Assessment of knowledge of oral cancer in dentists in the Los Ríos Region, Chile, in 2017.

Evaluación del conocimiento del cáncer oral en dentistas en la Región de Los Ríos, Chile, en 2017.

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Abstract: Objective: To determine the level of knowledge of Oral Cancer (OC) of dental surgeons in Los Rios Region in the year 2017. Materials and methods: A descriptive, cross-sectional study consisting of a survey containing 24 multiple-choice questions was conducted and applied in person to 102 public practice dentists of Los Ríos Region, between March-July 2017. Participants were previously informed that the survey was voluntary, anonymous and confidential. Characterization data from the population was collected and the variable "Knowledge of Oral Cancer" along with its subsections on OC epidemiology, etiopathogenesis, diagnosis, treatment/complications and prognosis/prevention were measured. Tabulated data were analyzed through descriptive statistics. Results were presented through a passing percentage (60% minimum for approval). Results: 100 surveys were answered (with a 98% response rate). Knowledge of OC averaged a 77% passing rate among the participants: 63% for the epidemiology section, 78% for etiopathogenesis, 86.5% for diagnosis, 64% for treatment/complications, while OC prevention resulted in a 75% passing rate. Conclusion: A high percentage of dental surgeons in Los Rios Region demonstrated a satisfactory knowledge of the etiopathogenesis, diagnosis and prevention of OC. However, a low percentage responded correctly regarding the epidemiological factors, treatment and complications. It is highly recommended to follow the same research methodology in other regions across Chile in order to analyze results at a national level with a new approach, so as to properly guide future professional training programs.

Keywords: Dentists; Chile; surveys and questionnaires; disease prevention; mouth neoplasms; cross-sectional studies.

Resumen: Objetivo: Determinar los conocimientos acerca de cáncer oral (CO) que poseen los odontólogos de la Región de los Ríos en el año 2017. Material y métodos: Se realizó un estudio descriptivo mediante encuestas de preguntas de selección múltiple aplicadas a 102 odontólogos de práctica pública de la Región de los Ríos. Se informó previamente a los participantes el carácter voluntario, anónimo y confidencial de la encuesta y se entregó un consentimiento informado. Se recopilaron datos de caracterización de la población y se midió la variable "Conocimientos acerca del Cáncer Oral" en sus dimensiones de epidemiología, etiopatogenia, diagnóstico, tratamiento/complicaciones y pronóstico/prevención. A los datos tabulados se les realizó estadística descriptiva. Los resultados se presentaron mediante porcentaje de aprobación y nota equivalente al 60% en escala continua. Resultados: Se respondieron 100 encuestas (tasa de respuesta del 98%). El Conocimiento acerca de CO promedió una aprobación de 77% entre los participantes, equivalente a una nota 5,29. La dimensión de epidemiología alcanzó un 63%, etiopatogenia un 78%, diagnóstico un 86,5%, tratamiento/complicaciones un 64% y preven-ción 75% de aprobación. Conclusión: Un alto porcentaje de los cirujanos dentistas de la Región de los Ríos demostró conocimientos adecuados acerca de la etiopatogenia, diagnóstico y prevención del CO. Sin embargo, un bajo porcentaje respondió asertivamente en lo que respecta a factores epidemiológicos, tratamiento y complicaciones. Se sugiere seguir la misma línea investigativa en otras regiones, para analizar resultados a nivel nacional y orientar, con un nuevo enfoque, los programas educativos para profesionales.

Palabras Clave: *Odontólogos; Chile; encuestas y cuestionarios; prevención de enfermedades; neoplasias de la boca; estudios transversales.*

INTRODUCTION.

Oral cancer (OC) is a growing global problem. Its estimated incidence is around 275,000 cases per year.[1] The reported OC incidence in Chile is 3.2 in men and 1.2 in women, with a mortality rate ranging between 1.11 and 1.25 for every 100,000 inhabitants.[2]

Although early detection of OC is considered the most effective measure in reducing its morbidity,[3] its mortality is associated with late diagnosis in advanced stages of the disease, when treatment is usually radical, and of poor prognosis. Literature describes two main causes: the first one is a general lack of public awareness; and the second, a negative attitude and insufficient knowledge about the topic by the professional in charge.[4-9]

It has been shown that continuing educational programs improve the skills of dentists responsible for performing clinical exams associated with OC.[10] Before planning these courses, it is necessary to assess the current level of knowledge of working professionals, as it is the basis for developing proper training programs and protocols.[11]

Knowledge of OC among dentists has been assessed through various international cross-sectional descriptive studies based on surveys.[12,13]

In Chile, only one study has been published on this topic,[14] which measured the knowledge of different aspects of OC in a population of dental surgeons from the district of Las Condes in the Metropolitan region by means of a survey. Results revealed deficiencies regarding knowledge, attitude and practices.

In the southern regions of Chile, the sociodemographic reality of the population is different to that of Santiago, so extrapolating results and conclusions to these regions is difficult.

For this reason, health services and private entities regularly organize courses and updates about OC in Los Rios Region, which eventually has become a reference center for cancer studies. However, there are no published studies that measure the level of knowledge of OC in dental surgeons from this region.

The aim of this study was to determine the level of knowledge of OC in dental surgeons in Los Rios Region in 2017.

MATERIALS AND METHODS.

An observational descriptive study was conducted based on the application of a survey. This study was approved by the Ethics Committee of the School of Medicine of Universidad Austral de Chile, the dental unit of Valdivia Public Health Service, and the Department of Municipal Health of the city of Valdivia.

This study gathered data from both general and specialist dentists who were part of the public health network of Los Ríos Region, and whose health centers (hospitals, community and family health centers, municipal health departments, rural health posts and dental clinics) agreed to be part of the research. Exclusion criteria involved: dental surgeons who participated at some stage in creating or reviewing the assessment tools, those related to the area of oral pathology (specialists or teachers), and dental surgeons involved exclusively in administrative tasks.

The source population came from a list of dentists employed in public healthcare networks (permanent staff, and others with semi-permanent and part-time contracts) of the Valdivia Public Health Service, and the municipalities/districts of Los Rios Region: Lago Ranco, Río Bueno, La Unión, Futrono, San José de la Mariquina, Máfil, Corral, Panguipulli, Lanco, Paillaco, Los Lagos and Valdivia. Data were compiled through a process of formal requests under Law 20.285 on Transparency regarding access to public information in March 2017.

Sample size estimation was performed considering a 95% confidence interval, 5% sample error and an expected prevalence of 50%; yielding a total of 100 dentists from the total population of 134 dentists as of March 2017. A non-probabilistic sampling was carried out for convenience given the high non-response rates reported in other studies,[14] and the difficulty to arrange interviews with the participants.

The population was characterized considering age, gender, year of graduation, completion of courses and/or training in OC (in addition to year of completion) and years of professional practice since graduation. The "Knowledge of Oral Cancer" (Annex I) questionnaire was applied, which consisted of 24 dichotomous and polychotomous questions related to knowledge of OC, assessing the following aspects:

epidemiology, etiopathogenesis, diagnosis, treatment, prognosis and prevention. This instrument was created and validated by Izaguirre,[15] through experts' judgments, structural corrections, drafting and finally piloting, which resulted in a Cronbach's alpha of 0.76 for reliability. In order to avoid cultural differences, in December 2016 a team of specialists in Oral Pathology from Universidad Austral de Chile verified the validity of the content in the items of the original survey.

After that, a pilot study was performed on dentists from the same university in order to evaluate the comprehension of the content and the performance time, as well as to improve thematic deficiencies that participants considered relevant in order to ensure an adequate interpretation of the questions. This finally resulted in a Cronbach's alpha of 0.68.

Operationalization of variable: Knowledge of oral cancer, divided into sections:

1. Knowledge of oral cancer epidemiology: The most common type of mouth cancer, link between oral cancer and age, and connection between oral cancer and gender. Measured with an ordinal scale, with three questions in total.

2. Knowledge of oral cancer etiopathogenesis: The biggest risk factor for oral cancer, the genetic susceptibility to oral cancer, understanding of the human papilloma virus as a risk factor for oral cancer, and knowledge of solar radiation as a risk factor for oral cancer. Measured with an ordinal scale, a total of five questions.

3. Knowledge of oral cancer diagnosis: Characteristics of precancerous lesions, knowledge of leukoplakia as the most frequent lesion, signs and symptoms of oral cancer lesions and expertise about the most frequent locations of oral cancer. Measured with an ordinal scale, a total of nine questions.

4. Knowledge of oral cancer treatment and complications: Relationship between tumor size and oral cancer prognosis, knowledge of the most frequent oral cancer treatment and knowledge of the most frequent complication in oral cancer treatment. Measured with an ordinal scale, a total of three questions.

5. Knowledge of oral cancer prevention: The influence of oral hygiene in the prevention of carcinogenesis, the influence of dietary habits on carcinogenesis and knowledge of suppressing the risk factor as protection. Measured with an ordinal scale, a total of four questions.

Data collection was carried out between April and June of 2017. The survey was conducted at the units of the Valdivia Public Health Service and at the Health Centers that agreed to participate in the study.

Informed consents were given to each of the participants (Annex II). They were informed of the voluntary, anonymous and confidential nature of the survey during and after the study.

The survey was conducted and supervised personally by the researchers at all times. Along with the survey, participants were handed an instruction sheet and an informed consent, which briefly explained the study. Contact information of the researchers was also provided, as well as data related to the Ethics Committee of the School of Medicine at Universidad Austral de Chile, and details about the confidentiality of the study. Once the survey and informed consent were submitted, both documents became completely anonymous.

The data was uploaded to a Google Drive spreadsheet (Google LLC, USA) for tabulation and analysis. In case of tabulation errors, the original printed and applied survey was reviewed to verify the data. Valid surveys were those including a completely answered "General Data" section; surveys containing an unanswered item in this section were discarded. Questions with answers omitted or where more than one alternative was marked were considered invalid and had 0 points. 100% of the surveys were tabulated.

Version 24 of IBM SPSS® software was used to analyze the data, as well as Microsoft Excel® 2016. Results were grouped based on the level of knowledge of OC. Percentages and grades were calculated with these data, using a continuous 1-to-7 scale in order to obtain an academic reference; 60% of correct answers was required to obtain the minimum passing grade. Data analysis was carried out using descriptive statistics and measurements of central dispersion by intervals, according to the global scale.

RESULTS.

From a total of 102 dentists, only 2 refused to participate in the study; yielding a response rate of 98%. From the total number of participants, the following information was obtained: a 1:1.4 men-women ratio; 77% were general dentists, the other 23% were specialists; an average of 5.9 years of professional post-degree experience was registered. The most common specialties within the sample group were orthodontics and dentomaxilofacial orthopedics (6%), and oral

rehabilitation (5%).

Regarding the time elapsed since a course on OC was last taken, 41% of dental surgeons reported to have never participated in a training program of this kind. (Table 1) Regarding knowledge of OC, a 77% passing rate was obtained among participants, equivalent to 5.29 on the 1-to-7 scale. (Table 2)

Dentists with up to 5 years of experience averaged a passing rate of 75.91% (S.D. 0.11), equivalent to 5.21 on the 1-to-7 scale (S.D. 0.86), and those with over 6 years of experience achieved 78.52% passing rate (S.D. 0.09), equivalent to 5.4 (S.D. 0.69). Regarding the refresher courses, dentists who participated in them averaged a 75.79% passing rate (S.D. 0.10), equivalent 5.2 on the 1-to-7 scale (S.D. 0.17); while those who have never attended a course on this subject averaged a 78.96%passing rate (S.D. 0.80), equivalent to 5.43 on the 1-to-7 scale (S.D. 0.80).

In the section related to knowledge of OC epidemiology, a 63% passing rate was averaged. Males were identified as the group with the highest frequency of OC (71%), epidermoid cancer (spinocellular, squamous) was established as the most prevalent (61%), and the 55-to-65 years old age range was identified as having the highest number of OC cases (57%) (Table 2).

In relation to the etiopathogenesis, a 78% passing rate was obtained. Identification of the synergistic action of tobacco and alcohol consumption as the main risk factor for OC (61%) was highlighted. (Table 2).

Regarding OC diagnosis, an 86.5% passing rate was obtained. Most participants recognized the characteristics, signs and symptoms of a cancerous lesion. However, only 44% of participants identified the tongue as the most frequent OC location. (Table 2)

In the section related to OC treatment and complications, a 64% passing rate was obtained, where 69% of the dental surgeons recognized that tumor size influences prognosis and identified mucositis as the most prevalent complication. Only 54% of them identified surgery accompanied by radiotherapy as the most frequently performed OC treatment. Regarding the item related to OC prevention, a 75% passing rate was obtained.

The influence of dietary habits and vitamin deficiency on carcinogenesis was identified, while 69% of the sample recognized that hygiene influences the development of OC. (Table 2).

Table 1. Demographic and professional characteristics. (n=100).

Characteristic		%
Gender	Female	58
	Male	42
Years since graduation	0-5	55
	6-10	16
	11-15	12
	16-20	6
	>20	11
Specialty	No specialty: General dentistry	77
	Periodontics	2
	Oral Rehabilitation	5
	Endodontics	4
	Implantology	1
	Pediatric dentistry	4
	Orthodontics and dentomaxilofacial orthopedics	6
	Oral and maxillofacial surgery and traumatology	1
Time elapsed since last training course in oral cancer	<12 month	8
	1–4 years	40
	>5 years	11
	Never taken/attended a training course in oral cancer	41

Table 2. Passing percentage per question and dimension (n=100).

Questions	Passing (%)
Epidemiology dimension	63 (S.D±0.28)
Which gender is more frequently affected by OC in Chile?	71
Which is the most frequent type of OC in Chile?	61
At what age are cases of OC more prevalent?	57
Ethiopathogenesis dimension	78 (S.D±0.18)
Is exposure to the sun a risk factor for OC?	94
Is family history a risk factor for oral cancer?	84
What virus is the most frequently associated with OC?	77
Is there a genetic predisposition for oral cancer?	74
What is the main risk factor for OC?	61
Diagnostic Dimension	86.56 (S.D±0.11)
Is a cancerous lesion always painful?	98
Do you think it is relevant to question the patient about persistent pathologies?	98
Can a cancerous lesion be proliferative (exophytic)?	94
Is a cancerous lesion always ulcerated?	93
Is a cancerous lesion infiltrative?	93
Which of the following lesions is considered a warning sign of a cancerous lesion?	88
Which of these lesions related to OC occurs most frequently?	86
What is the most frequent location of OC?	44
Treatment and Complications Dimension	64 (S.D±0.30)
Do you think tumor size matters in the prognosis of OC?	69
The most frequent oral complication of patients undergoing treatment with OC radiotherapy is:	69
What is the most frequent treatment for oral cancer?	54
Prevention dimension	75 (S.D±0.23)
Does vitamin deficiency contribute to carcinogenesis?	81
Does diet influence carcinogenesis?	79
Does a smoking patient diagnosed with oral cancer have a better prognosis if he/she quits smoking?	71
Does oral hygiene influence the appearance of OC?	69
Total Knowledge	77.08 (S.D±0.10)
Grade "Knowledge of oral cancer":	5.29 (S.D±0.79)

DISCUSSION.

This study assessed the oral cancer level of knowledge of dental surgeons from Los Ríos region. Assessing this variable is essential to determine the effectiveness of prevention and early detection of OC as well as the reduction of its morbidity. In turn, this research also measures the efficacy of educational and training programs in OC aimed at dentists.

The participating dental surgeons averaged 5.29 on the 1-to-7 scale, which revealed their strengths and weaknesses in the different sections. Currently, only one similar study has been published in Chile, conducted by Stillfried et al.,14 in a borough of the city of Santiago. Comparing the results obtained in this study with those from research conducted in other countries requires careful interpretation and analysis. Sociodemographic and professional factors must be considered as aspects that influence individual knowledge. Differences in data collection and result assessment methodology should also be taken into account.

When analyzing the connection between years of professional post-degree experience and knowledge of OC, similarities were observed between the parti-cipants, which suggests that experience does not enhance knowledge nor improves their original academic training. A similar situation was observed regarding the participation in OC courses, where attendance did not make a difference in the results. This may be due to multiple reasons, such as the methodology used in the courses, modality and type

of assessment, and most importantly, the attitude of the participants.

In relation to OC epidemiology, respondents showed limited knowledge, resulting in a failing rate of almost 40%. Only 61% of the participants recognized epidermoid cancer (spinocellular, squamous) as the most common type of OC in the Chilean context. This percentage was found to be inferior to the results obtained by Mehdizadeh et al.,[16] Motallebnejad et al.,[14] Alami et al.,[17] Akbari et al.,[18] Patton et al.,[19] whose ranges vary from 81 to 98%. It is slightly greater than the 54% obtained by Rocha-Buelvas et al.,[13] and similar to the 58% obtained by Stillfried et al.[14] and the 60% reported by Nicotera et al.[20]

The reason for this could be the difference in educational approaches between countries, and thus may explain the similarities found with the only other study conducted in Chile, by Stillfried et al.[14] Results showed a significant lack of knowledge of the most prevalent age range for OC cases, as only 57% of dentists were able to identify it; similar to the results obtained by LeHew et al.,[21] Although multiple studies suggest that age is a risk factor for OC,[12,16,19] they do not include age range as a separate item within their assessment methodology. In the section related to knowledge of OC etiopathogenesis, dentists identified sun exposure as the main risk factor; it was correctly recognized by 94% of the participants, which was considered a remarkable finding and exceeded both 80% obtained by Stillfried et al.,[14] and 70% reported by Clovis et al.[22]

To a lesser extent, family history, genetic predisposition and association with the human papillomavirus were identified. Only 61% of the participants identified tobacco in conjunction with alcohol consumption as the main risk factor for OC, revealing a lack of knowledge of the synergistic action of both factors. Higher values were documented by Clovis et al.,[22] Akbari et al.,[18] Stillfried et al.,[14] whose ranges varied from 85% to 99%. However, these results consider tobacco and alcohol as separate factors of OC, not their joint use.

In the section of the survey related to OC diagnosis, participants showed a satisfactory level of knowledge in general. Most respondents recognized the importance of asking the patient about persistent pathologies. They also recognized the painless, infiltrative and exophytic characteristics of OC. To a lesser extent, participants recognized the reversibility of precancerous lesions and correctly identified leukoplakia as the most prevalent type, also considering recurring ulcerative lesions as warning signs.

However, only 44% of the dental surgeons identified the tongue as the most frequent location of OC, which was the same percentage as the one obtained in the study conducted by Stillfried et al.,[14] at national level. This percentage was higher than the 32% obtained by Colella et al.,[23] and the 18% documented by Rocha-Buelvas et al.,[13] but quite lower than the 75% reported by LeHew et al.,[21] and the 60% obtained by Mehdizadeh et al.[16]

These results are of concern given the wide dissemination of different OC prevention programs in the country. The importance of recognizing the most frequent anatomical locations of OC is that it involves clinical actions during examination, having an impact on the early diagnosis of these types of lesions, which is a priority in public health. Early diagnosis contributes to an increase in the survival rate and the use of more conservative therapeutic measures.

More than a third of the participants failed in the item related to knowledge of OC treatment and complications. Just over 60% recognized the influence of tumor size in the prognosis, and only 70% identified mucositis as the most frequent complication. The lack of post-diagnosis knowledge should be highlighted, as about half of the participants failed to identify the most common type of OC treatment. No results were found for this section among the studies assessing the level of knowledge of OC.

Regarding the item related to OC prevention, a passing rate of 75% was recorded. Most participants recognized the influence of vitamin deficiencies and dietary habits on oral carcinogenesis, achieving a percentage higher than the 17.2% obtained by Rocha-Buelvas et al.,[13] and the 32% reported by Alami et al.,[12] whose studies considered the low consumption of fruits and vegetables as a risk factor. Results showed that a third of the dental surgeons were unaware of the effect of smoking cessation on OC prognosis. Other studies did not question their participants about stopping bad habits that may contribute to this pathology. Regarding the influence of hygiene on the appearance of OC, results are lower than 72% obtained by Alami et al.,[12] 57% documented by Canto et al.,[25] 56% reported by Stillfried et al.,[14] and 42% obtained by Patton et al.,[19] However,

these studies employed the same methodology and were based on the same survey, which did not consider poor oral hygiene as a risk factor. Regarding this disagreement with the criteria of the present study, it was determined that these factors are of minor importance when they act in isolation, but multiple studies have looked for a connection between these elements in conjunction.

The work of Chen *et al.,*[25] is relevant in this respect, as they conducted a study in a female Chinese population without registration of tobacco and/or alcohol consumption, and concluded that oral hygiene did indeed have an important influence on OC.

Regarding the limitations of the present study, there is the tendency of participants towards answering questions without having any insight in the matter; although the anonymous nature of the survey could have helped reduce this bias. Another limitation to take into account is the survey's validation, which has not been published yet. It is highly suggested that the same research methodology should be used in studies on other regions. Further research should also include private dentists and undergraduate dentistry students coursing their last academic year.

The contribution of this study is that it can be seen as a tool to modify public policies and educational approaches, promoting the creation of an assessment protocol that can help certify the effectiveness of these measures.

CONCLUSION.

Dental surgeons in Public Services in Los Rios Region in 2017 had an average passing rate of 77.08%, with better outcomes in the items related to knowledge of OC etiopathogenesis, diagnosis and prevention than in the sections concerning OC epidemiology, treatment and complications.

The level of knowledge demonstrated by the participants was deemed deficient in relation to its importance. In the fundamental topics of early diagnosis and the reduction of OC morbidity and mortality, participants evidenced the lowest levels of knowledge.

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