral cancer (OC) accounts for about 2.2% of all cancers diagnosed in Saudi Arabia.[16] However, frequency of OC seen in Jizan province, Saudi Arabia would place this region among one of the highest incidence areas for the tumor in the world.[19] To improve the prognosis for cancer patients, several countries place emphasis on public education, screening and on the fact that early diagnosis can save lives.[21] The current study was performed to assess a group of Jeddah's public, the second city of Saudi Arabia concerning their knowledge, opinions and practices regarding OC with the ultimate aim of increasing early detection and prevention of this type of cancers. The results showed that there was extensive misinformation and a general lack of knowledge among Jeddah's adult population reflected by the high proportions of "don't know" answers and incorrect responses.

Many of the participants (48%) had never heard of OC existence, and most of the others did not know very much about it (etiology and clinical presentations and treatment). This lack of knowledge could result in simple ignorance of an early sign of OC that, in turn, could have serious consequences.

These findings are consistent with other researches conducted earlier among adults in U.K.[5] as well as U.S.A.[12-15] For example, Warnakulasuriya *et al.*[5] reported that OC was one of the least heard cancers by the Great Britain public with only 56% of the participants being aware, whereas 96% had heard of skin cancer, 98% lung cancer and 86% cervical cancer. Furthermore, several surveys

conducted among U.S. adults indicated that the general public was generally ill informed about OC risk factors, signs and symptoms, presentation and early detection.[12-15] Therefore, it should not be a surprise, that most adults in Jeddah have relatively little accurate knowledge about these cancers. Possibly, because relatively little attention has been given to educate the general public about OC worldwide. Although no local similar study has been conducted for comparison, but it was reported earlier that, Saudis were un-informed or misinformed in several areas related to cancer in general (etiology, presentation, diagnosis and treatment).[21]

Oral cancer can be prevented by avoiding risk factors such as tobacco and alcohol use as well as over exposure to sunlight in the case of lip cancer.[22] Although, the danger of smoking was recognized by many (64.4%), the association between alcohol and smokeless tobacco with OC was known to a lesser percentage 53.5% and 54.4% respectively, which was in agreement with others findings.[5,21] Shamma, is a traditional form of chewable tobacco used as a quid and retained in the buccal cavity. It is commonly used in southern Saudi Arabia and Yemen especially among women.[18] It is claimed to be the cause of high frequency of OC among Jizan population by several investigators.[23-26] Thus extensive public education about the role of smokeless tobacco i.e. Shamma, in the etiology of OC is essential to reduce its incidence significantly in this population.

Interestingly in the present study, the greater awareness of OC was among males and higher educational group than among the lower educational groups. Factors relative to the gender differences in the current results agreed with Almas *et al.,*[27] report, which indicated that knowledge and awareness about dental health and disease conditions were better in male subjects than females, which was a reflection of the better educational level of male subjects compared to females. Moreover, the educational level factor was in accordance with Ibrahim *et al.,*[28] Bedikian and Thompson [21] findings.

Regarding the sources of oral health information, results of the present study indicated that TV, books and journals as well as dentists in descending order were the primary sources of oral health information. This is in agreement with a local study, which reported that about 60.7% of Jeddah population claimed that TV was the main source of their oral health information followed by dentist (46.7%).[29] Whereas more recently, a study in Riyadh, the capital of Saudi Arabia, reported that the dentist (48%) was the primary source of oral health information followed by media (32%).[30] These differences could be related to a higher level of awareness of the population of Riyadh being the capital of Saudi Arabia, regarding professional information sources. Overall, this information should alert those involved in oral health promotion to the importance of accurate information on the T.V. media and to utilize it since all the members of the family watch it. Furthermore, dentists and other care providers should be instrumental in increasing the public awareness of OC.

Regarding the attitude, it is interesting that many participants tended to seek care regarding suspicious oral lesions from their dentist. This is in contrast to the American adults, who seek the physician's advice.[15] Possible explanation is that health insurance frequently does not cover dental treatment in most foreign countries. In addition, some thought that patients are afraid of going to a dentist and tend to associate such dental visits with pain.[15]

Fortunately, the majority of the participants (91.1%) believed that early

OC is curable. This is in contrast to Saudi's earlier attitude where only 50% believed cancer can be cured reflecting the widespread belief that a diagnosis of cancer is like a death sentence for most people.[21] However, when relating to smoking habit, smokers believed more than non-smokers on the curability of the disease, which unfortunately may discourage them to discontinue the habit.

Finally, to determine awareness of the general public to the importance of screening as a tool for early diagnosis of OC, the prevalence of check up visits and previous OC examination in the respondents was evaluated. It revealed that, another gap existed between the public behavior and awareness regarding the crucial role of regular dental check ups, in preventing and detecting dental disease. This was reflected obviously by the low percentage (17.1%) of subjects who visited the dentist regularly every six months. This is also in agreement with previous reports of Jeddah public, where only 15% reported visiting dentists for regular check up every six months.[29] The barrier in attendance and the logistic problems behind this should be analyzed and solved.

Oral malignant lesions are likely candidates for early detection during oral and medical examination.[9] Yet the current survey showed that overall, only 2.1% of the participants reported that they had been examined for OC. Horwitz *et al.* [15] recorded similarly disappointing results in USA adults, where only 28% reported ever having had OC examination. While the American Cancer Society recommends that people 40 years of age or older or anyone of any age who is at high risk should have an annual OC examination and a three year examination for the general population aged 20 to 30 years.[31] Sadly, earlier research indicated that only a small fraction of Saudis are aware of the potential benefit of general cancer screening procedures such as regular physical check up and self examination.[21]

Health care providers can reduce morbidity and mortality from OC by identifying high risk patients, providing them with cancer screening examination and educating them about the importance of check up.

## RECOMMENDATIONS

- Comprehensive public education about OC should be provided in dental offices and clinics as well as in mass media of all types.
- More clinicians should include comprehensive OC screening in their oral examination.
- Further research is required to explore objective information on the lack of knowledge and positive attitude of Jeddah adults, as well as dentist, regarding the regular OC check up examinations.
- Best approaches should be planned to inform the public on OC prevention and early detection in their work places or day clusters.

## ACKNOWLEDGMENT

I wish to express my deep appreciation to Prof. Mahasen Farghali and Dr. Jamila Farsi for their guidance in the questionnaire preparation and Prof. Hala Amer, and Dr. Najat Farsi for critical revision of the manuscript.

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