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Perception of tobacco use prevention and cessation among faculty members in Latin American and Caribbean dental schools

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Abstract

Rates of tobacco use are increasing in regions of Latin America and the Caribbean (LAC). Unfortunately, tobacco cessation education is not a standard component of dental curriculum in LAC dental schools. The objective of this study was to identify the perceptions of LAC dental faculty members regarding the tobacco use prevention and cessation (TUPAC) competencies that should be addressed in dental curricula. Dental deans and faculty completed a web-based questionnaire in Spanish, Portuguese, French, or English. The questionnaire contained 32 competencies grouped into the 5A's (Ask, Advise, Assess, Assist, and Arrange) of tobacco cessation and 6 supplementary questions for identifying barriers to providing TUPAC education to dental students. Respondents indicated the degree to which they believed each competency should be incorporated into dental curricula using a 5-point Likert scale ("1"= strongly disagree to "5"=strongly agree). Responses were obtained from 390 faculty members (66% South America, 18% Mexico/Central America, 16% the Caribbean). Two%, 12%, and 83% of respondents reported that smoking was allowed in clinical environments, other indoor environments, and outdoor environments of their dental schools, respectively. Mean importance ratings for each of the competencies were as follows: Ask (4.71), Advise (4.54), Assess (4.41), Assist (4.07), and Arrange (4.01). Overall, LAC dental educators agree that TUPAC training should be incorporated in dental curricula. Assist and Arrange competencies were rated lower, relative to other competencies. Tobacco use among dental educators and high rates of on-campus smoking could potentially pose barriers to promoting cessation interventions in the LAC dental schools.

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INTRODUCTION

Tobacco is the leading cause of preventable death worldwide. While tobacco use in developed countries of the Western Hemisphere (United States and Canada) has slowly declined over the past 20 years, the consumption in developing countries has steadily increased.[1] Tobacco use prevalence rates in Latin America and the Caribbean (LAC) approach or surpass those of the United States.[2] Some of the highest tobacco use prevalence rates in Latin America have been observed in Chile and Bolivia (35% and 30%, respectively), followed by Argentina (27%) and Uruguay (25%).¹ The associations between tobacco use and significant adverse health consequences, such as cancer, cardiovascular and pulmonary diseases, are well documented.[3, 4] In fact, increased tobacco consumption in regions of LAC has contributed to a shift in the leading cause of death from infectious to non-communicable diseases in recent years.[5, 6] Because of the time lag between the onset of tobacco use and the subsequent development of tobacco-related diseases, the effect of increasing tobacco usage in LAC will continue to be observed for decades to come.[5] These findings highlight the importance of public health efforts to reduce tobacco consumption in this region.

Tobacco use prevention and cessation (TUPAC) includes behavioral support and pharmacotherapy strategies that assist non-tobacco users in remaining tobacco free and help tobacco users to quit.[7] Healthcare providers from a variety of professions such as dentistry, social work, and nursing are in a unique position to deliver TUPAC to patients. Oftentimes, these providers see patients more frequently or for longer durations than physicians.[8] A 2012 Cochrane review of tobacco cessation interventions in the dental environment demonstrated that the interventions performed by dental professionals increased the tobacco abstinence rate 1.71 times at 6 months.[9] Important progress has been made in incorporating tobacco prevention and cessation programs into US and Canadian dental curricula.[10, 11] Two decades ago, only 25% of dental schools in developed nations included information related to tobacco use in their dental records.[12] Today, most US and Canadian schools provide training on how to promote tobacco cessation among dental patients.[11]

Unfortunately, tobacco cessation education is not a standard component of dental curriculum in LAC dental schools.[13] When tobacco education is provided, it typically focuses on the health consequences of tobacco use, particularly the oral health impact. Formal training on counseling strategies and available treatment options like NRT (nicotine replacement therapy), antidepressants, or nicotinic receptor partial agonists is typically not provided. As an illustration, although 80% of 1,949 Mexican dental students participating in a study had heard about NRT during their program, only 12.6% reported having had the formal training to provide this type of therapy to their patients.[14] Additionally, in a study which assessed smoking-related practices among 93 Venezuelan dentists, 86% of these dentists stated that they recorded the tobacco history of their patients during the first dental appointment, but none of them updated the smoking status in subsequent visits, and 72% reported not

¹Data from the 2011 WHO Report on the Global Tobacco Epidemic (Data only for adult females in Honduras)

advising any type of pharmacotherapy, counseling support, or any other cessation strategy to help the patients quit.[15]

Smoking among dental professionals presents an additional challenge to promoting TUPAC in dental settings in LAC. Surveys conducted in Venezuelan and Brazilian schools of dentistry reported high smoking rates among dental students (30–40%)[13, 16] and dental faculty (34%).[16] On-campus smoking also appears to be fairly common in regions of LAC. In a study conducted in 13 Mexican schools of dentistry in 2006, only 55% of the dental students reported that their schools have smoke-free environment policies in the dental clinics and 41% of the surveyed students admitted to have smoked in the clinical facilities and surrounding areas.[14] These policies and smoking practices may reflect the broader attitudes towards smoking among certain dental communities in LAC.

Dental professionals have a unique opportunity to impact tobacco consumption in LAC. However, there is initial evidence that dental professionals in LAC do not possess the education and training needed to properly assess tobacco use and provide tobacco cessation interventions. As a first step in improving TUPAC in LAC dental settings, we need to better understand the current practices, perceived value of tobacco competencies, and perceived barriers to implementing training in TUPAC among the faculty and leadership in dental programs. Although a few studies have examined the use of TUPAC among dental students, to our knowledge this project is the first multinational survey to identify perceptions of dental deans and faculty members in LAC regarding TUPAC competencies that should be addressed in the dental curricula. Our hope is that this study will help us to better understand tobacco control practices in LAC dental schools and to identify the next steps for integrating TUPAC training into dental curricula.

METHODS

Study Population

A non-probability voluntary convenience sampling procedure was used to recruit dental educators from LAC countries. Invitation letters with the access link to the survey were distributed via email through a variety of contacts in the region including: (a) deans or directors of baccalaureate and higher degree dental schools in LAC listed in the World Health Organization (WHO) World Directory of Medical Schools; (b) faculty and directors of dental programs in Latin America and the Caribbean identified by the Pan American Health Organization (PAHO) Regional Office for Oral Health of WHO; (c) members of the IADR (International Dental Association for Dental Research), Latin American chapter; and (d) LAC authors of manuscripts related to tobacco prevention and cessation in dental education.

Data collection

The data collection instrument (online survey) was divided into four sections: Part I (demographics, role of the respondent in the academic institution, knowledge of current tobacco-free policies in the dental school), Part II (self-assessment on tobacco use), Part III (TUPAC Competencies), and Part IV (Perceived barriers to providing TUPAC education).

We identified essential TUPAC competencies, using as a reference the New Zealand Smoking Cessation Core Competencies published in 2008.[17] These competencies were modified and adapted for developing the survey questions in the study. Thirty-two competencies were divided into 5 categories according to the key steps of the 5 A's Intervention (Ask, Advise, Assess, Assist, and Arrange) developed by the U.S. Public Health Service.[18] Respondents were asked to rate their level of agreement with how essential each TUPAC competency was for undergraduate or basic dental students, using a 5-point Likert scale, with scores ranging from 1 ("strongly disagree") to 5 ("strongly agree").

Additionally, we incorporated 6 supplementary questions with the goal of identifying barriers to providing TUPAC education to dental students.[19, 20] As a final question, we asked dental educators if they would benefit from training in TUPAC interventions, including brief motivational intervention. For all these questions we used the same 5-point Likert scale described above. The English version of the instrument was translated into Spanish, French, and Portuguese. The translations were validated by 8 health professionals (two per language) who were also native speakers. After this process, questions were modified to improve clarity and pilot data were discarded (Table 1).

A communication via email was sent to deans, directors, and faculty members of LAC who spoke French, Spanish, Portuguese, or English (languages most commonly spoken in the region), inviting them to complete a web-based survey. At the same time, these potential respondents were asked to disseminate the survey to other faculty members at their institutions. All participants' responses remained anonymous and confidential, as Internet Protocol (IP) addresses were not collected. The questionnaire was accessible online for a 4-month period.

The study was approved by the Institutional Review Board of The University of Texas MD Anderson Cancer Center. Informed consent for participation in the study was implied by each respondent upon submission of the completed survey.

Statistical Analyses

Survey data were analyzed for the entire cross-regional study population using Statistical Package for the Social Sciences (SPSS) software. Descriptive statistics were generated to describe the characteristics of the sample. Student's *t*-test and the Chi-square test for categorical data were used to compare the groups. For analysis purposes, LAC was divided in 3 sub regions --Mexico/Central America, the Caribbean, and South America-- according to the United Nations geoscheme. Analyses of the 5 categories of the TUPAC competencies (Ask, Advise, Assess, Assist, and Arrange) were tested for internal reliability using the Cronbach's alpha coefficient. TUPAC competencies scores by sub-regions were compared using one-way ANOVA. Tukey HSD post hoc comparisons were also performed. A value of $p < 0.05$ was required for statistical significance.

RESULTS

Sample characteristics

Among the 23 countries identified with dental schools in LAC (including the US territory of Puerto Rico), 19 responded to the questionnaire, giving a country response rate of 83%. Responses from Haiti, Jamaica, and Nicaragua were not obtained. A total of 390 LAC dental educators completed the online survey (Table 2), most of them were faculty members (88%). The majority of the participants were from South America (66%), and more than a third (38%) were dental educators appointed in countries where the tobacco use prevalence is equal or higher than 20%.[21] Ten percent of the dental educators were current tobacco users. Among them, more than two-thirds (68%) identified themselves as cigarette smokers; although use of cigar, water pipe, and smokeless tobacco was also reported.

Smoking restriction in the LAC dental schools

Participants in our study reported that people smoke inside clinical environments (2%); in other indoor environments (12%) such as waiting rooms, hallways, classrooms, restrooms, laboratories; and at outside environments (83%) like cafeterias, sidewalks, and parking lots adjacent to their dental schools.

TUPAC competencies

Overall, dental educators who participated in our study were in agreement that TUPAC competencies are essential for undergraduate or basic dental students (mean 4.35; SD 0.51) (Table 3). The higher scores were reported for the competencies related to Ask (mean 4.71; SD 0.38), followed by Advise (mean 4.54; SD 0.53), Assess (mean 4.41; SD 0.62), Assist (mean 4.07; SD 0.71), and Arrange (mean 4.01; SD 0.81). In item level analysis, among the 32 competencies, the lowest scores were related to *“offering nicotine replacement therapy (NRT) and other medications such as bupropion, varenicline (Chantix), when appropriate”* (part of the category Assist), and *“arranging follow-up support during treatment for tobacco cessation”* (part of the category Arrange).

Comparison showed a statistically significant difference among the level of agreement with the TUPAC competencies that should be taught in all the sub-regions (Mexico/Central America, the Caribbean, and South America) at the significance level of $p = 0.05$ (ANOVA). Tukey HSD post hoc tests showed significant statistical differences between the South American and Mexico/Central American sub-regions, with Mexico/Central American rating the overall TUPAC competencies (average of 5 As) more highly than South America ($p < 0.05$).

Barriers

Lack of resources to make needed referrals (mean 3.76; SD 1.10) and lack of skills to teach motivational interventions (mean 3.61; SD 1.07) were identified as the most important barriers for providing TUPAC education to undergraduate or basic dental students (Figure 1). Of note, study respondents agreed that dental faculty will benefit from training in TUPAC interventions, including brief motivational interventions (mean 4.07; SD 1.10).

DISCUSSION

A primary focus of this study was to assess dental educators' attitudes regarding the importance of TUPAC competencies in dental curricula. Overall, dental educators assigned high importance to the Ask, Advise, Assess, Assist, and Arrange competencies, as indicated by a score of 4 out of 5 or greater on each of the five competencies. However, differences emerged among competency ratings, with ratings decreasing for each competency from Ask to Arrange. Competencies related to the assessment and documentation of tobacco use (Ask, Advise, and Assess) received higher importance ratings than competencies related to providing tobacco cessation treatments and arranging for continued cessation support (Assist and Arrange). This is consistent with other research examining the integration of smoking cessation interventions into clinical practice, which have found lower delivery of Assist and Arrange services compared to Ask, Advise, and Assess among physicians and pharmacists. [19] The reasons for this pattern of findings are multifactorial and likely due to both aspects of the healthcare system and factors unique to LAC cultures. Assist and Arrange competencies are typically more time consuming.[19] Lack of insurance coverage for smoking cessation treatments may also limit the use of these interventions.[22] Moreover, in some LAC regions, tobacco use is not often viewed as an addiction that needs treatment, possibly resulting in less utilization of tobacco cessation services.[23]

This study also identified important sub-regional differences in perceptions of TUPAC competencies. Respondents in Mexico/Central America were more likely to view TUPAC competencies favorably, compared to respondents in South America. These findings may reflect sub-regional differences in tobacco cessation services or government efforts to curb tobacco use. For example, in Mexico there are more tobacco cessation services available in medical settings than in most Caribbean nations and many South American countries.[24] Although more research is needed to better understand these findings, this information provides an important starting point in designing TUPAC education and training programs for different regions of LAC.

Although TUPAC training was generally viewed favorably by dental educators in this study, there appear to be some practical barriers to implementing this training in LAC dental schools. Among the barriers identified by dental educators, lack of resources to make referrals and lack of skills to provide motivational interventions scored the highest. Also worth noting, some differences emerged between dean and faculty perceptions of barriers in our exploratory analyses. Faculty perceived insufficient class and clinic time, limited tobacco educational resources, faculty skills, and lack of support from other faculty to be stronger barriers to TUPAC training implementation than did dental schools deans. This suggests that there may be a slight disconnect between deans and faculty in terms of perception of available resources for delivering TUPAC education and training.

Additional barriers to integrating TUPAC curricula into LAC dental schools include the smoking practices of faculty and university smoking culture. About 10% of dental educators surveyed reported being current smokers. Moreover, on-campus smoking (especially in outdoor environments) occurred in most of the universities surveyed. These findings are consistent with other research which suggests that on-campus smoking[14] and smoking

among dental students and faculty[14, 16] may be fairly common in some LAC dental schools. These smoking practices may also interfere with clinical efforts to reduce smoking among patients. Some have argued that health professionals must model non-smoking behavior themselves in order to establish credibility with tobacco dependent patients.[23] The rates of smoking among dental educators and presence of on-campus smoking observed in this study provide important context for any efforts to improve TUPAC in dental curricula.

This study represents the first comparative needs assessment for TUPAC training in dental schools of the LAC region. A strength of this study was in its broad sampling of countries across multiple regions of LAC. Importantly, the response rates for the online survey did not appear to be skewed towards certain sub-regions or influenced by region-specific tobacco-use characteristics. Responses were received from over 80% of the LAC countries surveyed. Moreover, responses represented countries with both low and high tobacco use prevalence rates. However, as a limitation, this study utilized a convenience sampling approach, thus reducing the generalizability of results to schools other than those sampled. We were unable to obtain a comprehensive list of all dental schools in LAC and invitations to participate in this online survey were sent to dental educators who were identified through web searches, professional organization member lists, and other search methods. Thus, we do not know how representative this sample is of all dental schools in LAC. As an additional limitation, we did not collect specific demographic information from respondents (e.g., age and gender). This was done in order to help ensure participant confidentiality (especially for deans and directors), but it limited our examination of sample characteristics and the relation of these characteristics to TUPAC ratings. Lastly, in the interest of reducing the length of this survey, a nonstandard assessment of tobacco use was used. Although this assessment method was not as comprehensive as other available tools, it did provide a basic understanding of tobacco use among dental educators.

There is a need in LAC to develop training for dental faculty members in educating dental students on tobacco cessation. Our hope is that these results will help inform national and cross-national priorities for intervention and facilitate the identification of best practices for TUPAC delivered in the dental environment. Factors such as attitudes towards TUPAC, university smoking culture, and availability of local resources should be taken into consideration when designing curricula and adopting standards of best practice. There is good evidence in other areas of the world that training in TUPAC competencies can improve patient cessation outcomes.[9] The increasing rates of tobacco use observed in regions of LAC in recent years underscore the importance of this work. Incorporating TUPAC training into the dental environment should help dental professionals to deliver more effective tobacco cessation and prevention services, a move that we hope will be a meaningful step forward in addressing tobacco use in LAC.

Encouragingly, there appears to be considerable interest among dental educators in establishing TUPAC practices in dental education. In this study, we included in the online survey an invitation to participants to contact the authors if they had interest in establishing a regional dental organization for tobacco control and cessation [Coalición de Profesores de Odontología/Estomatología en Latinoamérica y el Caribe para la Prevención y Cesación del

Tabaquismo]. We had several responses to this invitation and so far have conducted four virtual meetings with dental educators in LAC using an online platform sponsored by the Pan American Health Organization (The branch for the Americas region of the World Health Organization). As a result of these meetings, some members of this group have implemented a multi-country research project related to cigar use (still in progress). Web-based technologies have great potential in promoting the exchange of research experiences and creative ideas in an interactive environment. Currently, this coalition is identifying and evaluating successful TUPAC training programs in the LAC region that can be disseminated (perhaps using the same online platform) to the LAC dental schools where tobacco cessation is a missing component of the curriculum. We believe that collaborations such as these are an important first step in advancing TUPAC practices in LAC and we plan to continue to develop this online platform for dental training programs.

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Fig. 1.
LAC dental educators perceived barriers for providing TUPAC education in dental schools
(1=strongly disagree, 3=neutral, 5=strongly agree)

Table 1

Battery of questions used in the online survey for tobacco use in the environments of dental schools, tobacco cessation competencies, and potential barriers for implementing tobacco prevention, and control strategies.

Tobacco Use in Different Environments of Dental Schools	<i>Possible answers: Yes, No, Don't know.</i>
	<ol style="list-style-type: none"> 1 Do people smoke in the clinical environments (where patients are treated) at your dental institution? 2 Do people smoke in other indoor environments (waiting rooms, hallways, classrooms, restrooms, laboratories, etc.) at your dental institution? 3 Do people smoke in the outside environments (parking lot, cafeteria, sidewalks, etc.) at your dental institution?
Competencies	<i>5-item scale from Strongly Disagree (1) to Strongly Agree (5)</i>
ASK	<ol style="list-style-type: none"> 1 Ask about and document a client's current tobacco use status and relevant details. 2 Demonstrate knowledge of tobacco dependence as a chronic relapsing condition. 3 State the prevalence and patterns of tobacco dependence in his/her country, in particular among vulnerable populations (children, pregnant women, HIV patients, TB patients). 4 Demonstrate awareness of the historical, political, social, and economic factors that promote and maintain tobacco dependence, in particular among vulnerable populations. 5 State the major harmful health effects of tobacco use on individuals, pregnant women and their babies, and the wider community, and the health benefits of stopping tobacco use. 6 Identify the importance for pregnant women of complete cessation of tobacco use as early in pregnancy as possible. 7 Ask all people documented as tobacco users, at each admission to the dental clinic and each presentation to the dental care setting, if they are still using tobacco.
ADVISE	<ol style="list-style-type: none"> 8 Give brief advice clearly and convincingly and document that this has taken place. 9 Demonstrate knowledge of basic relevant anatomy and physiology, particularly the areas of the brain involved in reward and dependence, the lungs, and cardiovascular system. 10 Demonstrate knowledge that giving brief advice to stop using tobacco is an effective and cost-effective strategy to promote quit attempts. 11 Demonstrate knowledge that brief advice can be given to people who use tobacco often and at any time, regardless of the client's readiness to stop using tobacco. 12 Demonstrate knowledge that giving brief advice can be anything from 30 seconds to a few minutes.
ASSESS	<ol style="list-style-type: none"> 13 Assess a patient's interest in receiving tobacco cessation support. 14 Identify common myths about nicotine, nicotine dependence, smoking, and its treatment. 15 Demonstrate empathy regarding nicotine dependence. 16 Assess the level of nicotine dependence using 'time to first cigarette' and use this to help plan treatment.
ASSIST	<ol style="list-style-type: none"> 17 Negotiate tobacco cessation goals and strategies with clients, including setting a Target Quit Day. 18 Demonstrate knowledge of or ability to use an effective behavioral support method 19 Understand the need for medications to deal with the symptoms of nicotine dependence. 20 Offer nicotine replacement therapy (NRT) and other medications such as bupropion, varenicline(chantix), when appropriate. 21 Demonstrate knowledge of the characteristics (types, costs, sources, doses, actions, effectiveness and side-effects) of effective stop-tobacco use treatments available in the country. 22 Refer patients to a quitline, medical practitioner, or other specialist in tobacco cessation support if appropriate and if available. 23 Identify complementary therapies for stop-smoking treatment and understand their effectiveness.

	<p>24 Demonstrate awareness of the need to seek expert advice for managing complex cases such as patients with mental illness, concurrent alcohol and other drug dependence problems, or a co-existing medical disorder.</p> <p>25 Conduct a risk-benefit assessment with pregnant women who smoke to help determine safe and effective treatment.</p>
ARRANGE	<p>26 Arrange follow-up support during treatment for tobacco cessation.</p> <p>27 Identify the common symptoms of nicotine withdrawal.</p> <p>28 Identify the common cues that trigger urges to smoke.</p> <p>29 Demonstrate knowledge of common smoking compensation behaviors.</p> <p>30 Verify self-reported tobacco abstinence using a range of methods where available and feasible.</p> <p>31 Understand the use of higher doses and combinations of NRT (eg, patches and gum) when appropriate.</p> <p>32 Work with clients using appropriate strategies to help them maintain tobacco abstinence.</p>
33. Please describe below any additional TUPAC competencies that you believe are important for dentists, dental hygienists, or dental assistants (<i>Open question</i>)	
Perceived Barriers to Providing Tobacco Education	<p><i>5-item scale from Strongly Disagree (1) to Strongly Agree (5)</i></p> <p>1 As a dental program, we lack sufficient class and clinic time to devote to tobacco education.</p> <p>2 As a dental program, we do not have all the evidence-based tobacco educational materials/resources we need.</p> <p>3 As a dental program, we lack tobacco cessation counseling resources to make needed referrals.</p> <p>4 Our clinical faculty do not support and encourage tobacco cessation in our clinics.</p> <p>5 Our faculty lacks the basic counseling skills to teach, model, and assess brief motivational interviewing in the classroom and clinic.</p> <p>6 Our faculty lacks the interest and motivation to teach tobacco education as an integral part of patient care.</p>

Table 2

Participants' demographics (n = 390)

	All participants n(%)
Characteristics	390 (100.0)
Academic role	
Dean/Director	46 (11.8)
Faculty member	344 (88.2)
Geographical sub-regions ^a	
Mexico/Central America	70 (17.9)
The Caribbean	64 (16.4)
South America	256 (65.7)
Sub-regions by tobacco use prevalence	
Countries with <20% prevalence	242 (62.1)
Countries with ≥20% prevalence	148 (37.9)
Current tobacco use status	
Not using any type of tobacco product	349 (89.7)
Using some type of tobacco product	40 (10.3)
Smoking in clinical environments of dental school	
No	379 (97.2)
Yes	7 (1.8)
Don't know	4 (1.0)
Smoking in other indoor environments of dental school	
No	337 (86.4)
Yes	45 (11.5)
Don't know	8 (2.1)
Smoking in outdoor environments of dental school	
No	51 (13.1)
Yes	325 (83.3)
Don't know	14 (3.6)

^aClassification based on the M49 coding of the United Nations

Table 3

Cronbach's (α) and means of the TUPAC competencies scores compared by sub-regions in LAC.

TUPAC competencies	Cronbach's alpha	All	Mexico/Central America	The Caribbean	South America	p-value
Ask	0.817	4.71	4.81	4.70	4.66	0.07
Advise	0.834	4.54	4.62	4.58	4.51	0.26
Assess	0.818	4.41	4.50	4.48	4.36	0.19
Assist	0.904	4.07	4.23	4.25	3.99	<0.01
Arrange	0.942	4.01	4.13	4.30	3.91	<0.01
All 5 Competencies	0.867	4.35	4.46	4.45	4.29	<0.05