

Questionnaire-based study related to the level of awareness and knowledge about oral cancer among Turkish patients with dental diseases in 2018

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Original Article

Abstract

BACKGROUND AND AIM: In this study, the awareness and knowledge level of oral cancer (OC) was assessed among a group of patients with dental problems in Turkey.

METHODS: 509 individuals at the ages of ≥ 18 years, who attended to School of Dentistry of the Ordu University, Ordu, Turkey, were included in the study. To assess the respondents' awareness and knowledge of OC, a self-administered questionnaire with 30 items was used. Some socio-demographic characteristics and smoking/alcohol habits of respondents were also asked. The data were analyzed by calculating percentages, frequency distributions, and chi-square test to assess significance. The statistical significance level was set at $P < 0.050$.

RESULTS: In total, 61.9% of the respondents were informed of OC with no significant differences by sex ($P = 0.660$). Only 31.6% of the respondents reported knowledge on OC. The respondents who claimed to have some knowledge about OC, identified non-healing ulcer as early sign and smoking as risk factor as 35.4% and 48.4%, respectively.

CONCLUSION: The present study indicated an overall insufficiency of awareness and knowledge concerning OC among the subjects among a group of Turkish people with dental problems. It is recommended that effective health education programs be emphasized for the recognition of OC in Turkey.

KEYWORDS: Oral Cancer; Awareness; Knowledge; Early Diagnosis; Risk Factors

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Oral cancer (OC) is a malignant neoplasia which arises on the lip or oral cavity and is an important public health problem.¹ The etiology of OC is dependent on a number of factors, the most important ones being tobacco, heavy alcohol consumption, and betel-quinid usage.² Heavy alcohol consumption, defined as more than one drink per-day for women and more than two drinks per-day for men, has been associated to an increased risk of several cancers, including cancers of the female breast, oral cavity, pharynx, larynx, esophagus, liver, colon, and rectum.³

Although early detection is easier with examining mouth due to its accessibility, most lesions are not diagnosed until advanced stages.⁴ When a localized tumor is diagnosed in a patient, a 5-year survival rate of 83.7% is expected, whereas this rate is reduced to 38.5% in case of the tumor metastasis.⁵ In 2012, approximately 300, 400 new cases and 145400 deaths due to oral cavity and lip cancer were recorded worldwide.⁶ The most important factors in reducing OC morbidity and mortality are early detection and treatment.⁷ Thus, increase in the awareness of risks, early signs, and

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symptoms of OC among the general population can help in prevention, prognosis, and cure of the disease. An overall insufficiency of awareness and knowledge concerning OC has been reported in previous studies,⁸⁻¹⁰ which is one of the causes for the delayed diagnosis. Therefore, the aim in the current study was to assess the awareness and knowledge level concerning OC among a group of Turkish people with dental problems, and a questionnaire on OC was distributed among these patients.

Methods

Between January and February 2018, a self-administered questionnaire was distributed among the patients with dental problems at the ages of ≥ 18 years, attending School of Dentistry of Ordu University, Ordu, Turkey.

Informed, signed consent form was obtained from all respondents, and participation in the study was voluntary. The study was performed according to the principles of the Declaration of Helsinki (DoH). Questionnaires from previous studies¹¹⁻¹⁴ were employed to design the questionnaire used in this study. The questionnaire consisted of 30 items in four sections; the first section included demographic information and habits including age, sex, education levels, smoking status, and alcohol consumption as well as their frequency (5 items); the second section included awareness and general knowledge on OC (10 items); the third section included early symptoms of OC (5 items), and the last section contained risk factors of OC (10 items). In the third and fourth sections, the respondents were asked to select one answer from three options: yes, no, or no idea. The questions in these sections were answered by the subjects who claimed to have knowledge about OC.

The self-administered questionnaires were provided to patients with dental problems and they were asked to answer the questions before their appointment time. One of the authors was readily available when

respondents needed to ask a question.

All statistical analyses were performed using SPSS for Windows software (version 15, SPSS Inc., Chicago, IL, USA). Frequencies and percentages were calculated to describe the prevalence of awareness on OC, associated risk factors, and early symptoms. The responses regarding awareness and knowledge were cross-tabulated with sex and education level. The chi-square test was employed to evaluate the statistical significance of the results. The level of statistical significance was set at 0.050 for all analyses.

Results

To evaluate the level of public awareness and knowledge on OC, a total of 530 questionnaires were distributed. Of these, 21 were excluded due to incompleteness of all the questions and 509 questionnaires were then available for analysis. The study population consisted 287 (56.4%) and 222 (43.6%) women and men, respectively (Table 1). The average age of the subjects was 33.24 ± 13.07 (range: 18-92) years.

Table 1. Socio-demographic information and smoking/alcohol habits of the respondents (n = 509)

Variable	n (%)
Sex	
Female	287 (56.4)
Male	222 (43.6)
Education	
Less than a diploma	32 (6.3)
Primary school	108 (21.2)
Secondary school	157 (30.8)
Bachelor's degree	198 (38.9)
Post-graduate degree	14 (2.8)
Smoking	
Yes	123 (24.2)
Ex-smoker	13 (2.5)
No	373 (73.3)
Alcohol use	
Heavy alcohol consumption	9 (1.8)
Ex-alcohol consumption	3 (0.6)
Less frequent/never	497 (97.6)

First, the overall awareness of OC was checked among the participants, and 61.9% of the respondents were informed about OC, with no significant differences by sex as the proportions were 62.7% and 60.8% for the

women and men, respectively ($P = 0.660$). Only 161 (31.6%) of the respondents reported that they had knowledge on OC. The groups with education levels of bachelor's and post-graduate degree had a significantly better awareness of OC in comparison to other groups ($P < 0.001$). Table 2 shows the distribution of OC awareness in terms of the education level.

In the current study, over half of the respondents [283 (55.6%)] indicated that they would have consulted a dentist if they had doubted that either they or their relatives might had OC; the rest of them indicated they would have consulted a physician. After evaluating the knowledge of OC, only 49 (9.6%) of the respondents reported that they had practiced oral self-examination, and 62 (12.2%) of them reported an OC examination by physicians or dentists within last year. Over three quarters of the respondents 395 (77.6%) believed that early diagnosis increased the success rate of treatment (Table 3).

Knowledge on the early symptoms of OC was assessed through questions 16-20. Generally, the respondents showed poor knowledge and chose the option of no idea on the early symptoms of OC. Only 35.4% of them who claimed to have some knowledge about OC identified non-healing ulcer as early symptoms. Overall, the proportion of the recognized clinical symptoms ranged from 14.3% to 35.4% (Figure 1).

The subjects who claimed to have some knowledge about OC, identified smoking and genetic inheritance as risk factors as 48.4% and 29.2%, respectively. Regarding non-risk factors, only 42.9% of the participants knew that intimate contact with patients with OC was not a potential risk of OC (Figure 2). Analyzing the awareness and knowledge of OC among the subjects taking into account their smoking habits revealed that 59.4% of the 123 smoker respondents were informed of OC and only 39.8% of them thought smoking was a risk factor.

Table 2. Distribution of responses in terms of education

Education			
Question 1: Have you ever heard of oral (mouth, tongue, or lip) cancer?	Yes [n (%)]	No [n (%)]	
None	16 (50.0)*	16 (50.0)*	
Primary school	48 (44.4)*	60 (55.6)*	
Secondary school	90 (57.3)**	67 (42.7)**	
Bachelor's degree	150 (75.8)#	48 (24.2)#	
Post-graduate degree	11 (78.6)#	3 (21.4)#	
Total	315 (61.9)	194 (38.1)	
P	< 0.001	< 0.001	
Question 2: Do you have any knowledge about oral cancer?	Yes [n (%)]	A little [n (%)]	No [n (%)]
None	0 (0)*	11 (34.4)*	21 (65.6)*
Primary school	3 (2.8)**	9 (8.3)**	96 (88.9)**
Secondary school	3 (1.9)**	42 (26.8)#	112 (71.3)*
Bachelor's degree	12 (6.1)#	77 (38.9)*	109 (55.0)#
Post-graduate degree	2 (14.3)‡	2 (14.3)‡	10 (71.4)*
Total	20 (3.9)	141 (27.7)	348 (68.4)
P	< 0.001	< 0.001	< 0.001
Question 3: If you have any information, where did you learn/acquire it?	Mass media [n (%)]	People [n (%)]	Dentists-physicians [n (%)]
None	6 (54.6)*	5 (45.4)*	0 (0)*
Primary school	4 (33.3)**	7 (58.4)**	1 (8.3)**
Secondary school	28 (62.2)#	12 (26.7)#	5 (11.1)#
Bachelor's degree	69 (77.6)‡	14 (15.7)‡	6 (6.7)**
Post-graduate degree	2 (50.0)*	1 (25.0)#	1 (25.0)‡
Total	109 (67.7)	39 (24.2)	13 (8.1)
P	< 0.001	< 0.001	< 0.001

The differences between the groups in the same column, means followed by the same symbol are not significantly different at $P = 0.050$.

Table 3. Distribution of “correct” responses in terms of education

Question	Less than diploma [n (%)]	Primary school [n (%)]	Secondary school [n (%)]	Bachelor’s degree [n (%)]	Post graduate degree [n (%)]	Total [n (%)]	P
Do you think oral cancer is a contagious disease?	10 (31.2)*	16 (14.8)**	29 (18.5)**	82 (41.4)#	7 (50.0)¥	144 (28.3)	< 0.001
Do you think oral cancer is more likely to occur at older age?	25 (78.1)*	46 (42.6)**	67 (42.7)**	131 (66.2)#	6 (42.9)**	275 (54.0)	0.035
Do you think early diagnosis increases the success rate of treatment?	22 (68.8)*	82 (75.9)**	113 (72.0)**	166 (83.8)#	12 (85.7)#	395 (77.6)	< 0.001
Do you think untreated oral cancer cases have a high mortality rate?	24 (75.0)*	64 (59.3)**	69 (44.0)#	118 (59.6)**	8 (57.1)**	283 (55.6)	< 0.001

The differences between the groups in the same column, means followed by the same symbol are not significantly different at P = 0.050.

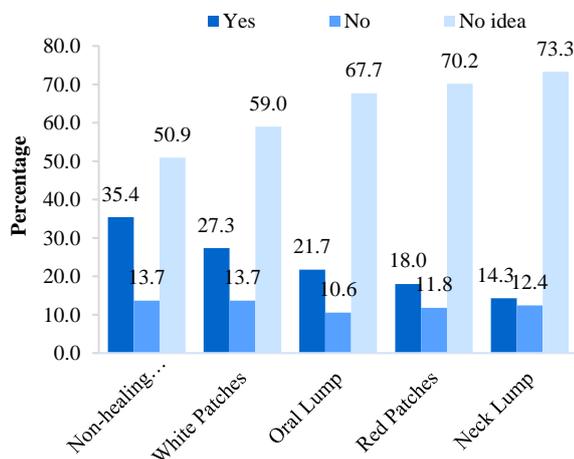


Figure 1. Distribution of responses to the early symptoms of oral cancer (OC) by respondents who claimed to have some knowledge about OC (n = 161)

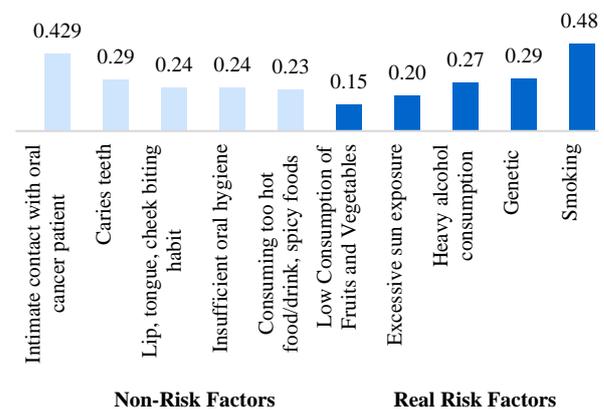


Figure 2. Distribution of “correct” responses to real risk and non-risk factors of oral cancer (OC) by respondents who claimed to have some knowledge about OC (n = 161)

Discussion

Lack of public awareness and knowledge about OC plays a significant role in lateness of diagnosis. Approximately, half of the subjects with OC are not diagnosed until advanced stages, which results in increased mortality, hence aggressive care is required.⁹ Earlier diagnosis greatly increases a patient’s chance of survival as mouth is very accessible for a clinical examination or even self-examination.⁸ Therefore, increasing the degree of awareness and knowledge of OC among public, dentists, and physicians is fundamental to recognize and detect this cancer early.

In the present study, more than half of the respondents indicated that they were informed of OC but were not aware of early symptoms and risk factors. Previously, several other studies have been carried out to investigate public awareness and knowledge of OC.^{8,9,15-19} In the current study, 61.9% of the respondents reported being aware of OC; this finding was similar to that of the study conducted by Al-Maweri et al. in Riyadh.¹⁵ This rate of awareness is higher than what was reported in other countries as 52.3% in Australia,¹² 56.0% in Great Britain,⁸ 45.6% in Jordan,¹⁶ and 39.3% in Turkey⁹. However,

particularly higher levels of OC awareness have been reported in countries such as India (91.2%),¹⁷ Sri Lanka (95.0%),¹⁸ and Malaysia (84.2%)¹⁹ with a known high prevalence of OC. This indicates that the incidence of OC correlates with awareness, but it is important to increase public awareness before a great portion of people suffer from it.

In the present study, a significant association between OC awareness and the level of education was found. This study showed that the groups with a bachelor's and/or post-graduate degree had better awareness, similar to the studies carried out in India¹⁷ and in Malaysia.²⁰

Mass media such as television, radio, newspapers, and the Internet play a significant role in training people about OC.^{15,16} Furthermore, compared with other methods, television advertising was the main method of an OC awareness campaign.²¹ In the current study, most of the subjects were informed of OC via mass media. These results support previous findings reporting that mass media was a common source of information about OC.^{9,13,19,22} Mass media advertisements informing about OC prevention would increase the awareness on this topic.^{9,23} Accordingly, McLeod et al.²⁴ reported that an internet search for "oral cancer" in November 2003 revealed over 32000 pages, the same search in July 2018 revealed about 201000000 pages, indicating the increase in awareness over time thanks to advertisements over various media lines.

Dentists play an important role, particularly in early diagnosis of OC. In a study by Cruz et al.,²⁵ most respondents did not think of dentists as the most proper health care professionals to examine OC, and most of them declared that they would consult a physician in case of doubt about OC. However, in the current study, over half the participants reported that they would consult a dentist if they had doubted about OC. According to the opinion of the authors of the present study, the respondents may have been affected in their choice of a dentist

since this study was performed in a school of dentistry, similar to the result of the study by Peker and Alkurt.⁹

Oral self-examination is an efficient method for the early detection of OC. Due to the complex anatomy of the oral cavity, self-examination is more difficult than the breast/skin examination.²⁶ Monthly performed inspections in front of a mirror can help detecting some lesions of the oral cavity. For this examination, patients should move their tongue to both directions laterally, look at the bottom of their tongues, pull both cheeks laterally, and inspect carefully. Asymptomatic cancers can be detected by the patients themselves at the early stages through self-examination.²⁷ It is important to be well aware of the early symptoms of OC in order to perform self-examination of the oral cavity effectively.¹² In the study conducted by Ghani et al. in Malaysia, 75.0% of the respondents in the age group of 40-59 years old were aware of oral self-examination.¹⁹ In the current study, only 9.6% of the respondents reported having practiced self-examination for OC. Since OC is most commonly prevalent in South and South East Asian countries,¹⁹ it can be claimed that awareness of self-examination is higher in these areas. In another study assessing the level of coverage by the popular press on the OC issue, 18 newspapers and 32 magazines were identified and analyzed regarding OC. Only 14.0% suggested clinical OC examinations by a health care professional, and 8.0% advised the use of self-examination.²⁸ Public health education programs must be carried out for identification of early symptoms of OC and facilitate early diagnosis by self-examination.

The American Cancer Society (ACS) advises a cancer-related oral cavity examination for every individual aged 20 years and over, as examination in every 3 years from ages 20 to 39 years, and once a year after the age of 40 years.²⁹ At present, the principal test for OC is a comprehensive clinical examination that includes a visual

and tactile examination of the mouth, full protrusion of the tongue with the aid of a gauze wipe, and palpation of the tongue, floor of the mouth, and lymph nodes in the neck.¹⁰ In previous studies, the rates of experiencing an OC examination within the last year were respectively 29.0%³⁰ and 30.1%¹⁰. In the present study, lower rate of experience of an OC examination within last year may be related to the lack of awareness or experience of a periodic health examination.

In this study, most of the respondents (77.6%) believed that the detection of OC in early stages could increase the success of treatment. However, this rate is slightly lower than reported by Warnakulasuriya et al.⁸ and Monteiro et al.³¹ as 94.0% and 91.2%, respectively.

In several studies, the level of awareness and knowledge about early symptoms of OC were evaluated and they were correctly identified with the rates of 6.8%-53.2%, 6.5%-47.2%, and 17.5%-86.2% for white patches, red patches, and non-healing ulcers, respectively.^{9,10,12,13,32} In the present study, only one-third of the participants who claimed to have some knowledge about OC knew that presence of non-healing ulcer was an early symptom. The lack of public knowledge on early symptoms of OC leads to late clinical presentation and consequently, reduced survival rates. One of the major factors in the late diagnosis has been the patient's own delay in referring to hospital

after the onset of symptoms.³³ Therefore, enhancing awareness and training the general population on the early symptoms of cancers is imperative for early diagnosis and treatment of the disease.

Avoiding risk factors is effective in preventing OC. Unfortunately, the study group in this investigation showed inadequate knowledge regarding risk factors. Based on the investigations in previous studies, respondents could most correctly identify smoking and/or smokeless tobacco use as risk factors for OC,^{9,10,31,32} which was similar to this study, although they were identified with lower rates among the patients in the current study.

Conclusion

It was observed that there is a general deficiency in awareness and knowledge concerning OC among patients with dental problems. This study suggests that effective health education programs be emphasized in order for the recognition of OC in Turkey. After implementing OC training programs, further studies with larger sample sizes are highly recommended to be conducted in Turkey.

Conflict of Interests

Authors have no conflict of interest.

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References

1. Rivera C. Essentials of oral cancer. *Int J Clin Exp Pathol* 2015; 8(9): 11884-94.
2. Warnakulasuriya S. Global epidemiology of oral and oropharyngeal cancer. *Oral Oncol* 2009; 45(4-5): 309-16.
3. Cao Y, Giovannucci EL. Alcohol as a risk factor for cancer. *Semin Oncol Nurs* 2016; 32(3): 325-31.
4. Jafari A, Najafi S, Moradi F, Kharazifard M, Khani M. Delay in the diagnosis and treatment of oral cancer. *J Dent (Shiraz)* 2013; 14(3): 146-50.
5. Howlader N, Noone AM, Krapcho M, Miller D, Bishop K, Altekruse SF, et al. SEER cancer statistics review, 1975-2013. Bethesda, MD: National Cancer Institute; 2016.
6. Torre LA, Bray F, Siegel RL, Ferlay J, Lortet-Tieulent J, Jemal A. Global cancer statistics, 2012. *CA Cancer J Clin* 2015; 65(2): 87-108.
7. Shiboski CH, Shiboski SC, Silverman S Jr. Trends in oral cancer rates in the United States, 1973-1996. *Community Dent Oral Epidemiol* 2000; 28(4): 249-56.
8. Warnakulasuriya KA, Harris CK, Scarrott DM, Watt R, Gelbier S, Peters TJ, et al. An alarming lack of public awareness towards oral cancer. *Br Dent J* 1999; 187(6): 319-22.

9. Peker I, Alkurt MT. Public awareness level of oral cancer in a group of dental patients. *J Contemp Dent Pract* 2010; 11(2): 049-56.
10. Tomar SL, Logan HL. Florida adults' oral cancer knowledge and examination experiences. *J Public Health Dent* 2005; 65(4): 221-30.
11. Srikanth RB, Doshi D, Padma Reddy M, Kulkarni S, Gaffar A, Ram R, V. Oral cancer awareness and knowledge among dental patients in South India. *J Craniomaxillofac Surg* 2012; 40(6): 521-4.
12. Formosa J, Jenner R, Nguyen-Thi MD, Stephens C, Wilson C, Ariyawardana A. Awareness and knowledge of oral cancer and potentially malignant oral disorders among dental patients in far North Queensland, Australia. *Asian Pac J Cancer Prev* 2015; 16(10): 4429-34.
13. Al-Maweri SA, Addas A, Tarakji B, Abbas A, Al-Shamiri HM, Alaizari NA, et al. Public awareness and knowledge of oral cancer in Yemen. *Asian Pac J Cancer Prev* 2014; 15(24): 10861-5.
14. Rogers SN, Hunter R, Lowe D. Awareness of oral cancer in the Mersey region. *Br J Oral Maxillofac Surg* 2011; 49(3): 176-81.
15. Al-Maweri SA, Al-Soneidar WA, Dhaifullah E, Halboub ES, Tarakji B. Oral cancer: Awareness and knowledge among dental patients in Riyadh. *J Cancer Educ* 2017; 32(2): 308-13.
16. Hassona Y, Scully C, Abu Ghosh M, Khoury Z, Jarrar S, Sawair F. Mouth cancer awareness and beliefs among dental patients. *Int Dent J* 2015; 65(1): 15-21.
17. Agrawal M, Pandey S, Jain S, Maitin S. Oral cancer awareness of the general public in Gorakhpur city, India. *Asian Pac J Cancer Prev* 2012; 13(10): 5195-9.
18. Ariyawardana A, Vithanaarachchi N. Awareness of oral cancer and precancer among patients attending a hospital in Sri Lanka. *Asian Pac J Cancer Prev* 2005; 6(1): 58-61.
19. Ghani WM, Doss JG, Jamaluddin M, Kamaruzaman D, Zain RB. Oral cancer awareness and its determinants among a selected Malaysian population. *Asian Pac J Cancer Prev* 2013; 14(3): 1957-63.
20. Kassim NK, Adnan MM, Wern CW, Ru LZ, Hanafi MH, Yusoff A. Awareness and knowledge of oral cancer among siamese ethnic group in Tumpat, Kelantan. *Malays J Med Sci* 2017; 24(4): 47-54.
21. Eadie D, MacKintosh AM, MacAskill S, Brown A. Development and evaluation of an early detection intervention for mouth cancer using a mass media approach. *Br J Cancer* 2009; 101(Suppl 2): S73-S79.
22. Tadbir AA, Ebrahimi H, Pourshahidi S, Zeraatkar M. Evaluation of levels of knowledge about etiology and symptoms of oral cancer in southern Iran. *Asian Pac J Cancer Prev* 2013; 14(4): 2217-20.
23. Petti S, Scully C. Oral cancer knowledge and awareness: Primary and secondary effects of an information leaflet. *Oral Oncol* 2007; 43(4): 408-15.
24. McLeod NM, Saeed NR, Ali EA. Oral cancer: Delays in referral and diagnosis persist. *Br Dent J* 2005; 198(11): 681-4.
25. Cruz GD, Shulman LC, Kumar JV, Salazar CR. The cultural and social context of oral and pharyngeal cancer risk and control among Hispanics in New York. *J Health Care Poor Underserved* 2007; 18(4): 833-46.
26. Guneri P, Epstein JB. Late stage diagnosis of oral cancer: Components and possible solutions. *Oral Oncol* 2014; 50(12): 1131-6.
27. Peacock ZS, Pogrel MA, Schmidt BL. Exploring the reasons for delay in treatment of oral cancer. *J Am Dent Assoc* 2008; 139(10): 1346-52.
28. Canto MT, Kawaguchi Y, Horowitz AM. Coverage and quality of oral cancer information in the popular press: 1987-98. *J Public Health Dent* 1998; 58(3): 241-7.
29. Smith RA, Cokkinides V, von Eschenbach AC, Levin B, Cohen C, Runowicz CD, et al. American Cancer Society guidelines for the early detection of cancer. *CA: A cancer journal for clinicians* 2002; 52(1): 8-22.
30. Patton LL, Agans R, Elter JR, Southerland JH, Strauss RP, Kalsbeek WD. Oral cancer knowledge and examination experiences among North Carolina adults. *J Public Health Dent* 2004; 64(3): 173-80.
31. Monteiro LS, Warnakulasuriya S, Cadilhe S, Sousa D, Trancoso PF, Antunes L, et al. Oral cancer awareness and knowledge among residents in the Oporto city, Portugal. *J Invest Clin Dent* 2016; 7(3): 294-303.
32. West R, Alkhatib MN, McNeill A, Bedi R. Awareness of mouth cancer in Great Britain. *Br Dent J* 2006; 200(3): 167-9, discussion.
33. Hollows P, McAndrew PG, Perini MG. Delays in the referral and treatment of oral squamous cell carcinoma. *Br Dent J* 2000; 188(5): 262-5.