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Awareness of the Oral Cancer Risk Factors in People from Nothern-Eastern Region of Poland

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Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: The aim of the study presented in this paper is to investigate patient knowledge about the existence of oral cancer and the awareness of the impact of smoking on the development of this malignancy.
Methods: Patients managed at the Department of Maxillofacial and Plastic Surgery in Bialystok, Poland, voluntarily completed an anonymous questionnaire concerning this issue. The collected clinical material was stratified by the respondents' age and was subjected to statistical analysis.
Results: The percentage of smokers was 53.2% of the subjects from the Group 1, 54.8% in the Group 2 and 31,4% in the Group 3. A total of 64.3%, 65.5%, 84.9% of people from each group respectively believed that smoking could increase the risk of cancer. Unfortunately, only 44% of the subjects from Group 1 and slightly over 33% in the other age groups knew that cancer can also develop in the oral cavity. Most of respondents (90,3%) confirm that the widened knowledge about oral cancer would induce the change of their harmful habits.

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Conclusion: Our research clearly points the lack of appropriate patients' knowledge about oral cancer and smoking in most of the study population. Most of people are conscious about this problem and declare the willingness of expanding their knowledge in this field. Future health-promoting programmes and campaigns organised to prevent cancer should raise the society's awareness of the risks of smoking to oral health. The higher the patient awareness of a given issue, the greater the readiness to prevent the disease.

Keywords: Oral cancer; smoking; patient awareness of cancer.

1. INTRODUCTION

The harmful effects of smoking on the human body have been openly discussed for years. Cigarette smoke contains more than 4000 chemical compounds, of which more than 50 can contribute to the development of cancers [1]. These are not only lung cancer, so commonly targeted by various preventive campaigns, but also pharyngeal, oesophageal, laryngeal, urinary bladder, pancreatic, renal cell and oral cancers. Oral cancer is the eleventh most common cancer worldwide [2]. In Poland, oral cancer accounts for 2.5–4.0% of all new cases of cancer, which makes it the eighth most common cancer [3]. Unfortunately, the incidence of oral cancer among women and men, especially over the age of 50 years, is growing. Bad habits and environmental factors contribute to oral cancer in about 80% [3]. Examples of these bad habits and environmental factors include: Chronic irritation of the oral mucosa with cigarette smoke, high-proof alcohol, hot spices, poorly fitted dentures or radiation; other suspected causes are poor oral hygiene, inappropriate diet and oncogenic viruses (HPV) [4,5]. For instance, the risk of oral cancer in smokers increases seven-fold compared to non-smokers. According to the literature, between 45% and 93% of patients diagnosed with oral cancer are smokers [3]. The risk of oral and pharyngeal cancer among smokers increases irrespective of the number of cigarettes smoked a day with the amount of consumed alcohol [6,7].

It is assumed that cancer prevention starts from making patients aware of the risk factors, of the exposure to the risk factors and of the early detection of initial manifestations of cancer. The knowledge about these things among the general public is shaped by the mass media, literature and observation. Unfortunately, little attention is paid to oral cancer, which indeed affects a large percentage of cancer patients. This results in late presentation to specialists and, as a consequence, a low cure rate [5]. The very few studies to investigate patient awareness of oral cancer confirm the lack of knowledge about the risk factors, detection and treatment of oral cancer.

There is therefore a need for patient education about the carcinogenic factors, early diagnosis and appropriate treatment of oral cancer.

The purpose of our study is to evaluate patient knowledge about the existence of oral cancer and the awareness of the impact of smoking on its development.

2. MATERIALS AND METHODS

This is the cross-sectional study carried out in the Department of Maxillofacial and Plastic Surgery, University Teaching Hospital in Bialystok, Poland, between March 2011 and February 2012. The study material consisted in questionnaire data collected among 294 patients of the Department, excluding people treated for cancer. The questionnaire was constructed following the example used it similar publications and adapted to our patients [8,9,10]. It was a type of closed survey, with "yes", "no" or "don't know" answers, divided into 3 parts. First part included 5 questions about the respondents' basic details (age, sex, date of birth, address, education), social circumstances and living conditions (occupation, objective assessment of the conditions), second - 29 questions related to exposure to potential carcinogenic factors and 15 questions to assess the respondents' knowledge about oral cancer. The respondents were asked about how much and what kinds of alcohol they consumed, about tobacco and cigarette smoking, diet, oral hygiene, oral mucosal injuries caused by piercings or dentures. The respondents provided information on their lifestyle and knowledge about cancer shared with them by their dentists. Three questions concerned HPV and oral sex. When we examined patient understanding of oral cancer, we asked the

respondents about the occurrence of oral cancer and about its possible manifestations and prognosis. We checked patient knowledge about the methods of detection and treatment of cancer. The respondents estimated the impact of alcohol and smoking on the degree of development of oral cancer. They indicated the physician they would contact in case of suspected oral cancer and provided their sources of information about this issue. The last part of the questionnaire concerned the willingness to expand their knowledge about oral cancer. Moreover, respondents answered the question if the knowledge that they received taking part in this research will induce some change in their damaging habits. Patient awareness was determined by evaluating the correctness of the replies provided taking into account each of the parameters separately. The respondents over the age of 18 years completed the questionnaire unassisted, voluntarily and anonymously.

This study assessed smoking and understanding of oral cancer relative to the social status of the respondents (age, sex, education, occupation, social circumstances and living conditions).

The collected material was stratified into three age groups: 18–30 years (Group 1), 31–50 years (Group 2) and >50 years (Group 3). The results in each group were subjected to statistical analysis - Pearson's chi-squared test was used. A significance level of $p \leq 0.05$ was adopted.

The study scheme was approved by the Ethic Committee of Medical University of Bialystok.

3. RESULTS

The population of young subjects (Group 1) consisted of 124 respondents, of whom 40.3% were women and 59.7% were men. The distribution of the respondents in terms of the place of residence was well-balanced: 34.7% lived in large cities, 33.1% in small towns and 32.3% in villages. The respondents most often had secondary-level education (45.98%) and a permanent job (40.32%). Most of the respondents in this group rated their social circumstances and living conditions as good (57.3%). There were 66 smokers in this study group (53.3%). Smoking was declared by 42% of the women, 52.4% of whom smoked several cigarettes a day and 14.28% declared smoking one or more packets a day. Among the male respondents, as many as 60.9% declared smoking, 37.8% of whom smoked several cigarettes a day and the same percentage smoked one or more packets a day.

Smokers were most likely to come from small towns (39.4% of the smokers), most had secondary- level education (51.6%) (Diagram 1) and did not work or worked periodically. Very good, good and poor social circumstances and living conditions were declared by 6.1%, 63.7% and 30.3% of the smokers, respectively (Table 1).

In Group 1, 43.6% of the respondents did not know that cancer could develop in the oral cavity. The greatest percentage of the respondents that were unaware that cancer could develop in the oral cavity, i.e. 63,0%, were persons living in villages and small towns. Most of the respondents who had never heard about oral cancer were respondents with secondary-level education (44.4%). Persons with primary-level education accounted for 29.6% of the unaware respondents and those with higher education – 25.9%. It was also found to be statistically significant that lack of knowledge was mostly declared by patients who did not work or who worked periodically (38.9%). Unfortunately, as many as 24.1% of students were unaware of the risk of oral cancer. (Table 2).

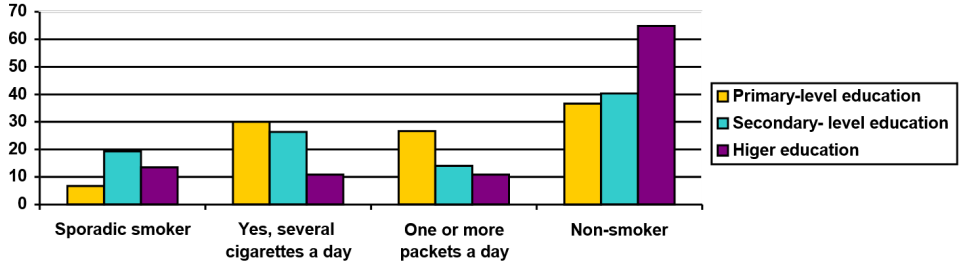

Diagram 1. Education vs smoking in the age group 18–30 years

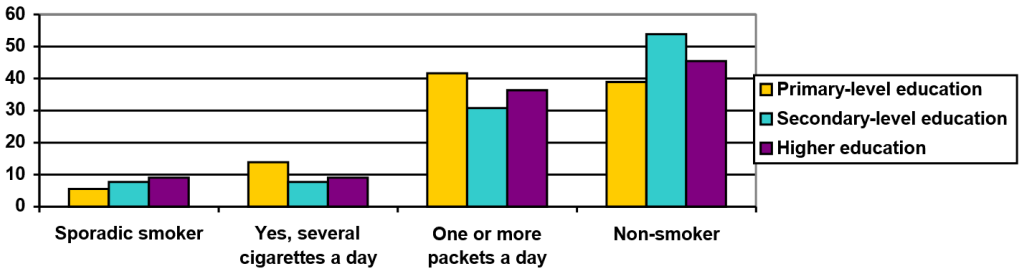

Diagram 2. Education vs smoking in the age group 30-50 years

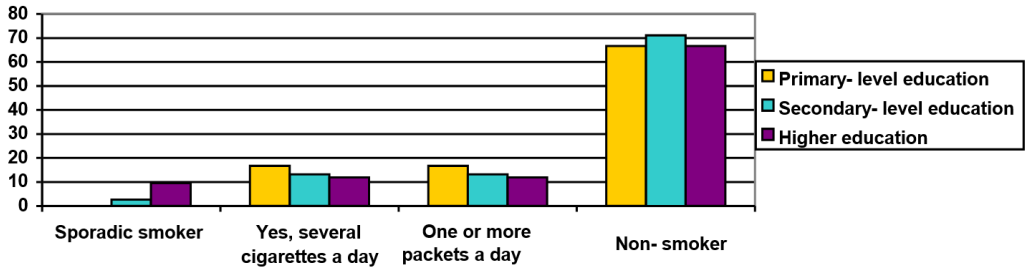

Diagram 3. Education vs smoking in the age group >50 years

Table 1. Demographic structure of smokers (in percent)

	Group 1	Group 2	Group 3
Smoke ?			
yes	53,2	54,8	31,4
no	46,8	45,2	68,6
	Percentage of respondents who smoke		
Sex			
men	60,8	54,8	18,6
woman	42	40,6	12,8
Place of residence			
large city	35,1	32,6	59,3
town	39,4	34,2	23,3
village	25,5	33,2	17,4
Education			
primary education	16,5	47,8	37,2
secondary deegree	51,5	26,1	27,9
university degree	32	26,1	34,9
Job			
permnent job	20,1	60,9	33,3
work periodically	41,2	21,5	34,9
do not work	38,7	17,6	43
Living condition			
very good	6,1	16,7	8,1
good	63,6	47,8	40
poor	30,3	35,7	51,9

One third of the respondents in Group 1 believed that the prognosis in oral cancer was very good (31.5% of the total). As many as 91.1% of the respondents did not know the methods or tests used to detect oral cancer, only 8,9% of people knew some screening method. Most of the respondents believed that smoking could affect the development or oral cancer (86.3%) and 64.3% of the respondents had a suspicion that the number of cigarettes smoked might affect the risk of oral cancer. Those who declared ignorance about the

impact of smoking were mostly respondents living in large cities (41.2%) with primary-or secondary-level education (70.6%). Most respondents who claimed that smoking was not a carcinogenic factor declared poor social circumstances and living conditions (52.9%). Most of the respondents indicated their dentist as the first-contact physician in cases of suspected oral cancer (73.4%). A total of 65.3% said they would like to expand their knowledge about oral cancer. 95,3% of them declared that the knowledge about cancer would influence the change of their harmful habits. (Table 3).

Group 2 comprised 84 respondents, of whom 38.1% were women and 61.9% were men. Group 2 had a similar distribution of the place of residence as Group 2: 33.3% lived in large cities, 36.9% in small towns and 29.8% in villages. Most of the respondents had primary-or vocational-level education (42.9%). Only 26.2% had higher education. In this age group, 69.05% did not work or worked only periodically. Accordingly, 41.7% declared poor social circumstances and living conditions.

Smoking was declared by 54.8% of the respondents (46 subjects). Male smokers accounted for 54.8% of all the male respondents and female smokers for 40.6% of the female respondents. Among the male smokers, 66.7% smoked more than 20 cigarettes a day and 18.2% declared smoking several cigarettes a day. Among the female smokers, 69.2% smoked more than 20 cigarettes a day and 23.1% declared smoking several cigarettes a day. Most of the smokers lived in small towns or villages (31 subjects, 67.4%) (Diagram 2). Among the smokers, 22 subjects (47.9%) had primary-level education, 26.1% had secondary-level education and the same percentage had higher education. Among the smokers, 60.9% declared a permanent job. Smokers were most likely to rate their social circumstances and living conditions as good (47.82%) (Table 1).

Among the subjects in Group 2, 33.3% did not know that cancer could develop in the oral cavity. These were mostly men (75%) and respondents living in small towns or villages (71.4%). A total of 57.1% of the respondents who did not know that cancer could develop in the oral cavity had primary-level education. Those unaware were mostly those with a permanent job (71.4%) (Table 2).

Most of the patients believed that the prognosis in oral cancer was good or very good (48.8%) with only 21.4% rating the prognosis as poor. The respondents did not know the methods for detection of oral cancer - 95.2%, only 4,8% were aware of it. Most of the respondents correctly defined smoking as a carcinogenic factor for oral cancer (89.3%) and believed that the number of cigarettes smoked affects carcinogenesis (65.5%). Among those unaware of the fact that cigarette smoking was carcinogenic were subjects from small towns and

Table 2. Demographic structure of people who did not know that cancer can develop in oral cavity (majority of respondents)

Respondents who did not know that cancer can develop in oral cavity			
	Group 1	**Gropu 2**	**Group 3**
Place of residence	Village (63%)	Village (71,4%)	Village (48,3)
Education	Secondary (44,4%)	Primary (57,1%)	Primary (65,5%)
Job	Do not work (38,9%)	Permanent job (71,4%)	Do not work (48,3%)

Table 3. Percentage of respondents from each group who gave an affirmative answer to questions listed below

	Group 1	**Group 2**	**Group 3**
Do you know that cancer can develop in oral cavity?	56,5	66,7	66,3
Do you know some screening methods for oral cancer?	8,9	4,8	11,5
Do you think that the prognosis of oral cancer is very good?	31,4	48,8	46,5
Do you think that moking could affect the development of oral cancer?	86,3	89,3	84,9
Do you think that number of smoked cigarettes can affect the risk of oral cancer?	64,3	65,5	67,4
Would you like to expand your knowledge about oral cancer?	65,3	76,2	74,4
Will the new facts about oral cancer which you learned from this questionnaire influence the change of your habits?	95,3	86,1	89,6

villages (88.9%), subjects with primary-level education (55.6%) and subjects declaring poor social circumstances and living conditions (44.4%). Similarly to Group 1, 75% of the subjects indicated their dentist as the first-contact physician. Most of the respondents (76.2%) said they would like to expand their knowledge about oral cancer. 86,1% of them affirmed that the knowledge about cancer will influence the change of their damaging behaviour (Table 3).

A total of 86 individuals were studied in Group 3, half of whom were men (50%). The respondents were most likely to live in large cities (44.2%) and have vocational-or primary-level education (44.2%). A total of 58.2% of the respondents in this group did not work or worked only periodically, and 48.8% rated their social circumstances and living conditions as poor.

Only 31.4% of the respondents declared smoking (18.6% of men and 12.8% of women in this age group). Among the male smokers, % smoked more than 20 cigarettes a day and 37.5% declared smoking several cigarettes a day. Among the female smokers, 36.4% smoked more than 20 cigarettes a day and 45.5% declared smoking several cigarettes a day. Most smokers (59.3%) lived in large towns, had primary-level education (Diagram 3), did not work or worked only periodically (66.7%), and rated their social circumstances and living conditions as poor (51.9%) (Table 1).

One third of the respondents (i.e. 33.7%) did not know that cancer could develop in the oral cavity. The unaware respondents most often lived in small towns and villages (48.3%), did not work or worked only periodically (65.5%) and had primary-level education (58.6%). (Table 2) A total of 46.5% of the respondents rated the prognosis in oral cancer as good or very good. A total of 89.5% of the respondents did not know the methods for the diagnosis of cancers of the oral tissues, when only 11,5% were aware of it. A total of 84.9% considered smoking to be a carcinogenic factor, 67.4% of whom knew the harmful effect of the number of cigarettes smoked on the development of cancer in the oral cavity. In line with the previous groups, ignorance in this respect was mainly declared by subjects with primary-level education (46.2%), subjects living in small towns and villages (69.2%), subjects who did not work or worked only periodically (69.2%), and who declared poor social circumstances and living conditions (53.8%). A total of 51.2% indicated their dentist and 40.7% their family physician as the first-contact physician. As in the other groups, 74.4% of the respondents said they would like to expand their knowledge about oral cancer. 89,6% of them confirmed that the knowledge about cancer will affect the change in their lifestyle (Table 3).

Statistical comparison of the study age groups revealed that the lowest number of smokers was in the population of subjects >50 years of age (68.6% of the patients did not smoke at all). The percentages of smokers in Groups 1 and 2 were 45.3% and 46.8%, respectively. In each of the study groups, men smoked more often than women. The high percentage of smoking women in the Group 1 (42%) is notable. The largest population of subjects unaware of the existence of oral cancer (43.6%) consisted of subjects aged 18–30 years. Despite the ignorance of the existence of oral cancer in each of the study groups, a large number of respondents believed that smoking could contribute to the development of oral cancer and that the number of cigarettes smoked could also have an effect (86.3%, 89.3% and 84.9% in Groups 1, 2 and 3, respectively). Most of the respondents in Groups 1 and 2 considered their dentist the first-contact physician, while the opinions were divided in the oldest group of respondents between the dentist and the family physician. In each study group, a similar population (>65%) said they would like to expand their knowledge about oral cancer.

4. DISCUSSION

The incidence of cancer in Europe is continuously increasing. A total of 3,191,000 new cases of cancer and 1,803,000 cancer-related deaths were reported in 2006. It is estimated that about 25–30% of all cancer-related deaths are associated with smoking and that more than a half of smokers die from smoking-related causes [11]. Sixty million people died from smoking-related diseases in the second half of the 20th century. The M-POWER report published by the WHO in February 2008 demonstrated that the tobacco epidemic kills 5.4 million people a year worldwide. In 2000, smoking was the cause of about 69 thousand deaths in Poland, 43 thousand of which were premature (at 35–69 years of age). It is currently estimated that 29% of the adult Polish population, i.e. 9 million Poles, are smokers. The poorest and

uneducated Poles are much more likely to smoke than wealthier individuals with higher education, as confirmed by our study. The incidence of tobacco-related cancers, i.e. pharyngeal, oral, oesophageal and lung cancers, can be considerably reduced by implementing appropriate preventive measures. It is estimated that 80–90% of the new cases of cancer are caused by environmental factors [12]. It is, however, quite disturbing that the European Union is the second leading manufacturer of cigarettes in the world after China and that the number of smokers in Europe is growing. In 2002, smokers accounted for 33.1% and 25.1% of the male and female population, respectively. In our study, the respective percentages of male and female smokers were as follows: 60.8% and 42% in Group 1, 54.8% and 40.6% in Group 2, and 18.6% and 12.8% in Group 3. Of note is the high percentage of female smokers up to 29 years of age.

It has been estimated that one third of cancers can be treated, one third can be prevented and one third of cancer patients can have their quality of life improved. In order to successfully increase the awareness of cancer in our society and therefore improve the lifestyle and limit the prevalence of cancer, it has become necessary to conduct studies to assess patient knowledge in this respect. Knowledge about oral cancer and the awareness of the risk factors increase the chances of detecting the disease in its early stages. The main impact on the positive attitude changes is exerted by promotional campaigns aimed to raise patient awareness of a given disease [13].

In Poland, in recent years, two large studies were conducted to investigate patient understanding of cancer: one in 2006 entitled: “Awareness of healthy lifestyle, cancer and cancer prevention in the Polish society”, and one in 2007 entitled: “Prevention of cancer – a study among medical practitioners”. The results of these studies suggest a considerable need for implementation of prevention programmes. They showed a low percentage of patients attending prophylactic examinations and a high percentage of smokers in the population. Similar results were obtained in studies conducted in the United States and Saudi Arabia. The conclusions from these projects confirm the low percentage of patients aware of the risk factors of cancer (approximately 16.6% with a satisfactory level of knowledge in the study of the Riyadh district in Saudi Arabia) or patient ignorance of screening tests for the detection of subsequent cancers (only 53.7% of the subjects in the US knew the screening tests for colorectal cancer). Similar study conducted in Ireland also showed that a sizable part of Irish population is misinformed about cancer risk. It was a large survey, including 748 participants. Another interesting research, carried out in Malaysia, showed a lack of knowledge about oral cancer even amongst medical and dental students. However, undergraduate dental students had better awareness of oral cancer in comparison to medical students, but in both groups, their knowledge was assessed as less than acceptable. Authors of the article pointed the need of improvement and reforms in the teaching program [8,14-16].

A report for the Wielkopolskie Province in Poland revealed a surprising fact –individuals with higher education accounted for the majority of smokers (60.4%). A large percentage of non-smokers were individuals with secondary-level education (70.8%) [17]. In our study, the highest percentage of smokers had secondary- level education in Group 1 (51.5%) and primary-level education in Groups 2 and 3 (47.8% and 40,0%, respectively). In the study population in the Podlaskie Province in Poland, over a half of the young respondents (Group 1 - 53.2%) declared smoking. This group mainly comprised men from small towns with secondary-level education and good social circumstances and living conditions. The profile of the typical Group 2 smoker is also a man with primary-level education, from a small town, with good social circumstances and living conditions. The profile of the typical Group 3 smoker is also a man with primary-level education but from a large city and poor social circumstances and living conditions. Most patients did not know the methods for early detection and treatment of cancer (91.1%, 95.2% and 89.6% in Groups 1, 2 and 3, respectively). This is associated with the fact that dentists show little interest in their patients’ habits and fail to provide them with information about the harmful effects of smoking on oral health [4,18]. Most dentists never conduct full physical examinations for oral cancer in their patients. And this is the only screening test. Most dentists also fail to inform their patients about the possibility of oral cancer. The level of awareness of oral cancer among the patients is alarming. The percentages of the respondents who had never heard about oral cancer was 43.6%, 33.3% and 33.7% in Groups 1, 2 and

3, respectively. Although in most Polish and foreign publications patients associate smoking with cancer, the association of this awareness in practice is ruled out [19,20]. The fact that most of the respondents (71.1%) say they would like to expand their knowledge about oral cancer is satisfactory. The lowest percentage of the respondents willing to expand their knowledge was observed in the youngest age group. Young people might believe cancer to occur later in life and therefore do not show any interest, assuming that the problem does not concern them. Although, early education is extremely important, it unfortunately does not provide lower exposure on carcinogenic factors. Our study showed that about 90% of respondents would change their harmful habits if they knew more about cancer, but it seems rather doubtful. Other articles concerning this problem confirmed such statement. In the review paper estimating prevalence of tobacco use after cancer diagnosis authors showed that about one third of lung and head/neck cancer patients continue to smoke, despite the awareness of its risk factors [21].

In light of our results some thought should be given to developing information campaigns about oral cancer and the exposure to the potential initiating factors. The reviewed literature included numerous reports on campaigns promoting the prevention and treatment of breast, cervical, lung, colorectal and urinary bladder cancers. Similar programs concerning oral cancer are, unfortunately, very scarce. The ongoing “National Program for the Fight against Cancer 2006–2015” in Poland assumes, among other goals, dissemination of knowledge about cancer in the society and increasing access to screening tests. While the program includes lung, colorectal and CNS cancers, lymphomas, endometrial and cervical cancers, and breast cancer, it does not feature a detailed task for developing promotional campaigns against oral cancer [13]. It should be kept in mind that this is the eighth most commonly detected cancer in Poland. Efforts to promote oral health and encourage the society to undergo screening for oral cancer should therefore be expanded. Education in this respect should start from the youngest age group. This education should reach all communities, through the media or literature, especially those at the greatest risk of this type of cancer.

Awareness is the fundamental element of the system for fighting cancer.

5. CONCLUSIONS

Our research clearly points the lack of appropriate patients’ knowledge about oral cancer and smoking in most of the study population. Most of people are conscious about this problem and declare the willingness of expanding their knowledge in this field. Such conclusions suggest the need of implementing appropriate information campaigns. Public education, especially education of young people, may change the harmful human behaviour and increase the survival of patients with oral cancer. The higher the patient awareness of a given issue, the greater the readiness to prevent the disease. Unfortunately, despite of the fact that about 90% of patients declare the change of their harmful habits (after expanding their knowledge in this field), growing trends of oral cancer morbidity make those declarations doubtful. It seems interesting to extend such research, paying attention to other oral cancer risk factors.

CONSENT

All authors declare that written informed consent was obtained from the patient (or other approved parties) for publication of this paper and accompanying images.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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