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Smoking Status of Faculty and Their Tobacco Cessation Counselling Advisory

Amrita Geevarghese^a, Jagan Kumar Baskaradoss^{b*}, Tina N. Tsafa^c, Israel T Agaku^{a,d}^a Division of Oral Epidemiology and Dental Public Health, Department of Preventive and Restorative Dental Sciences, School of Dentistry, University of California San Francisco, CA, USA^b Department of Developmental and Preventive Sciences, Faculty of Dentistry, Kuwait University, Kuwait^c Benue State University, Makurdi, Nigeria^d Department of Oral Health Policy and Epidemiology, Harvard School of Dental Medicine, Boston, MA, USA

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ABSTRACT

Introduction: Health professionals' own beliefs and practices, especially their smoking status, has been described to strongly influence their willingness to provide brief tobacco interventions (5 A's) to their patients. This study examines the association between the smoking status of faculty members in US dental programmes and (1) practice pattern; (2) perceived confidence; and (3) perceived educational preparedness of new graduates in providing the 5 A's to their patients.

Methods: This study presents data from the National Tobacco Survey of Personnel in Dental and Allied Academic Programs (TSPDAP) conducted in 2018. Faculty members in US dental/allied dental schools were invited to participate in this survey. Data were stratified based on the smoking status of the respondents as "never" and "ever" smokers (smoked <100 and ≥100 cigarettes during their lifetime, respectively). Multiple logistic regression models were used to calculate the adjusted odds ratios (aORs) and 95% confidence intervals (CIs).

Results: Data of 1896 participants were analysed, of whom 1032 (54.4%) were categorised as "ever" smokers. In the final regression model, low perceived barrier score was significantly associated with high practice pattern (aOR, 0.94; 95% CI, 0.92-0.97), high perceived confidence (aOR, 0.92; 95% CI, 0.90-0.95), and high perceived educational preparedness (aOR, 0.97; 95% CI, 0.94-0.98) in delivering the 5 A's to patients. Similarly, high perceived effectiveness was significantly associated with high practice pattern (aOR, 1.08; 95% CI, 1.05-1.11), high perceived confidence (aOR, 1.10; 95% CI, 1.06-1.13), and high perceived educational preparedness (aOR, 1.06; 95% CI, 1.03-1.09) in delivering the 5 A's to their patients. The smoking status of the dental personnel did not show any significant association with practice pattern, perceived confidence, or perceived educational preparedness in delivering the 5 A's to their patients.

Conclusions: The smoking status of oral health care personnel was not significantly associated with their participation in tobacco cessation interventions.

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Introduction

Smoking is the single greatest cause of preventable morbidity and mortality in the world and is regarded as one of the biggest public health threats in the current era.^{1,2} Cigarette smoking elevates the risk of nearly every oral condition that

* Corresponding author. Faculty of Dentistry, Division of Dental Public Health, Department of Developmental and Preventive Sciences, Kuwait University, P.O. Box: 24923, Safat-13110, Kuwait.

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dental professionals are tasked with treating and diminishes the chances of many dental treatments being successful.³ It has been estimated that by 2030, tobacco usage will become the greatest cause of death, especially amongst 35- to 69-year-old individuals worldwide.⁴ One of the goals of Healthy People 2020 was to increase the life expectancy and improve the quality of life amongst adults by reducing the prevalence of smoking.⁵ The FDI World Dental Federation (FDI) adopted a position statement⁶ and a strategic plan⁷ on tobacco control that urges its member associations to take decisive action in this area of public health. The consensus report from the 2nd European Workshop on Tobacco Use Prevention and Cessation urged oral health care professionals to act as advocates to promote population, community, and individual initiatives in support of tobacco use prevention and cessation counselling, including integration in undergraduate and graduate dental curricula.⁸

Health professionals play an important role in the success of tobacco control and cessation interventions. The US Public Health Service (PHS) guidelines recommend the "5 A's" approach to be adopted by all health professionals in helping their patients quit tobacco use.^{9,10} The 5 A's approach, or the brief intervention, includes *asking* about tobacco use, *advising* tobacco users to quit, *assessing* readiness to make a quit attempt, *assisting* with the quit attempt, and *arranging* follow-up care.⁹ The tobacco control interventions offered by dental health care professionals have been reported to be efficient in motivating tobacco users to quit the addiction.^{11,12} Most treatments carried out by dental health care professionals require several appointments for the completion of treatment, thus enabling an ideal opportunity for providing tobacco cessation counselling and encouraging smokers to quit tobacco use.¹³

Despite the evidence on the success of tobacco cessation interventions in dental care settings,^{12,14} the acceptance amongst dental health care professionals to routinely engage in these activities continues to be low.¹⁵ Some of the common reasons cited by dental health care professionals for not proactively participating in cessation activities are lack of financial reimbursement, time, perceived need, training,¹⁶⁻¹⁸ confidence/skills,¹⁹⁻²¹ patient resistance/lack of patient motivation,^{16,22-24} and lack of resources and referral system.²⁵

Several studies across Europe^{26,27} and North America^{28,29} have assessed the effectiveness of tobacco prevention and cessation training offered to undergraduate students within dental and allied academic programmes. Academic institutions are in a unique position to provide the necessary training on tobacco counselling and cessation services for undergraduate students. It is with this objective in mind that the American Dental Education Association (ADEA) launched the Tobacco Control Project in 2001. Following this, a national survey amongst dental schools in the United States reported that almost all of the schools routinely used tobacco use evaluation forms during the patient history and examination process.²⁸ One of the barriers that was identified in the ADEA survey was the lack of faculty training on cessation techniques. Since faculty members play a vital role in educating the students about tobacco cessation and prevention, assessing the faculty's preparedness and confidence in engaging in these areas is critical.

Health professionals' own beliefs and practices, especially their smoking status, has been described to strongly influence

their willingness to provide tobacco prevention and cessation services to their patients.³⁰⁻³² A national survey amongst multiple types of health professionals in the United States reported that the health professionals' smoking status had an influence on their smoking cessation practices and beliefs.⁹ Compared to nonsmokers, a health professional who smokes may be less likely to believe that smoking posed a significant threat to the patients' health. However, to the best of our knowledge, no study has assessed the influence of individual-level characteristics, specifically smoking status, on the dental faculty's perception towards the provision of tobacco prevention and cessation services in an academic institution. Therefore, this study was designed to examine whether there was an association between the dentists' smoking status (smoker vs nonsmoker) and (1) the practice pattern of delivering the 5 A's to their patients, (2) perceived confidence in providing the 5 A's to their patients, and (3) perceived educational preparedness of new graduates of the institution in providing the 5 A's to their patients.

Materials and methods

Overview of the survey

This study analysed data collected from the Tobacco Survey of Personnel in Dental and Allied Academic Programs (TSPDAP), conducted in 2018. This includes pre- and postdoctoral dental programmes, dental hygiene programmes, and dental assisting programmes recognised by the Commission on Dental Accreditation (CODA). Institutional Review Board approval (Protocol #: 7042; Dated 16 October 2017) was obtained from the Centers for Disease Control and Prevention. The TSPDAP employed a complete enumeration approach (census) at both the programme and the person level. All personnel in accredited dental education programmes who met the inclusion criteria were eligible. The survey was administered electronically (via SurveyMonkey) and participation was voluntary. The number of programmes enumerated were 335 US dental hygiene programmes; 258 US dental assisting programmes; and 66 US predoctoral and US postdoctoral programmes in civilian institutions.

TSPDAP sampling frame construction

The target population for this study was faculty and staff in US dental and allied academic programmes recognised by CODA. Inclusion of different types of dental educational programmes was intended to allow comparison of curricula, training, knowledge, practices, and attitudes in relation to cessation counselling amongst different programme types. Individual-level criteria for inclusion included being a full-time or a part-time faculty member. The following groups were excluded: residents, teaching assistants, or work-study students who were currently under training. Completion of the sampling frame involved the following 3 steps:

- (1) Complete enumeration of all eligible programmes using information from CODA surveys of programmes. This included 66 US dental schools, 335 US dental

hygiene programmes, and 258 US dental assisting programmes.

- (2) Complete enumeration of all personnel in each eligible programme using information from the individual programmes' directories or catalogues. Most programmes had this information available on their online directory of faculty/staff or within online catalogues. For each individual staff or faculty, contact details were extracted, including emails and phone numbers.
- (3) For personnel listed without an email address, cross-referencing with other supplemental sources of information was done to extract this information. Additional searches for email information were performed on professional networking sites such as LinkedIn, Research Gate, PubMed (corresponding author information), and professional organisation member directories.

Survey administration

The TSDAP questionnaire (Appendix 1) was administered using the "email invitation" option of SurveyMonkey. Reminder messages were sent at specified intervals to individuals who had not yet responded.

The main outcome variables of interest were tobacco cessation practice behaviours/perceptions. We measured these in 3 separate domains:

1. Practice pattern of delivering the 5 A's to their patients.
2. Perceived confidence in providing the 5 A's to their patients.
3. Perceived educational preparedness of new graduates of the institution in providing the 5 A's to their patients.

The 10 items measured on each domain all correspond to the 5 A's: (1) asking about cigarettes smoking; (2) asking about the use of any tobacco product other than cigarettes; (3) asking and recording the patient's tobacco use pattern; (4) advising tobacco users by discussing the benefits of quitting tobacco use; (5) advising tobacco users by providing educational materials on benefits of quitting; (6) assessing tobacco users' willingness to quit; (7) assisting tobacco users to set a day to quit; (8) assisting tobacco users by referring them to telephone quit lines; (9) assisting tobacco users by offering smoking cessation medications; and (10) arranging and monitoring progress in quitting tobacco use. Each question was measured on a 4-point Likert-type scale, as those describing frequency (always [3], sometimes [2], rarely [1], and never [0]) or intensity of engagement (high [3], moderate [2], low [1], and none [0]). For each of these domains, we summed the scores for each item reported. The lowest possible score was 0 (the individual scored 0 on all 10 items for the domain), whilst the maximum possible score was 40 (the individual scored 4 on all 10 items on the domain). The 3 domains were dichotomised based on statistical distribution into affirmative (\geq median score) and nonaffirmative ($<$ median score).

Smoking status

An "ever" smoker was defined as someone who had smoked at least 100 cigarettes in their lifetime, and a "never" smoker was someone who smoked fewer than 100 cigarettes during their lifetime.⁹

Data analyses

Chi-square analysis was used to compare between ever and never smokers across all demographic characteristics and other tobacco-related characteristics. Multiple logistic regression models, with coefficients and 95% confidence interval (CI) estimation, were fit separately to identify predictors for each of the 3 domains. Independent variables in the regression analysis included health professional's smoking status, perceived effectiveness of implementing the 5 A's framework, and barriers faced in implementing the 5 A's framework along with the demographic variables and practice characteristics. All the models were adjusted for barrier score, effectiveness score, years since graduation, residence region, type of academic programme, dental or allied health programme, and the smoking status of the respondents. A composite score for perceived effectiveness and perceived barriers was obtained by summing the affirmative responses for each.

Separate analysis of each of the 3 domains was performed with the same predictors in the regression model, and their adjusted odds ratios (aORs) were estimated. All observed results are significant based on 2-tailed statistical tests with a critical alpha of 0.05. The data management and analysis were carried out using statistical software SPSS 26.0 (IBM Corp.).

Results

Of the total 3034 faculty members who gave informed consent and completed the online survey, only 1896 (62.5%) responses were found to be complete for the outcome variable, after adopting a listwise deletion approach. About 55% of the study sample were categorised as ever smokers. More than half of the respondents were women (57%), and respondents were mostly White (80%) (Table 1). The majority of the respondents were older than 50 years, were full-time faculty members, and were primarily working in dental schools. Almost all the respondents (90%) were academic faculty members, and about two-thirds were involved with predoctoral dental programmes. About 45% of the faculty members spent less than 10 hours per week seeing patients, and about 58% reported having received formal training in tobacco prevention and cessation services.

The overall perceived effectiveness of different tobacco cessation interventions within the entire study population showed that support from family (89.8%), peers (88.0%), prescription medication (88.9%), nicotine replacement therapy (86.6%), and counselling (81.6%) were perceived to be more effective than use of e-cigarettes (33.0%), quit lines (47.4%), web-based cessation material (38.8%), and self-help material (35.7%) (Table 2). However, a significantly higher percentage

Table 1 – Demographic and workplace-related characteristics between never and ever smokers.

Characteristics	Total	Never smokers	Ever smokers	P value*
	N (%)	n (%)	n (%)	
Overall	1896 (100.0)	864 (45.6)	1032 (54.4)	
Sex [#]				
Male	801 (43.5)	316 (37.8)	485 (48.4)	<.001
Female	1039 (56.5)	521 (62.2)	518 (51.6)	
Age [#]				
29 years or younger	25 (1.4)	20 (2.4)	5 (0.5)	<.001
30-39 years	190 (10.3)	90 (10.8)	100 (9.9)	
40-49 years	349 (18.7)	174 (20.8)	175 (17.4)	
50-59 years	511 (27.7)	243 (29.0)	268 (26.6)	
60-69 years	573 (31.2)	252 (30.1)	321 (31.8)	
70+ years	197 (10.7)	58 (6.9)	139 (13.8)	
Race/ethnicity [#]				
White	1452 (79.8)	610 (73.8)	842 (84.9)	<.001
Black	61 (3.4)	25 (3.0)	36 (3.6)	
Hispanic	108 (5.9)	59 (7.1)	49 (4.9)	
Asian	169 (9.3)	122 (14.8)	47 (4.7)	
Other	30 (1.6)	11 (1.3)	19 (1.9)	
Region [#]				
Midwest	480 (26.1)	208 (24.9)	272 (27.0)	.63
Northeast	526 (28.5)	246 (29.4)	280 (27.8)	
South	475 (25.7)	212 (25.3)	263 (26.1)	
West	364 (19.7)	171 (20.4)	193 (19.1)	
Workplace				
Dental programme	1378 (72.7)	626 (72.5)	752 (72.5)	.84
Allied dental programme	518 (27.3)	238 (27.5)	280 (27.5)	
Advanced profession [#]				
General dentist	416 (22.0)	199 (23.1)	217 (21.0)	.53
Specialist dentist	567 (30.0)	261 (30.3)	306 (29.7)	
Dental assistant/dental therapist/other dental	310 (16.4)	140 (16.2)	170 (16.5)	
Dental hygienist	447 (23.5)	189 (21.9)	258 (25.0)	
Others	153 (8.1)	73 (8.5)	80 (7.8)	
Position [#]				
Full-time	1413 (75.0)	660 (77.1)	753 (73.2)	.049
Part-time	471 (25.0)	196 (22.9)	275 (26.8)	
Educational setting dental where programme is located [#]				
Dental school and affiliate	1327 (70.3)	614 (71.2)	713 (69.5)	.02
Medical school/hospital	46 (2.4)	31 (3.2)	15 (4.5)	
Community/junior college	319 (16.9)	129 (15.5)	190 (15.0)	
Technical college/institute	56 (3.0)	23 (2.7)	33 (3.5)	
School of allied health sciences	89 (4.7)	41 (4.8)	48 (4.7)	
Other	51 (2.7)	31 (2.6)	15 (2.8)	
Academic role				
Academic	1701 (89.7)	782 (90.6)	919 (89.1)	.84
Non-academic	195 (10.3)	82 (9.4)	113 (10.9)	
Training programme involved in [#]				
Dental assisting	119 (6.3)	65 (7.5)	54 (5.3)	.21
Dental hygiene	461 (24.5)	191 (21.9)	270 (26.7)	
Dental therapy	15 (0.8)	7 (0.8)	8 (0.8)	
Other	123 (6.5)	64 (7.3)	59 (5.8)	
Predoctoral	1166 (61.9)	545 (62.5)	621 (61.4)	
Hours/week seeing patients [#]				
1-10 hours	548 (45.5)	248 (44.7)	300 (46.2)	.45
11-20 hours	301 (25.0)	141 (25.3)	160 (24.6)	
21-35 hours	246 (20.4)	108 (19.5)	138 (21.2)	
36+ hours	110 (9.1)	58 (10.5)	52 (8.0)	
Received formal training for tobacco prevention/cessation? [#]				
No	506 (42.1)	236 (42.7)	270 (41.6)	.7
Yes	696 (57.9)	317 (57.3)	379 (58.4)	

* Chi-square test.

[#] Missing values present.

Significant associations are shown in bold.

Table 2 – Perceived effectiveness of tobacco cessation interventions at the workplace.

Effectiveness of:	Total	Never smokers	Ever smokers	P value*
	N (%)	n (%)	n (%)	
Counselling from a dental professional	876 (73.1)	409 (74.1)	467 (72.2)	.46
Counselling from a physician	968 (81.6)	448 (81.8)	520 (81.5)	.91
Nicotine replacement therapy	1032 (86.6)	473 (86.5)	559 (86.8)	.87
Prescription medication	1044 (88.9)	482 (89.1)	562 (88.6)	.81
E-cigarettes	387 (33.0)	195 (36.0)	192 (30.4)	.04
Quit lines	541 (47.4)	266 (50.5)	275 (44.7)	.04
Web-based cessation materials	454 (38.8)	210 (38.9)	244 (38.7)	.94
Self-help materials	421 (35.7)	198 (36.3)	223 (35.1)	.67
Family support	1071 (89.8)	502 (91.6)	569 (88.4)	.06
Peer support	1041 (88.0)	478 (87.9)	563 (88.1)	.90

* Chi-square test. Significant associations are shown in bold.

of never smokers, as compared with ever smokers, considered e-cigarettes (36.0% and 30.4%, respectively; $P = .04$) and quit lines (50.5% and 44.7%, respectively, $P = .04$) to be effective tobacco cessation interventions.

Table 3 presents the perceived barriers to delivering smoking cessation counselling for never and ever smokers. Some of the frequently identified barriers within the overall population were high relapse rates (82.2%), little/no reimbursement for cessation counselling (81.8%), and limited coverage for cessation interventions (81.2%). A significantly higher proportion of never smokers believed that patients had more immediate problems than addressing tobacco differences (60.9%, $P = .04$) when compared to ever smokers (50.5%). A significantly higher percentage of never smokers (59.6%, $P = .03$), when compared to ever smokers (53.6%), reported other priorities to reduce their ability to provide tobacco cessation counselling. In comparison to ever smokers (8.8%), a higher proportion of never smokers (15.0%) believed that medical doctors were better than dentists at providing tobacco cessation counselling to their patients ($P = .01$).

Table 4 presents the differences in the practice pattern, confidence, and preparedness in implementing brief 5 A's intervention at the workplace. In our study, dental professionals, both never (36.1%) and ever smokers (35.1%), reported less confidence in prescribing tobacco cessation medications when compared to other nicotine replacement therapies.

Multiple logistic regression models were used to calculate the aOR and 95% CI for practice pattern, confidence, and

preparedness (Table 5). After simultaneous adjustment for all the other variables in the model, low perceived barrier score was significantly associated with high practice pattern (aOR, 0.94; 95% CI, 0.92-0.97), high perceived confidence (aOR, 0.92; 95% CI, 0.90-0.95), and high perceived educational preparedness (aOR, 0.97; 95% CI, 0.94-0.98) in delivering the 5 A's. Similarly, high perceived effectiveness was significantly associated with high practice pattern (aOR, 1.08; 95% CI, 1.05-1.11), high perceived confidence (aOR, 1.10; 95% CI, 1.06-1.13), and high perceived educational preparedness (aOR, 1.06; 95% CI, 1.03-1.09) in delivering the 5 A's. Additionally, the variable of fewer years since graduation was significantly associated with higher perceived educational preparedness of recent graduates in delivering the 5 A's (aOR, 0.90; 95% CI, 0.81-0.98). There were no significant associations for the other sociodemographic/workplace variables included in the models.

Discussion

This study assessed the association between smoking status of faculty members from the different US dental/allied dental schools and their self-efficacy and perception towards providing brief tobacco interventions at the workplace. The results of our study show that the smoking status of dental personnel did not influence their perception of tobacco cessation interventions. Only a few studies have assessed the relationship between the smoking status of dental professionals and their participation in smoking cessation initiatives.³³⁻³⁵

Table 3 – Perceived barriers to delivering smoking cessation counselling.

Barrier	Total	Never smokers	Ever smokers	P value*
	N (%)	n (%)	n (%)	
Little or no reimbursement for tobacco cessation	947 (81.8)	440 (82.6)	507 (81.3)	.57
Limited coverage for cessation	939 (81.2)	443 (83.0)	496 (79.7)	.16
Patients are not motivated to quit tobacco	809 (69.3)	383 (71.5)	426 (67.4)	.14
Lack of resources	585 (50.3)	278 (51.8)	307 (49.0)	.34
Patients who attempt to usually quit relapse	963 (82.2)	437 (81.8)	526 (82.4)	.79
Patients have more immediate problems than tobacco	646 (55.3)	324 (60.9)	322 (50.5)	.04
Other priorities reduce my ability to provide tobacco cessation counselling	659 (56.3)	320 (59.6)	339 (53.6)	.03
My experience in intervening with tobacco users is limited	682 (57.7)	319 (59.1)	363 (56.5)	.38
Physicians are better than dentists in providing tobacco cessation counselling	136 (11.6)	80 (15.0)	56 (8.8)	.01

* Chi-square test. Significant associations are shown in bold.

Table 4 – The practice pattern, perceived confidence and perceived educational preparedness of new graduates of the institution in providing the 5 A's to their patients between "ever" and "never" smokers.

	Practice		Confidence		Preparedness		P value*
	Never smokers	Ever smokers	Never smokers	Ever smokers	Never smokers	Ever smokers	
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	
Asking about cigarettes smoking	501 (90.6)	590 (90.6)	517 (93.7)	611 (93.9)	480 (87.9)	562 (87.7)	.90
Asking about the use of any tobacco product other than cigarettes	482 (87.2)	562 (86.3)	505 (91.7)	596 (91.7)	481 (88.3)	556 (86.9)	.05
Asking and recording the patient's tobacco use pattern	503 (91.3)	576 (88.8)	513 (93.1)	602 (92.6)	289 (53.4)	351 (55.3)	.52
Advise tobacco users by discussing the benefits of quitting tobacco use	484 (87.8)	573 (88.0)	503 (91.3)	597 (91.8)	443 (81.6)	532 (83.1)	.49
Advise tobacco users by providing educational materials on benefits of quitting	343 (62.1)	371 (57.2)	336 (61.3)	407 (62.7)	168 (31.1)	191 (30.2)	.74
Assess tobacco users' willingness to quit	438 (79.5)	521 (80.5)	433 (78.9)	516 (79.5)	382 (70.3)	434 (68.0)	.39
Assist tobacco users by referring them to telephone quit lines	234 (42.4)	275 (42.5)	301 (54.7)	348 (54.1)	489 (89.9)	568 (88.8)	.53
Assist tobacco user by offering smoking cessation medications	161 (29.2)	165 (25.5)	198 (36.1)	227 (35.1)	295 (54.6)	352 (55.4)	.78
Assist tobacco users to set a day to quit	304 (55.3)	358 (55.4)	343 (62.7)	410 (63.1)	355 (65.7)	436 (68.6)	.31
Arrange and monitor progress in quitting tobacco use	300 (54.3)	340 (52.4)	399 (72.7)	459 (70.8)	287 (53.1)	355 (56.1)	.31

* Chi-square test. Significant associations are shown in bold.

To the best of our knowledge, this is the first national survey amongst faculty members in dental/allied dental programmes in the United States to assess the factors contributing to tobacco cessation intervention programmes.

In a dental academic setting, there was no significant difference in active participation in cessation interventions related to the smoking status of the academic faculty, and this was in agreement with other published literature.^{18, 33} A previous study in a US-based dental school that assessed students' attitudes to tobacco cessation reported that the students' own smoking practices were not reflected in their attitudes and practices in smoking cessation for their patients.²⁵ However, many studies amongst medical health care workers have reported contradictory findings.^{31,32,36} Kawakami et al³¹ found that physicians who smoked were less likely to offer smoking cessation assistance to their patients when compared with their nonsmoking counterparts. Similarly, a large multinational survey amongst physicians from 16 countries reported that smoking physicians are less likely to initiate cessation interventions with their patients.³⁰ In the same survey, it was reported that most physicians did not routinely ask their patients about their smoking behaviour at every clinic visit. In contrast, studies amongst dentists have reported an increasing trend in routinely providing tobacco cessation advice to patients.³⁷ Most dental and dental hygiene schools in the United States require the students to enquire about patients' tobacco usage and to provide tobacco cessation advice to smokers.²⁹ The ADEA survey²⁸ demonstrates that dental educators believe they have a role in both tobacco prevention and cessation services. Faculty members play a vital role in ensuring that the students are equipped with the necessary skills for providing tobacco cessation interventions to their patients. In the present study, dental faculty members were asked about their perception on the preparedness of new dental graduates in providing tobacco cessation intervention, and it was observed that the smoking status of the academic faculty did not affect their perception. Dental personnel were confident that recent graduates could adequately screen and record patients' smoking behaviour as well as discuss the benefits of quitting.

Smoking status did not have any influence on perception of the self-reported barrier to tobacco cessation. But when adjusted for other variables in a linear regression model, barrier scores reported a significant association with self-efficacy and perception of preparedness towards providing tobacco cessation counselling, henceforth interfering with the professional's confidence and practice pattern of providing effective cessation services. In contrast to a similar study from Japan,³³ a higher proportion of participants in this study identified relapse rate, reimbursement, limited coverage for cessation interventions, and nonmotivated (to quit) patient as the perceived barriers in delivering smoking cessation counselling. Reimbursement as a barrier factor was consistent with other studies of similar interest.³⁸ Our study was in agreement with other published literatures that report "lack of reimbursement" as a significant tobacco cessation barrier.^{39,40} A nationally representative survey in the United States also reported that dentists were more likely to participate in tobacco cessation counselling if they are sufficiently

Table 5 – Multiple logistic regression models for the correlates of practice pattern, perceived confidence and perceived educational preparedness of new graduates of the institution in providing the 5 A's to their patients.

Variable	Practice			Confidence			Preparedness		
	95% CI			95% CI			95% CI		
	aOR	Lower limit	Upper limit	aOR	Lower limit	Upper limit	aOR	Lower limit	Upper limit
Barrier score	0.94	0.92	0.97	0.92	0.90	0.95	0.97	0.94	0.98
Effectiveness score	1.08	1.05	1.11	1.10	1.06	1.13	1.06	1.03	1.09
Years since graduation	0.90	0.81	1.00	0.92	0.83	1.02	0.90	0.81	0.98
Residence region	0.84	0.59	1.18	0.88	0.62	1.25	0.78	0.56	1.09
Type of academic programme	1.10	0.94	1.18	1.10	0.97	1.23	1.08	0.96	1.21
Cigarette smoking status	1.10	0.76	1.51	1.19	0.84	1.70	0.96	0.69	1.33
Dental/allied	1.03	0.69	1.53	0.82	0.55	1.22	0.98	0.67	1.43
Nagelkerke R ² (%)	12.6			17.7			7.8		

aOR, adjusted odds ratio.

Significant associations are shown in bold.

reimbursed.¹⁴ Another study amongst dental practitioners in the US reported lack of financial incentives along with lack of training to be the most important barriers.⁴¹ Barriers to quit tobacco use can be decreased by improving the tobacco intervention curriculum.⁴² As highlighted in the literature, training plays an important role and henceforth emphasises the value of having a tobacco cessation curriculum.

There are several limitations in this study. First, the sampling frame excluded dental technology programmes as well as postdoctoral residency programmes not in a dental school. Therefore, the findings might not be generalisable to personnel in these programmes. Also, the response rate is quite low. Data were self-reported; thus, the findings are subject to misreporting. Third, despite adjustment for nonresponse bias by sex and dental education programme type, there might still be some differences between respondents and nonrespondents on certain factors that were not adjusted for. Since the study included only dentists working in an academic environment, the results of this study may not be generalisable to dentists working in other settings. Finally, social desirability bias could have influenced the responses. Taking into consideration these limitations along with the low magnitude of observed associations, caution must be exercised in deriving clinical implications based on the results of this study.

Although the smoking status of the oral health care personnel was not significantly associated with their participation in tobacco cessation interventions, this study identified several other factors that strongly influenced the providers' perception towards the provision of brief tobacco interventions at the workplace. Increasing participation of dentists and allied members of the dental team in tobacco cessation, prevention, and control may accelerate progress made in reducing national prevalence of tobacco use, as well as tobacco-related health outcomes.

Conflict of interest

None disclosed.

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Supplementary materials

Supplementary material associated with this article can be found in the online version at [doi:10.1016/j.identj.2022.02.001](https://doi.org/10.1016/j.identj.2022.02.001).

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