

Dental Professionals' Engagement in Tobacco, Electronic Cigarette, and Cannabis Patient Counseling

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Appendix

Appendix Table 1. Survey Items: California Dental Professionals Tobacco Surveys

Table includes questionnaire items that contributed to the present analysis.

Appendix Table 2. Geographic Distribution of Active California Dental Licensees and Survey Respondents

Using survey weights, the geographic distribution of the dentist sample was highly similar to that of active dental licensee addresses obtained from the California Dental Board in 2018.

Appendix Table 3. Correlates of Assisting Patients in Tobacco Cessation, Alternative Outcome Specifications

To check the sensitivity of results to how the main outcome variable (assisting patients) was specified, alternative specifications were evaluated. Findings related to confidence, willingness, and barriers were largely robust to alternative specifications; however, other co-variables lost or gained statistical significance under some specifications.

Appendix Table 4. Correlates of Confidence, Willingness, and Barriers Related to Patient Tobacco Cessation

In an exploratory analysis, a high level of professional satisfaction was associated with greater confidence and fewer perceived barriers to performing patient tobacco cessation. For hygienists, holding a bachelor's degree was positively associated with confidence and willingness and inversely associated with perceived barriers; however, having more years in practice was associated with less confidence and willingness. For dentists, general practitioners had greater confidence and willingness than specialists, but private practice was associated with more perceived barriers.

Appendix Table 1. Survey Items: California Dental Professionals Tobacco Surveys

Two near-identical surveys were administered in 2018 dental hygienists and dentist. Item differences noted in the table below. Items not necessarily presented in the order below.

Question	Response Options
Participant Characteristics	
Are you 18 years of age or older?	Yes; No
Are you currently practicing clinical dentistry at least part-time?	Yes; No
What is your age?	Drop-down choices: 18-90 in intervals of 1 year; Prefer not to answer
What is your gender identity?	Male; Female; Transgender; Do not identify as male; female or transgender; Prefer not to answer
What is your racial or ethnic identity?	Caucasian, White or European origin; Hispanic, Latino, or Spanish; Black or African American; Asian or Asian American; American Indian or Alaska Native; Middle Eastern or North African; Native Hawaiian or Other Pacific Islander; Other race, ethnicity, or origin; Prefer not to answer
How many years have you been in practice as a dentist (<i>dental hygienist</i>)?	0-5 years; 6-20 years; 21+ years
What type of degree did you receive to become a dental hygienist? (Don't count training or degrees after licensure) <i>*not asked in dentist survey</i>	Certificate/Diploma; Associate degree; Bachelor's degree; Other, please specify
How <i>satisfied</i> are you with your professional career (work life)?	Sliding bar from 0-10 in 1-unit increments (1=least satisfied; 10=most satisfied)
How many times have you used the following products in your lifetime?	
Cigarettes	Never; 1-99 times; 100 times or more
Smokeless tobacco (dip/chew)	Never; 1-99 times; 100 times or more
Cigars	Never; 1-99 times; 100 times or more
Hookah/waterpipe	Never; 1-99 times; 100 times or more
E-cigarettes	Never; 1-99 times; 100 times or more
Cannabis/marijuana	Never; 1-99 times; 100 times or more
Do you currently use the following products every day, some days or not at all?	
Cigarettes	Not at all; Some days; Every day
Smokeless tobacco (dip/chew)	Not at all; Some days; Every day
Cigars	Not at all; Some days; Every day
Hookah/waterpipe	Not at all; Some days; Every day
E-cigarettes	Not at all; Some days; Every day
Cannabis/marijuana	Not at all; Some days; Every day

Practice Characteristics

For the following questions, consider your primary place of clinical practice (i.e., where you work the most hours in patient care). If you divide time equally between practices, consider where you have worked the longest.

On average, how many days per week do you currently see patients?	Less than 1; 2; 3; 4; 5 or more
What best describes the dental practice setting where you see patients?	Small private practice; Large private practice or corporation; Public health practice or clinic; Other
<i>Dental hygienist survey:</i> What best describes the dental practice setting where you see patients? <i>Dentist survey:</i> In your primary practice, in which specialty areas are you announcing yourself and practicing as a licensed specialist?	General dentistry (no specialty); Periodontics; Pediatric dentistry; Orthodontics; Endodontics; Oral surgery; Prosthodontics; Oral medicine; Oral radiology (**dentist survey only); Oral pathology (**dentist survey only); Other
What is the zip code of the practice where you see patients?	Fill-in response with validation for 5-digit codes
How does your dental practice record and store patient information?	Entirely electronic charting; Mostly electronic charting; Mostly paper charting; Entirely paper charting
Does your dental practice accept patients insured through Denti-Cal (Medicaid)?	Yes; No
What percentage of the patients in your practice would you estimate use tobacco products?	Less than 5%; Between 5-20%; Greater than 20%

Tobacco Cessation Practice Behaviors

How often do you do the following in your clinical practice?	
Ask patients about tobacco use status and history	Never; Sometimes; Often; Always
Document tobacco use status/history in dental record	Never; Sometimes; Often; Always
Give clear, strong, personalized advice to quit/stay quit	Never; Sometimes; Often; Always
Discuss health risks of tobacco	Never; Sometimes; Often; Always
Use open-ended questions to generate discussion about tobacco cessation	Never; Sometimes; Often; Always
Assess patient's readiness to quit	Never; Sometimes; Often; Always
Motivate those not interested in quitting to think about quitting	Never; Sometimes; Often; Always
Assist those who are interested in quitting to develop a plan to quit	Never; Sometimes; Often; Always
Refer patients to a cessation program	Never; Sometimes; Often; Always
Provide materials containing telephone quit-line information	Never; Sometimes; Often; Always
Discuss cessation medications (e.g., nicotine replacements, Zyban, Chantix)	Never; Sometimes; Often; Always

Follow up with patients trying to quit	Never; Sometimes; Often; Always
Re-evaluate tobacco use with all patients at follow-up visits	Never; Sometimes; Often; Always

How often do you ask your patients about the following products?

Cigarettes	Never; Sometimes; Most of the time; All of the time
Smokeless tobacco (dip/chew)	Never; Sometimes; Most of the time; All of the time
E-cigarettes	Never; Sometimes; Most of the time; All of the time
Other tobacco products (i.e., cigars, hookah, pipes)	Never; Sometimes; Most of the time; All of the time
Cannabis/marijuana	Never; Sometimes; Most of the time; All of the time

At what age do you typically begin asking your patients about tobacco use?	Age 12 or younger; Ages 13-17; Ages 18-24; Ages 25 and older; I do not typically ask about tobacco use
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Does your office currently have a tobacco cessation protocol (e.g., written set of steps that staff follow for delivering tobacco cessation counseling)?	Yes; No; I don't know
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Select the staff member(s) who provides tobacco cessation services in your dental practice. (Select all that apply)	Dentist; Dental Hygienist; Dental Assistant; Office Manager; Receptionist; Other; No one
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Tobacco-Related Practice Attitudes

How confident are you to perform the following?	
Counsel patients on how to stop using tobacco	Not at all; Slightly; Somewhat; Very
Assess stage of readiness to stop using tobacco	Not at all; Slightly; Somewhat; Very
Assess a patient's nicotine dependence	Not at all; Slightly; Somewhat; Very
Discuss cessation medication options	Not at all; Slightly; Somewhat; Very
Talk to patients about e-cigarettes	Not at all; Slightly; Somewhat; Very
Refer to appropriate resource for cessation support	Not at all; Slightly; Somewhat; Very
Talk to patients about cannabis/marijuana	Not at all; Slightly; Somewhat; Very

How willing are you to take the following actions in your practice to encourage tobacco cessation among your patients?

Implement a written protocol for tobacco cessation counseling in your office/practice	Not at all; Slightly; Somewhat; Very
Provide educational materials (e.g., brochures)	Not at all; Slightly; Somewhat; Very
Provide cards with the number of the smokers' quit-line	Not at all; Slightly; Somewhat; Very
Sign-up patients online with the smokers' quit-line (e-referral)	Not at all; Slightly; Somewhat; Very
Recommend cessation medications (e.g., nicotine replacements, Zyban, Chantix)	Not at all; Slightly; Somewhat; Very
Write prescriptions for cessation medications	Not at all; Slightly; Somewhat; Very
Be trained to help patients stop using tobacco	Not at all; Slightly; Somewhat; Very
Be the tobacco cessation leader in your practice	Not at all; Slightly; Somewhat; Very
Follow-up with patients trying to quit	Not at all; Slightly; Somewhat; Very

The following question is about barriers that make it harder for you to incorporate tobacco cessation into your practice. Indicate how often these barriers occur.

Amount of time required	Never; Sometimes; Often; Always
Patient resistance	Never; Sometimes; Often; Always
Do not think it is effective	Never; Sometimes; Often; Always
Lack of training in tobacco cessation	Never; Sometimes; Often; Always

Lack of referral resources	Never; Sometimes; Often; Always
Lack of patient education materials in my office	Never; Sometimes; Often; Always
Lack of reimbursement	Never; Sometimes; Often; Always
Resistance from other members in office	Never; Sometimes; Often; Always
Not personally interested	Never; Sometimes; Often; Always

Appendix Table 2. Geographic Distribution of Active California Dental Licensees and Survey Respondents

County	Active Licensees, % (N = 31,797)¹	Weighted Sample Dentists, % (N = 674)^{1,2}
Los Angeles	26.3	24.1
Orange	12.1	11.7
San Diego	8.6	8.6
Santa Clara	7.2	8.3
Alameda	4.6	6.3
San Bernardino	4.3	2.0
San Francisco	4.0	4.3
Sacramento	3.5	6.2
Contra Costa	3.4	3.2
Riverside	3.3	1.5
San Mateo	2.8	3.4
Ventura	2.1	0.3
Fresno	1.9	1.7
Placer	1.4	1.3
Sonoma	1.2	1.9
San Joaquin	1.2	1.2
Kern	1.0	1.1
Santa Barbara	1.0	0.5
Marin	1.0	0.9
Solano	0.9	0.6
Stanislaus	0.9	0.8
Monterey	0.8	0.9
San Luis Obispo	0.7	1.2
Tulare	0.7	0.7
Santa Cruz	0.6	0.5
El Dorado	0.5	0.5
Butte	0.4	0.5
Shasta	0.4	0.4
Yolo	0.4	1.1
Napa	0.4	0.4
Merced	0.3	0.9
Nevada	0.3	0.2
Humboldt	0.2	0.2
All Other Counties ³	1.7	2.8

1. Excludes out-of-state locations
2. Weighted for sampling, years of dental society membership, email domain, and local dental society-specific response rate
3. Each one of these 25 counties individually accounted for <0.2% of active licensees

Appendix Table 3. Correlates of Assisting Patients in Tobacco Cessation, Alternative Outcome Specifications

Population -->	Hygienists				Dentists (weighted) ¹				Dentists (unweighted)			
Outcome Specification ² -->	A	B	C	D	A	B	C	D	A	B	C	D
<i>Attitudes and Barriers</i>												
Confidence	+	+	+	+	+	+	+	+	+	+	+	+
Willingness	+	+	+	+	+	+		+	+	+		+
Perceived Barriers												
<i>Participant Characteristics</i>												
Gender: male (ref) ³												
Gender: female					+				+			
Race/ethnicity: White (ref)												
Race/ethnicity: Asian	+	+										
Race/ethnicity: Hispanic/Latino							-					
Race/ethnicity: Other	+	+					-					
Years in practice: 0-5 (ref)												
Years in practice: 6-20										+		
Years in practice: >20							-			+		
Associate degree/certificate (ref) ³												
Bachelor's degree												
Professional satisfaction: <7 (ref)												
Professional satisfaction: 7-8		-										
Professional satisfaction: 9-10												
Own tobacco use: never (ref)												
Own tobacco use: ever					-		-	-			-	-
<i>Practice Setting Characteristics</i>												
Public or other practice (ref)												
Private practice				-								
Specialty practice (ref)												
General practitioner	-											
Does not accept Medicaid (ref)												
Accepts Medicaid							+					
Charting: paper (ref)												
Charting: electronic												+
Patient tobacco use: <5% (ref)												
Patient tobacco use: 5-20%				+								
Patient tobacco use: >20%			+					-				-
Urban practice (ref)												
Rural / partially rural practice												

1. Weighted for sampling and non-response
 2. Assist Specifications: A = "always" performing at least one activity of develop a quit plan, refer to cessation program, provide quitline information, or discuss cessation medications (main analysis); B = performing at least one activity often or always; C = performing all four activities often or always; D = top quartile of assisting score
 3. Gender not included in hygienist model; degree type not included in dentist model
- Key: "+" = positive, statistically significant association ($P<0.05$); "-" = negative, statistically significant association ($P<0.05$)

Estimates based on adjusted odds ratios for all co-variables in the table. Missing co-variable values multiply imputed

Appendix Table 4. Correlates of Confidence, Willingness, and Barriers Related to Patient Tobacco Cessation

Population --> Outcome ² -->	Hygienists (N=640) Regression Coefficient			Dentists (N=656) ¹ Regression Coefficient		
	Confidence	Willingness	Barriers	Confidence	Willingness	Barriers
<i>Participant Characteristics</i>						
Gender: male ³ (ref)						
Gender: female				0.028	0.339*	0.104
Race/ethnicity: White (ref)						
Race/ethnicity: Asian	-0.144	-0.016	0.227	-0.193	-0.126	0.283*
Race/ethnicity: Hispanic/Latino	0.021	0.096	0.174	-0.044	-0.048	-0.197
Race/ethnicity: Other	0.062	-0.035	0.210	-0.005	-0.355*	0.291
Years in practice: 0-5 (ref)						
Years in practice: 6-20	-0.052	0.039	-0.128	-0.031	0.130	0.190
Years in practice: >20	-0.350*	-0.420*	0.200	-0.078	0.158	0.266*
Associate degree/certificate ³ (ref)						
Bachelor's degree	0.228*	0.198*	-0.196*			
Professional satisfaction: <7 (ref)						
Professional satisfaction: 7-8	0.064	0.093	-0.344*	-0.019	0.203	-0.160
Professional satisfaction: 9-10	0.314*	0.224	-0.628*	0.321*	0.317	-0.384*
Own tobacco use: never (ref)						
Own tobacco use: ever	-0.007	-0.042	-0.040	-0.080	-0.235*	0.031
<i>Practice Setting Characteristics</i>						
Public or other practice (ref)						
Private practice	-0.378*	-0.243	0.316*	-0.161	-0.188	0.374*
Specialty practice (ref)						
General practitioner	-0.147	-0.147	0.163	0.311*	0.676*	0.188
Does not accept Medicaid (ref)						
Accepts Medicaid	0.108	0.061	-0.092	0.200	0.191	0.085
Charting: paper (ref)						
Charting: electronic	0.021	0.107	-0.071	-0.154	0.212	-0.026
Patient tobacco use: <5% (ref)						
Patient tobacco use: 5-20%	-0.066	0.129	0.167*	-0.040	0.067	0.356*
Patient tobacco use: >20%	0.068	0.187	0.421*	-0.056	0.064	0.690*
Urban practice (ref)						
Rural / partially rural practice	0.028	0.071	-0.025	0.149	0.145	-0.010

1. Weighted for sampling and non-response
2. Outcomes specified as continuous variable (standardized: mean=0; standard deviation=1) in multivariable linear regression models
3. Gender not included in hygienist model; degree type not included in dentist model

Abbreviation: ref = reference category

* $P < 0.05$

Missing co-variable values multiply imputed

