Original investigation

Disparities in the Receipt of Tobacco Treatment Counseling within the US Context of the Affordable Care Act and Meaningful Use Implementation

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Abstract

Introduction: Disparities in receiving advice to quit smoking and other tobacco use from health professionals may contribute to the continuing gap in smoking prevalence among priority populations. Under the Affordable Care Act (ACA), beginning in 2010, tobacco cessation services are currently covered in private and public health insurance plans. Providers and hospitals are also incentivized through the Meaningful Use of Electronic Health Records (EHRs) to screen and document patients' tobacco use and deliver brief cessation counseling. This study analyzes trends and correlates of receiving health professionals' advice to quit and potential disparities among US adult smokers from 2010 to 2015.

Methods: Data were from the National Health Interview Survey in 2010 and 2015. We analyzed the weighted prevalence of smokers' receipt of advice to quit smoking and other tobacco use from a health professional in 2010 and 2015 and correlates of receiving advice to quit.

Results: Prevalence of receiving advice to quit from a health professional increased from 51.4% in 2010 to 60.6% in 2015. This positive trend was observed across tobacco disparity population groups. Survey year (2015), age (older), ethnicity (non-Hispanic), region (Northeast), poverty level (above 100% poverty level), past quit attempt, daily smoking, cigarettes per day (11+ per day), and psychological distress were associated with higher odds of receiving advice to quit.

Conclusion: Based on national level data, receipt of advice to quit from health professionals increased between 2010 and 2015. However, disparities in receiving advice to quit from health professionals persist in certain populations.

Implications: This study provides important data on the national trends in receipt of health professional advice to quit smoking and other tobacco use in the context of the ACA and Meaningful Use

implementation and whether these policies helped to narrow the gaps in receipt of health professional advice among vulnerable populations.

Introduction

Smoking prevalence in the United States has declined from 21% in 2005 to 15% in 2015.¹ However, significant disparities in smoking initiation, continuation, and rates of cessation persist.^{2–4} Most notably, certain populations continue to smoke and are disproportionately impacted by tobacco-related health disparities including cancer and cardiovascular disease, resulting in disparate rates in mortality.^{5,6} Populations at risk for tobacco-related health disparities include young adults, racial/ethnic minorities, individuals at lower socioeconomic status, LGBT (lesbian, gay, bisexual, transgender) persons, those with disabilities, psychiatric or substance use disorders, and individuals living in the Midwest and Southern regions in the United States.^{1,7–9}

Lack of advice to quit smoking from a health professional may be a significant contributing factor to the continuing gap in smoking prevalence among priority populations. Several studies based on national health surveys have documented inequalities in receipt of cessation advice by social determinants. Smokers who are male (vs. female), aged 18–24 years (vs. older age groups), Hispanic (vs. non-Hispanic white), had never married (vs. married), living in the Southern and Western regions of the United States (vs. Northeast), and those who are uninsured (vs. government or private insurance) were less likely to report receiving advice to quit smoking or using other kinds of tobacco from a health professional.^{10–18} A recent review identified lack of support from health professionals as a major barrier to tobacco cessation among smokers from low socioeconomic status populations.¹⁹ Health professionals' screening for smoking, brief advice on tobacco cessation, and referral to tobacco treatment services are associated with improved cessation rates^{20,21} and may help to reduce tobacco-related health disparities, if provided consistently to disparity populations. Consistent with these findings, the US Public Health Service Clinical Practice Guideline (*Treating Tobacco Use and Dependence: 2008 Update*) recommends that clinicians and health care delivery systems consistently identify and document tobacco use and treat every tobacco user seen in a health care setting. The guideline further recommends clinicians to encourage every patient who is willing to quit smoking to use recommended treatments including counseling and medications.²²

Two recent public health policies have the potential to improve access to tobacco treatment and increase health professionals' delivery of cessation advice to populations at risk for tobacco-related disparities. First, the 2010 Patient Protection and Affordable Care Act (ACA) mandated private insurance plans, Medicaid, Medicare, and state health insurance plans to cover comprehensive tobacco cessation treatments including counseling and medications that are US Food and Drug Administration (FDA)-approved.^{23,24} An additional provision within the ACA in 2014 further included comprehensive coverage for tobacco treatments without cost-sharing or prior authorization.²³ Second, the 2009 Health Information Technology for Economic and Clinical Health (HITECH) Act outlined plans for Meaningful Use of electronic health records (EHRs). Meaningful Use is defined as using certified EHR technology to improve quality, safety, efficiency, and reduce health disparities; engage patients and family; improve care coordination, population and public health;

and maintain privacy and security of patient health information.²⁵ In 2011, health professionals and hospitals were incentivized to screen and document patients' use of tobacco and to document the delivery of brief cessation counseling using EHRs as part of Meaningful Use Stage 1.²⁶ These provisions highlight the national priority of providing tobacco treatment for all patients who come in contact with the health care system.

Recent studies have examined the impacts of the ACA and EHR Meaningful Use on health professionals' delivery of tobacco cessation counseling and utilization of tobacco treatments among underserved patients. For instance, Bailey et al.²⁷ compared the prevalence of clinicians providing brief counseling and either ordering or discussing cessation medications with low-income and vulnerable patient populations within Oregon federally qualified health centers in 2010 (prior to Meaningful Use Stage 1 implementation) and in 2012 and 2014. The study reported that the incentives for Meaningful Use Stage 1 were associated with increased brief counseling (30% in 2010, 54% in 2012, 69% in 2014) and either ordering or discussing about medications with patients (28% in 2010, 49% in 2012, 48% in 2014), as documented within EHRs.²⁷ Young-Wolff et al.²⁸ compared smoking prevalence and tobacco treatment utilization among patients newly enrolled in health care through Medicaid (including Medicaid expansion), the state insurance exchange, and nonexchange commercial plans in the first 6 months of 2014 following ACA implementation. The study found that Medicaid recipients were more likely to be current smokers (22%) compared with state exchange and private insurance patients (12%–13%). Medicaid smokers were also more likely to use at least one type of tobacco treatment (20%) compared with state exchange and private insurance patients (11%–13%).²⁸ The above studies suggest the ACA and Meaningful Use Stage 1 may be associated with increased provision of cessation advice and utilization of treatment by underserved populations in health care settings.

Despite these important studies, national trends in patients' receipt of cessation advice from their health professionals following the implementation of the ACA and Meaningful Use have not yet been described. The objectives of this analysis were to (1) assess whether the prevalence of receipt of tobacco cessation advice from health professionals among US adults increased from 2010 to 2015 following implementation of these policies; and (2) analyze whether receiving advice to quit over time differed based on smokers' sociodemographic characteristics.

Methods

Data Source

We analyzed data from two waves of the National Health Interview Surveys (NHIS) among adults aged 18 years and older. The NHIS is a cross-sectional household interview survey conducted continuously each year since 1957 among nationally representative samples of the US population. The Cancer Control Supplement is administered every 5 years, focusing on issues pertaining to knowledge, attitudes, and practices of cancer-related behaviors, screening, and risk assessment. The supplement includes questions on tobacco

use and control and the outcome measure of interest for this analysis—receiving health professional advice for tobacco cessation. We utilized the data files from 2010 and 2015 because these two surveys encompassed the time of the ACA and Meaningful Use Stage 1 implementation relevant for this study.

Sample and Data Collection

Details of the NHIS sampling and data collection procedures are described elsewhere.²⁹ Briefly, the NHIS is a cross-sectional, in-person household interview survey conducted continuously throughout the year. The survey sample is drawn from each state and the District of Columbia, designed to produce estimates for the nation, each census region, and within census regions. In 2010, the total household response rate was 79.5% with an adult sample response rate of 60.8%.³⁰ In 2015, the total household response rate was 70.1% with an adult sample response rate of 55.2%.³¹ The total adult sample sizes were 27 157 in 2010 and 33 672 in 2015. For this analysis, we selected only current smokers (100+ cigarettes in their lifetime who currently smoke daily or on some days) who had seen a health professional in the past 12 months. The analyzed sample sizes were 3803 in 2010 and 4165 in 2015, with a total sample size of 7968 adults in both years.

Measures

The outcome variable for this study is receipt of health professional advice to quit smoking or other tobacco use in the past 12 months. Respondents were asked, “In the PAST 12 MONTHS, has a medical doctor, dentist, or other health professional ADVISED you to quit smoking, or to quit using other kinds of tobacco?” Responses were categorized into yes or no. Individuals who refused or responded that they do not know were recoded as missing.

Predictor variables included age (18–24, 25–44, 45–64, or 65 and older), gender (male or female), sexual orientation (2015 only; heterosexual or lesbian/gay/bisexual), race (White, Black, Asian, or other), ethnicity (non-Hispanic or Hispanic), education (less than high school, GED/high school graduate, some college/associate degree, or college graduation/higher), marital status (never married, married/living with partner, or divorce/widowed/separated), region (Northeast, Midwest, South, or West), insurance type (private, any Medicaid, Medicare only, other insurance, or uninsured), poverty level (below, 100–199%, or 200%+ above poverty line), quit attempt in the last year (no or yes), daily smoking (no or yes), cigarettes per day (1–10 or 11+), mental health status, and smoking-related cancer diagnoses (no or yes). Mental health status was assessed using the Kessler 6-item (K6) scale as described in prior research analyzing the NHIS data.¹ Based on the K6 scale, the degree of psychological distress is presented as a four-category measure with no psychological distress (score = 0), low (1–5), moderate (6–10), and high psychological distress (11–24). Smoking-related cancer incidence (self-reported) included bladder, cervix, colon, esophagus, kidney, larynx, liver, lung, pancreas, rectum, stomach, and throat, as described in prior research.³²

Statistical Analysis

All analyses were weighted to the US adult smoker population, using weights provided in the NHIS datasets based on the survey documentation. The Stata statistical package (version 14) was utilized for the analyses. We conducted bivariate analyses using the “svy” and “subpop” commands for 2010 and 2015 data separately to assess

the prevalence of receipt of health professional advice to quit by individual characteristics (Supplementary Table 1). We then utilized multiple logistic regression across both years to assess the adjusted associations between receipt of health professional advice and the predictor variables (survey year and individual sociodemographic characteristics) (Table 1). The analyses used listwise deletion in handling missing values. There were 577 individuals who were missing on one or more variables (15%) in the 2010 data and 572 individuals (14%) in the 2015 data. To assess whether changes in the prevalence of receipt of advice to quit over time differed by individual sociodemographic characteristics, we analyzed interactions between survey year and each individual characteristic in separate models.

Results

Among US adult smokers, the prevalence of receiving tobacco cessation advice from health professionals increased from 51.4% in 2010 to 60.6% in 2015. Supplementary Table 1 summarizes the prevalence of receiving health professional advice by individual variables in both years and bivariate chi-square analyses comparing the prevalence across different categories of each variable. Generally, the prevalence of receiving tobacco cessation advice increased for all subgroups of smokers between 2010 and 2015, with one exception being Asian smokers, for whom the prevalence declined slightly from 51% in 2010 to 46% in 2015. Bivariate analyses indicated that there were significant differences in prevalence of receiving tobacco cessation advice in both 2010 and 2015 by age, ethnicity, marital status, region, health status, quit attempts, daily smoking, cigarettes per day, psychological distress, and smoking-related cancer diagnosis. There were significant differences in prevalence of receiving health professional advice to quit by gender and poverty level in 2010, and race in 2015. During this period, the prevalence of quit attempts in the past year increased from 47.9% in 2010 to 50.8% in 2015 (Supplementary Table 1).

Table 1 summarizes the results from the multiple logistic regression analyzing the adjusted odds of receiving advice to quit for survey year and individual sociodemographic characteristics. The regression analysis found significantly increased odds of receiving health professional advice to quit in 2015 compared with 2010 (odds ratio [OR] = 1.45). Older adults had increased odds of receiving advice to quit than 18–24 year-olds (ORs ranged from 1.38 to 2.0684). Adults who were above the poverty level had increased odds than those below the poverty level to receive advice to quit (ORs ranged from 1.27 to 1.45). Tobacco-related behaviors were also significantly associated with increased odds of receiving advice to quit: 1) quit attempt in the last year (yes vs. no; OR = 1.57); 2) being a daily smoker (yes vs. no; OR = 2.10); and 3) number of cigarettes smoked per day (over 11 vs. 1–10 cigarettes per day; OR = 1.33). Psychological distress (K6 scale) was associated with increased odds of receiving advice to quit (mild, moderate, and high vs. none; ORs ranged from 1.33 to 2.05). Hispanic smokers had lower odds of receiving advice to quit compared with non-Hispanics (OR = 0.74). Those from the South (OR = 0.64) or West (OR = 0.63) regions of the United States had lower odds of receiving advice to quit compared with those from the northeast. Uninsured adults had reduced odds of receiving advice to quit (OR = 0.59) than privately insured adults. Gender, education, marital status, and smoking-related cancer diagnosis were not significantly associated with receipt of advice to quit from a health professional.

Table 1. Multiple Logistic Regression of Current Smokers Receiving Cessation Advice from Health Professionals by Year of Survey and Sample Characteristics: National Health Interview Survey, 2010 and 2015

Characteristics	Adjusted odds ratio	95% confidence interval	p
Survey year			
2010 (referent)	1	[1.00, 1.00]	
2015	1.45***	[1.26, 1.67]	<.0001
Age			
18–24 (referent)	1	[1.00, 1.00]	
25–44	1.38**	[1.08, 1.76]	.01
45–64	2.06***	[1.60, 2.66]	<.0001
65+	1.86***	[1.29, 2.69]	<.0001
Gender			
Male (referent)	1	[1.00, 1.00]	
Female	1.04	[0.92, 1.19]	.52
Race			
White (referent)	1	[1.00, 1.00]	
Black	0.93	[0.76, 1.14]	.49
Asian	0.67	[0.45, 1.00]	.05
Other	1.21	[0.83, 1.75]	.32
Ethnicity			
Non-Hispanic (referent)	1	[1.00, 1.00]	
Hispanic	0.74**	[0.59, 0.93]	.01
Education			
Less than high school (referent)	1	[1.00, 1.00]	
GED/High school graduate	0.86	[0.71, 1.06]	.15
Some college/ Associate degree	1.04	[0.86, 1.26]	.66
College graduate or higher	0.94	[0.72, 1.23]	.66
Marital status			
Never married (referent)	1	[1.00, 1.00]	
Married/living with partner	1.18	[0.99, 1.40]	.07
Divorced/Widowed/separated	1.04	[0.85, 1.28]	.71
Region			
Northeast (referent)	1	[1.00, 1.00]	
Midwest	0.81	[0.63, 1.05]	.11
South	0.64***	[0.51, 0.80]	<.0001
West	0.63***	[0.49, 0.80]	<.0001
Health insurance			
Private (referent)	1	[1.00, 1.00]	
Any Medicaid	1.09	[0.86, 1.40]	.47
Medicare only	1.27	[0.93, 1.75]	.13
Other insurance	1.00	[0.82, 1.23]	.98
Uninsured	0.59***	[0.48, 0.72]	<.0001
Poverty status			
Below poverty line (referent)	1	[1.00, 1.00]	
100%–199% above poverty line	1.27*	[1.05, 1.54]	.02
200%+ above poverty line	1.44***	[1.17, 1.76]	<.0001
Quit attempts in the past 12 months			
No (referent)	1	[1.00, 1.00]	
Yes	1.57***	[1.37, 1.79]	<.0001
Daily smoker			
No (referent)	1	[1.00, 1.00]	
Yes	2.10***	[1.75, 2.53]	<.0001
Cigarettes per day			
1–10 (referent)	1	[1.00, 1.00]	
11+	1.33***	[1.13, 1.56]	<.0001
Psychological distress			
None (referent)	1	[1.00, 1.00]	
Mild	1.33***	[1.14, 1.55]	<.0001
Moderate	1.67***	[1.37, 2.04]	<.0001
High	2.05***	[1.66, 2.54]	<.0001
Smoking-related cancers			
No (referent)	1	[1.00, 1.00]	
Yes	1.06	[0.72, 1.54]	.77

Source: CDC/NCHS, National Health Interview Survey, 2010 and 2015. * $p < .05$, ** $p < .01$, *** $p < .001$.

There were no significant interactions between survey year and individual sociodemographic characteristics. The findings suggest that the trends of receipt of smoking advice from 2010 to 2015 did not differ across various population groups of smokers.

Discussion

In these analyses of nationally representative survey data among US adult smokers, we found an overall increase of almost 10 percentage points between 2010 and 2015 in the receipt of health professional advice to quit tobacco use, and an increase was observed in nearly all sociodemographic groups. This is an encouraging trend overall that may be partly influenced by the implementation of the ACA and Meaningful Use Stage 1. While we are unable to attribute the observed change entirely to these policies, it is possible that the combination of expansion of insurance coverage for tobacco treatment, reduced barriers to access tobacco treatment, and incentives to record smoking status and brief counseling within the EHR facilitated health professionals' ability to provide advice to their patients to quit tobacco use.³³

We observed a positive trend in receiving advice to quit from health professionals across various tobacco disparity populations (ie, young adults, racial/ethnic minorities, individuals at lower socioeconomic status, psychological distress, individuals living in the Midwest and Southern regions). These findings suggest that the impacts of the ACA and Meaningful Use implementation may have been beneficial in improving health professional provision of advice to quit across all groups—the proverbial rising tide that lifts all boats. One exception in the positive trend over time is among Asian American smokers, who reported slightly lower rates of receiving advice to quit in 2015 compared with 2010. One potential reason may be Asian Americans are less likely to use tobacco compared to other racial groups and it is possible that health professionals perceive them to be less at risk or more able to quit on their own. Given the uncertain future of the ACA, the focus on health promotion and primary prevention, including tobacco cessation, may be more limited in the future. This could risk reversing the increase in health professional delivery of advice to quit tobacco use observed in recent years. The ACA and Meaningful Use Stage 1 could be augmented with additional institutional policies to support health professionals' ability to screen and provide cessation advice to all smokers, consistent with the US Public Health Service Guideline recommendations.²² For instance, providing training and resources for health professionals to consistently deliver cessation advice and assigning dedicated staff to provide tobacco-dependence counseling and treatment to all smokers would help rise the tide further.

However, the ACA and Meaningful Use policies might not have helped in narrowing the gaps in receiving advice to quit from health professionals among certain vulnerable populations. While prevalence of receipt of advice to quit generally increased across various populations (except for Asian Americans), we found that the rate of change in receipt of advice to quit between 2010 and 2015 did not differ significantly across individual sociodemographic characteristics. We further observed persistent inequalities in receipt of cessation advice among young adults, racial/ethnic minorities, and individuals who are low-income, and those who are uninsured. These differences are consistent with earlier research that described inequalities in receipt of advice to quit by social determinants.^{10–17}

For certain smoker populations, the differences in receiving advice from health professionals may be due to factors unrelated

to lack of health care access or delivery. For instance, young adult smokers (18–24 years) tend to be relatively healthy, may not have developed smoking related comorbid conditions, or are less likely to see a provider and therefore have fewer opportunities to receive advice to quit compared with older adults. Similarly, nondaily and light smokers (1–10 cigarettes per day) may be less likely to receive advice to quit compared with daily and heavy smokers (11 or more cigarettes per day) because nondaily and light smokers are impacted to a lesser extent by tobacco use.

For other populations, reasons for the persistence of the inequalities in receipt of health professional advice to quit may be due to health care system-, provider-, or patient-level factors. For instance, health care systems and health professionals who serve medically underserved populations such as those below the poverty line, uninsured, or non-English speakers may have greater time constraints, limited access to patient education materials including non-English materials, inadequate provider resources or cessation clinical skills, or limited prescribing authority in certain settings to provide assistance for tobacco cessation.³⁴ Systematic implicit biases may exist among health professionals regarding certain disparity populations that could be addressed through provider education and awareness.^{35,36} Competing health priorities including complex and multiple comorbidities, inability to take time off from work for cessation services, and financial burden from out-of-pocket expenses among patients from medically underserved populations may also explain lower levels of receiving advice to quit from health professionals.³⁴ Health professionals and patients may not be fully aware of the availability of effective cessation treatments without copayments or preauthorization, if these benefits are not well-publicized.²³ Patients' mistrust, negative experiences, or discomfort with discussing tobacco cessation with their health professional are also potential barriers to seeking help from health professionals for tobacco cessation among minority populations.^{37,38}

The reasons for differences in receiving advice to quit between geographic areas remain unclear and may warrant further investigation. This analysis found that smokers living in Southern and Western regions of the United States were less likely to receive advice to quit (compared with those living in Northeast United States), controlling for other characteristics. Future research may consider identifying state-level factors that influence whether health professionals provide advice to quit tobacco in the clinical setting to smokers to inform tobacco cessation efforts that address the above observed regional disparities.

The persistent pattern of under-receipt of advice to quit tobacco use from health professionals among vulnerable populations highlights the need for more targeted and focused efforts on tobacco cessation to narrow and ultimately eliminate tobacco-related health disparities. One example could be targeted outreach to activate smokers from underserved populations and their health professionals to discuss evidence-based tobacco treatments. For example, the state of Massachusetts conducted a campaign to promote tobacco cessation provision among physicians serving Medicaid enrollees. The campaign resulted in a utilization rate of the benefit among 37% of Medicaid smokers, a decline in the smoking prevalence from 38% to 28%, reduced hospitalizations for myocardial infarction, and medical savings of \$3.12 per dollar spent on the tobacco cessation benefit.³⁹ In addition, it would be valuable to explore additional policies to incentivize health care system changes to facilitate health professionals' provision of advice on tobacco treatment. Examples may include appropriate flags within EHR dashboards targeted at

inquiring about tobacco use for all patients, requiring brief counseling for all smokers who have encounters within the health care system⁴⁰ and providing financial incentives for health professionals for smoking cessation services.⁴¹

The results should be interpreted within the context of the study limitations. Because the NHIS only collects health professional advice to quit smoking data every 5 years within the Cancer Control Supplement, we were limited to analyzing data from 2 years, 2010 and 2015. Although we were unable to assess the detailed trends of prevalence of receiving advice in each of the 5 years, these 2 years represent time periods pre- and post-ACA and Meaningful Use Stage 1 implementation. We were not able to establish causality of these policy changes in influencing health professional practice of advising smokers to quit, however, the findings do offer unique insight into advice to quit by health professionals in the context of important health policy change. It is important to consider that there may be other secular events that contributed to health professionals being more willing to offer advice to quit in the same period. Another limitation includes self-report bias. The outcome measure was based on self-report and may therefore be subject to recall bias. In addition, questions on sexual orientation were only asked in 2015 and the sample size of LGBT participants was low. Although we were not able to assess differences or trends across various sexual minority populations, the inclusion of LGBT participants provides a baseline on which future analysis can be compared.

In sum, the percentage of adult smokers who reported receiving advice to quit tobacco use from a health professional increased from 2010 to 2015, following ACA and Meaningful Use implementation. It was encouraging to observe a positive trend in receipt of advice to quit from health professionals at the population level, and in nearly all groups. However, the full public health potential of the policies remains suboptimal as disparities in receipt of advice to quit persisted among groups at greatest risk for tobacco-related disparities. If not addressed, these gaps will continue to contribute to disparities in access and utilization of tobacco treatments among tobacco disparity populations, cessation rates, tobacco use prevalence, and tobacco-related health disparities. Further efforts are needed to close the gap in health professionals' assistance to quit tobacco use among tobacco disparity populations.

Supplementary Material

Supplementary data are available at *Nicotine and Tobacco Research* online.

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Declaration of Interests

None declared.

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