

State-specific changes in receipt of cessation counseling from dentist and physician offices, 2011–2015

Israel Agaku¹, Satomi Odani², Judith Gordon³

AFFILIATION

1 Oral Health Policy and Epidemiology, Harvard School of Dental Medicine, Boston, United States

2 Division of Social Medicine, School of Medicine, University of Crete, Heraklion, Greece

3 Department of Family and Community Medicine, College of Medicine, The University of Arizona, Tucson, United States

CORRESPONDENCE TO

Israel Agaku. Oral Health Policy and Epidemiology, Harvard School of

Popul. Med. 2021;3(May):14

Dental Medicine, Boston, Massachusetts, United States. E-mail: iagaku@post.harvard.edu

KEYWORDS

tobacco, smoking, tobacco control, cessation counseling, oral health, dental visits

Received: 3 February 2021, **Revised:** 6 May 2021, **Accepted:** 6 May 2021

<https://doi.org/10.18332/popmed/136451>

ABSTRACT

INTRODUCTION We investigated changes in tobacco product use and receipt of cessation counseling among smokers within 50 US states and the District of Columbia between 2010/2011 and 2014/2015 among adults aged ≥18 years.

METHODS Data were from the Tobacco Use Supplement to the Current Population Survey, a household-based survey designed to yield representative estimates at the state and national levels (n=153725 for 2010/2011 and n=163920 for 2014/2015). Tobacco product use was estimated for all adults. We calculated receipt of cessation counseling among current cigarette smokers who visited a dentist (data available for 2010/2011 only) or a medical doctor (data available for both 2010/2011 and 2014/2015). Between-year changes were assessed with chi-squared tests.

RESULTS Between 2010/2011 and 2014/2015, declines

occurred in 22 states for combustible tobacco smoking, and in 13 states for any tobacco use. Among current cigarette smokers who visited a medical doctor, 13 states had an increase in the receipt of advice or assistance to quit between 2010/2011 and 2014/2015. State-specific estimates of receipt of advice during 2014/2015 ranged from 58.7% (Arkansas) to 80.7% (Wisconsin). During 2010/2011, 31.2% of current cigarette smokers who visited a dentist were advised to quit smoking, and only 7.6% were assisted to quit. By state, the proportion receiving dentist advice to quit ranged from 21.4% (Montana) to 38.9% (Alaska). These estimates were lower than those from physicians in each state.

CONCLUSIONS Wide variability in delivery of cessation counseling existed across states, and dentists were less likely to deliver cessation counseling than physicians.

INTRODUCTION

The oral and systemic health effects of tobacco use, including smoking of cigarettes, cigars, and other combustible tobacco products, and smokeless tobacco are well documented¹. The Surgeon General has recommended that healthcare professionals, including those in dentistry must play an active role in combatting addiction². Engagement of health professionals in cessation counseling is such a cornerstone of preventive care that it is included in the national objectives tracked in Healthy People 2020³. Objective TU-9 of HP2020 seeks to increase tobacco use screening in various healthcare settings, including those providing dental care, substance abuse care, mental health services, as well as office and hospital-based ambulatory care. In addition to screening for tobacco use within these same settings, Objective TU-10

seeks to increase delivery of counseling and education to help smokers quit. The U.S. Preventive Services Task Force (USPSTF) concluded that there is high certainty that the net benefit of tobacco screening and counseling is substantial (grade A recommendation)⁴.

There are several models for delivering evidence-based tobacco treatment in healthcare settings that use a Screening Brief Intervention and Referral to Treatment (SBIRT) approach. The Clinical Practice Guideline: Treatment of Tobacco Use and Dependence advocates for the use of the 5 As (Ask, Advise, Assess, Assist and Arrange)⁵. The Ask step includes regular assessment and documentation of tobacco use status at every visit. Advice encourages all practitioners to relate tobacco use to the presenting complaint and provide non-judgmental advice to quit. Healthcare providers then

Assess patients' level of readiness to quit and Assist patients who are ready to quit. For those patients, practitioners are urged to create a quit plan including a quit date, cessation resources and referral to treatment, and prescribe pharmacotherapy. Finally, practitioners should Arrange to follow up with patients on or around their quit date and at the next dental visit to check on progress. For patients who are not ready to quit, healthcare providers should use Motivational Interviewing techniques to help patients overcome ambivalence and move closer to taking action to quit⁶.

Three similar, more streamlined models of SBIRTs are Ask-Advise-Refer⁷, Ask-Advise-Assist⁸, and Ask-Advise-Connect⁹. In these models, practitioners provide the same Ask and Advise steps as in the 5 As, and also provide assistance to quit, arranging for follow-up care, and refer patients to a tobacco quitline in one of three ways: 1) provide a traditional referral to the patient who must initiate the call to the quitline; 2) fax a referral to the quitline which then contacts the patient; and 3) electronically transmit referral data to the quitline which allows the quitline to contact the patient more quickly. These models reduce several barriers to the provision of tobacco treatment by healthcare professionals, including lack of training, time, and reimbursement.

While several studies have examined receipt of cessation counseling at the national level, to the best of our knowledge, no study has examined state-specific estimates. More so, variations between different types of health providers in delivering smoking cessation within states are not known. This information is critical to state tobacco control programs for planning and making decisions regarding policies and programs. To fill these gaps in knowledge, this study examined changes in tobacco product use among all US adults, and receipt of cessation counseling from physicians among cigarette smokers within the 50 states and the District of Columbia (D.C.) between 2010/2011 and 2014/2015. Secondly, we compared dentist-provided versus physician-provided assistance to quit smoking during 2010–2011, the period data were available for both health professions. Representative data at the national and state levels were obtained from the Tobacco Use Supplement to the Current Population Survey (TUS-CPS).

METHODS

Study design and sample selection

The TUS-CPS is a household-based survey of the civilian non-institutionalized US adult population aged ≥ 18 years in the 50 US states and D.C. Households were probabilistically selected from mailing addresses to yield representative estimates for the nation, individual states, and other specified areas. For the 2010/2011 wave, a final pooled analytical sample of 153725 self-respondents were analyzed across all states and D.C. (pooled from May 2010, August 2010, and January 2011). For the 2014/2015 wave, a total of 163920 self-responses (pooled from July 2014, January 2015, and May 2015) were used for the analysis. Overall response

rates were 62% for the 2010/2011 wave, and 54.2% for the 2014/2015 wave.

Measures

Current tobacco use

Individuals were classified as current cigarette smokers if they had smoked ≥ 100 cigarettes during their lifetime and smoked daily or on some days at the time of the survey. Current use of pipes, hookahs, cigars, and smokeless tobacco products, was defined as daily or some days use at the time of the survey. Current use of any tobacco product was defined as being a current user of at least one of cigarettes, pipes, hookahs, cigars, or smokeless tobacco. Current use of any combustible tobacco product was defined as being a current user of at least one of cigarettes, pipes, hookahs, or cigars.

Patient-reported visit to a physician or dentist and receipt of cessation counseling

Participants were asked: 'In the past 12 months, have you seen a medical doctor?' and 'In the past 12 months, have you seen a dentist?' (Yes/No). Visit to a dentist was assessed only in the 2010/2011 wave of TUS-CPS. Visit to a medical doctor's office was assessed in both the 2010/2011 and 2014/2015 waves.

Current smokers who reported visiting any medical doctor or dentist, respectively, in the past 12 months were then asked: 'During the past 12 months, did any medical doctor advise you to stop smoking?' or 'During the past 12 months, did any dentist advise you to stop smoking?'. Those who answered 'Yes' were then asked if the medical doctor or dentist had provided them with assistance to quit, as follows: 'In the past 12 months, when a [medical doctor/dentist] advised you to quit smoking, did the [doctor/dentist] also'. Multiple choice options were identical for both medical doctors and dentists, they were as follows: 1) Suggest that you call or use a telephone help line or quit line?; 2) Suggest that you use a smoking cessation class, program, or counseling?; 3) Suggest that you set a specific date to stop smoking?; 4) Recommend or prescribe a nicotine product such as a patch, gum, lozenge, nasal spray or inhaler?; and 5) Prescribe a pill such as Chantix, Varenicline, Zyban, Bupropion, or Wellbutrin? An affirmative response to ≥ 1 of the five items above was classified as having received assistance to quit from a medical doctor or a dentist, as appropriate.

The questions assessing receipt of advice or assistance from a dentist or receipt of assistance from a medical doctor were asked only in the 2010/2011 wave. Therefore, comparative analyses of receipt of cessation counseling from dentist versus physician offices were restricted to the 2010/2011 wave of the survey. Comparative analyses of receipt of cessation counseling over time (between 2010/2011 and 2014/2015) was restricted to receipt of advice to quit smoking from a doctor.

US census regions

In addition to state-specific differences, we examined

differences by US Census region. The following nine states were classified as *Northeastern region*: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. The following 12 states were classified as the *Midwestern region*: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. The following 16 states, along with the District of Columbia, were classified as the *Southern region*: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. Finally, the following 13 states were classified as the *Western region*: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

Statistical analysis

Descriptive analyses were performed with percentages and 95% confidence intervals; all data were weighted to yield representative estimates at the state, US Census region, and national levels. The denominators for analyzing both receipt of advice or assistance to quit was among those who had visited the specified health provider. Prevalence estimates with relative standard errors $\geq 40\%$ are not shown. Chi-squared tests ($p < 0.05$) were used to assess changes in prevalence between the two waves (2010/2011 and 2014/2015). All analyses were performed using R Version 3.6.1.

RESULTS

The distributions of age, sex, and race/ethnicity within each state during 2014/2015 are shown in Table 1. Between 2010/2011 and 2014/2015, prevalence of combustible tobacco smoking declined in 22 states, and prevalence of any tobacco use declined in 13 states. In three states (Maine, Mississippi, and South Carolina), smokeless tobacco use prevalence declined significantly (Table 2). However, a significant increase was observed in Arkansas (2.7% to 4.0%). All four US census regions saw significant declines in combustible tobacco smoking and all, except the Northeast, saw a decline in any tobacco use (all $p < 0.05$).

Overall, a relatively smaller percentage of current smokers reported a visit to a dentist than to a medical doctor in the

2010/2011 wave. The overall percentage who reported a dental visit in that period was 39.4%, and ranged from 29.0% in Texas to 54.9% in Connecticut (Table 3). Overall, during 2010/2011, 63.7% of all smokers reported a visit to a medical doctor, which ranged from 52.5% in Texas to 74.2% in Maine and Maryland (Table 4). The proportion of current cigarette smokers who visited a doctor between 2010/2011 and 2014/2015 increased significantly in 10 states and D.C.; these proportions remained unchanged in all other states.

Across all states, less than a third (31.2%) of current cigarette smokers who visited a dentist during 2010/2011 were advised to quit smoking, and only 7.6% were assisted to quit (Table 3). By state, the proportion receiving dentist advice to quit ranged from 21.4% (Montana) to 38.9% (Alaska). The 10 states with the highest prevalence of receiving advice by a dentist were: South Dakota, Rhode Island, Virginia, Washington, Maryland, New York, D.C., Minnesota, Maine, and Alaska. Among those that visited a dentist, the proportion of all smokers who were assisted ranged from 4.4% (Nebraska) to 17.8% (Alaska). The 10 states with the highest prevalence of receiving assistance from a dentist were New Hampshire, South Dakota, Rhode Island, Mississippi, D.C., West Virginia, Oregon, Hawaii, Maine, and Alaska. As shown in Figure 1, receipt of assistance from a dentist during 2010/2011 was lower compared to a medical doctor in all states assessed (all $p < 0.05$).

Among current cigarette smokers who visited a medical doctor, most states did not see a statistically significant change in the percentage of those reporting having received advice to quit between 2010/2011 and 2014/2015 (only 12 states and D.C. saw a statistically significant increase in self-reported receipt of advice to quit smoking) (Table 4). All four U.S. Census regions saw an increase in the proportion of those who were advised by a doctor to quit smoking: Northeast (69.9% to 75.3%), Midwest (65.7% to 73.1%), South (62.6% to 68.9%), and West (63.1% to 67.4%) (all $p < 0.05$). State-specific estimates of receipt of advice during 2014/2015 ranged from 58.7% (Arkansas) to 80.7% (Wisconsin). The 10 states with the highest prevalence of receipt of advice among smokers during 2014/2015 were: Indiana, Pennsylvania, D.C., Vermont, Rhode Island, New Hampshire, Maine, Massachusetts, and Wisconsin.

Table 1. Characteristics of the study population by region and state, United States, 2014–2015

Census region/state	n	Sex		Age (years)				Race/ethnicity			
		Female	Male	18–24	25–44	45–64	≥65	White	Black	Hispanic	Other
		%	%	%	%	%	%	%	%	%	%
Overall	163920	51.9	48.1	12.6	34.0	34.4	18.9	64.9	11.7	15.6	7.8
Northeast	28370	52.2	47.8	11.0	33.9	35.2	19.9	69.1	10.3	12.7	8.0
Midwest	35894	51.7	48.3	12.2	33.3	34.6	19.9	79.4	9.5	6.2	4.9
South	58602	52.3	47.7	13.2	33.6	34.4	18.8	60.4	18.2	15.8	5.5
West	41054	51.2	48.8	13.4	35.5	33.5	17.7	55.6	4.5	25.8	14.1

Continued

Table 1. Continued

	Census region/state	n	Sex		Age (years)				Race/ethnicity			
			Female	Male	18-24	25-44	45-64	≥65	White	Black	Hispanic	Other
			%	%	%	%	%	%	%	%	%	%
AL	Alabama	2827	52.7	47.3	14.1	30.8	34.6	20.4	68.1	25.2	3.2	3.5
AK	Alaska	1919	48.9	51.1	15.5	35.8	36.3	12.4	65.5	3.0	5.8	25.7
AZ	Arizona	2319	51.8	48.2	13.7	33.2	34.2	18.9	54.5	4.3	33.9	7.4
AR	Arkansas	2606	51.7	48.3	14.2	31.6	35.0	19.3	78.0	13.2	5.5	3.3
CA	California	12257	51.4	48.6	14.0	36.1	33.1	16.8	44.6	5.7	33.1	16.6
CO	Colorado	2393	50.7	49.3	10.9	37.8	35.2	16.1	75.3	3.5	16.8	4.4
CT	Connecticut	2372	52.2	47.8	10.9	32.0	38.0	19.1	72.3	8.9	12.6	6.2
DE	Delaware	2275	52.7	47.3	10.7	32.7	35.1	21.5	68.4	18.5	8.5	4.6
DC	District of Columbia	3100	53.5	46.5	13.5	45.7	26.6	14.2	38.6	44.8	8.8	7.7
FL	Florida	6482	52.2	47.8	10.8	31.0	35.1	23.1	56.0	14.0	26.2	3.7
GA	Georgia	3570	52.9	47.1	12.0	36.8	34.5	16.7	55.0	30.1	7.5	7.4
HI	Hawaii	2075	51.4	48.6	13.6	31.2	33.2	22.0	22.2	1.8	9.1	67.0
ID	Idaho	2344	51.0	49.0	14.4	32.7	34.1	18.8	84.6	0.7	10.3	4.3
IL	Illinois	4719	51.8	48.2	12.5	35.0	33.3	19.2	66.9	13.6	13.2	6.2
IN	Indiana	2644	51.8	48.2	12.9	33.4	33.8	19.9	82.5	8.4	6.1	3.0
IA	Iowa	2332	51.1	48.9	11.6	33.0	35.9	19.4	89.1	2.7	3.6	4.6
KS	Kansas	2361	50.7	49.3	15.2	31.9	33.9	19.0	78.3	5.4	9.6	6.7
KY	Kentucky	2483	52.0	48.0	13.0	32.4	34.3	20.3	86.1	7.1	3.7	3.2
LA	Louisiana	3124	52.5	47.5	14.7	33.3	35.6	16.4	60.4	30.2	5.3	4.1
ME	Maine	2314	51.7	48.3	9.3	29.6	38.2	23.0	93.4	1.3	1.0	4.3
MD	Maryland	2874	53.1	46.9	11.4	34.7	36.5	17.4	56.5	29.0	6.5	8.0
MA	Massachusetts	2871	52.5	47.5	11.3	34.5	34.1	20.1	76.4	6.1	9.9	7.6
MI	Michigan	3854	52.0	48.0	13.2	31.0	34.8	21.0	78.5	13.0	4.2	4.2
MN	Minnesota	3091	51.0	49.0	10.4	35.5	34.6	19.5	84.3	4.6	5.3	5.8
MS	Mississippi	3065	53.4	46.6	15.8	31.1	34.4	18.6	60.3	36.0	1.8	1.9
MO	Missouri	2534	52.6	47.4	10.4	34.2	34.6	20.7	81.5	10.8	3.7	4.0
MT	Montana	2946	50.5	49.5	13.2	29.8	37.1	19.9	90.0	0.6	2.9	6.5
NE	Nebraska	2201	50.8	49.2	14.4	32.9	33.6	19.2	82.6	4.2	7.8	5.4
NV	Nevada	2302	50.3	49.7	12.6	35.0	33.0	19.4	55.0	7.1	24.7	13.2
NH	New Hampshire	2731	51.1	48.9	8.8	32.0	37.9	21.3	92.0	1.1	2.6	4.2
NJ	New Jersey	2925	52.1	47.9	9.3	35.2	35.8	19.8	57.9	12.4	18.6	11.1
NM	New Mexico	2484	51.6	48.4	13.0	32.0	33.2	21.8	43.6	1.7	40.8	14.0
NY	New York	6098	52.5	47.5	12.2	34.9	33.9	19.0	59.2	13.1	17.6	10.0
NC	North Carolina	3458	52.7	47.3	14.5	31.6	34.3	19.6	64.6	20.8	7.8	6.7
ND	North Dakota	2281	48.6	51.4	15.0	34.6	33.4	17.0	90.6	1.4	1.3	6.6
OH	Ohio	4532	51.9	48.1	11.3	32.7	35.6	20.4	82.2	11.1	2.6	4.2
OK	Oklahoma	2507	51.8	48.2	14.1	32.8	34.2	18.9	70.2	6.7	9.3	13.8
OR	Oregon	2382	50.8	49.2	10.6	34.8	33.1	21.6	80.4	1.9	8.9	8.8
PA	Pennsylvania	4669	51.9	48.1	10.9	32.2	36.0	20.9	80.1	9.8	5.6	4.5
RI	Rhode Island	1870	52.5	47.5	10.0	34.6	35.8	19.6	77.5	4.9	12.0	5.6

Continued

Table 1. Continued

	Census region/state	n	Sex		Age (years)				Race/ethnicity			
			Female	Male	18-24	25-44	45-64	≥65	White	Black	Hispanic	Other
			%	%	%	%	%	%	%	%	%	%
SC	South Carolina	2649	53.0	47.0	13.5	31.3	35.3	19.8	66.4	26.6	4.4	2.6
SD	South Dakota	2305	50.4	49.6	12.8	32.8	32.2	22.1	86.9	2.0	1.7	9.4
TN	Tennessee	2922	52.2	47.8	14.6	31.5	34.1	19.8	77.2	15.9	3.7	3.3
TX	Texas	8324	51.6	48.4	14.6	37.2	33.1	15.2	46.6	11.6	35.5	6.3
UT	Utah	2131	50.4	49.6	16.4	40.2	29.0	14.4	82.7	0.8	11.6	4.9
VT	Vermont	2520	51.1	48.9	9.1	32.3	37.9	20.7	96.4	0.4	1.4	1.8
VA	Virginia	3231	52.5	47.5	11.6	34.8	35.2	18.3	66.8	18.4	7.0	7.9
WA	Washington	3066	51.3	48.7	11.5	35.1	34.7	18.7	73.3	3.5	9.7	13.5
WV	West Virginia	3105	51.4	48.6	13.3	28.4	34.9	23.4	93.7	3.1	1.0	2.3
WI	Wisconsin	3040	51.4	48.6	11.7	32.0	36.8	19.5	84.6	5.4	5.6	4.5
WY	Wyoming	2436	49.4	50.6	13.3	33.7	35.5	17.4	87.6	1.1	7.2	4.1

Racial/ethnic subgroups are non-Hispanic, unless otherwise specified. *Northeastern region*: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. *Midwestern region*: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. *Southern region*: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia, and the District of Columbia (D.C.). *Western region*: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

Table 2. Changes in tobacco use by region and state between 2010–2011 and 2014–2015, United States

	Census region/state	Any tobacco			Combustible tobacco			Smokeless tobacco		
		2010–2011	2014–2015	p	2010–2011	2014–2015	p	2010–2011	2014–2015	p
		% (95% CI)	% (95% CI)		% (95% CI)	% (95% CI)		% (95% CI)		
	Overall	18.4 (18.1–18.6)	17.1 (16.9–17.4)	<0.05	17.2 (17.0–17.5)	15.3 (15.1–15.5)	<0.05	1.6 (1.6–1.7)	1.6 (1.6–1.7)	0.94
	Northeast	16.2 (15.7–16.7)	15.6 (15.1–16.2)	0.15	15.6 (15.1–16.1)	14.6 (14.0–15.1)	<0.05	0.9 (0.8–1.1)	1.0 (0.8–1.1)	0.72
	Midwest	21.6 (21.1–22.1)	20.3 (19.8–20.8)	<0.05	20.3 (19.8–20.8)	18.0 (17.5–18.4)	<0.05	2.1 (1.9–2.2)	2.1 (1.9–2.3)	0.62
	South	19.7 (19.4–20.1)	18.6 (18.2–19.0)	<0.05	18.3 (17.9–18.7)	16.4 (16.0–16.7)	<0.05	2.0 (1.9–2.1)	2.0 (1.9–2.1)	0.88
	West	14.8 (14.4–15.2)	13.1 (12.7–13.5)	<0.05	14.0 (13.6–14.4)	11.8 (11.4–12.1)	<0.05	1.2 (1.1–1.4)	1.1 (1.0–1.3)	0.34
AL	Alabama	22.1 (20.1–24.1)	23.1 (21.2–24.9)	0.50	19.6 (17.8–21.5)	19.7 (17.9–21.5)	0.97	3.3 (2.4–4.2)	3.3 (2.5–4.0)	0.96
AK	Alaska	25.6 (23.5–27.7)	21.4 (19.4–23.5)	<0.05	22.8 (20.8–24.8)	18.5 (16.5–20.4)	<0.05	4.1 (3.1–5.1)	3.5 (2.5–4.4)	0.39
AZ	Arizona	16.9 (15.1–18.7)	14.4 (12.9–15.9)	<0.05	16.5 (14.8–18.3)	13.0 (11.5–14.5)	<0.05	1.0 (0.5–1.4)	0.9 (0.5–1.4)	0.87
AR	Arkansas	24.7 (22.7–26.7)	24.0 (22.2–25.8)	0.63	23.1 (21.1–25.0)	20.4 (18.7–22.1)	<0.05	2.7 (1.9–3.5)	4.0 (3.1–4.8)	<0.05
CA	California	11.7 (11.1–12.3)	10.2 (9.6–10.8)	<0.05	11.3 (10.8–11.9)	9.4 (8.8–9.9)	<0.05	0.5 (0.4–0.7)	0.6 (0.4–0.8)	0.52
CO	Colorado	17.1 (15.8–18.4)	16.9 (15.2–18.6)	0.86	15.9 (14.6–17.2)	14.9 (13.3–16.5)	0.34	1.6 (1.1–2.0)	1.8 (1.2–2.3)	0.59
CT	Connecticut	16.0 (14.7–17.2)	15.4 (13.7–17.1)	0.61	15.6 (14.3–16.8)	14.3 (12.7–16.0)	0.23	0.7 (0.4–1.0)	0.6 (0.2–1.1)	0.76
DE	Delaware	18.4 (16.7–20.0)	15.2 (13.6–16.8)	<0.05	18.0 (16.4–19.6)	14.3 (12.8–15.9)	<0.05	0.5 (0.2–0.8)	0.3 (0.1–0.6)	0.39
DC	District of Columbia	15.2 (13.6–16.7)	15.8 (14.4–17.3)	0.52	15.0 (13.4–16.6)	15.5 (14.1–16.9)	0.66	¶	0.4 (0.1–0.6)	0.39
FL	Florida	16.3 (15.4–17.2)	14.4 (13.5–15.3)	<0.05	15.9 (15.0–16.8)	13.2 (12.3–14.1)	<0.05	0.7 (0.5–1.0)	0.8 (0.6–1.0)	0.70
GA	Georgia	16.7 (15.4–18.0)	16.8 (15.5–18.2)	0.92	15.7 (14.4–17.0)	14.7 (13.4–15.9)	0.27	1.6 (1.1–2.0)	1.9 (1.4–2.4)	0.31
HI	Hawaii	14.4 (12.9–15.9)	13.9 (12.2–15.6)	0.64	13.7 (12.2–15.3)	11.7 (10.1–13.2)	0.06	0.9 (0.5–1.4)	0.9 (0.5–1.4)	0.93
ID	Idaho	18.9 (17.0–20.7)	17.4 (15.7–19)	0.24	17.2 (15.4–19.1)	14.7 (13.2–16.2)	<0.05	2.1 (1.4–2.9)	2.2 (1.6–2.9)	0.86
IL	Illinois	18.7 (17.5–19.9)	16.3 (15.1–17.4)	<0.05	18.2 (17.0–19.3)	14.8 (13.7–15.8)	<0.05	1.1 (0.8–1.5)	1.0 (0.7–1.3)	0.58
IN	Indiana	23.1 (21.4–24.9)	22.5 (20.8–24.3)	0.65	21.7 (20.0–23.4)	20.3 (18.6–22.0)	0.26	2.2 (1.5–2.9)	2.2 (1.5–2.8)	0.95
IA	Iowa	22.4 (20.9–23.9)	20.8 (18.9–22.6)	0.19	20.4 (19.0–21.8)	17.4 (15.7–19.1)	<0.05	3.0 (2.4–3.6)	3.7 (2.8–4.6)	0.19
KS	Kansas	22.6 (20.9–24.2)	22.1 (20.3–23.9)	0.68	19.5 (18.0–21.1)	19.5 (17.8–21.2)	0.99	3.7 (3.0–4.5)	2.9 (2.2–3.6)	0.12
KY	Kentucky	28.6 (26.8–30.5)	26.2 (24.3–28.1)	0.07	26.5 (24.7–28.3)	22.4 (20.6–24.2)	<0.05	3.5 (2.8–4.3)	3.8 (2.9–4.7)	0.67
LA	Louisiana	21.7 (19.6–23.8)	21.6 (20.0–23.3)	0.96	20.3 (18.3–22.3)	19.5 (17.9–21.1)	0.53	1.8 (1.2–2.5)	2.4 (1.8–3.0)	0.22
ME	Maine	21.5 (20.0–22.9)	18.6 (16.8–20.3)	<0.05	20.5 (19.1–21.9)	17.8 (16.1–19.6)	<0.05	1.4 (0.9–1.9)	0.6 (0.2–0.9)	<0.05

Continued

Table 2. Continued

	Census region/state	Any tobacco			Combustible tobacco			Smokeless tobacco		
		2010–2011	2014–2015	p	2010–2011	2014–2015	p	2010–2011	2014–2015	p
		% (95% CI)	% (95% CI)		% (95% CI)	% (95% CI)		% (95% CI)		
MD	Maryland	15.2 (14.0–16.4)	13.7 (12.3–15.2)	0.14	14.8 (13.6–16.0)	12.5 (11.1–13.9)	<0.05	0.7 (0.5–1.0)	0.4 (0.1–0.7)	0.10
MA	Massachusetts	14.9 (13.4–16.5)	13.3 (11.9–14.7)	0.13	14.7 (13.2–16.2)	12.5 (11.1–13.9)	<0.05	¶	0.4 (0.1–0.7)	0.47
MI	Michigan	20.7 (19.3–22.1)	19.9 (18.5–21.3)	0.42	19.9 (18.6–21.3)	18.3 (17.0–19.7)	0.10	1.6 (1.1–2.0)	1.6 (1.1–2.1)	0.92
MN	Minnesota	18.9 (17.6–20.1)	19.1 (17.6–20.7)	0.79	17.4 (16.2–18.6)	16.4 (14.9–17.8)	0.30	2.3 (1.8–2.8)	2.4 (1.8–3.0)	0.76
MS	Mississippi	24.5 (22.2–26.8)	23.0 (21.3–24.7)	0.30	20.6 (18.4–22.7)	19.7 (18.1–21.3)	0.51	5.4 (4.2–6.7)	3.6 (2.8–4.5)	<0.05
MO	Missouri	26.7 (25.0–28.4)	20.7 (19.0–22.5)	<0.05	24.8 (23.2–26.5)	18.0 (16.3–19.6)	<0.05	2.7 (2.1–3.4)	2.0 (1.4–2.7)	0.14
MT	Montana	23.9 (21.7–26.2)	21.8 (20.0–23.6)	0.14	20.1 (18.0–22.2)	18.5 (16.8–20.2)	0.25	5.0 (3.8–6.2)	3.8 (3.0–4.6)	0.07
NE	Nebraska	19.4 (17.8–21.1)	19.8 (18.0–21.6)	0.75	17.6 (16.0–19.2)	17.0 (15.3–18.7)	0.65	3.0 (2.2–3.7)	2.5 (1.8–3.2)	0.37
NV	Nevada	19.3 (17.6–20.9)	16.6 (14.9–18.3)	<0.05	18.8 (17.2–20.4)	15.6 (13.9–17.2)	<0.05	0.6 (0.3–0.9)	0.6 (0.2–0.9)	0.84
NH	New Hampshire	17.8 (16.4–19.1)	17.3 (15.7–18.9)	0.68	17.3 (15.9–18.6)	15.9 (14.4–17.5)	0.19	0.8 (0.5–1.1)	1.0 (0.6–1.5)	0.41
NJ	New Jersey	13.5 (12.2–14.8)	12.2 (10.9–13.5)	0.17	13.4 (12.1–14.7)	11.9 (10.6–13.2)	0.10	¶	¶	0.33
NM	New Mexico	19.2 (16.8–21.6)	17.1 (15.5–18.8)	0.17	17.8 (15.4–20.1)	15.2 (13.6–16.8)	0.07	1.8 (0.9–2.6)	1.4 (0.9–1.9)	0.45
NY	New York	14.6 (13.7–15.5)	14.5 (13.5–15.5)	0.90	14.2 (13.3–15.0)	13.8 (12.9–14.8)	0.61	0.5 (0.4–0.7)	0.6 (0.3–0.8)	0.95
NC	North Carolina	20.5 (19.0–22.0)	20.4 (18.9–21.9)	0.95	18.9 (17.5–20.3)	17.7 (16.3–19.1)	0.26	2.0 (1.4–2.5)	2.2 (1.6–2.8)	0.57
ND	North Dakota	21.3 (19.6–23.1)	22.6 (20.7–24.5)	0.33	18.4 (16.7–20.0)	19.0 (17.2–20.7)	0.63	4.1 (3.2–5.0)	4.9 (3.9–6.0)	0.21
OH	Ohio	24.2 (22.9–25.5)	23.8 (22.5–25.2)	0.72	22.8 (21.5–24.0)	20.8 (19.6–22.1)	<0.05	2.3 (1.8–2.8)	2.8 (2.2–3.3)	0.22
OK	Oklahoma	27.2 (25.2–29.1)	23.8 (22.0–25.7)	<0.05	24.8 (22.8–26.7)	19.7 (17.9–21.4)	<0.05	3.5 (2.6–4.4)	4.3 (3.4–5.2)	0.21
OR	Oregon	19.3 (17.6–21.0)	17.3 (15.7–19.0)	0.11	17.4 (15.8–19.0)	15.5 (13.9–17.1)	0.10	2.8 (2.1–3.6)	2.1 (1.4–2.8)	0.17
PA	Pennsylvania	20.2 (19.0–21.3)	20.5 (19.2–21.8)	0.69	18.6 (17.5–19.7)	18.1 (16.9–19.3)	0.57	2.5 (2.1–3.0)	2.6 (2.1–3.1)	0.78
RI	Rhode Island	18.6 (17.0–20.2)	15.5 (13.6–17.3)	<0.05	18.3 (16.7–19.9)	14.3 (12.5–16.1)	<0.05	0.6 (0.2–0.9)	¶	0.78
SC	South Carolina	20.5 (18.8–22.2)	20.7 (19.0–22.4)	0.87	18.7 (17.0–20.4)	19.1 (17.5–20.7)	0.73	2.4 (1.7–3.0)	1.2 (0.8–1.6)	<0.05
SD	South Dakota	23.7 (22.0–25.4)	23.0 (21.0–25.1)	0.63	21.3 (19.7–23.0)	19.5 (17.6–21.4)	0.15	3.6 (2.9–4.4)	4.0 (2.9–5.0)	0.60
TN	Tennessee	26.8 (24.8–28.8)	22.7 (21.1–24.4)	<0.05	23.9 (22.0–25.8)	19.7 (18.1–21.3)	<0.05	3.6 (2.7–4.4)	2.8 (2.1–3.5)	0.15
TX	Texas	18.2 (17.3–19.0)	17.0 (16.2–17.9)	0.07	16.9 (16.1–17.8)	15.0 (14.1–15.8)	<0.05	1.7 (1.4–2.0)	1.9 (1.6–2.2)	0.30
UT	Utah	12.5 (10.9–14.2)	10.9 (9.5–12.4)	0.15	11.2 (9.6–12.7)	8.9 (7.6–10.2)	<0.05	2.0 (1.2–2.8)	1.3 (0.7–1.8)	0.10
VT	Vermont	18.8 (17.3–20.4)	18.2 (16.5–19.9)	0.59	18.0 (16.4–19.5)	16.5 (14.9–18.1)	0.19	1.4 (0.9–2.0)	1.8 (1.2–2.4)	0.39

Continued

Table 2. Continued

	Census region/state	Any tobacco			Combustible tobacco			Smokeless tobacco		
		2010–2011	2014–2015	p	2010–2011	2014–2015	p	2010–2011	2014–2015	p
		% (95% CI)	% (95% CI)		% (95% CI)	% (95% CI)		% (95% CI)		
VA	Virginia	17.0 (15.7–18.4)	17.1 (15.7–18.5)	0.92	15.9 (14.6–17.3)	15.6 (14.2–16.9)	0.69	1.7 (1.3–2.2)	1.4 (1.0–1.9)	0.36
WA	Washington	19.0 (17.5–20.6)	16.8 (15.3–18.2)	<0.05	17.6 (16.2–19.1)	14.8 (13.4–16.1)	<0.05	2.4 (1.7–3.0)	2.2 (1.6–2.7)	0.66
WV	West Virginia	27.8 (25.7–29.9)	26.9 (25.0–28.8)	0.53	22.9 (21.0–24.9)	23.1 (21.2–24.9)	0.90	6.0 (4.8–7.2)	4.8 (3.9–5.7)	0.12
WI	Wisconsin	19.6 (18.2–21.0)	19.1 (17.5–20.7)	0.66	18.6 (17.2–19.9)	16.8 (15.3–18.3)	0.09	1.5 (1.1–2.0)	2.2 (1.5–2.9)	0.10
WY	Wyoming	27.9 (25.9–30.0)	27.7 (25.6–29.7)	0.85	22.7 (20.8–24.6)	22.2 (20.3–24.1)	0.74	7.2 (6.0–8.4)	6.4 (5.2–7.6)	0.38

Northeastern region: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. *Midwestern region:* Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. *Southern region:* Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia, and the District of Columbia (D.C.). *Western region:* Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. Current use of any tobacco product use was defined as being a current user of at least one of cigarettes, pipes, hookahs, cigars, or smokeless tobacco. Current use of any combustible tobacco product use was defined as being a current user of at least one of cigarettes, pipes, hookahs, or cigars. For the respective tobacco products, individuals were classified as current cigarette smokers if they had smoked ≥100 cigarettes during their lifetime and smoked daily or on some days at the time of the survey. Current use of pipes, hookahs, cigars, and smokeless tobacco products, was defined as daily or some days use at the time of the survey. Estimates with relative standard error ≥40% were suppressed (†).

Table 3. Percentage of current smokers who reported visiting a dentist in the past 12 months, and proportion who received cessation counseling among those who visited, 2010–2011

	Census region/state	Visited a dentist in the past 12 months (among current cigarette smokers)	Advised to stop smoking (among those who visited)	Received any assistance (among those who visited)
		% (95% CI)	% (95% CI)	% (95% CI)
	Overall	39.4 (38.7–40.1)	31.2 (30.2–32.3)	7.6 (7.0–8.2)
	Northeast	47.0 (45.2–48.8)	33.8 (31.3–36.3)	8.1 (6.7–9.5)
	Midwest	41.2 (39.8–42.5)	31.3 (29.4–33.3)	6.9 (5.9–7.9)
	South	34.2 (33.1–35.3)	29.9 (28.0–31.7)	7.4 (6.3–8.5)
	West	41.4 (39.8–43.0)	31.0 (28.6–33.3)	8.3 (6.9–9.7)
AL	Alabama	36.0 (30.6–41.4)	26.8 (18.2–35.3)	6.7 (1.7–11.7)
AK	Alaska	42.1 (36.9–47.2)	38.9 (31.0–46.7)	17.8 (11.2–24.3)
AZ	Arizona	41.1 (35.0–47.2)	32.5 (23.5–41.5)	¶
AR	Arkansas	30.0 (25.4–34.6)	27.7 (19.5–35.9)	¶
CA	California	42.4 (39.6–45.2)	29.3 (25.3–33.2)	8.6 (6.2–11.1)
CO	Colorado	43.2 (38.4–47.9)	30.4 (23.7–37.1)	9.6 (5.3–14.0)
CT	Connecticut	54.9 (50.2–59.5)	33.1 (27.2–39.0)	8.0 (4.6–11.4)
DE	Delaware	47.1 (41.9–52.3)	23.7 (17.4–29.9)	7.3 (3.5–11.0)
DC	District of Columbia	49.2 (42.9–55.4)	38.6 (30.0–47.2)	10.8 (5.4–16.2)
FL	Florida	32.4 (29.2–35.5)	27.4 (22.2–32.5)	7.5 (4.3–10.7)
GA	Georgia	34.3 (30.0–38.7)	27.0 (20.3–33.7)	9.5 (5.0–14.1)
HI	Hawaii	41.3 (35.4–47.3)	34.4 (25.5–43.3)	12.4 (5.6–19.2)
ID	Idaho	37.0 (31.2–42.8)	28.5 (19.6–37.4)	8.3 (3.2–13.3)
IL	Illinois	41.0 (37.3–44.7)	31.3 (25.9–36.7)	4.9 (2.5–7.3)
IN	Indiana	28.7 (24.5–33.0)	24.7 (16.9–32.5)	4.7 (1.3–8.2)
IA	Iowa	47.5 (43.4–51.7)	33.8 (28.1–39.5)	8.2 (4.8–11.5)
KS	Kansas	37.7 (33.2–42.2)	24.5 (18.0–30.9)	5.9 (2.5–9.4)
KY	Kentucky	35.3 (31.4–39.3)	26.6 (20.5–32.7)	7.4 (3.8–11.0)
LA	Louisiana	36.1 (30.4–41.7)	30.4 (21.0–39.7)	9.1 (2.7–15.5)
ME	Maine	40.3 (36.3–44.3)	38.8 (32.3–45.2)	12.9 (8.3–17.6)
MD	Maryland	48.5 (43.8–53.2)	36.4 (30.0–42.8)	8.5 (4.8–12.2)
MA	Massachusetts	43.4 (37.4–49.4)	28.2 (20.1–36.3)	8.8 (4.1–13.6)
MI	Michigan	46.1 (42.1–50.1)	31.0 (25.5–36.5)	8.5 (5.3–11.7)
MN	Minnesota	49.7 (45.7–53.7)	38.6 (33.1–44.2)	8.2 (4.8–11.6)
MS	Mississippi	32.6 (26.8–38.3)	27.6 (17.8–37.5)	10.2 (3.1–17.4)
MO	Missouri	39.2 (35.2–43.1)	30.2 (24.3–36.2)	7.4 (4.0–10.7)
MT	Montana	35.5 (29.5–41.4)	21.4 (12.5–30.4)	¶
NE	Nebraska	47.7 (42.5–52.9)	25.6 (19.1–32.1)	4.4 (1.6–7.3)
NV	Nevada	32.2 (27.5–36.9)	30.5 (22.5–38.5)	6.7 (2.5–11.0)
NH	New Hampshire	43.0 (38.4–47.6)	35.0 (28.2–41.8)	9.8 (5.4–14.2)
NJ	New Jersey	48.6 (43.1–54.1)	34.8 (27.6–42.0)	9.2 (4.9–13.5)
NM	New Mexico	44.4 (36.7–52.0)	32.0 (21.6–42.3)	¶
NY	New York	48.6 (45.1–52.1)	38.2 (33.3–43.1)	8.9 (6.0–11.7)
NC	North Carolina	39.8 (35.6–44.0)	33.9 (27.4–40.4)	7.0 (3.5–10.5)
ND	North Dakota	41.9 (36.7–47.0)	24.9 (17.9–31.8)	6.8 (2.6–11.0)

Continued

Table 3. Continued

Census region/state		Visited a dentist in the past 12 months (among current cigarette smokers)	Advised to stop smoking (among those who visited)	Received any assistance (among those who visited)
		% (95% CI)	% (95% CI)	% (95% CI)
OH	Ohio	38.9 (35.7–42.2)	32.8 (27.9–37.7)	7.0 (4.3–9.6)
OK	Oklahoma	33.5 (29.1–37.9)	28.0 (20.5–35.4)	9.1 (4.4–13.8)
OR	Oregon	40.5 (35.0–46.0)	29.3 (21.2–37.5)	11.5 (5.4–17.6)
PA	Pennsylvania	45.2 (41.7–48.6)	29.3 (24.6–34.0)	5.5 (3.2–7.8)
RI	Rhode Island	52.0 (46.9–57.2)	35.9 (29.1–42.7)	10.1 (6.1–14.2)
SC	South Carolina	34.9 (30.0–39.8)	30.7 (22.5–38.8)	7.0 (2.8–11.3)
SD	South Dakota	46.7 (42.1–51.3)	35.2 (28.7–41.7)	9.9 (6.0–13.8)
TN	Tennessee	29.2 (25.0–33.5)	29.6 (21.6–37.7)	5.4 (1.6–9.3)
TX	Texas	29.0 (26.5–31.6)	29.1 (24.4–33.9)	6.1 (3.6–8.7)
UT	Utah	43.8 (36.0–51.5)	33.7 (22.1–45.3)	8.7 (1.6–15.8)
VT	Vermont	41.0 (36.0–45.9)	34.5 (27.0–42.0)	7.7 (3.8–11.6)
VA	Virginia	40.5 (35.8–45.2)	35.9 (28.5–43.3)	7.7 (3.7–11.6)
WA	Washington	42.0 (37.1–46.9)	36.0 (28.7–43.3)	7.5 (3.6–11.4)
WV	West Virginia	35.3 (30.4–40.2)	29.9 (21.9–37.9)	10.9 (4.8–17.0)
WI	Wisconsin	45.4 (41.2–49.6)	32.2 (26.4–38.0)	7.5 (4.3–10.6)
WY	Wyoming	41.1 (36.2–46.1)	33.2 (26.2–40.1)	9.3 (5.3–13.3)

Northeastern region: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. *Midwestern region:* Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. *Southern region:* Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia, and the District of Columbia (D.C.). *Western region:* Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. 'Any assistance' includes suggestions to use a telephone help line/quitline or a smoking cessation class/program/counseling, recommending/prescribing a nicotine product (e.g. patch, gum, lozenge, nasal spray or inhaler) or a pill (e.g. Chantix, Varenicline, Zyban, Bupropion, or Wellbutrin), and suggesting to set a specific date to stop smoking. Estimates with relative standard error $\geq 40\%$ were suppressed (¶).

Table 4. Percentage of smokers who reported visiting a physician in the past 12 months, and proportion who received cessation counseling among those who visited, 2010–2011 and 2014–2015, United States

	Census region/state	Visited a medical doctor in the past 12 months (among current cigarette smokers)			Advised to stop smoking (among those who visited)			Received any assistance (among those who visited)		
		2010–2011	2014–2015	p	2010–2011	2014–2015	p	2010–2011	2014–2015	p
		% (95% CI)	% (95% CI)		% (95% CI)	% (95% CI)		% (95% CI)		
	Overall	63.7 (63.0–64.4)	67.0 (66.3–67.8)	<0.05	64.8 (63.9–65.6)	70.9 (70.0–71.8)	<0.05	33.8 (33.0–34.7)	-	-
	Northeast	68.1 (66.4–69.9)	72.7 (70.9–74.6)	<0.05	69.9 (67.9–71.9)	75.3 (73.1–77.5)	<0.05	40.3 (38.2–42.4)	-	-
	Midwest	66.0 (64.7–67.3)	71.1 (69.6–72.5)	<0.05	65.7 (64.1–67.3)	73.1 (71.4–74.7)	<0.05	34.1 (32.6–35.7)	-	-
	South	61.4 (60.2–62.5)	64.4 (63.2–65.6)	<0.05	62.6 (61.1–64.0)	68.9 (67.5–70.3)	<0.05	31.0 (29.6–32.3)	-	-
	West	61.3 (59.7–62.9)	62.0 (60.1–63.8)	0.60	63.1 (61.0–65.1)	67.4 (65.2–69.6)	<0.05	33.3 (31.4–35.3)	-	-
AL	Alabama	69.9 (64.6–75.1)	67.6 (62.1–73.0)	0.55	53.2 (46.5–59.8)	63.4 (57.7–69.1)	<0.05	22.3 (17.0–27.6)	-	-
AK	Alaska	64.2 (59.1–69.3)	62.5 (56.3–68.8)	0.68	61.7 (55.4–68.1)	71.2 (63.9–78.5)	0.06	39.7 (33.3–46.0)	-	-
AZ	Arizona	65.2 (59.2–71.1)	61.0 (54.7–67.2)	0.34	62.0 (54.3–69.6)	71.6 (64.6–78.6)	0.07	26.0 (19.5–32.5)	-	-
AR	Arkansas	64.9 (60.0–69.7)	65.5 (60.8–70.2)	0.85	56.6 (50.5–62.6)	58.7 (53.1–64.3)	0.61	24.0 (18.8–29.2)	-	-
CA	California	59.9 (57.1–62.7)	56.4 (53.0–59.9)	0.12	63.5 (60.0–67.0)	67.6 (63.5–71.8)	0.14	33.4 (30.0–36.8)	-	-
CO	Colorado	60.2 (55.5–64.9)	70.7 (65.0–76.5)	<0.05	67.4 (61.6–73.1)	70.9 (64.3–77.5)	0.43	42.8 (36.9–48.6)	-	-
CT	Connecticut	73.3 (69.2–77.5)	65.7 (58.8–72.6)	0.06	69.1 (64.1–74.1)	74.2 (67.3–81.1)	0.25	39.9 (34.6–45.2)	-	-
DE	Delaware	67.7 (62.8–72.7)	74.0 (68.5–79.5)	0.10	65.3 (59.3–71.3)	70.0 (63.2–76.8)	0.31	39.5 (33.4–45.6)	-	-
DC	District of Columbia	69.2 (63.1–75.3)	77.3 (72.4–82.2)	<0.05	64.8 (57.7–71.8)	77.0 (71.2–82.7)	<0.05	39.3 (32.3–46.3)	-	-
FL	Florida	58.8 (55.4–62.1)	63.1 (59.5–66.8)	0.09	63.7 (59.7–67.8)	71.9 (67.7–76.2)	<0.05	29.5 (25.7–33.3)	-	-
GA	Georgia	60.5 (55.9–65.0)	59.4 (54.5–64.4)	0.76	66.0 (60.4–71.6)	70.9 (65.2–76.5)	0.23	32.7 (27.2–38.1)	-	-
HI	Hawaii	62.3 (56.3–68.3)	66.3 (59.0–73.6)	0.41	66.9 (59.9–73.9)	68.9 (59.7–78.0)	0.74	40.1 (32.7–47.5)	-	-
ID	Idaho	61.7 (55.8–67.7)	63.9 (58.2–69.7)	0.60	62.2 (54.5–69.8)	60.4 (53.2–67.6)	0.74	35.0 (27.9–42.1)	-	-
IL	Illinois	69.9 (66.4–73.4)	66.8 (62.8–70.9)	0.27	64.3 (59.9–68.7)	70.4 (65.7–75.1)	0.06	31.4 (27.3–35.4)	-	-
IN	Indiana	55.1 (50.4–59.7)	70.3 (65.7–74.9)	<0.05	62.9 (56.7–69.0)	75.9 (71.1–80.7)	<0.05	28.2 (22.7–33.7)	-	-
IA	Iowa	70.8 (67.0–74.6)	71.9 (66.4–77.3)	0.75	58.9 (54.1–63.7)	73.8 (67.9–79.7)	<0.05	33.2 (28.7–37.8)	-	-
KS	Kansas	62.1 (57.5–66.7)	67.5 (62.4–72.5)	0.12	62.6 (57.0–68.2)	67.0 (61.2–72.8)	0.29	37.1 (31.5–42.6)	-	-

Continued

Table 4. Continued

	Census region/state	Visited a medical doctor in the past 12 months (among current cigarette smokers)			Advised to stop smoking (among those who visited)			Received any assistance (among those who visited)		
		2010–2011	2014–2015	p	2010–2011	2014–2015	p	2010–2011	2014–2015	p
		% (95% CI)	% (95% CI)		% (95% CI)	% (95% CI)		% (95% CI)		
KY	Kentucky	66.7 (62.7–70.6)	67.9 (63.3–72.5)	0.69	65.5 (60.7–70.4)	72.8 (67.8–77.8)	<0.05	37.7 (32.8–42.5)	-	-
LA	Louisiana	65.7 (60.2–71.2)	60.0 (55.3–64.7)	0.13	68.2 (61.7–74.7)	67.3 (62.0–72.6)	0.82	34.6 (27.7–41.5)	-	-
ME	Maine	74.2 (70.5–77.8)	75.2 (70.2–80.2)	0.74	71.1 (66.7–75.5)	80.0 (74.6–85.3)	<0.05	51.9 (47.0–56.7)	-	-
MD	Maryland	74.2 (70.0–78.4)	76.1 (70.2–81.9)	0.61	66.0 (60.8–71.2)	73.9 (66.7–81.1)	0.09	38.4 (33.2–43.7)	-	-
MA	Massachusetts	67.1 (61.4–72.9)	73.5 (68.0–78.9)	0.12	77.4 (71.3–83.4)	80.1 (73.8–86.4)	0.55	51.3 (44.0–58.6)	-	-
MI	Michigan	67.6 (63.7–71.5)	73.0 (69.1–77.0)	0.05	68.1 (63.5–72.6)	73.8 (69.2–78.3)	0.08	33.3 (28.9–37.7)	-	-
MN	Minnesota	65.2 (61.4–69.1)	72.9 (68.1–77.7)	<0.05	71.2 (66.8–75.6)	71.7 (66.1–77.4)	0.89	45.3 (40.4–50.2)	-	-
MS	Mississippi	55.5 (49.4–61.6)	62.8 (58.2–67.3)	0.06	56.7 (48.8–64.6)	63.8 (58.0–69.6)	0.16	27.3 (20.4–34.1)	-	-
MO	Missouri	67.9 (64.0–71.8)	72.0 (67.3–76.8)	0.19	67.7 (63.1–72.2)	71.1 (65.2–76.9)	0.37	32.4 (27.8–37.0)	-	-
MT	Montana	65.5 (59.6–71.5)	72.1 (67.3–77.0)	0.09	56.9 (49.3–64.5)	66.7 (60.4–73.1)	0.05	34.1 (27.0–41.3)	-	-
NE	Nebraska	64.4 (59.4–69.5)	68.1 (62.7–73.4)	0.34	59.3 (53.1–65.5)	65.4 (58.6–72.2)	0.20	31.9 (26.0–37.8)	-	-
NV	Nevada	56.6 (51.6–61.6)	58.7 (52.7–64.6)	0.61	58.9 (52.3–65.6)	59.9 (51.9–67.8)	0.86	23.5 (17.8–29.1)	-	-
NH	New Hampshire	69.1 (64.8–73.3)	71.7 (66.6–76.9)	0.44	72.3 (67.4–77.2)	78.9 (73.4–84.4)	0.08	34.9 (29.6–40.2)	-	-
NJ	New Jersey	58.5 (53.1–63.8)	69.6 (63.6–75.6)	<0.05	64.9 (58.1–71.7)	72.1 (65.3–78.9)	0.14	32.0 (25.4–38.6)	-	-
NM	New Mexico	58.8 (51.2–66.5)	58.1 (52.2–64.0)	0.89	56.7 (46.8–66.5)	67.4 (60.2–74.6)	0.08	31.8 (22.8–40.7)	-	-
NY	New York	68.1 (64.9–71.4)	74.8 (71.3–78.2)	<0.05	71.7 (67.9–75.5)	73.5 (69.3–77.8)	0.53	42.5 (38.3–46.7)	-	-
NC	North Carolina	61.3 (57.1–65.6)	64.6 (60.1–69.0)	0.30	64.6 (59.5–69.8)	71.5 (66.3–76.7)	0.07	34.4 (29.3–39.4)	-	-
ND	North Dakota	59.6 (54.5–64.7)	65.6 (60.5–70.7)	0.10	60.2 (53.5–66.8)	66.2 (59.5–72.8)	0.21	32.4 (26.1–38.6)	-	-
OH	Ohio	66.5 (63.3–69.7)	72.4 (69.1–75.7)	<0.05	65.9 (62.0–69.8)	73.8 (69.8–77.7)	<0.05	32.9 (29.1–36.6)	-	-
OK	Oklahoma	63.4 (58.9–67.9)	62.4 (57.5–67.4)	0.77	61.3 (55.7–67.0)	62.8 (56.6–69.0)	0.73	31.6 (26.4–36.7)	-	-
OR	Oregon	63.6 (58.1–69.0)	74.4 (68.8–79.9)	<0.05	58.9 (52.1–65.7)	63.6 (56.7–70.5)	0.34	31.5 (25.0–38.0)	-	-
PA	Pennsylvania	70.6 (67.4–73.9)	72.4 (68.7–76.0)	0.48	66.3 (62.4–70.2)	76.0 (72.1–80.0)	<0.05	35.5 (31.5–39.4)	-	-
RI	Rhode Island	73.1 (68.3–77.8)	77.8 (71.6–84.1)	0.24	74.0 (68.8–79.3)	78.1 (71.0–85.3)	0.37	41.2 (35.4–46.9)	-	-
SC	South Carolina	62.5 (57.5–67.5)	66.1 (61.4–70.8)	0.30	61.1 (54.8–67.4)	65.4 (59.5–71.3)	0.33	28.5 (22.8–34.3)	-	-

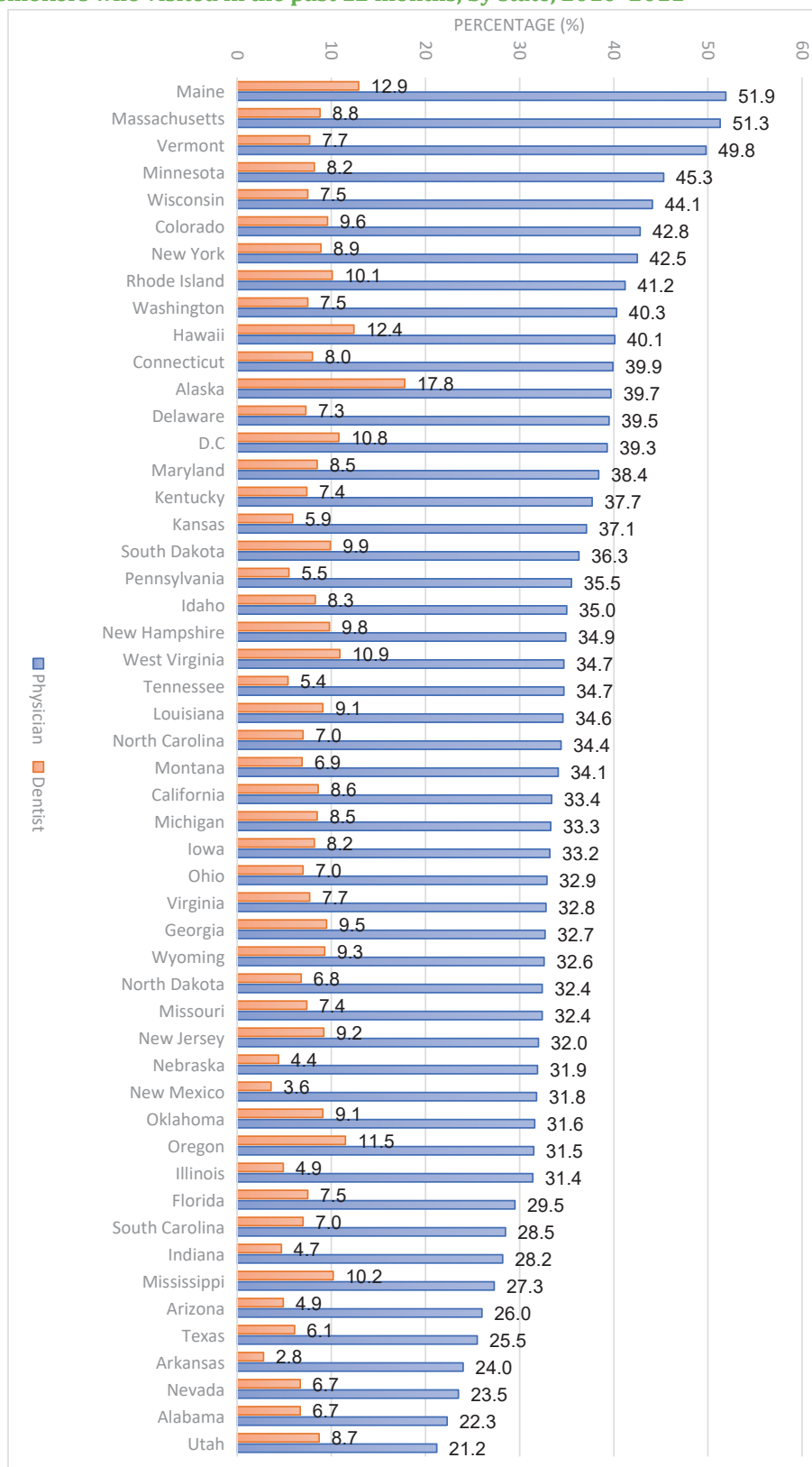
Continued

Table 4. Continued

	Census region/state	Visited a medical doctor in the past 12 months (among current cigarette smokers)			Advised to stop smoking (among those who visited)			Received any assistance (among those who visited)		
		2010–2011	2014–2015	p	2010–2011	2014–2015	p	2010–2011	2014–2015	p
		% (95% CI)	% (95% CI)		% (95% CI)	% (95% CI)		% (95% CI)		
SD	South Dakota	64.5 (60.1–69.0)	65.2 (59.6–70.9)	0.85	57.4 (51.8–63.0)	67.4 (60.8–73.9)	<0.05	36.3 (30.8–41.8)	-	-
TN	Tennessee	66.7 (62.4–71.1)	74.2 (69.9–78.5)	<0.05	63.4 (57.8–69.1)	71.7 (67.0–76.4)	<0.05	34.7 (29.3–40.1)	-	-
TX	Texas	52.5 (49.6–55.3)	58.2 (55.1–61.3)	<0.05	57.5 (53.7–61.4)	65.7 (61.8–69.6)	<0.05	25.5 (22.1–28.9)	-	-
UT	Utah	61.7 (54.1–69.2)	57.7 (49.6–65.8)	0.48	56.5 (47.0–66.1)	68.4 (58.6–78.2)	0.10	21.2 (13.3–29.0)	-	-
VT	Vermont	72.3 (67.7–76.9)	74.6 (69.7–79.5)	0.50	70.0 (64.5–75.4)	77.7 (72.2–83.2)	0.05	49.8 (43.9–55.7)	-	-
VA	Virginia	63.4 (58.7–68.2)	69.1 (64.0–74.1)	0.11	68.7 (63.1–74.3)	73.4 (68.0–78.8)	0.24	32.8 (27.3–38.4)	-	-
WA	Washington	62.7 (57.9–67.5)	68.0 (62.8–73.2)	0.15	68.6 (62.8–74.4)	67.0 (60.9–73.1)	0.72	40.3 (34.2–46.5)	-	-
WV	West Virginia	67.0 (62.1–71.9)	71.8 (67.5–76.1)	0.15	68.5 (62.9–74.1)	70.8 (65.3–76.2)	0.56	34.7 (29.0–40.5)	-	-
WI	Wisconsin	67.1 (63.1–71.1)	74.6 (70.1–79.1)	<0.05	69.5 (64.7–74.2)	80.7 (76.3–85.2)	<0.05	44.1 (39.0–49.1)	-	-
WY	Wyoming	65.8 (61.1–70.6)	61.2 (55.9–66.4)	0.20	62.4 (56.1–68.6)	66.1 (60.3–71.8)	0.40	32.6 (26.8–38.3)	-	-

Northeastern region: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. *Midwestern region:* Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. *Southern region:* Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia, and the District of Columbia (D.C.). *Western region:* Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. 'Any assistance' includes suggestions to use a telephone help line/quit line or a smoking cessation class/program/counseling, recommending/prescribing a nicotine product (e.g. patch, gum, lozenge, nasal spray or inhaler) or a pill (e.g. Chantix, Varenicline, Zyban, Bupropion, or Wellbutrin), and suggesting to set a specific date to stop smoking. Receipt of any assistance from a physician was not assessed during 2014/2015 (-). Estimates with relative standard error ≥40% were suppressed (¶).

Figure 1. Comparison of receipt of assistance to quit smoking from dentist versus physician offices among current cigarette smokers who visited in the past 12 months, by state, 2010–2011



'Any assistance' includes suggestions to use a telephone help line/quitline or a smoking cessation class/program/counseling, recommending/prescribing a nicotine product (e.g. patch, gum, lozenge, nasal spray or inhaler) or a pill (e.g. Chantix, Varenicline, Zyban, Bupropion, or Wellbutrin), and suggesting to set a specific date to stop smoking.

DISCUSSION

We found wide variability in delivery of cessation counseling across states. Not surprisingly, most of the states with the highest prevalence of cessation counseling had the lowest prevalence of tobacco use, including states such as Massachusetts, New York, Utah, Rhode Island, and Hawaii. The gap between the highest and lowest performing states was notable. For example, the proportion of smokers who were assisted to quit by a dentist was over four-fold higher in Alaska than in Nebraska (17.8% vs 4.4%, respectively). Furthermore, over the study period, only 12 states and D.C. saw an increase in self-reported receipt of advice to quit smoking from a doctor. Intensified tobacco prevention and control efforts at the state and local levels, including funding of tobacco control programs at CDC-recommended levels, provision of tobacco cessation training to healthcare providers, and adequate reimbursement for tobacco cessation services are needed if further progress is to be made.

We found that in every state assessed, current smokers who visited a dentist were less likely to report receipt of advice or assistance to quit, compared to those who visited a physician. Visit to an oral health professional affords unique opportunities for smoking cessation and counseling, while dental records provide an excellent source of information^{10,11}. The dental visit, especially the hygiene visit, is typically longer than a visit with a physician or nurse practitioner¹². It is routine for patients to be on a periodic examination schedule, particularly those patients with tobacco-related oral health conditions such as periodontitis¹³. The American Dental Association (ADA), the American Dental Hygienists' Association (ADHA), the FDI World Dental Federation, and the World Health Organization (WHO) Framework Convention for Tobacco Control (FCTC) all promote provision of evidence-based tobacco treatment by dental professionals¹⁴⁻¹⁷. Each member of the dental 'team' can play a role in the delivery of evidence-based tobacco treatment, reducing the burden on any one individual in the office and creating a supportive environment for patients who use tobacco^{12,18}. Because of the length of the hygiene visit and the focus on education and prevention in dental hygiene practice, many dental tobacco cessation interventions rely primarily on the dental hygienist to deliver the majority of program content^{12,18}. The dentist can reinforce the advice to quit and can play an important role in the discussion about and provision of a prescription for pharmacotherapy (e.g. Nicotine Replacement Therapy [NRT], varenicline, bupropion, etc.)¹⁸. Front office staff may also support the provision of brief interventions by collecting information about patients' tobacco use at their initial visit and updating that information regularly. In addition, front office staff can initiate referrals to tobacco quitlines and provide information on other cessation resources to patients^{9,12,18-22}. Through a team-based model, patients can

receive multiple messages encouraging tobacco cessation, and a systematic approach to providing assistance to quit²³.

With the rapidly changing landscape of tobacco use in the United States, it is critical that cessation efforts focus not only on cigarettes, but the totality of tobacco products²⁴. During tobacco cessation counseling, it is critical to take into consideration nicotine dependence, which may affect preferences on tobacco cessation methods²⁵. In our study, despite declines in combustible tobacco smoking in 22 states between 2010/2011 and 2014/2015, aggregate tobacco consumption decreased only in 13 states, likely because of unchanged prevalence of smokeless tobacco use in most states. Although use of electronic nicotine delivery systems (ENDS, such as electronic cigarettes) was not assessed in this study due to lack of information, US adults and youth have increasingly used ENDS in the past decade^{26,27}. Taken together with this, our findings underscore the importance of a comprehensive strategy that covers all tobacco products at the individual and population levels, especially since not all tobacco users may visit a provider, not all who visit a provider may disclose their tobacco use status or receive advice, and not all who are counseled by a provider may make a quit attempt. Therefore, repeated exposures to health messages from numerous sources, including cigarette packaging warnings, can complement tobacco control interventions currently employed, resulting in reduced tobacco use and public health improvement²⁸.

Limitations

The findings in this study are subject to several limitations. First, all measures were self-reported and may be subject to misclassification or misreporting. Second, small sample sizes for certain outcomes yielded imprecise estimates and were omitted. Third, data are not available for frequency of visits, or other types of providers (e.g. pharmacists, nurses, psychologists), who may be involved in providing cessation counseling. Fourth, the questions assessing receipt of advice and assistance were asked of current cigarette smokers only, and were not asked of non-cigarette tobacco product users. Finally, these data may not be representative of certain groups (e.g. institutionalized persons, military personnel, the homeless).

CONCLUSIONS

We found wide variability in delivery of cessation counseling across states for cessation counseling from a dentist or physician. Consistently across states, dental patients were less likely to receive cessation counseling than medical patients. Despite declines in combustible tobacco smoking in 22 states between 2010/2011 and 2014/2015, all tobacco consumption decreased only in 13 states. A comprehensive tobacco control strategy is necessary to improve dental public health.

REFERENCES

1. U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. 2014. Accessed May 6, 2021. https://www.ncbi.nlm.nih.gov/books/NBK179276/pdf/Bookshelf_NBK179276.pdf
2. U.S. Department of Health and Human Services. Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health. 2016. Accessed May 6, 2021. <https://addiction.surgeongeneral.gov/sites/default/files/surgeon-generals-report.pdf>
3. Tobacco use: objectives. U.S. Department of Health and Human Services. Accessed September 24, 2019. <https://www.healthypeople.gov/2020/topics-objectives/topic/tobacco-use/objectives>
4. A and B Recommendations. U.S. Preventive Services Task Force. Accessed September 24, 2019. <https://www.uspreventiveservicestaskforce.org/Page/Name/uspstf-a-and-b-recommendations/>
5. Fiore MC, Jaén CR, Baker TB, et al. Treating Tobacco Use and Dependence: 2008 Update. U.S. Department of Health and Human Services, Public Health Service. May, 2008. Accessed May 6, 2021. https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/clinicians-providers/guidelines-recommendations/tobacco/clinicians/update/treating_tobacco_use08.pdf
6. Miller WR, Rollnick S. Motivational interviewing: Helping people change. 3rd ed. Guilford Press; 2012.
7. Hudmon KS, Kroon LA, Corelli RL, et al. Training future pharmacists at a minority educational institution: evaluation of the Rx for change tobacco cessation training program. *Cancer Epidemiol Biomarkers Prev.* 2004;13(3):477-481. Accessed May 6, 2021. <https://cebp.aacrjournals.org/content/cebp/13/3/477.full.pdf>
8. Gordon JS, Andrews JA, Crews KM, Payne TJ, Severson HH, Lichtenstein E. Do faxed quitline referrals add value to dental office-based tobacco-use cessation interventions? *J Am Dent Assoc.* 2010;141(8):1000-1007. doi:10.14219/jada.archive.2010.0314
9. Vidrine JI, Shete S, Cao Y, et al. Ask-Advise-Connect: A New Approach to Smoking Treatment Delivery in Healthcare Settings. *JAMA Intern Med.* 2013;173(6):458-464. doi:10.1001/jamainternmed.2013.3751
10. Carr AB, Ebbert J. Interventions for tobacco cessation in the dental setting. *Cochrane Database Syst Rev.* 2012;2012(6):CD005084. doi:10.1002/14651858.CD005084.pub3
11. Al-Kayyal MA, Al-Hazmi NA. Dental Records and what they can Reveal about Tobacco Use Intervention Practices. *Tob Prev Cessat.* 2017;3(February):1-7. doi:10.18332/tpc/67969
12. Gordon JS, Severson HH. Tobacco Cessation Through Dental Office Settings. *J Dent Educ.* 2001;65(4):354-363. doi:10.1002/j.0022-0337.2001.65.4.tb03406.x
13. Zhang Y, He J, He B, Huang R, Li M. Effect of tobacco on periodontal disease and oral cancer. *Tob Induc Dis.* 2019;17(May):1-15. doi:10.18332/tid/106187
14. Current Policies: Tobacco Use, Vaping, and Nicotine Delivery Products. American Dental Association. Updated October 27, 2020. Accessed April 19, 2019. <https://www.ada.org/en/advocacy/current-policies#tobacco>
15. ADHA Policy Manual. American Dental Hygienists' Association; 2020. Accessed September 24, 2019. https://www.adha.org/resources-docs/7614_Policy_Manual.pdf
16. Tobacco and Oral Health. FDI World Dental Federation. Accessed April 19, 2019. <https://web.archive.org/web/20180912042347/https://www.fdiworldddental.org/oral-health/tobacco-and-oral-health>
17. World Health Organization. WHO Framework Convention on Tobacco Control. World Health Organization; 2005. Accessed May 6, 2021. <http://apps.who.int/iris/bitstream/handle/10665/42811/9241591013.pdf>
18. Gordon JS, Albert DA, Crews KM, Fried J. Tobacco education in dentistry and dental hygiene. *Drug Alcohol Rev.* 2009;28(5):517-532. doi:10.1111/j.1465-3362.2009.00108.x
19. Severson HH, Andrews JA, Lichtenstein E, Gordon JS, Barckley MF. Using the hygiene visit to deliver a tobacco cessation program: results of a randomized clinical trial. *J Am Dent Assoc.* 1998;129(7):993-999. doi:10.14219/jada.archive.1998.0353
20. Andrews JA, Severson HH, Lichtenstein E, Gordon JS, Barckley MF. Evaluation of a dental office tobacco cessation program: Effects on smokeless tobacco use. *Ann Behav Med.* 1999;21(1):48-53. doi:10.1007/BF02895033
21. Gordon JS, Lichtenstein E, Severson HH, Andrews JA. Tobacco cessation in dental settings: research findings and future directions. *Drug Alcohol Rev.* 2006;25(1):27-37. doi:10.1080/09595230500459495
22. Gordon JS, Andrews JA, Crews KM, Payne TJ, Severson HH. The 5A's vs 3A's plus proactive quitline referral in private practice dental offices: preliminary results. *Tob Control.* 2007;16(4):285-288. doi:10.1136/tc.2007.020271
23. Warnakulasuriya S. Effectiveness of Tobacco Counseling in the Dental Office. *J Dent Educ.* 2002;66(9):1079-1087. doi:10.1002/j.0022-0337.2002.66.9.tb03577.x
24. McMillen R, Maduka J, Winickoff J. Use of emerging tobacco products in the United States. *J Environ Public Health.* 2012;2012:989474. doi:10.1155/2012/989474
25. Enyioha C, Meernik C, Ranney L, Goldstein AO, Sellman K, Kistler CE. Willingness-to-try various tobacco cessation methods among US adult cigarette smokers. *Tob Prev Cessat.* 2019;5(May):1-9. doi:10.18332/tpc/108555
26. Dai H, Leventhal AM. Prevalence of e-Cigarette Use Among Adults in the United States, 2014-2018. *JAMA.* 2019;322(18):1824-1827. doi:10.1001/jama.2019.15331
27. Pfeiffer JA, Tompkins LK, Hart JL, et al. Relationship between population characteristics, e-cigarette and tobacco-related perceptions, and likelihood of ever using e-cigarettes. *Tob Prev Cessat.* 2020;6(March):1-12. doi:10.18332/tpc/117477
28. Drovandi A, Teague PA, Glass B, Malau-Aduli B. Smoker perceptions of health warnings on cigarette packaging

and cigarette sticks: A four-country study. *Tob Induc Dis.*
2019;17(March):1-13. doi:10.18332/tid/104753

CONFLICTS OF INTEREST

The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none was reported.

FUNDING

There was no source of funding for this research.

ETHICAL APPROVAL AND INFORMED CONSENT

Ethical approval and informed consent were not required for this

study, as data used were from Tobacco Use Supplement to the Current Population Survey.

DATA AVAILABILITY

The data supporting this research is available from the author(s) on reasonable request.

PROVENANCE AND PEER REVIEW

Not commissioned; externally peer reviewed.