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Oral Cancer: Awareness and Knowledge among dental patients in Riyadh

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Corresponding Author:	Sadeq Ali Al-Maweri, BDS, MSc, PhD Al-Farabi College for Dentistry and Nursing Riyadh, SAUDI ARABIA
Corresponding Author Secondary Information:	
Corresponding Author's Institution:	Al-Farabi College for Dentistry and Nursing
Corresponding Author's Secondary Institution:	
First Author:	Sadeq Ali Al-Maweri, BDS, MSc, PhD
First Author Secondary Information:	
Order of Authors:	Sadeq Ali Al-Maweri, BDS, MSc, PhD Walid Ahmed Al-Soneidar, BDS Esam Dhaifullah, PhD Esam Saleh Halboub, PhD Bassel Tarakji, PhD
Order of Authors Secondary Information:	
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Abstract:	<p>Background: More than 50% of oral cancer cases are diagnosed at advanced stages. Public knowledge about oral cancer can help in prevention and early detection of the disease. The aim of the present study was to assess the levels of awareness and knowledge about signs and risk factors of oral cancer among dental patients in Saudi Arabia.</p> <p>Methods: A self-administered questionnaire was used to collect information from 1410 randomly selected patients attending dental departments within public hospitals in Riyadh, Saudi Arabia. The collected data were analyzed using SPSS software. The significance level was set at $P < 0.05$.</p> <p>Results: The study revealed that only 62.4% were aware of oral cancer. Some 68.2% and 56.5%, respectively, were able to correctly identify tobacco and alcohol as risk factors. More than two thirds of subjects had no knowledge about any signs of oral cancer. Participants with less than university education were significantly less aware, and had much less knowledge, of the signs and risk factors of oral cancer.</p> <p>Conclusions: The Knowledge regarding oral cancer among Saudi dental patients is alarmingly low. Interventions to improve public knowledge about oral cancer and attitudes towards early diagnosis and treatment are urgently indicated.</p>
Suggested Reviewers:	alexandrina Dumitrescu alexandrina_l_dumitrescu@yahoo.co.uk The author has published many similar studies in this Journal Shine Chang, PhD Director of Cancer Prevention Research Training Program ShineChang@MDAnderson.org She is an expert in the field

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Abstract

Background: More than 50% of oral cancer cases are diagnosed at advanced stages. Public knowledge about oral cancer can help in prevention and early detection of the disease. The aim of the present study was to assess the levels of awareness and knowledge about signs and risk factors of oral cancer among dental patients in Saudi Arabia.

Methods: A self-administered questionnaire was used to collect information from 1410 randomly selected patients attending dental departments within public hospitals in Riyadh, Saudi Arabia. The collected data were analyzed using SPSS software. The significance level was set at $P < 0.05$.

Results: The study revealed that only 62.4% were aware of oral cancer. Some 68.2% and 56.5%, respectively, were able to correctly identify tobacco and alcohol as risk factors. More than two thirds of subjects had no knowledge about any signs of oral cancer. Participants with lower than university education were significantly less aware, and had much less knowledge, of the signs and risk factors of oral cancer.

Conclusions: The Knowledge regarding oral cancer among Saudi dental patients is alarmingly low. Interventions to improve public knowledge about oral cancer and attitudes towards early diagnosis and treatment are urgently indicated.

Keywords: oral cancer; Knowledge; dental patients; Saudi

Introduction

Oral cancer is a significant health problem, being the sixth most common cause of cancer-related deaths worldwide [1]. More than 500,000 patients are estimated to have oral cancer globally with approximately 389,000 new cases per annum [2]. Notably, the incidence and mortality rates as a result of oral cancer are higher in developing countries as compared to the developed world [1, 3].

The etiology of oral cancer is multi-factorial, but the most important risk factors are: tobacco use, excess alcohol consumption, betel quid chewing, and combinations of these habits [4]. Human Papilloma Virus (HPV) infection is implicated mainly in oropharyngeal cancer, and ultraviolet light is the main factor in lip cancer [5]. Other factors possibly implicated in mouth and oropharyngeal cancers include immunosuppression [6] and familial and genetic factors [7].

The cancer has a strong association with smoking and alcohol [4, 8]. The relative risk of oral cancer increases between 10- and 15-fold in smokers [8]. Unfortunately, smoking is a very common habit among young males in Saudi Arabia; according to previous research, the prevalence of smoking is 21% among the general adult population and 25% among University students, which is considered one of the highest figures in the world [9]. Additionally, Saudi Arabia has a large expatriate community particularly people of Southeast Asian origin, in which social habits such as areca nut chewing are common. Subsequently, these factors will contribute to an increased incidence of oral cancer in Saudi Arabia in future years [9, 10].

Oral cancer has been reported to have one of the lowest 5-year survival rates of all cancers, probably because most lesions are not diagnosed in the early stages [11, 12]. Generally, survival rates decline with the advancement of the stage of the disease in which TNM stages I and II have comparatively higher survival rates than stages III and IV [13].

Many patients who have undergone successful treatment for oral cancer may have to face some functional and cosmetic impairment that includes difficulties in eating, swallowing, speaking and disfigurement. This may have significant adverse impact on their quality of life [14]. The detection of oral cancer at an early stage of the disease is the most effective means of improving survival as well as the morbidity and disfigurement [15].

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Published literature has indicated that lack of public awareness about signs and risk factors of oral cancer can contribute to the late diagnosis and poor prognosis [15, 16]. Any increase in the understanding about signs, symptoms and early detection of oral cancer among the general population can thus help in prevention, early detection and better prognosis of the disease. In Saudi Arabia, data regarding public knowledge of oral cancer is scarce [17, 18]. Therefore, the purpose of the present study was to assess the levels of public awareness, knowledge about the signs and risk factors of oral cancer among hospital attending dental patients in Riyadh, Saudi Arabia.

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4 **Methods:**
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7 This cross-sectional study was conducted between January and March 2015. Around 1750 questionnaires
8 were sent to dental patients attending dental department of 5 public hospitals in Riyadh, Saudi Arabia
9 (350 questionnaires for each hospital). These hospitals were chosen because they were located in different
10 parts of Riyadh and because they had a high patient load. All patients aged 15 year and over were
11 randomly selected for the study. The sample size was calculated based on the proportion of awareness
12 among adults in Yemen of 75% at 95% confidence level with an absolute precision of 5%, giving a
13 minimum sample size of 228 [20]. The study was approved by the Al-Farabi College Institutional Ethical
14 Review Board, and informed consents were obtained from the participants.
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23 We used a self-administered questionnaire adapted from a pretested questionnaire that has been applied in
24 similar studies [19, 20]. A pilot study was conducted on a random sample of patients (n = 30) to ensure
25 clarity and practicability of the questions. No major amendments were required following feedback from
26 the pilot. Participation in the study was completely voluntary, and participants were informed that they
27 could withdraw at any time and that their responses would be anonymous and treated confidentially.
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33 The self-administered questionnaire consisted of 13 close-ended questions divided into 4 groups
34 with relevant questions to ascertain socio-demographic factors (age, gender and education background),
35 habits, awareness of oral cancer, and knowledge of signs/symptoms and risk factors for oral cancer.
36 Responses to knowledge questions were assessed as correct or incorrect and knowledge scores were
37 calculated for each participant to obtain the mean total knowledge on oral cancer. The education level of
38 the participants was grouped as illiterate (no school education), elementary (maximum up to grade 9),
39 high school (up to grade 12) and college/university.
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47 The participants were asked to complete the questionnaires in the waiting rooms of the dental offices
48 while waiting for their appointments. Illiterate participants were interviewed face to face by one of the
49 investigators.
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54 SPSS (IBM^R Statistical Package for Social Studies) version 20.0 was used for data entry and analyses. A
55 knowledge score was calculated for each participant based on the answers to the 13 knowledge items. A
56 total knowledge score out of 13 was computed for each participant with possible scores ranging from 0-
57 13. The quantitative data were presented as means and standard deviations. The Chi-square test, Student *t*-
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test and one way analysis of variance (ANOVA) were used to compare groups. P value < 0.05 was considered statistically significant.

Results

Out of the 1750 distributed questionnaires, 1500 were returned for a response rate of 86%. Of these, 1410 had been properly completed and were analyzed. The sample comprised 56.6% females and 43.4% males. The mean age of the participants was 33.82 years \pm 13.15 (range: 15-90) with 73.1% in the 15 to 39-year-old age group. More than one third of the participants had college/university education and 27.3% were smokers (Table 1).

Table 2 shows awareness of oral cancer with different demographic characters. Only 62.4% of the participants had heard of oral cancer, with no significant differences between genders ($P > 0.05$). It was noted that the general awareness was significantly higher among participants with the highest level of education and those with greater frequency of dental visits ($P < 0.01$). Young participants showed higher rates of oral cancer awareness as compared to the old age groups, though the difference was not statistically significant. Among patients who were aware of oral cancer, around 37.6% gained the information from the public media (TV, Radio and the Internet), 20.0% from their dentist and 10% from the physicians (Figure 1).

Around two thirds of the participants (69%) believed that oral cancer is preventable, and 57.2% believed that it is treatable. There was, however, certain misconception about oral cancer, as a considerable portion of the participants (21.3%) believed that oral cancer is a contagious disease. When asked about the risk factors of oral cancer, the most recognized risk factors were smoking (68.2%), smokeless tobacco (56.9) and alcohol (56.5). Only 34.4% identified older age as a risk factor, and only 22.1% could identify sun exposure as a risk factor in case of lip cancer (Table 3).

The participants showed poor knowledge regarding the early signs and symptoms of oral cancer. Of total, only one quarter of the participants could identify white and red patches as clinical signs of oral cancer. The most recognized clinical presentations were lump (44%), red (26.1%) and white patches (25.9%) (Table 3).

The total mean score of knowledge was 5.23 \pm 3.03 (Range=0-12). A significant correlation was noted between the level of knowledge and level of education and regular dental visits ($P < 0.01$). However, no significant association ($P > 0.05$) was noted between level of knowledge and age, gender and smoking habits (Table 4)

Discussion

More than 50% of oral cancer cases are diagnosed at advanced stages. Knowledge regarding risk factors and early signs of oral cancer among the public can help in prevention and early detection of the disease. We conducted a large multicenter survey to examine awareness and knowledge regarding signs and risk factors of oral cancer among patients attending dental departments of public hospitals in Riyadh, Saudi Arabia.

The present study highlights a very alarming lack of knowledge on oral cancer, with only 62.4% of subjects were aware of oral cancer. Although this rate of awareness is slightly higher than that reported among comparable hospital based populations in Australia (52.3%) [21], Jordan (45.6%) [16] and the UK (56%) [22], this figure is much lower than that reported in India (91.2%) [19], Sri Lanka (95%) [23] Yemen (71.5%) [20] and the USA (84%) [24]. Notably, higher levels of oral awareness have been reported from countries with a known high prevalence of oral cancer such as India and Sri Lanka. The high prevalence of oral cancer in these countries and the displayed educational materials about this disease such as posters, pamphlets, etc. in public hospitals to which the public has free access are contributory to this high level of awareness [23].

The results of this study reflect a previous study in the UK by Warankulsurya et al. [22] which found that the public awareness of oral cancer in the UK was very poor with only 56% of the participants being aware, in comparison to lung cancer of which the awareness was very high (97%). This emphasizes the importance of initiating intensive public education programs targeting the public to increase levels of oral cancer knowledge.

Public media such as Radio, T.V. and the Internet plays a pivotal role in educating people about oral cancer [16, 22, 25]. The present study confirmed this finding by being the most reported common source of information about oral cancer. A recent Malaysian study has assessed the impact of promoting oral cancer awareness of the public using a mass media campaign; the results showed a significant increase in the public awareness regarding general knowledge and etiology factors of the disease [25]. Disappointingly, only one fifth of subjects in this study knew about oral cancer from their dentists. This finding is in agreement with several awareness surveys that reported that the role played by dentists in education their patients is secondary [16, 20-22, 26]. Limited patient attendance or accessibility to dental care personnel and deficiencies in knowledge among dental professional may explain why dentist are playing a lesser influential role than mass media in conveying oral cancer awareness among the public. In a survey among general dental practitioners, Horowitz et al., [27] found only 25% of dentists strongly agreed that they were adequately trained in providing oral cancer examinations. This highlights the fact

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4 that improvement of the knowledge of dentists on oral cancer would increase the likelihood that a dentist
5 will be a leading source of passing knowledge to their patients.
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11 Public Knowledge of the risk factors is one of the most important parameters for successful prevention of
12 oral cancer in the community. In the present study, the knowledge regarding risk factors was rather poor;
13 although around two thirds of the subjects identified tobacco use as a risk factor, only 56% knew that
14 alcohol consumption is also a potential risk factor. These findings are in line with most studies, which
15 found greater public awareness of tobacco as a risk factor compared with alcohol consumption [16, 20-23,
16 28]. The greater awareness of tobacco as a risk factor could be attributed to anti-tobacco media campaigns
17 explaining the adverse effects of smoking. In the present study around one third of Saudi subjects were
18 tobacco smokers, and, surprisingly, although the majority of smokers (62.3%) knew that smoking was a
19 risk factor for oral cancer, they continued to smoke. Similarly, majority of smoking adults from Italy [28]
20 and more than half of smoking adults from Kuwait [29] were aware of the correlation between heavy
21 smoking and oral cancer but, nevertheless, continued to smoke. Patients knew that smoking and heavy
22 alcohol consumption were risk factors for oral cancer, but did not change behavior. Further investigations
23 have to be carried out to find out the reasons behind the continued practice of high-risk habits, despite
24 knowledge. Health education should be carried out to bridge the gap between the knowledge and
25 awareness of oral cancer and their risk habits and the practice of these habits. It has been reported that
26 health education could result in a significant proportion of subjects giving up their tobacco habits [19].
27 Also, dental health professionals need to focus on changing their patients' behavior, in addition to
28 educating patients about oral cancer risk factors.
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43 Identification of oral cancer early signs and symptoms is of paramount importance for early detection of
44 the disease and thus early treatment and good prognosis. In the present study, unfortunately, the
45 knowledge pertaining clinical presentation of oral cancer was remarkably unsatisfactory, with only less
46 than quarter of the participants were aware of different presentation of cancer in the mouth. These
47 findings are consistent with most of the published studies, which reported lack of public knowledge
48 regarding early signs of oral cancer [20-25]. Hence raising awareness and educating the public on the
49 early signs of cancers is mandatory for early diagnosis and treatment of the disease.
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56 Several socioeconomic factors may affect the public oral cancer knowledge and awareness. In the present
57 study, we found a significant association between the level of knowledge and education and frequency of
58 dental visits ($P < 0.05$). Participants educated at university level or higher displayed a greater level of
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4 knowledge about oral cancer. This finding is supported by previous studies, which have documented that
5 knowledge is proportional to the education level of respondents [16, 19, 23-25]. Also, participants who
6 visited their dentists regularly have shown significantly better level of knowledge. This again emphasizes
7 the important role that dentists can play in passing knowledge about oral cancer to their patients. Younger
8 age group showed relatively greater level of knowledge, which can be attributed to their higher education
9 level (as noted above) and to their wider exposures to mass media such as internet, TV and social
10 networks.
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17 **Strength and limitations:** The sample size and high response rate of this study can be considered among
18 its strong points compared with previous studies. However, the study had several limitations, and the
19 results need to be interpreted with caution. One limitation is the fact that this study was primarily a
20 hospital-based survey; as such, our results may not be generalizable to the whole population in Saudi
21 Arabia. Well-designed population-based studies are therefore needed to assess, in greater detail, public
22 knowledge about oral cancer. Another limitation is that in attempting to assess the participants'
23 knowledge by the use of the close-ended questions, such questions could have been considered "leading
24 questions" in that the most of questions were typically asked so that "yes" was the correct answer. Since
25 the appropriate answer was embedded in the question, some respondents probably tended to agree with
26 statements rather than disagree, which would artificially overestimated level of knowledge. Nevertheless,
27 despite these limitations, this study provides valuable baseline information on the level of oral cancer
28 awareness and knowledge among Saudi dental patients.
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41 In summary, we investigated on the awareness and knowledge on oral cancer among dental patients in
42 Riyadh. The study revealed an alarming lack of knowledge regarding risk factors and early signs of oral
43 cancer which requires to be readily addressed. Public health promotion, education initiatives and
44 awareness campaigns utilizing mass media should be implemented to improve levels of knowledge about
45 oral cancer nationwide.
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51 **Acknowledgments**

52 The authors would like to express their warm gratitude to all subjects, who agreed to participate in the
53 study. We would like also to thank all hospitals staff or their support and help in conducting this survey.
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Table 1: Demographic data of the subjects ($n = 1410$)

Variable	N	%
Gender		
Male	612	43.4
Female	798	56.6
Age groups (years)		
< 40 years	1031	73.1
≥ 40 years	379	26.9
Education level		
Elementary	479	34.0
Secondary	411	29.1
University	520	36.9
Smoking		
Yes	379	27.3
No	1007	72.7

Table 2: Awareness of OC with different demographic variables

Variable	Awareness		P-Value
	Yes (%)	No (%)	
Gender			0.265
Male	64.1	35.9	
Female	61.1	38.8	
Age groups			
< 40	63.5	36.5	0.152
>40	59.4	40.6	
Education level			
Elementary	51.6	48.4	0.000
Secondary	58.4	41.6	
University	75.6	24.4	
Dental Visits			0.000
<3times	52	48	
3-5times	67.4	32.6	
>5times	67.4	32.6	
Smoking			
Yes	62.3	37.7	0.99
No	62.3	37.7	

OC: oral cancer

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7 **Table 3: Responses to questions regarding knowledge**
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Variable	Yes (%)	No (%)	Don't know (%)
General knowledge			
OC is preventable	69.0	7.7	23.3
OC can be treated	57.2	10.1	32.7
OC is contagious	21.3	37.9	40.8
Risk factors for OC			
Old age	34.4	20.6	45.0
Smoking	68.2	9.9	21.8
Smokeless tobacco use	56.9	11.6	31.4
Alcohol drinking	56.5	13.8	29.8
Sun exposure	22.1	30.6	47.3
Signs of OC			
Non-healing ulcer	31.9	15.6	52.5
Red patch	26.1	18.1	55.8
White patch	25.9	17.8	56.3
Lump	44.2	9.1	46.7

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7 **Table 4: Association between levels of Knowledge of oral**
8 **cancer and demographic factors**

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Variable	Mean	SD	P-Value
Gender			0.368*
Male	5.32	2.958	
Female	5.17	3.086	
Age groups			0.259*
< 40	5.29	2.952	
>40	5.08	3.231	
Education level			0.000**
Elementary	4.52	2.883	
Secondary	5.16	2.874	
University	5.96	3.123	
Dental Visits			0.000**
<3times	4.72	2.908	
3-5times	5.32	3.000	
>5times	5.58	3.090	
Smoking			0.709*
Yes	5.17	3.056	
No	5.24	3.021	

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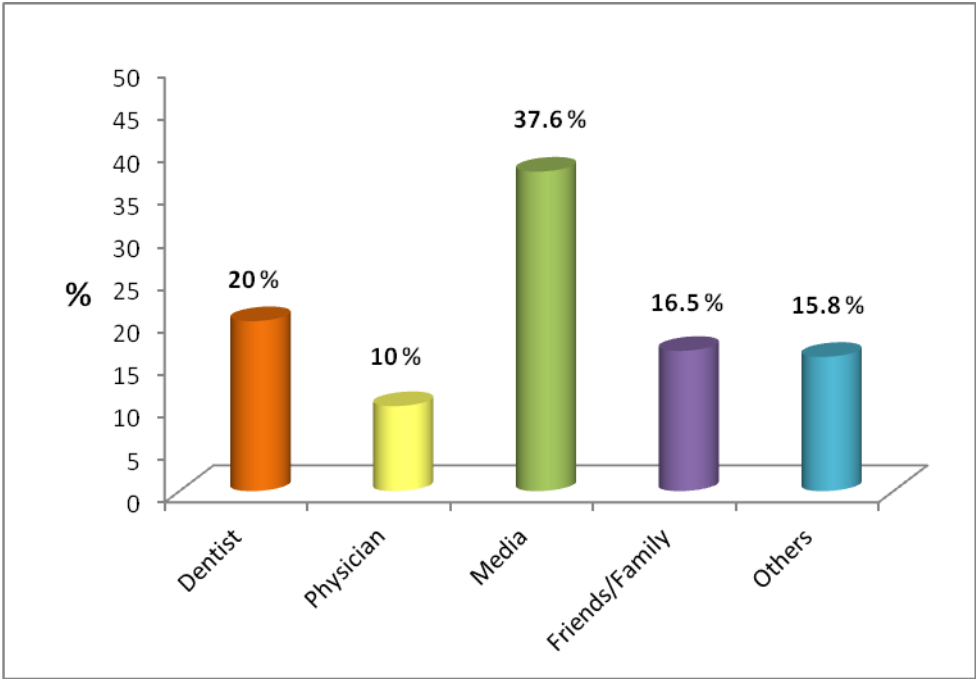


Figure1: Source of information about oral cancer.

Oral Cancer: Awareness and Knowledge among dental patients in Riyadh

Authors names: Sadeq Ali Al-Maweri¹, Walid Ahmed Al-Soneidar² Esam Dhaifullah³, Esam Saleh Halboub⁴, Bassel Tarakji⁵

¹Assistant Professor, Department of Oral and Maxillofacial Sciences, AL-Farabi colleges of Dentistry and nursing, Riyadh, Saudi; Department of Oral Medicine and Diagnosis, Faculty of Dentistry, Sana'a University, Yemen. Email: sadali05@hotmail.com

²Graduate Research Assistant, Department of Health Policy and Administration, Washington State University, Pullman, USA · Email: walid.al-soneidar@wsu.edu

³Assistant Professor, Department of Periodontology, Faculty of Dentistry, Sana`a University, Sana`a, Yemen; Assistant Professor Department of Oral and Maxillofacial Sciences, Al-Farabi Colleges, Riyadh, Saudi. Email: dhaifullah02@gmail.com

⁴Assistant Professor, Department of Oral Medicine and Diagnosis, Faculty of Dentistry, Sana`a University, Yemen. Email: mhelboub@gmail.com

⁵ Professor and Head Department of Oral and Maxillofacial Sciences, AL-Farabi Colleges of Dentistry and Nursing, Riyadh, Saudi Email: denpol@yahoo.co.uk

Corresponding author: Dr. Sadeq Ali Al-Maweri, Al-Farabi Colleges for Dentistry and Nursing, 11691 Riyadh, Saudi. Email: sadali05@hotmail.com