

# ORAL CANCER AND DENTISTS: KNOWLEDGE, ATTITUDES AND PRACTICES IN A SOUTH COLOMBIAN CONTEXT

Anderson Rocha-Buevas<sup>1</sup>, Carlos Hidalgo-Patiño<sup>1</sup>, Giuseppe Collela<sup>2</sup>, Italo Angelillo<sup>3</sup>

<sup>1</sup> Health Institute of the Department of Nariño. Nariño, Colombia

<sup>2</sup> Department of Public Health, Clinical and Preventive Medicine, Second University of Naples. Naples, Italy.

<sup>3</sup> Department of Head and Neck Surgery, Second University of Naples. Naples, Italy.

## ABSTRACT

An estimated 36.38% of oral cancer cases in Colombia are lethal. Most cases are diagnosed in late stages, so early detection and control of risk factors would be the most effective tools for prevention. The aim of this study was to use a questionnaire to evaluate knowledge and practices regarding oral cancer among a group of dentists in southern Colombia. A sample of 93 dentists was asked to respond to a confidential survey which was based on prior studies. It was found that one quarter of the respondents knew that squamous cell carcinoma is the most frequent form of oral cancer and that leukoplakia and erythroplakia are the two lesions most probably associated to oral cancer. Most respondents believe they advise their patients adequately about suspicious lesions. Three quarters believe they are prepared to explain the risks of smoking.

Over half evaluate their patients' personal history of tumors and less than one quarter evaluate the history of cancer in patients' families. In general, an oral examination is performed for cancer diagnosis and almost all the respondents consider it important to keep up to date. A statistically significant correlation was found between dentists' belief that they are adequately prepared to perform a physical examination and having attended a "formal course within the past 12 months". This study revealed that dentists' level of knowledge and application of preventive measures are an important part of the public health strategy for reducing the morbidity and mortality for oral cancer.

**Keywords:** mouth neoplasms - diagnosis - attitude of health personnel - professional practice- colombia

## EL CÁNCER BUCAL Y LOS ODONTÓLOGOS DEL SUR DE COLOMBIA: CONOCIMIENTOS, ACTITUDES Y PRÁCTICAS

### RESUMEN

El cáncer bucal en Colombia tiene una letalidad estimada de 36.38%. La mayoría de los casos son diagnosticados en etapas tardías, siendo entonces la detección temprana y el control de factores de riesgo las herramientas más efectivas para su prevención. El objetivo de este trabajo fue evaluar, a través de un cuestionario, los conocimientos, actitudes y prácticas sobre el cáncer bucal en un grupo de odontólogos del sur de Colombia. En una muestra de 93 odontólogos asistentes a un evento odontológico, se aplicó una encuesta confidencial, elaborada con base en estudios previos. Se encontró que la cuarta parte de los encuestados conocían que el carcinoma de células escamosas es la forma más frecuente de cáncer bucal, y que la leukoplasia y la eritroplasia son las dos lesiones más probablemente asociadas al cáncer bucal. La mayoría consideran que orientan adecuadamente a sus pacientes sobre lesiones orales sospechosas. Tres cuartas partes de los odontólogos consideraron que

estaban preparados para explicar los riesgos del tabaquismo. Más de la mitad evalúan antecedentes personales de los pacientes con tumor y menos de un cuarto de ellos evalúan antecedentes familiares de cáncer. En general, se practica el examen bucal para diagnóstico de cáncer y casi la totalidad de los encuestados consideran importante mantenerse actualizado. Se encontró una correlación estadísticamente significativa entre la creencia de los odontólogos de estar adecuadamente preparados para realizar un adecuado examen físico, con el hecho de haber realizado un "Curso formal en los últimos 12 meses". Este estudio reveló que el nivel de conocimientos y la aplicación de medidas preventivas por parte de los odontólogos, se convierten en una importante estrategia de salud pública para la reducción de la morbilidad y mortalidad del cáncer bucal.

**Palabras clave:** neoplasias bucales - actitudes del personal de salud - diagnóstico - práctica profesional - colombia

### INTRODUCTION

Malignant neoplasms are responsible for one fifth of mortality due to chronic diseases in the Americas, having caused about 459,000 deaths in 2002<sup>1</sup>. In Colombia, squamous cell carcinoma is the most frequent head and neck neoplasm and usually begins as a detectable premalignant lesion, with 100 - 120

new cases recorded yearly<sup>2</sup>. The estimated lethality of oral cancer in Colombia is 36.38% (Table 1), a very similar figure to that reported for developed countries, e.g. 37.62% in Italy<sup>3</sup> (Table 2). The importance to public health of early diagnosis and control of oral cancer in different populations is based on world and national reports, which show

**Table 1: Estimated Oral Cancer Lethality in Colombia.**

Colombia	Oral Cavity Male	Oral Cavity Female	Total
Incidence: Number, Cases All Ages	576	452	1,028
Mortality: Number, Deaths All Ages	197	177	374

(Lethality= Mortality/ Incidence x 100 = 374/ 1,028 x 100) = 36.38%  
From Parkin DM, Bray F, Ferlay J, Pisani P. Global cancer statistics, 2002. CA Cancer J Clin. 2005; 55:74-108.

**Table 2: Estimated Oral Cancer Lethality in Italy.**

Italy	Oral Cavity Male	Oral Cavity Female	Total
Incidence: Number, Cases All Ages	3,308	1,186	4,494
Mortality: Number, Deaths All Ages	1,215	476	1,691

(Lethality= Mortality/ Incidence x 100 = 1,691/ 4,494 x 100) = 37,62%  
From Parkin DM, Bray F, Ferlay J, Pisani P. Global cancer statistics, 2002. CA Cancer J Clin. 2005; 55:74-108.

**Table 3: Levels of Prevention for Oral Cancer.**

Level of Prevention	Tools	Objective
Primary	Removal / reduction of risk factors	Avoiding onset of disease
Secondary	Early detection/ Screening/Biopsy/ Exfoliative cytology	Improving prognosis
Tertiary	Treatment of existing lesions	Curing Preventing death/ Improving life quality

that oral cancer is one of the 10 most frequent cancers in the world, with three quarters of the cases occurring in developing countries<sup>3</sup>. Oral cancer is a chronic disease which compromises the oral cavity and other structures in the stomatognathic system. Dentists should therefore provide adequate prevention and control in order to avert fatal outcomes or functional and esthetic compromise detrimental to the quality of life<sup>3</sup>. Unfortunately, the clinical and histopathological detection of oral cancer does not usually occur until the disease is in its late stages. Dentists do not routinely perform early detection, even in countries such as USA and Italy, where universities have primary health care pro-

grams for oral cancer providing the knowledge, attitudes and practices needed to reduce the incidence of this aggressive, lethal form of cancer<sup>4-7</sup>.

The lack of progress regarding the survival rate is thus clearly a result of deficient public and professional education regarding early detection of oral cancer; otherwise, early detection of malignant and premalignant lesions and the reduction of risky behavior would have enormously improved the prognosis of the disease, quality of life and cost of treatment (Table 3)<sup>8-10</sup>.

This study assessed dentists' Knowledge, Attitudes and Practices (KAP) regarding the prevention of oral cancer in a Colombian setting. The variables that could explain variations in KAP were analyzed with the aim of contributing to policy decision-making and the development of screening programs for early detection and prevention of oral cancer in Colombia. Moreover, these results could serve as a basis for promoting curricular initiatives at universities, particularly in the field of prevention and control of chronic diseases.

## MATERIALS AND METHODS

This was an observational, descriptive study using a self-administered questionnaire based on a previous study<sup>5</sup>. The questionnaire was translated into Spanish and adapted to produce a provisional one which was used in a pilot study to check understanding and ask respondents whether it lacked any issue they considered important. The questionnaire was administered to a universe of 350 subjects who were attending the 12th National Dentistry Congress and the 4th International Congress (*XII Congreso Nacional de Odontología y IV Congreso Internacional*) organized by the School of Dentistry of the Cooperative University of Colombia Pasto in southern Colombia, in April 2009. The response rate was 26.5%. Inclusion criteria were: 1) dentists with or without post-graduate studies, practicing in Colombia and 2) dentists of Colombian nationality. Exclusion criteria were: dentists working exclusively in the administrative health area or doing other work different from the actual practice of dentistry. The final sample was made up of 93 dentists. Participation in the survey was voluntary and all potential respondents were clearly informed that their participation would be anonymous; therefore they had the right to refuse to participate during and after the survey. Confi-

dentiality was guaranteed. All participants signed and provided consent to their participation.

Three dependent variables were established as follows: for the component "Knowledge", "Knows that squamous-cell carcinoma is the most common oral cancer and that erythroplakia and leukoplakia are the two lesions most often associated to oral cancer"; for the component "Attitudes", "believes to be adequately prepared to perform lymph node palpation and examination", and for the component "Practices", "performs routine preventive examination for oral cancer". These variables for analysis were reduced to dichotomous variables. They were taken as a reference for the bivariate analysis, and compared to variables related to respondents' type of specialty, clinical practice and continuous education using a chi-square test. All variables except demographics were measured on categorical scales. Lastly, three multivariate models were constructed for a multiple logistic regression analysis with binomial response, using the three variables described above as dependent variables. The explanatory variables included in the multivariate models predicted the dependence of those that obtained a p-value lower than 0.5. Univariate and bivariate statistical analyses were performed using the XL-STAT version 7.5.2 statistics package, and the multivariate analysis was performed with the SPSS version 17 software.

## RESULTS

Of the respondents, 41.9% were male, 65% had 10 years or less professional experience, 24.73% were specialist dentists, and the most common specialties were orthodontics and oral surgery. Most respondents (73.12%) worked in a team (Table 4). Respondents had a reasonable level of knowledge regarding the risk factors that can trigger oral cancer, e.g. 78.49% recognized that tobacco use and potentially malignant lesions of the oral mucosa were risk factors. However, few were aware of other risk factors such as alcohol use, old age and low fruit and vegetable intake. Regarding knowledge of the diagnostic procedures for oral cancer, 52.69% of the respondents knew that squamous-cell carcinoma is the most frequent form of oral cancer, and 51.61% knew that leukoplakia and erythroplakia are the lesions most likely to be associated to oral cancer. Few knew the most frequent location of oral cancer (Table 5). Table 6 shows respondent attitudes regarding the possibility of diagnosing oral cancer. It was found

that 92.5% advised their patients about how to self-detect suspicious oral lesions. Almost three quarters believed they were adequately prepared to explain the risks of tobacco use, 67.7% believed they were adequately prepared to explain the risk of alcohol use, 66.7% believed they were adequately prepared to perform lymph node palpation and 39.8% believed they were adequately prepared to perform an examination to detect oral cancer. Overall, 30.1% (Table 5) believed they were adequately prepared to perform an examination to check for oral cancer.

Table 7 summarizes respondents' attitudes towards the personal history of their patients. For example, it was found that 76.34% advised or enquired about current use of alcohol, 88.13% about prior use of alcohol and 88.13% about the type and quantity of alcohol used. Fewer evaluated tobacco use, with 35.48% who advised or enquired about current use of tobacco, 63.44% about previous use and 50.54% about the type and quantity of tobacco used. More than half the respondents (59.14%) believed it is important to evaluate personal history and less than

**Table 4: Respondent Demographics and Practice.**

	N	%
<b>Gender</b>		
Male	39	41.94
Female	54	58.06
<b>Years since graduation</b>		
0-5 years	32	34.41
6-10 years	30	32.26
11-15 years	11	11.83
16-20 years	20	21.51
<b>Basic Training</b>		
Medicine and Dentistry	6	6.45
Dentistry	87	93.55
<b>Level of Studies</b>		
General Dentistry	70	75.27
Specialist	23	24.73
<b>Specialty</b>		
General Dentistry	70	75.27
Orthodontics	10	10.75
Oral and/or Maxillofacial Surgery	7	7.53
Periodontics	3	3.23
Stomatology	2	2.15
Endodontics	1	1.08
<b>Type of Practice</b>		
Individual	25	26.88
Team	68	73.12

**Table 5: Knowledge of Oral Cancer in the Study Population.**

	Knows		Doesn't know		Not sure	
	N	%	N	%	N	%
<b>Knowledge of Risk Factors</b>						
Tobacco use	73	78.49	3	3.23	16	17.20
Potentially malignant oral cancer lesion	73	78.49	2	2.15	18	19.35
Alcohol use	53	56.99	16	17.20	24	25.81
Old age	41	44.09	21	22.58	31	33.33
Low fruit and vegetable intake	16	17.20	39	41.94	38	40.86
<b>Knowledge of Diagnostic Procedures</b>						
The incipient cancer lesion is small, painless and erythematous	48	51.61	45	48.39		
Leukoplakia y erythroplakia are the lesions that most often tend to pre-malignancy	48	51.61	45	48.39		
Squamous cell carcinoma is the most frequent form or oral cancer	49	52.69	44	47.31		
Oral cancer is frequently diagnosed from 40 to 59 years of age	44	47.31	49	52.69		
The tongue and the floor of the mouth are the most frequent locations for oral cancer	17	18.28	76	81.72		

**Table 6: Attitudes to Oral Cancer in the Study Population.**

	Yes %	No %	Not sure %
I advise my patients regarding suspicious oral lesions.	92.47	5.38	2.15
My patients are sufficiently informed about the risk factors for oral cancer.	32.26	58.06	9.68
My patients know enough about the signs and symptoms of oral cancer.	20.43	63.44	16.13
I am adequately prepared to explain the risks of tobacco use.	74.19	20.43	5.38
I am adequately prepared to explain the risks of alcohol use.	67.74	27.96	4.30
I am adequately prepared to perform an examination to check for oral cancer.	39.78	51.61	8.60
I am adequately prepared to perform a lymph node palpation.	66.67	30.11	3.23

one quarter (22.58%) believed that it is important to evaluate family history of cancer (Table 7). Regarding the 3 dependent variables, it was found that 24.73% (N=28) responded appropriately to knowing that squamous-cell carcinoma is the most frequent form of oral cancer and that leukoplakia and erithroplasia are the lesions most likely to be associated to oral cancer; while 30.1% believed that they were adequately prepared to perform an examination to check for oral cancer and palpation of lymph nodes.

**Table 7: Personal History Evaluated by Dentists in the Study Population.**

	N	%
Current alcohol use	71	76.34
Current tobacco use	33	35.48
Personal history of neoplasms	55	59.14
Previous tobacco use	59	63.44
Previous alcohol use	82	88.17
Type and quantity of alcohol use	82	88.17
Type and quantity of tobacco use	47	50.54
Family history of neoplasms	21	22.58

Table 8 shows the distribution of the three dependent variables related to knowledge, attitudes and practices against some variables that are considered explanatory, and against each other. The bivariate análisis showed that none of the variables are significantly associated to knowing the type of cancer and lesions most frequently associated to oral cancer, although the variable “need for additional information” comes close to being significantly associated ( $\chi^2 = 2.929$ , GL=1,  $p=0.087$ .) The Attitude variable shows that the belief of being adequately prepared to perform a physical examination is significantly associated to having attended a “formal course within the past 12 months” ( $\chi^2 = 8.383$  GL=1,  $p < 0.05$ ). For routine performance of an examination for the diagnosis of oral cancer, it was found that considering “scientific material as a source of information” is the most dependent condition ( $\chi^2 = 1.736$  GL=1,  $p=0.188$ ), although, as for the rest of the conditions evaluated, the dependence is not significant.

The results of the multivariate analysis (Table 9) show that in the Knowledge model (Model 1) lev-

**Table 8: Distribution of Knowledge, Attitudes and Practices Related to Oral Cancer according to some Explanatory Variables.**

	Knows that squamous cell carcinoma is the most frequent form of oral cancer, and that leukoplakia and erythroplakia are the 2 lesions most likely to be related to oral cancer		Believes he/she is adequately prepared to examine patients to check for oral cancer and perform cervical node palpation		Routinely performs oral cancer examination	
<b>Specialty</b>						
Specialist	8	34.78	5	21.74	8	34.78
General Dentistry	15	21.43	23	32.86	20	28.57
	$\chi^2 = 1.658$ GL=1 p=0.198		$\chi^2 = 1.017$ GL=1 p=0.313		$\chi^2 = 0.317$ GL=1 p=0.573	
<b>Type of practice</b>						
Individual	7	28.00	10	35.71	7	28.00
Not individual	16	23.53	18	27.69	21	30.88
	$\chi^2 = 0.196$ GL=1 p=0.658		$\chi^2 = 0.598$ GL=1 p=0.439		$\chi^2 = 0.072$ GL=1 p=0.788	
<b>Formal course in the past 12 months</b>						
No	1	12.50	22	25.88	25	29.41
Yes	22	25.88	6	75.00	3	37.50
	$\chi^2 = 0.703$ GL=1 p=0.402		$\chi^2 = 8.383$ GL=1 p < 0.05		$\chi^2 = 0.227$ GL=1 p=0.634	
<b>Scientific material as source of information</b>						
No	16	28.07	16	28.07	20	35.09
Yes	7	19.44	12	33.33	8	22.22
	$\chi^2 = 0.882$ GL=1 p=0.348		$\chi^2 = 0.290$ GL=1 p=0.590		$\chi^2 = 1.736$ GL=1 p=0.188	
<b>Need for additional information</b>						
No	2	66.67	2	66.67	1	33.33
Yes	21	23.33	26	28.89	27	30.00
	$\chi^2 = 2.929$ GL=1 p=0.087		$\chi^2 = 1.969$ GL=1 p=0.161		$\chi^2 = 0.015$ GL=1 p=0.901	
<b>Knows that squamous cell carcinoma is the most frequent form of oral cancer and that early lesions are small, painless and erythematous</b>						
No			18	27.27	18	27.27
Yes			10	37.04	10	37.04
			$\chi^2 = 0.868$ GL=1 p=0.351		$\chi^2 = 0.466$ GL=1 p=0.495	
<b>Believes he/she is adequately prepared to examine patients to check for oral cancer and perform cervical node palpation</b>						
No					18	27.69
Yes					10	35.71
					$\chi^2 = 0.598$ GL=1 p=0.439	

els are not satisfactory ( $\chi^2 = 5.022$ ,  $GL = 4$ ,  $p = 0.285$ ). The same is true if a logistic regression model is tested independently for each of the four predictive variables. However, it can be seen again that the people who provided an affirmative answer to “Need for additional information” ( $OR = 5.95$ ,  $I.C. 95\%: 0.498 - 71.148$ ), and who have a “Specialization (Study Level)” ( $OR = 2.22$ ,  $I.C. 95\%: 0.705 - 6.993$ ) were more likely to identify the most common histological form and the type of early lesions most often related to oral cancer. In the Attitude model (Model 2) the 4 predictive variables generate a model that provides a satisfactory

explanation for the result of attitude according to *Need additional information*, *Type of practice*, *Study Level* and having attended a *Formal course in the past 12 months*, but it is the latter that contributes the greatest and most significant probability to the respondents believing they are adequately prepared to perform an examination to check for oral cancer and palpation of lymph nodes ( $OR = 14.9$ ,  $I.C. 95\%: 2.204 - 100.831$ ). The multivariate model for practicing a routine examination for oral cancer (Model 3) shows that overall, the level is not satisfactory ( $\chi^2 = 1.37$ ,  $GL = 4$ ,  $p = 0.849$ ), nor is it upon testing a logistic regres-

**Table 9: Logistic Regression Model Results.**

<b>MODEL 1. Knows that squamous cell carcinoma is the most frequent form of oral cancer, and that leukoplakia and erythroplakia are the 2 lesions most likely associated to oral cancer</b>					
$\chi^2 = 5.022, GL=4, p=0.285$					
<i>95% C.I for O.R.</i>					
	<i>S.E.</i>	<i>Sig.</i>	<i>O.R.</i>	<i>Low</i>	<i>Hlgh</i>
Need for additional information	1,266	0,159	5,951	0,498	71,148
Type of practice	0,589	0,891	0,923	0,291	2,929
Level of studies	0,585	0,173	2,220	0,705	6,993
Formal course in the past 12 months	1,145	0,342	0,337	0,036	3,179
S,E,					
<b>MODEL 2, Believes he/she is adequately prepared to examine patients to check for oral cancer and perform cervical node palpation</b>					
$\chi^2 = 13,22, GL=4, p=0,010$					
<i>95% C.I for O.R.</i>					
	<i>S.E.</i>	<i>Sig.</i>	<i>O.R.</i>	<i>Low</i>	<i>High</i>
Need for additional information	1,317	0,116	7,911	0,599	104,452
Type of practice	0,600	0,958	0,969	0,299	3,141
Level of studies	0,731	0,108	0,309	0,074	1,294
Formal course in the past 12 months	0,975	0,006	14,907	2,204	100,831
<b>MODEL 3, Routinely performs oral cancer examinations</b>					
$\chi^2 = 1,37, GL=4, p=0,849$					
<i>95% C.I for O.R.</i>					
	<i>S.E.</i>	<i>Sig.</i>	<i>O.R.</i>	<i>Low</i>	<i>High</i>
Need for additional information	1,283	0,936	0,903	0,073	11,161
Formal course in the past 12 months	0,821	0,834	1,188	0,238	5,938
Knows that squamous cell carcinoma is the most frequent form of oral cancer and that early lesions are small, painless and erythematous	0,494	0,393	1,524	0,579	4,011
Believes he/she is adequately prepared to examine patients to check for oral cancer and perform cervical node palpation	0,517	0,554	1,358	0,493	3,744

sion model independently with each of the 4 predictive variables. The OR values generated for each variable are close to 1, with confidence intervals that include the unit, and their individual contribution to the model is not significant.

## DISCUSSION

This study provides a comprehensive overview of the state of the skills and behaviors of dentists in southern Colombia. A comparison of the results of this study to those from other countries showed that the positive or satisfactory values were lower than in other studies<sup>11-12</sup>, which might be explained by the fact that the respondents had different specialties and graduated from different schools of dentistry. This suggests that educational efforts are

needed in southern Colombia to attain an adequate level of knowledge and practices.

Although the respondents may not be a representative sample of dentists in the region, as they are simply the attendees at the event, the results provide a valuable approximation that enables an initial approach to an issue that is unexplored in the region. This study might generate actions that would place the issue of oral cancer on the academic and work agenda of dentists in southern Colombia. It would be of great interest to conduct similar studies at some of the thirty-two (32) accredited schools of dentistry in Colombia.

Paradoxically, in a study in Sri Lanka, which is a developing country, the respondents had better knowledge of early detection of oral cancer, with

65% having adequate knowledge of screening for this disease<sup>13</sup>. This was because undergraduate dentistry curricula include topics related to oral cancer due to its high incidence in Sri Lanka. Indeed, there is great awareness of the problem, and 70% of the respondents felt they needed more and better training<sup>13</sup>. Another study, which assessed the knowledge of dentists in USA, suggests that screening for oral cancer has not been adequately understood<sup>14</sup>, because no association or statistical significance is found with time since graduation, as reported in our study on Colombian dentists. Another study in Spain found similar results, with only 49.7% of the dentists having adequate updated knowledge on oral cancer<sup>15</sup>.

The respondents in this study were found to have a good level of knowledge regarding the risk factors for oral cancer. In contrast, in countries such as Iran, there was little awareness, with 83.8% of the respondents having a low level of knowledge<sup>16-17</sup>. In a recent study in Illinois, USA, using a scale of 0-14 to rate knowledge on oral cancer, it was shown that there is considerable variability among dentists<sup>18</sup>. It is presumed that the predictive variables selected do not provide a satisfactory explanation of the results regarding knowledge; however, it contradicts studies performed in countries such as Italy<sup>19</sup>. A study comparing the knowledge of dentists and physicians reports that 34% of dentists can identify a preneoplastic lesion, such as erythroplakia and leukoplakia, of the oral mucosa, compared to 10% of physicians<sup>20</sup>.

It is worth noting that most studies agree regarding the attitude component, i.e. dentists believe they are adequately prepared to examine their patients, both in developed and developing countries. For example, in Sri Lanka, nearly 81% of the dentists who took part in the study believed they were adequately trained in early detection of oral cancer<sup>13</sup>, while in developed countries such as Spain, 94.7% believed they were qualified to perform the relevant oral examinations<sup>15</sup>. Evidently, these results differ considerably from ours. Nevertheless, it is curious that the attitude component in this study is highly correlated to other predictive variables such as "having taken a formal course in the past year", i.e., recent continuous education. The context in southern Colombia suggests that this correlation is due to the limited availability of professional training and continuing education in the region, since there is only one School of Dentistry, which has serious

deficiencies and has always been geographically isolated, which in turn creates mistrust of what is known and what is done. Nevertheless, our results agree with those from the study in Sri Lanka in that dentists feel they need more and better training<sup>13</sup>. It is worth highlighting that they are also consistent with a major study on self-perception of competencies in early detection of oral and oropharyngeal cancer in the USA<sup>16</sup>.

In countries like the USA, it has been shown that there is a need for educational programs for further training of primary care providers<sup>20</sup>. This finding agrees with the importance assigned to primary care in other countries. For example, studies in Spain found that 41.8% of dentists feel that family physicians are capable of performing early detection correctly, while 13.8% believe that hygienists can also do it correctly<sup>15</sup>. These data justify the need to foster continuing education in this field focusing on primary health care.

The fact that over half the respondents (59.14%) believe that it is important to evaluate the patient's personal history of tumors, but that less than a quarter (22.58%) evaluate family history of cancer, shows that there is variability in dentists' practices<sup>18</sup>. In fact, the predictive variables used to explain the results of models 1 and 3 on the components Knowledge and Practices, respectively, were not statistically significant due to the existing gap and variability. The study by Applebaum E. et al. reports that 54% of physicians and 93% of dentists reported that they performed oral examination of patients older than 56 years, while for checking risk factors, although 96% of physicians asked their patients whether they smoked or drank alcohol, only 9% of physicians and 39% of dentists could correctly identify the two most common locations for the onset of oral cancer<sup>20</sup>. According to LeHew et al. the factors that influence the knowledge and practical components depend on the understanding of early detection of oral cancer in clinical practice<sup>18</sup>. This shows the need for health professional training in southern Colombia.

## CONCLUSIONS

Many factors influence knowledge, attitudes and practices related to oral cancer, and in fact there are major differences that should be taken into account, such as the characteristics of the population studied, because there are different ways of determin-

ing and measuring results and different procedures for gathering information.

The findings on knowledge, attitudes and practices related to oral cancer among the dentists surveyed show the need for continuous theoretical-practical education. Thus, the inadequate role of oral health professionals in the early detection and control of oral cancer is presumed to be due to an insufficient level of professional instruction and training in southern Colombia.

There should be a program to improve the training of dental auxiliaries, hygienists and dentists

in preventing and controlling oral cancer, as has already been shown in other studies<sup>19</sup>. If oral healthcare professionals do not play a major part in prevention and control, the situation of disadvantaged or poorer people worsens, because they are usually more exposed to preventable risk factors such as environmental carcinogenic substances, alcohol, infectious agents and tobacco use. These people also have little access to health and education services, therefore the knowledge, attitudes and practices of professionals are highly conditioning.

#### ACKNOWLEDGMENTS

We are extremely grateful to the Degli Di Studi Di Napoli for its academic contribution and the National Research Commission (Comité Nacional de Investigaciones, CONADI) of the Cooperative University of Colombia for funding this research.

#### CORRESPONDENCE

Dr. Anderson Rocha-Buelvas  
Sub-Dirección de Salud Pública, Instituto Departamental de Salud de Nariño -IDSN  
Calle 16 a Bis # 33 - 34, San Juan de Pasto/Nariño, Colombia.  
e-mail: rochabuelvas@gmail.com

#### REFERENCES

- Petersen PE. Oral cancer prevention and control – The approach of the World Health Organization. *Oral Oncol* 2009; 45:454-460.
- Colombia. Instituto Nacional de Cancerología. Guías de Práctica clínica en enfermedades neoplásicas. 2003; p 33.
- Parkin DM, Bray F, Ferlay J, Pisani P. Global cancer statistics, 2002. *CA Cancer J Clin*. 2005;55:74-108.
- Baden E. Prevention of cancer of the oral cavity and pharynx. *CA Cancer J Clin* 1987;37:49-62.
- Colella G, Gaeta GM, Moscariello A y Angelillo I. Oral cancer and dentists: knowledge, attitudes, and practices in Italy. *Oral Oncol*. 2008;44:393-99.
- Rocha Buelvas A. Cáncer oral: El papel del Odontólogo en la detección temprana y control. *Rev Fac de Odont Univ Ant* 2009; 21:114-21.
- Rocha Buelvas A, Rocha Buelvas C. Upper aerodigestive tract neoplasm (UATN): an update. *Biosalud* 2010;9:35-45.
- Kujan O, Duxbury AJ, Glenn AM, Thakker NS, Sloan P. Opinions and attitudes of the UK's GPs and specialist in oral surgery, oral medicine and surgical dentistry on oral cancer screening. *Oral Dis* 2006;12:194-199.
- Ries LA, Eisner MP, Kosary CL, Hankey BF, Millar BA, Clegg L, et al., eds. SEER cancer statistics review, 1975-2003. Bethesda. National cancer institute 2003 (update nov 2005; cited 2006 Nov 25). [http://seer.cancer.gov/csr/1975\\_2003/](http://seer.cancer.gov/csr/1975_2003/)
- Stahl S, Meskin LH, Brown LJ. The American dental association's oral cancer campaign. *J Am Dent Assoc* 2004, 135: 1261-1267.
- Rogers SN, Pabla R, McSorley A, Lowe D, Brown JS, Vaughan ED. An assessment of deprivation as a factor in the delays in presentation, diagnosis and treatment in patients with oral and oropharyngeal squamous cell carcinoma. *Oral Oncol* 2007; 43:648-655.
- Cruz G, Ostroff J, Kumar JV y col. Preventing and detecting oral cancer: Oral health care providers readiness to provide health behavior Counseling and oral cancer examinations. *J Am Dental Assoc* 2005; 36:594-601.
- Ariyawardana A, Ekanayake L. Screening for oral cancer/pre-cancer: knowledge and opinions of dentists employed in the public sector dental services of Sri Lanka. *Asian Pacific J Cancer Prev* 2008;9:615-618.
- Yellowitz JA, Horowitz AM, Drury TF, Goodman HS. Survey of U.S. dentist's knowledge and opinions about oral pharyngeal cancer. *JADA* 2000; 131:653-661.
- López-Jornet, F. Camacho-Alonso. New barriers in oral cancer. Patient accessibility to dental examination—A pilot study. *Oral Oncol* 2006; 42: 1022-1025.
- McCunniff MD, Barker GJ, Barker BE, Williams K. Health professionals' baseline knowledge of oral/pharyngeal cancers. *J Cancer Educ* 2000;15:79-81.
- Pakfetrat A, Falaki F, Esmaily HO, Shabestari S. Oral cancer knowledge among patients referred to Mashhad Dental School, Iran. *Arch Iranian Med* 2010;6:543-548.
- Lehew CW, Kasle LM. Oral cancer prevention and early detection knowledge and practices of Illinois dentists: a brief communication. *J Public Health Dent* 2007;67:89-93.
- Nicotera G, Gnisci F, Bianco A y Angelillo I. Dental Hygienist and oral cancer prevention: knowledge, attitudes and behaviors in Italy. *Oral Oncol* 2004;40:638-644.
- Applebaum E, Ruhlen TN, Kronenberg FR, Hayes C, Peters ES. Oral cancer knowledge, attitudes and practices: a survey of dentists and primary care physicians in Massachusetts. *J Am Dent Assoc* 2009;140:461-467.