

# Knowledge and Perceptions of Cypriots about Oral Cancer

## SUMMARY

**Introduction:** Oral cancer is the sixth most common cancer in the world. Cyprus recorded 312 new cases between 1998 and 2009, which represent a significant percentage of all cancers reported in Cyprus.

**Purpose:** This study aimed to evaluate the knowledge and perceptions of group of Cypriots about oral cancer.

**Methods:** A convenience sample of 234 people was selected from those who came to mobile clinics in 4 major cities of Cyprus and received free dental examinations. The study used a self-completion questionnaire with questions about socio-demographics, habits (smoking, alcohol consumption, visits to the dentist), plus knowledge and perceptions of oral cancer.

**Results:** 53% (n= 124) of the respondents had heard about oral cancer, 77.4% (n= 181) knew that smoking is a risk factor for oral cancer but only 59.4% (n= 139) identified alcohol, and 38.9% (n= 91) solar irradiation as other risk factors. Although 68.4% (n= 160) responded that changing the habits of everyday life can prevent oral cancer, 38.9% (n= 91) erroneously thought that oral cancer is hereditary. In addition, only 25.6% (n= 60) mentioned that in case of a wound/lesion of their oral mucosa they would seek treatment from a dentist, while only 12% (n= 28) reported that they have been screened for oral cancer by their dentist. Those with higher education, as well as non-smokers, were more likely to have knowledge about oral cancer, while those who reported that they often visited the dentist had more chances of receiving preventive screening ( $p < 0.05$ ).

**Conclusions:** The results demonstrate a lack of adequate information in Cyprus, especially among less educated people, highlighting the need for an integrated policy planning, aiming at informing the public and health professionals about oral cancer and, at the same time, the need for introduce preventive examination within the context of the routine dental examination.

**Keywords:** Oral Cancer; Cyprus

Chrystala Charalambous<sup>1</sup>,  
Georgios Pantelas<sup>2</sup>, Athanasios Nikolentzos<sup>3</sup>,  
Mamas Theodorou<sup>3</sup>

<sup>1</sup>Ministry of Health, Dental Services, Cyprus

<sup>2</sup>Maxillofacial Clinic, Nicosia General Hospital  
European University, Medical School, Cyprus

<sup>3</sup>Open University of Cyprus

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## Introduction

Mouth and pharyngeal cancer (from here onwards referred to as oral cancer) grouped together are the sixth most common cancer in the world. In 2008, 283 861 new cases of oral cancer were recorded worldwide<sup>24</sup>, while the reported incidence ranged from 1 to 10 cases per 100 000 population. In exceptional cases the incidence maybe higher, such as in India, where the relevant indicator is 12.6 per 100 000 population due to everyday habits, such as betel quid/

tobacco chewing<sup>16</sup>. In Cyprus, 311 new cases were reported for 1998-2009 period, of which 57 concerned the lips, 92 the tongue, 79 the oral cavity, 56 the salivary glands, 14 the tonsils and 13 the oropharynx. On average 32 new cases are diagnosed every year and the annual incidence is 3.8 cases per 100,000 population (the population of Cyprus is 850,000 inhabitants). From the 79 cancer cases relevant to the oral cavity, 49 involved men and 30 women (1.6 to 1 ratio). In addition, after histological assessment, 59 of the 79 cases were diagnosed as Squamous Cell Carcinoma<sup>12</sup>.

The main risk factors for oral cancer are smoking, alcohol consumption and Human Papilloma Viruses (HPV)<sup>25</sup>.

Oral cancer is categorized as an early cancer that can be detected by clinical examination. Nevertheless, the majority of the cases are diagnosed at an advanced stage, likely due to the ignorance of the population concerning the symptoms, but also because preventive screening for oral cancer is frequently not included in the routine dental examination.

The aim of this study was to evaluate knowledge and perceptions of a group of Cypriots with regards to oral cancer. Within this aim there is a hope that findings will contribute to shaping strategic planning for the prevention of oral cancer and its early diagnosis.

## Methods

The study was conducted as part of a prevention campaign for oral cancer, which was organized by the Dental Services of the Ministry of Health in December 2012. The campaign was carried out by dentists working for the Ministry of Health, who were responsible for function of several mobile dental units at central points within the 4 major cities of Cyprus. The campaign also included free dental examinations for those who participated. Prior to their oral examination, they were all asked to fill in an anonymous questionnaire, specially created for the needs of the study.

The questionnaire was previously tested in a pilot study on 20 people. It included 21 questions, a number of which were relevant to the socio-demographic characteristics of the participants, while others were on the topic of their habitual routine (visits to the dentist, smoking, alcohol consumption), their knowledge regarding the aetiology and the epidemiological characteristics of oral cancer, their perceptions about oral cancer (if it can be prevented and if changing personal habits can reduce the risk of it occurring), and in case they knew about oral cancer, how did they receive the relevant information. Also there was a question whether or not their dentist performed a screening examination for oral cancer and whether or not they had carried-out self-examination. Finally, there was a question on "what do you do if you detect some kind of soreness in the mouth?" A convenient sample was used in this study; it consisted of 234 people, including citizens from the 4 major cities of Cyprus, namely Nicosia, Limassol, Larnaca and Paphos, who visited the mobile units for consultation. The statistical analysis of data (t-test,  $\chi^2$ ) was carried out with SPSS20.

Ethical approval for the study was given by the Cyprus Bioethical Committee. Participants were informed by the dentists for the purpose of the study and that all

information was going to be anonymous, and they signed a consent form.

## Results

Table 1 presents socio-demographics of the participants and their distribution by province, sex, marital status, nationality, age, level of education and living area (urban or rural).

Table 1. Socio-demographic data of the participants

		n	%
Province	Nicosia	75	32
	Limassol	49	21
	Larnaca	50	21
	Paphos	60	26
Sex	Men	128	55
	Women	103	44
	Not replied	3	1
Marital status	Married	151	65
	Single	40	17
	Divorced	19	8
	Widower	15	6
	In a relationship	6	3
	Not replied	3	1
Citizenship	Cypriot	199	86
	EU Country Citizen	17	7
	Other	10	4
	Not replied	6	3
Area of residence	Urban	184	79
	Rural	48	20
	Not replied	2	1
Age	18-44	88	38
	45-64	97	41
	65-74	37	16
	75 +	10	4
	Not replied	2	1
Level of education	Elementary graduates	30	12
	Junior High School Graduates	42	18
	High School Graduates	56	24
	Higher Education Graduates	97	42
	Not replied	9	4

With regard to habits, 44.4% (n=104) of the participants stated that their main reason for visiting a dentist was the need for emergency dental treatment, while 29.5% (n= 69) reported that they visit a dentist once a year and 20.9% (n= 49) that they visit a dentist every 6 months. Men (58.7% n=75) and those who had received only elementary school education (85.7% n=26) reported

that they visited a dentist more often for emergency reasons when compared with women (33.7% n=35) and those with university education (37.5% n=36), which was statistically significant ( $p<0.05$ ).

Exactly 33.8% (n=79) of the participants identified themselves as smokers, of whom 13.7% (n=32) reported consumption of fewer than 10 cigarettes a day, 12.8% (n=30) 11 to 25 cigarettes per day, and 7.3% (n=17) more than 25 cigarettes per day. The highest percentages of smokers were recorded among males (46.5% males n=60) as opposed to 25.8% (n=32) of women ( $p<0.05$ ). In fact, 19.3% (n=25) of men smoked 11-25 cigarettes per day in comparison with only 7.2% (n=7) of women. In addition, 13.2% of men (n=17) reported smoking more than 25 cigarettes per day, as opposed to 2.1% (n=2) of women ( $p<0.05$ ).

With regard to alcohol consumption, 22.6% (n=53) of the sample reported that they drank alcohol only a few times a week and 4.3% (n=10) consumed alcohol daily. Again, the study has recorded a statistical significant difference between males and females ( $p<0.05$ ) with 44.3% (n=57) of men consuming alcohol a few times a week or daily, compared to only 14% (n=15) of women.

With regards to their knowledge about oral cancer (Tab. 2), 53% (n=124) were familiar with the concept of oral cancer and their primary information sources were, in descending order: their dentist, the internet, their personal physician and newspapers and magazines. Although half of the participants reported that they were familiar with oral cancer, only 32.5% (n=76) knew about screening for oral cancer and even less of them (12% n=28) had some

kind of preventive examination by their dentist or carried out a self-examination (12.8% n=30).

Table 2. Sources of information about oral cancer

Sources of information	N	%
Dentist	25	6.6
Internet	23	6.1
Personal physician/GP	21	9.0
Newspapers and magazines	21	9.0
More than one sources	19	8.1
Friends	15	6.4
TOTAL	124	53.0

Regarding the knowledge and perceptions of the participants about prevention and early diagnosis of oral cancer, the study obtained the following results: as far as the question "do you think mouth cancer is a matter of luck and we can't prevent it" is concerned, 1 out of 4 participants (25.6% n= 60) agreed, while 1 in 5 mentioned they had no knowledge of the subject matter (20.9% n= 49). As far as the question "do you believe that early detection can increase the chances of treatment" is concerned, 70.5% of the participants (n=165) responded positively. Similarly, positive responses of participants 68.4% (n=160) were given to the question "do you think changing the everyday habits can reduce the risk of developing oral cancer".

Table 3. Effect of independent variables on knowledge of and attitudes to oral cancer

	Have you heard of oral cancer (%)	Have you heard about screening for oral cancer (%)	Have you ever had screening for oral cancer (%)	Mouth cancer is a matter of luck (%)	Early detection increases the chances of treatment (%)	Changing habits decreases the chance of having oral cancer (%)
Sex						
-Men	60 (47.2)					
-Women	69 (67)*					
Level of education						
-Elementary graduates	3 (8.9)	5 (15.5)		15 (51.3)	19 (62.5)	19 (62.5)
-University graduates	63 (65.5)*	42 (43.2)*		19 (19.1)*	84 (86.2)*	76 (78.7)*
Frequency of dental visits						
-Urgent	27 (26.2)	19 (18.0)	5 (5.2)			
-Every 6 months	32 (66.0)*	23 (46.9)*	13 (27.4)*			
Smoking						
-Yes	12 (14.6)					27 (33.9)
-No	88 (57.0)*					128(82.5)*

\* -  $p<0.05$

Table 3 presents the various socio-demographic characteristics and habits associated with the knowledge and perceptions of the participants. More specifically, people with high level of education, such as university graduates, had better knowledge of oral cancer and screening than the ones with a low level of education, (i.e. elementary school only), and they acknowledged the fact that oral cancer is not a matter of bad luck, and that it is highly associated with everyday habits, such as smoking and consuming alcohol.

Similarly, frequent visits to the dentist have been positively associated with screening for oral cancer. That is why participants who visited the dentist every 6 months had received screening at a higher rate than those who argued that they visited the dentist only for emergencies (27.4%  $n=13$  vs. 8.2%  $n=8$ ). Finally, participants who identified themselves as smokers seemed not to have good knowledge and perceptions of and about oral cancer. As a result, smokers believed, in a smaller proportion than non-smokers, that a change in their habits could reduce the likelihood of developing oral cancer (54.5%  $n=43$  vs. 82.5%  $n=128$ ), which was statistically significant ( $p < 0.05$ ), and were less informed about oral cancer compared with non-smokers (23.5%  $n=19$  vs. 57%  $n=88$ ). When participants were asked about the epidemiological characteristics of oral cancer, 23.9% ( $n=56$ ) suggested that it occurs more frequently in males, 36.3% ( $n=85$ ), that it most commonly has a higher incidence in people older than 40 years, and that the tongue is the most common site for oral cancer 29.1% ( $n=68$ ). As far as etiological factors of oral cancer were concerned, 77.4% ( $n=181$ ) of the participants associated oral cancer with smoking (non-smokers 92.2%  $n=143$  vs. smokers 67.9%  $n=54$ , and participants with a high level of education 87.5%  $n=85$  vs. 62.5%  $n=19$  with a low level education), 59.4% ( $n=139$ ) with alcohol consumption and 38.9% ( $n=91$ ) with solar irradiation. Contrary to the aforementioned, 38.9% ( $n=91$ ) erroneously considered that oral cancer is hereditary, in addition to 11.5% ( $n=27$ ) of the participants who attributed oral cancer to dental treatment. Finally 52.5% ( $n=122$ ) suggested that mouth inflammation is closely associated with oral cancer and 55.6% ( $n=130$ ) mentioned the lack of oral hygiene as a cause for oral cancer.

As far as the question "What do you do in case you identify a wound in your mouth" is concerned, the majority of the participants replied that they rinse their mouth with antiseptics (31.6%  $n=74$ ), some of them that they visited the dentist (25.6%  $n=60$ ), 15% ( $n=35$ ) of the participants that they did nothing, and 8.5% ( $n=20$ ) that they went to their General Medical Practitioner (GP) and 3.8% ( $n=9$ ) that they sought advice at a pharmacy ( $n=8$ ).

## Discussion

This study has presented important results regarding knowledge about oral cancer in Cyprus. The results suggest that many of those who took part do not often

visit dentists. 44.4% of the participants reported that their main reason for visiting a dentist was in case of a dental emergency. This percentage was virtually the same as that of the Euro barometer survey<sup>5</sup>, which indicated that 45% of the Cypriots only visited a dentist if they had a dental emergency, giving Cyprus a rather uncomfortable lead for this characteristic within the 27 Member States of the European Union. However, although 83% of the population is entitled to almost free of charge dental care at the Public dental services, only 10% make use of them. The majority of the population goes to a private dentist where they pay fee for service<sup>3</sup>.

Furthermore, another key finding of the current study is the fact that women visit dentists more frequently than men, which confirms the Statistics of the Dental Services (Ministry of Health), according to which, women in all age groups are more frequent users of dental services than men<sup>4</sup>.

The percentage of the participants who reported that they had some knowledge of oral cancer (53%) is significantly lower than the percentage found in similar studies in Malaysia 84.2%<sup>6</sup>, in the United Kingdom 80%<sup>1</sup>, and in New York 80.4%<sup>14</sup>, hence highlighting the significant lack of information resources in Cyprus.

It is also worth commenting on the sources of information from which the participants of the study considered were important for acquiring some kind of knowledge about oral cancer. Overall 20% of them reported a health professional, who according to the respondents could be either a dentist or a General Medical Practitioner (GMP), as the main source of their information. This highlights the need for more appropriate training among the GMPs in informing patients about the need of mouth cancer prevention and early detection. Furthermore, a study into the knowledge of medical students about oral cancer highlighted their lack of knowledge compared to dental students<sup>2</sup>. Another study found that GMPs knowledge on the same topic appears to be insufficient as well<sup>7</sup>. The aforementioned facts and figures indicate the need for introducing the subject of oral health education to all health professionals. On the other hand, one has to take into account the unwillingness or inability of dentists to inform patients about oral cancer, although in theory they have a sufficient level of knowledge to do so.

The percentage of people who had heard about the oral cancer screening was also lower in Cyprus (32.5%), compared to 84.2% in Malaysia<sup>6</sup>, and 80.4% in the UK<sup>14</sup>. This highlighted the lack of adequate information about oral cancer in Cyprus. Furthermore, a brief literature review showed that the percentage of patients who have received information from their dentist about the possibility of getting preventive screening in the context of early detection of oral cancer varied inconsistently. More specifically, a telephone survey carried out with a sample of 5544 adults in New York indicated that

35% of the respondents reported that they had received oral cancer screening<sup>14</sup>, while in another telephone survey in North Carolina, the relevant percentage was approximately 29%<sup>15</sup>. In both cases the percentages were clearly higher than the 12% found in the current study. Nevertheless, a recent study in Portugal with a sample of 602 patients who visited a specific hospital showed that only 1.7% of participants had benefited from preventive screening for oral cancer from their dentists<sup>13</sup>. This of course does not necessarily prove that dentists do not systematically examine their patients for oral cancer. It is worth mentioning that Awojobi et al<sup>1</sup> in a recent study, with a sample of 184 dental patients in the United Kingdom, found that 72% of respondents did not know whether or not the dentist had them screened for oral cancer, while 56% did not even know that dentists are trained to detect early signs and symptoms of oral cancer. Therefore, it is possible that dentists within a routine dental examination control their patients for early symptoms of oral cancer, but do not inform them. However, dentists have ethical obligation not only to inform their patients about oral cancer, but also to teach them how to self examine and track any suspicious signs and symptoms in the oral cavity. This requires constant training and skill enhancement of dentists. Studies in Germany<sup>9</sup> and Spain<sup>18</sup> showed positive effects of training dentists in screening for oral cancer and on patient information regarding its predisposing factors.

As far as the attitude of the participants towards prevention and their views on whether early detection can increase the chance of treatment, the findings of several studies vary. Findings from a study conducted in the London area showed that 94% of respondents had a positive view on the contribution of early diagnosis in the effectiveness of a possible treatment<sup>23</sup>, while in a similar study in Portugal<sup>13</sup> the rate was approximately 94.5%. Taking into account that in recent years there was a consistent flow of systematically organized campaigns on prevention and its importance in the early detection of chronic diseases such as cancer and cardiovascular diseases, which are the leading death causes in Cyprus<sup>21</sup>, this percentage is considered rather low. In addition, food for thought and for further self-reflection, although this is a convenient sample and may not be necessarily representative of all Cypriots, can cause the finding that 1 in 4 of the Cypriots who took part in this study believed that oral cancer is a matter of luck, which apart from the fact that it proves severe lack of knowledge, also implies a certain degree of unresponsiveness on behalf of the Cypriots concerned, and presents signs of unwillingness to change self-destructive habits, such as smoking and consuming alcohol.

In relation to the factors affecting knowledge and attitudes of the participants towards the prevention of oral cancer, as it was expected, there was a positive effect of the educational level, accurately mentioned in the study of

Grossman<sup>8</sup> "...the more educated are more knowledgeable about smoking or about what constitutes a healthy diet". Indeed, in a report published by the World Health Organization, the 2-way relationship between health and educational level is also very well documented<sup>19</sup>. Finally, West et al<sup>27</sup>, when presenting the findings of their study with a sample of 4198, also found that better educated people had higher rates of knowledge regarding oral cancer than people with lower levels of education.

Furthermore, the frequency of visits to dentists seems to affect both the knowledge about oral cancer and the possibility of receiving screening for oral cancer<sup>22</sup>. The importance and benefits of regular visits to the dentist are also part of the main findings of a study conducted by Watson et al<sup>26</sup>, according to whom, patients who have regular visits to a dentist were more likely to be diagnosed with oral cancer at an early stage, than the ones who did not. The current study confirmed a previous finding that Cypriots do not visit the dentist often, which is an important inhibitory factor of the early diagnosis of oral cancer. For better future results, as far as this factor is concerned, comprehensive strategic planning for the adoption of philosophy of preventive visits to the dentist, but also removing any economic obstacles or barriers to access, is needed.

Another interesting finding of this study lies in the poor knowledge of the participants about the epidemiological characteristics of oral cancer. More precisely, only 23.9% of the participants reported that men are most frequently diagnosed with oral cancer, 36.3% thought that there is a higher incidence for people over 40 years old, and 29.1% that it is often located on the tongue. These percentages are similar to those found in a similar study in Portugal, which respectively were 21.8%, 43.2% and 33.9%<sup>13</sup>.

The majority of participants identified smoking as a cause of oral cancer, a finding verified in several other surveys<sup>6,13,17,20,23,27</sup>, and is likely a consequence of the information campaigns carried out in Cyprus regarding the negative effects of smoking. In addition, non-smokers and also higher educated individuals acknowledged ( $p<0.05$ ) smoking as a risk factor of oral cancer at the highest rate ( $p<0.05$ ) when compared with smokers and people with low educational level. Similar rates were also reported by West et al<sup>27</sup>. The aforementioned finding calls on a greater need for additional information targeted at high-risk groups, such as smokers.

High rates of incorrect answers or statements about the risk factors of oral cancer are also of particular interest. The 38.9% of the participants who considered that oral cancer is hereditary disease is impressively high compared to just 2% of the Rogers study in Liverpool<sup>17</sup>. This demonstrated a lack of knowledge and confusion towards the causative factors of oral cancer and perhaps of all forms of cancer, and it may be linked with credibility

of information sources of the people, which in only 2 out of 5 cases were reported to be health professionals.

Finally, it is worth highlighting the reaction of participants when they identify a wound in their mouth. In these circumstances, 15% reported not doing anything and 31.6% chose to rinse with antiseptics, which are known not only to have no therapeutic value in cases of malignancy, but which can lead to significant delay in seeking medical advice. One out of 4 participants visited their dentist and 8.5% consulted their GMP, which in fact reveals the fertile ground a GMP can exploit and act in the prevention and early diagnosis of cancer. GMPs role is decisive. Indeed in one study<sup>10</sup>, it was found that 56% of the referrals at an oral maxillofacial clinic were from GMPs, and only 36% from dentists. In addition, Horowitz et al<sup>11</sup>, in a study carried out in Maryland, revealed greater their study's participants were more comfortable to discuss issues relating to oral cancer with their GMP than with their dentist.

## Conclusions

The results of this study highlight the lack of awareness of the examined Cypriots who took part in the study and particularly of low-educated individuals and smokers, who are a high-risk group for oral cancer. It confirms the need for an integrated planning and engagement of all authorities and professionals involved, such as doctors, dentists, nurses and the Ministry of Health. Their hands on engagement should aim to provide better information on oral cancer to the public, as well as to their fellow professionals, and to introduce preventive screening for oral cancer during routine dental examinations.

Hence in the context of the continuing education of GMPs and dentists, it is necessary to enrich their training with issues such as mouth cancer and the connection of oral hygiene with the good health in general. A report on a prevention protocol and on management of patients with oral cancer is an urgent necessity, as well as its careful implementation by the relevant health professionals. That is why, protocol prevention and management of patients with oral cancer and the accurate implementation by all health professionals is also considered a priority.

Dentists are in the forefront to prevent and provide early diagnosis of oral cancer, and as such, not only do they have to integrate screening for oral cancer within the context of a normal dental examination, but they also need to educate patients on how to examine themselves and be aware of any suspicious lesions and symptoms. This of course requires people to visit dentists regularly and systematically, something that is not encouraged due to the high costs when seeking care in the private sector. Information campaigns and raising awareness of citizens

on oral health issues should also be a priority of the Ministry of Health, even though the ongoing economic crisis in Cyprus has led to cuts in the Ministry's budget. Otherwise ignorance and lack of information on this issue will continue and the negative effects on the health of citizens will increase.

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Correspondence and request for offprints to:

ChrystalaCharalambous  
Ministry of Health, Dental Services  
Cyprus  
E-mail: chrysa@logos.cy.net