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Knowledge About the Relation Between Tobacco and Disease and the Attitude Toward Advising the Cessation of Its Consumption Among a Group of Spanish Dental Students

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Abstract Tobacco is one of the leading causes of preventable death in the developed world. Smoking is associated with a large number of oral pathologies, such as cancer and periodontitis. Dental professionals can play a key role in preventing these health problems. The objectives of this study were (1) to analyze tobacco consumption habits among a group of Spanish dental students, and (2) to assess their knowledge, perceptions, and attitudes regarding procedures to help patients quit smoking. A cross-sectional descriptive study was carried out at the Faculty of Medicine and Dentistry of Santiago de Compostela (Galicia, Spain). Three validated questionnaires were distributed, and the obtained data was processed using SPSS. One hundred twenty out of 220 surveys were completed. Of the students, 18.3% were smokers and the average number of smoked cigarettes per day was 7.5. Tobacco dependence and the intention to give up the habit were low (Fagerström Test) and doubtful (Richmond test), respectively. The majority of students (94.2%) considered it appropriate to promote tobacco use cessation (TUC) activities. A great divergence of criteria regarding tobacco-associated pathologies was found among courses. This article provides positive data about the motivation of dental students to implement TUC strategies. Nevertheless, the usefulness of these interventions makes it necessary to modify the university curricula in order to improve the education on this issue to reduce the incidence of future health problems.

Keywords Oral cancer · Tobacco use cessation · Teaching methodologies · Preventive medicine

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Introduction

Tobacco is the leading preventable cause of mortality in Spain, where it is related to over 50,000 deaths per year [1]. This health problem continues to exist despite that smoking prevalence has declined from the first registration in 1993 (32.1%) to the most recent in 2014 (23%). Regarding sex, the proportion of men who smoke daily is higher than that of women, although this difference has been notably shortened lately [2]. The average age of acquisition of the habit among the Spanish population is 16.4 years [3].

On the other hand, it is well known that tobacco is a modifiable risk factor for a large number of oral pathologies, such as cancer [4] and periodontitis [5, 6]. In this sense, tobacco use cessation (TUC) strategies applied by dental practitioners have been shown to be an effective method to help smokers give up the habit [7]. Moreover, the European Union Working Group on Tobacco and Oral Health has strongly recommended that all clinically active health professionals should thoroughly examine the oral cavity of all smoking adults and provide interventions to promote the habit cessation [8]. For this reason, it has become necessary to introduce specific trainings on this technique in the dental curricula [9, 10].

Principally, there are two TUC methods that may be performed during dental practice: cognitive behavioral therapy (CBT) and pharmacological methods like nicotine replacement therapy (NRT) or antidepressants, such as bupropion [11]. The most recommended intervention that may combine both previously mentioned procedures is the "5 A's" approach (Ask, Advise, Assess, Assist, and Arrange) [12].There is substantial research that supports its usefulness to assist tobacco users in a variety of settings, including the dental office [6].

The objectives of this study were (1) to analyze tobacco consumption habits among a group of Spanish dental students and (2) to assess the knowledge, attitudes, and perceptions of this same group regarding TUC strategies.

Material and Methods

A cross-sectional descriptive study was carried out at the Faculty of Medicine and Dentistry of Santiago de Compostela (Galicia, Spain). All dental students from the first to the fifth course (one lecture room per course) were invited to participate.

Three previously published questionnaires were printed and distributed to each lecture room by the main researcher (ALP) [13–15]. The first questionnaire was related to the students' perceptions about providing advice on smoking cessation, also including details of their own tobacco consumption and their knowledge regarding tobacco-associated pathologies [13]; the second one was the Fagerström Test for Nicotine Dependence (FTND), which was used to analyze nicotine dependence among smoking students [14]; the third and last questionnaire was the Richmond Test, which evaluates the motivation of smokers to give up the habit [15]. Information about the age, gender, and course of each participant was also recorded. Just before the distribution, the scopes and nature of the study were orally explained by the main researcher (ALP). The language used for this explanation was Spanish because all the students were Castilian-speaking. Nonetheless, taking into account that studies prior to university include a quite high level of English, and the fact that dental students receive formation on scientific English from the first course, the three questionnaires were distributed in English, as originally published, and after assessing the complexity of the vocabulary. These were collected after completion. The mean time to perform this process was 15 min per course.

Instrument Validation

The Delphi method [16] was used to validate the test proposed by Pizzo et al. [13] and reach a consensus on whether the questions were appropriate for the objectives of the research. In this sense, this questionnaire was sent by email to five experts in the field: a psychologist, a psychiatrist, a physician, and two dentists. Each of them evaluated two dimensions per item (reliability and validity) using a 5-point Likert scale. The statistical median at the end of the first round of this procedure was 4 on both dimensions for all the items. Therefore, it was considered not necessary to make any change on the set of questions and its appropriateness for the creation of the construct was confirmed.

Subsequently, the same questionnaire was pilot tested on 10 students. This certainly provided satisfactory results in terms of the time needed to fill out the form and the ease of understanding. After that, these 10 pilot cases were discarded and the collection of the final sample was carried out.

Next, in order to know the final reliability of the same questionnaire, Cronbach's alpha test was employed. For this purpose, stratification in thematic blocks was used. The weighted mean value for this questionnaire was 0.64. This data allowed us to assure a moderate reliability.

The FTND and Richmond questionnaires were not candidates for this type of verification because they had already been validated in the literature [14, 15, 17]. The FTND is a 6-item scale (0–10 points) which is a standard instrument for assessing the intensity of physical addiction to nicotine. The cutoff points are 4 and 7, in which less than 4 means low dependence, 4 to 7 moderate dependence, and more than 7 high dependence. The Richmond questionnaire is a 4-item scale (0–10 points). It is a standard tool to measure the degree of motivation to stop smoking. Item 1 scores 0 or 1 and all other items from 0 to 3. The scores from 0 to 3 mean zero or low motivation; from 4 to 5, doubtful motivation; from 6 to 7, moderate motivation (in need of help); and from 8 to 10, high motivation.

Statistical Analysis

Dental students were the statistical analysis unit. A frequency analysis was performed for the categorical variables, while the mean and standard deviation were applied to the continuous variables. Chi-square tests were used to examine differences between distributions, especially regarding grade, gender, and smoking status. The results were analyzed using the statistical software SPSS v20.0 (SPSS Inc., Chicago, IL, USA).

Ethical Aspects

The Clinical Research Ethics Committee of Galicia (CRECG) did not consider necessary to approve this study as long as the questionnaires were anonymous and the participation was free and voluntary.

Results

Description of the Sample

A total of 220 questionnaires were handed out, and 120 were returned completed (54.5%). The distribution by courses was

Table 1 Distribution of dentistry students according to study level, sex, and smoking status

	Smokers, *n* (%)	Non smokers, *n* (%)	Total
Dentistry students			
Level of studies			
I	7 (5.8)	16 (13.3)	23
II	3 (2.5)	15 (12.5)	18
III	2 (1.6)	23 (19.2)	25
IV	6 (5.0)	15 (12.5)	21
V	4 (3.3)	29 (24.2)	33
Sex			
Male	14 (11.7)	28 (28.3)	35
Woman	7 (5.8)	71 (51.2)	85
Total	22 (18.3)	98 (81.7)	120

the following: 23 from the first course (19.2%), 18 from the second course (15%), 25 from the third course (20.8%), 21 from the fourth course (17.5%), and 33 from the fifth course (27.5%). The overall distribution by gender was 35 men (29.2%) and 85 women (70.8%) (Table 1). The mean age of the students was 22.6 ± 4.3 years.

Tobacco Consumption Habits

The total number of smokers was 22 (18.3%), compared to 98 non-smokers (81.7%) (Table 1). Regarding the number of cigarettes consumed per day, the mean was 7.5 ± 6.1 cigarettes. In relation to the time they had been smokers, the median was 6.0 ± 6.4 years. The mean nicotine dependence and the average motivation to quit smoking were 1.71 ± 1.8 (very low) and 5.2 ± 1.9 (doubtful), respectively.

Knowledge About Tobacco-Associated Pathologies

The outcomes for this point are represented in Fig. 1. Figure 1a shows the positive data of each of the pathologies assessed in a spiderweb format, also including the results of all the students as a whole. Figure 1b, c shows the answers provided by the fifth and the first years, respectively.

Students' Opinion About the Knowledge Acquired During the Degree Regarding Tobacco-Associated Pathologies

Only two (1.7%) students reported no training on TUC procedures, while eight subjects (6.7%) just felt slightly trained. On the other hand, 22 (18.3%) students considered that they had received some training about these techniques, as long as 63 (52.55%) and 25 (20.8%) subjects described it as sufficiently or fully covered, respectively.

Students' Knowledge About TUC Interventions, Perception of Ttheir Role as TUC Counselors, and Attitudes Toward This Technique

All the data is presented in Fig. 2 and Tables 2, 3, and 4, together with the statistical results. With reference to the knowledge about TUC strategies, 62.5% of students selected "great extent" in the item "Dentists should ask the patients if they smoke then documenting their smoking status," while 70% also responded "great extent" to the affirmation

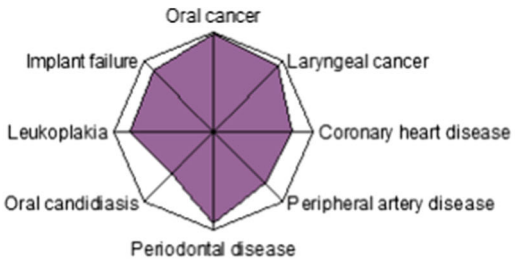

Figure 1.1

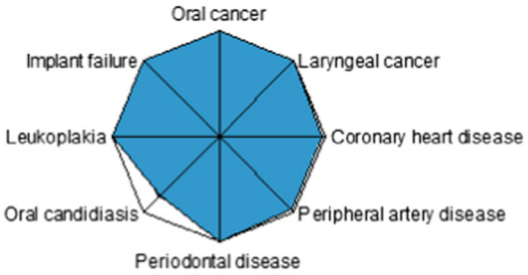

Figure 1.2

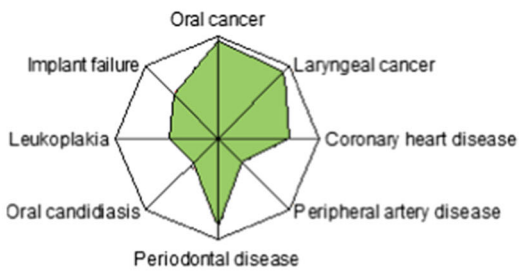

Figure 1.3

Fig. 1 Spiderweb diagram showing the knowledge of the students about the pathologies associated with smoking. **a** Global. **b** Fifth course. **c** First course

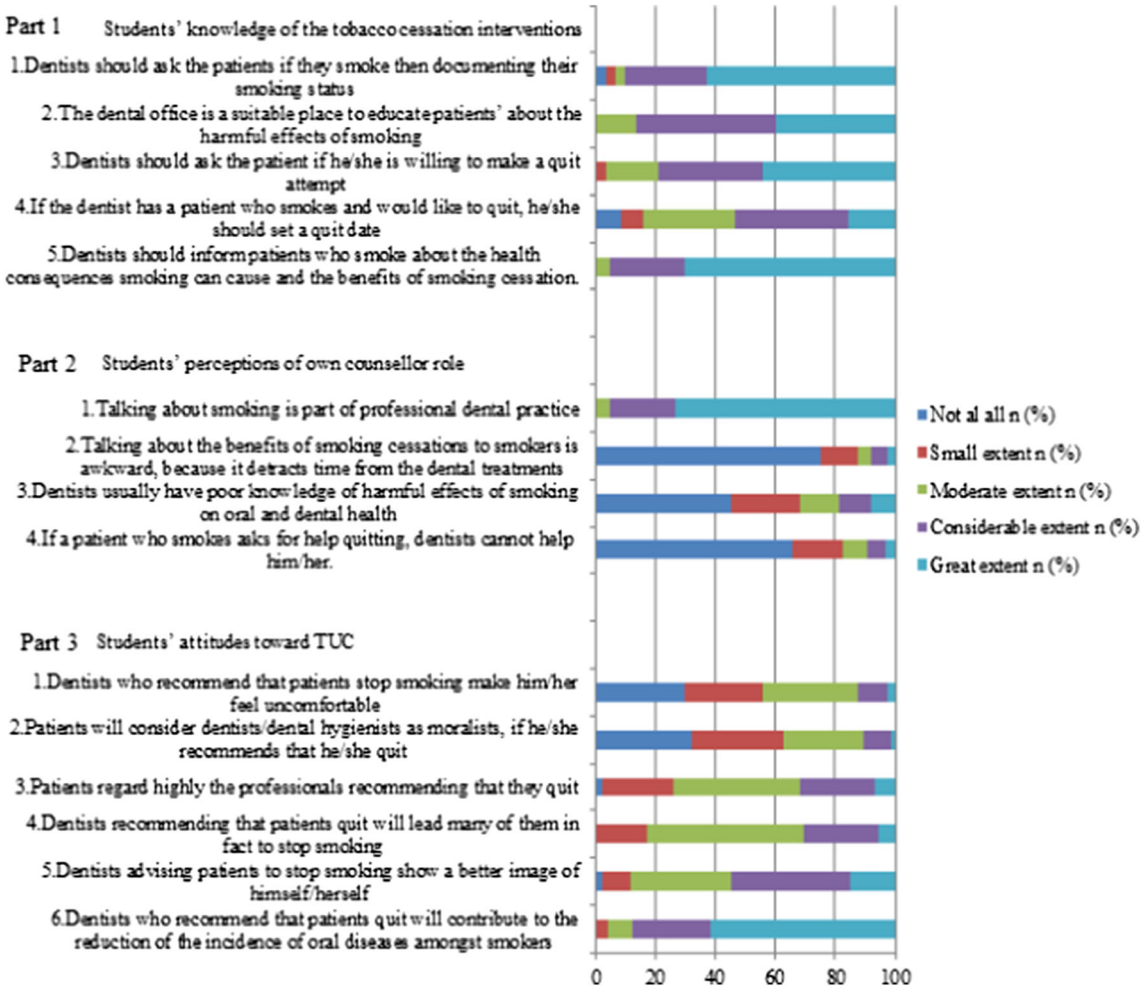

Fig. 2 Dental students' knowledge, attitudes, and perceptions regarding TUC

"Dentists should inform patients who smoke about the health consequences smoking can cause and the benefits of smoking cessation." With regard to their role as counselors, 73.3% answered "great extent" to the item "Talking about smoking is part of professional dental practice." In the same way, concerning the affirmation "If a patient who smokes asks for help quitting, dentists cannot help him/her," 65.8% replied "not at all." In relation to the students' attitudes toward TUC strategies, it is noteworthy that 61.7% of students marked "great extent" on the item "Dentists/dental hygienists who recommend that patients quit will contribute to the reduction of the incidence of oral diseases amongst smokers."

Regarding results by course, gender, or smoking status, a statistical significant difference was obtained between the first and fifth courses on the item "Dentists should ask the patient if he/she is willing to make a quit attempt." Moreover, a significant result was reported considering smoking status on the affirmation "Talking about the benefits of smoking cessations to smokers is awkward, because it detracts time from the dental treatments." .No significant differences were obtained concerning attitudes toward TUC.

Discussion

Training of dental students on tobacco-associated pathologies and TUC strategies is essential in preventive medicine. In fact, European education has shown a constant improvement on this regard over the years [10]. Moreover, the data included in the present study is a positive reflection of the standardization of the activities suggested in the European Workshop on Tobacco Use Prevention and Cessation for Oral Health Professionals [8].

The first goal of this project was to assess the amount of smoking dental students in our faculty. Within all the subjects enrolled, 18.3% were smokers. This figure is similar to that of a recent Spanish health survey for individuals from 15 to 24 years of age (19%) [2]. Furthermore, comparable to other studies, it was interesting to observe the divergence of smokers by gender (40% males vs. 9.86% females) [18].

On the other hand, the use of tobacco by dental professionals is a key issue on this topic, since smoking dentists have been considered less predisposed to advice patients to quit the habit; in fact, it has been suggested that non-smoking

Table 2 Dental students' knowledge about tobacco use cessation (TUC) interventions by grade, gender, and smoking status

Item description	Grade		Gender		Smoking status	
	First course (%)	Fifth course (%)	M (F)	F (%)	Smoker (%)	Non-smoker (%)
1. Dentists should ask the patients if they smoke then document their smoking status						
Not at all, *n* (%)	5.4	1.8	0.0	3.3	0.8	2.5
Small extent, *n* (%)	1.8	0.0	1.7	1.7	1.7	1.7
Moderate extent, *n* (%)	1.8	3.6	0.0	3.3	0.0	3.3
Considerable extent, *n* (%)	12.5	8.9	8.3	19.2	6.7	20.8
Great extent, *n* (%)	19.6	44.6	19.2	43.3	9.2	53.3
p value	0.163		0.375		0.273	
2. The dental office is a suitable place to educate patients' about the harmful effects of smoking						
Not at all, *n* (%)	0.0	0.0	0.0	0.0	0.0	0.0
Small extent, *n* (%)	0.0	0.0	0.8	0.0	0.8	0.0
Moderate extent, *n* (%)	8.9	3.6	5.0	7.5	1.7	10.8
Considerable extent, *n* (%)	23.2	30.4	14.2	32.5	8.3	38.3
Great extent, *n* (%)	8.9	25.0	9.2	30.8	7.5	32.5
p value	0.109		0.238		0.194	
3. Dentists should ask the patient if he/she is willing to make a quit attempt						
Not at all, *n* (%)	0.0	0.0	0.0	0.0	0.0	0.0
Small extent, *n* (%)	5.4	0.0	1.7	1.7	0.8	2.5
Moderate extent, *n* (%)	1.8	7.1	3.3	14.2	1.7	15.8
Considerable extent, *n* (%)	21.4	17.9	10.0	25.0	9.2	25.8
Great extent, *n* (%)	12.5	33.9	14.2	30.0	6.7	37.5
p value	0.029*		0.551		0.346	
4. If the dentist has a patient who smokes and would like to quit, he/she should set a quit date						
Not at all, *n* (%)	3.6	3.6	4.2	4.2	2.5	5.8
Small extent, *n* (%)	1.8	3.6	0.8	6.7	0.0	7.5
Moderate extent, *n* (%)	12.5	17.9	8.3	22.5	5.8	25.0
Considerable extent, *n* (%)	17.9	23.2	10.8	26.7	6.7	30.8
Great extent, *n* (%)	5.4	10.7	5.0	10.8	3.3	12.5
p value	0.975		0.454		0.551	
5. Dentists should inform patients who smoke about the health consequences smoking can cause and the benefits of smoking cessation.						
Not at all, *n* (%)	0.0	0.0	0.0	0.0	0.0	0.0
Small extent, *n* (%)	0.0	0.0	0.0	0.0	0.0	0.0
Moderate extent, *n* (%)	1.8	1.8	1.7	3.3	0.0	5.0
Considerable extent, *n* (%)	14.3	12.5	5.8	19.2	5.0	20.0
Great extent, *n* (%)	25.0	44.6	21.7	48.3	13.3	56.7
p value	0.489		0.714		0.489	

Significant differences between the two groups of dental education levels, between males and females, and according to participants' smoking status
*$p < 0.05$; **$p < 0.01$

dentists would act as a role model for their patients [9]. In this sense, we additionally estimated drug dependence and the intention to give up the drug among smoking dental students by means of two previously validated tests [14, 15]. The subjects of our study showed a low physical dependence to tobacco (1.71 ± 1.8), but a dubious motivation to give up smoking (5.2 ± 1.9). In the literature, these two questionnaires have been also applied to dental patients to evaluate and improve tobacco dependence education at university [19].

Apart from smoking habits, knowledge of tobacco-associated oral and systemic pathologies was also analyzed (Fig. 1). On this regard, a great difference between first- and fifth-year courses was observed. The former scarcely related tobacco to implant failure, leukoplakia, or oral candidiasis, as long as the latter just felt indecisive about relating smoking and oral candidiasis. This divergence may be explained by the acquisition of specific knowledge during the degree. On the contrary, a study performed among Italian dental students

Table 3 Dental students' perceptions regarding the dental health professional role in smoking cessation by grade, gender, and smoking status

Item description	Grade		Gender		Smoking status	
	First course (%)	Fifth course (%)	M (F)	F (%)	Smoker (%)	Non-smoker (%)
1. Talking about smoking is part of professional dental practice						
Not at all, *n* (%)	2.5	0.8	0.0	1.7	0.0	1.7
Small extent, *n* (%)	0.8	0.0	2.5	1.7	0.8	3.3
Moderate extent, *n* (%)	0.3	1.7	4.2	20.0	5.0	19.2
Considerable extent, *n* (%)	5.8	4.2	14.2	26.7	7.5	33.3
Great extent, *n* (%)	9.2	20.8	8.3	20.8	5.0	24.2
p value	0.094		0.211		0.963	
2. Talking about the benefits of smoking cessations to smokers is awkward, because it detracts time from the dental treatments						
Not at all, *n* (%)	5.4	1.8	19.2	53.3	12.5	60.0
Small extent, *n* (%)	1.8	0.0	5	10	0.8	14.2
Moderate extent, *n* (%)	1.8	3.6	1.7	2.5	1.7	2.5
Considerable extent, *n* (%)	12.5	8.9	2.5	3.3	0.8	5.0
Great extent, *n* (%)	19.6	44.6	0.8	1.7	2.5	0.0
p value	0.394		0.843		0.002**	
3. Dentists usually have poor knowledge of harmful effects of smoking on oral and dental health						
Not at all, *n* (%)	19.6	32.1	7.5	37.5	10.0	35.0
Small extent, *n* (%)	12.5	10.7	8.3	15.0	0.8	22.5
Moderate extent, *n* (%)	3.6	7.1	6.7	6.7	2.5	10.8
Considerable extent, *n* (%)	3.6	1.8	4.2	5.8	2.5	7.5
Great extent, *n* (%)	1.8	7.1	2.5	5.8	2.5	5.8
p value	0.579		0.063		0.208	
4. If a patient who smokes asks for help quitting, dentists cannot help him/her						
Not at all, *n* (%)	26.8	39.3	22.5	43.3	10.8	55.0
Small extent, *n* (%)	10.7	7.1	1.7	15.0	2.5	14.2
Moderate extent, *n* (%)	3.6	5.4	2.5	5.8	0.8	7.5
Considerable extent, *n* (%)	0.0	5.4	1.7	4.2	2.5	3.3
Great extent, *n* (%)	0.0	1.8	0.8	2.5	1.7	1.7
p value	0.370		0.336		0.179	

Significant differences between the two groups of dental education levels, between males and females, and according to participants' smoking status
*$p < 0.05$; **$p < 0.01$

stated that oral implant failure was the least tobacco-related condition [13]. With reference to this topic, there is enough scientific evidence that links smoking to either oral candidiasis or implant failure [20, 21]. In addition, oral cancer was the most tobacco-associated pathology by all the students, regardless of the course. In this sense, an OR of 27.7 has been estimated for this connection in Spanish male adults [22]. Moreover, the WHO currently considers smoking the highest risk factor for the development of oral and pharyngeal carcinomas [23].

Finally, the knowledge, attitudes, and perceptions concerning TUC strategies among our subjects were also assessed. This has been the goal of a great variety of articles in recent years, mainly focused on dental students from North America and other European countries [13, 24–28]. To our best knowledge, this is the first article in Spain trying to address this topic.

The first items regarding students' knowledge about TUC strategies followed the "5 A's" approach (Ask, Advise, Assess, Assist, and Arrange) (Fig. 2,, part 1). On this regard, 93% of students considered it necessary to ask their patients about smoking habits. The questions focused on the four remaining actions (Fig. 2, part 1, items 3, 4, and 5) showed lower percentages of acceptance, ranging from 53.3 to 79.2%, although these differences were not statistically significant. We only found a statistically significant divergence between first- and fifth-year students when they were questioned if dentists should ask their patients if they were willing to make a quit attempt ($p < 0.05$) (Table 2), which may reveal a higher clinical confidence among more trained students.

Table 4 Dental students' attitudes toward tobacco use cessation (TUC) by grade, gender, and smoking status

Item description	Grade		Gender		Smoking status	
	First course (%)	Fifth course (%)	M (F)	F (%)	Smoker (%)	Non-smoker (%)
1. Dentists who recommend that patients stop smoking make him/her feel uncomfortable						
Not at all, *n* (%)	8.9	12.5	5.8	24.2	3.3	26.7
Small extent, *n* (%)	16.1	17.9	12.5	13.3	5.0	20.8
Moderate extent, *n* (%)	10.7	17.9	6.7	25.0	7.5	24.2
Considerable extent, *n* (%)	5.4	7.1	3.3	6.7	2.5	7.5
Great extent, *n* (%)	0.0	3.6	0.8	1.7	0.0	2.5
p value	0.772		0.074		0.552	
2. Patients will consider dentists/dental hygienists as moralists, if he/she recommends that he/she quit						
Not at all, *n* (%)	12.5	12.5	9.2	23.3	3.3	29.2
Small extent, *n* (%)	14.3	21.4	8.3	21.7	6.7	23.3
Moderate extent, *n* (%)	10.7	12.5	10.0	16.7	6.7	20.0
Considerable extent, *n* (%)	3.6	10.7	0.8	8.3	1.7	7.5
Great extent, *n* (%)	0.0	1.8	0.8	0.8	0.0	1.7
p value	0.706		0.449		0.484	
3. Patients regard highly the professionals recommending that they quit						
Not at all, *n* (%)	3.6	0.0	0.0	2.5	0.0	2.5
Small extent, *n* (%)	8.9	10.7	5.8	17.5	3.3	20.0
Moderate extent, *n* (%)	16.1	25.0	15.0	27.5	7.5	35.0
Considerable extent, *n* (%)	12.5	17.9	7.5	17.5	7.5	17.5
Great extent, *n* (%)	0.0	5.4	0.8	5.8	0.0	6.7
p value	0.279		0.480		0.238	
4. Dentists recommending that patients quit will lead many of them in fact to stop smoking						
Not at all, *n* (%)	0.0	0.0	0.8	0.0	0.8	0.0
Small extent, *n* (%)	3.6	8.9	5.8	10.8	2.5	14.2
Moderate extent, *n* (%)	23.2	28.6	14.2	37.5	9.2	42.5
Considerable extent, *n* (%)	10.7	17.9	5.8	19.2	5.8	19.2
Great extent, *n* (%)	3.6	3.6	2.5	3.3	0.0	5.8
p value	0.841		0.409		0.153	
5. Dentists advising patients to stop smoking show a better image of himself/herself						
Not at all, *n* (%)	1.8	0.0	0.8	1.7	0.0	2.5
Small extent, *n* (%)	0.0	7.1	1.7	7.5	1.7	7.5
Moderate extent, *n* (%)	10.7	17.9	7.5	25.8	6.7	26.7
Considerable extent, *n* (%)	21.4	25.0	13.3	26.7	6.7	33.3
Great extent, *n* (%)	7.1	8.9	5.8	9.2	3.3	11.7
p value	0.328		0.600		0.907	
6. Dentists who recommend that patients quit will contribute to the reduction of the incidence of oral diseases among smokers						
Not at all, *n* (%)	0.0	0.0	0.0	0.0	0.0	0.0
Small extent, *n* (%)	0.0	1.8	2.5	1.7	1.7	2.5
Moderate extent, *n* (%)	0.0	3.6	2.5	5.8	0.8	7.5
Considerable extent, *n* (%)	16.1	16.1	10.0	15.8	4.2	21.7
Great extent, *n* (%)	25.0	37.5	14.2	47.5	11.7	50.0
p value	0.440		0.169		0.542	

Significant differences between the two groups of dental education levels, between males and females, and according to participants' smoking status
*$p < 0.05$; **$p < 0.01$

With respect to this point, the lack of time in the dental practice and absence of interest have been proposed as potential limiting factors for developing TUC activities [30]. In our opinion, the vast majority of students understand that they

should ask about smoking habits during the first consultation. Nonetheless, they neither know what measures they should implement afterward nor if these are part of their professional competences.

With reference to students' perceptions regarding their role as TUC counselors, the results were quite positive (Fig. 2, part 2). In fact, 95% of students extensively agreed that talking about smoking is part of their professional dental practice. Curiously, we found a statistically significant relationship in the item "Talking about the benefits of smoking cessations to smokers is awkward, because it detracts time from the dental treatments" taking into account the habit of smoking among students ($p < 0.01$) (Table 3). This means that most smoking students consider that speaking about TUC activities reduces their time to be more productive in the dental office. This data is rather worrying and proves the statement that smoking students tend to perform less TUC activities in comparison with non-smoking students [9].

In relation to students' attitudes concerning TUC procedures (Fig. 2, part 3), the results showed that the majority of students assumed that the development of TUC strategies would be greatly appreciated by their patients. In the same way, they recognized the impact that these activities could have on public health. About this topic, 17.5% of students believed that advising patients to give up the habit does not lead them to stop smoking (Table 4). Obviously, this is a limitation for students to conduct TUC actions, which we consider is related to a lack of understanding of their usefulness.

In a European context, our results are perfectly comparable to those obtained in Ireland [25] or the UK [29]. On the contrary, the data from Greece [26], Hungary [27], Italy [13], or Romania [28] was significantly worse.

It is worth mentioning that the main limitation of this work is that while the short-term impact of TUC training is clearly demonstrated by our findings, its long-term effect remains uncertain. It would be ideal to have a longer follow-up of the students enrolled in this study to evaluate the development of TUC activities once they have entered working life.

Conclusions

The percentage of smoking dental students was comparable to that estimated on the general Spanish population at the same age. At the same time, nicotine dependence was low, while the intention to give up smoking was dubious.

The knowledge about tobacco-associated pathologies was acceptable among dental students; however, advanced students showed clearly more competences on this regard. Similarly, knowledge, perceptions, and attitudes toward TUC strategies were quite appropriate, but higher efforts are needed to improve their understanding and complete implementation by undergraduate dental students. Improving their education must be a goal in order to optimize an essential preventative medicine resource.

Compliance with Ethical Standards The Clinical Research Ethics Committee of Galicia (CRECG) did not consider necessary to approve this study as long as the questionnaires were anonymous and the participation was free and voluntary.

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