Missing Out: Underutilization of Primary Care by Wisconsin Patients Who Smoke and Its Implications for Tobacco Treatment Access

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ABSTRACT

Introduction: Tobacco dependence treatment is usually offered in primary care settings. Yet, if many patients who smoke do no not access primary care, cessation interventions may be missing those who most need them. This study describes Wisconsin adults' health care utilization by smoking status.

Methods: Data were analyzed from 1726 individuals participating in a population-based, cross-sectional, in-person health survey of Wisconsin residents (2014-2016). Demographic characteristics were compared across smoking status using Wald chi-square tests weighted for the complex survey design. Odds ratios were calculated using multivariate logistic regression models.

Results: Of 1726 respondents, 15.3% reported current smoking, 25.4% former smoking, and 59.4% never smoking. Those currently smoking were more likely than former- or never-smoking respondents to report emergency departments as their "usual place to go when sick" (12% vs 3%) or report they had "no place to go when sick" (16% vs 7%). People who currently smoke also reported more emergency department visits during the past year (mean = 1.4 visits) than did others (mean = 0.4, $P < 0.01$). Among those currently smoking, 18% reported that they "needed health care but didn't get it" over the past year, compared to 6% of others ($P < 0.01$). Those currently smoking also were more likely to report a "delay in getting care" (16% vs 9%, $P = 0.02$) and were less likely to have had a "general health checkup" within the past year (58% vs 70%, $P < 0.02$). These relationships persisted in logistic regression models controlling for variables related to smoking status and health care utilization, including health insurance.

Conclusions: These findings suggest that more than a quarter of Wisconsin adults who smoke do not receive primary care every year and that they delay care or seek care in emergency departments more frequently than do those who never smoked or who quit smoking. As a result, such individuals may be missing out on evidence-based tobacco cessation treatment.

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INTRODUCTION

Despite large-scale public health campaigns and extensive evidence-based treatment options for tobacco dependence, approximately 14% of US adults currently smoke cigarettes,[1] and smoking remains the leading preventable cause of death and a driver of health care expenditures.[2] Health care system changes that institutionalize the delivery of evidence-based smoking-cessation interventions have been shown to be both clinically and cost-effective.[3-6] Moreover, guideline reviews have identified primary care settings, in particular, as a target – given that over 75% of smokers visit a primary care clinician each year.[7] On the strength of this evidence, accreditation bodies have encouraged health care systems to adopt system changes to promote the identification and treatment of patients who smoke during health care visits.[8]

Although primary care is well-suited to preventive care, including smoking cessation treatment, 1 in 4 adults who smoke report not receiving primary care in the past year.[9] Some people use emergency departments (ED) or urgent care as their usual source of care, and others go without.[10] Even among insured members of a health cooperative, roughly 17% of adults who smoke do not see their primary care clinician in a given year.[11] To design health system changes and outreach efforts to have the greatest impact on patients who smoke, it is important to explore how they obtain health services. Knowing where patients seek care will inform efforts to integrate smoking cessation advice and treatment or referral (eg, Ask,

Advise, Refer) into workflows and care models tailored to these settings and may inform direct-to-patient outreach efforts. This information is critical to meeting patients where they are, rather than expecting them to proactively seek smoking cessation care in particular settings.

This is especially important because evidence suggests that many of the marginalized communities that now suffer the greatest burden from tobacco use (ie, people with limited education or low socioeconomic status, minoritized racial groups, people with mental illness[12]) are also less likely to seek primary care and/or more likely to seek care in other venues, such as emergency departments.[13,14] Research on differences in usual sources of care by smoking status is quite limited, however. Given that roughly 23% of patients without health insurance smoke,[12] there are likely many socioeconomically disadvantaged people who smoke who cannot afford preventive or primary care. Disparities in usual sources of care may drive disparities in access to smoking cessation treatment and downstream disparities in health outcomes. As such, designing outreach efforts to reach patients with limited access to primary care may be one strategy to enhance health equity.

This study sought to address this gap in our knowledge using representative data from the Survey of the Health of Wisconsin (SHOW).[15] We examined differences in usual sources of care among adult respondents who reported current smoking, former (past, but not current) smoking, or never smoking. In addition, we examined differences in patient-rated health care quality and health by smoking status. Patient ratings of care quality and self-rated health are known to be lower among those without a usual source of care[13] and are important secondary outcomes of interest, given their relations with future care-seeking and mortality.[16,17]

METHODS

Measures

Data were analyzed from 1,726 individuals who reported smoking status while participating in SHOW between 2014 and 2016. SHOW is a population-based cross-sectional health examination survey of civilian, noninstitutionalized residents of Wisconsin. Detailed survey methods have been described previously by Nieto et al.[18] Survey components relevant to the current analysis included an in-home interview and a self-administered questionnaire. All study protocols were approved by the University of Wisconsin Health Sciences Institutional Review Board, and all participants provided written informed consent as part of the initial home visit.

Self-reported demographic characteristics included age (coded as 18-39, 40-64, or ≥ 65 years), race (coded as White not Hispanic or African American/Hispanic/Other), sex (coded as male or female), level of education completed (coded as high school or less, or at least some college), urbanicity (coded as urban, suburban, or rural as defined by rural-urban commuting area codes),[19] unemployment, insurance status (coded as Medicaid/no insurance vs other), food insecurity (worried food would run out always or often in the last 12 months, endorsed or not), and poverty level (above vs at or below 100% poverty level). Poverty level was calculated using the poverty guidelines from the US Department of Health and Human Services.[20] Categories were combined when possible to accommodate smaller sample sizes, at the expense of more granular description. To better characterize the sample, in addition to smoking status (former, current, never), additional self-reported health characteristics were measured, including self-reported health (coded as fair/poor vs good/very good/excellent), depression (as measured by the Patient Health Questionnaire-2 [PHQ-2], 2-item depression screening questionnaire),[21] and alcohol consumption (with heavy alcohol consumption defined as > 14 drinks per week for men or > 7 drinks per week for women).

Care seeking was assessed with questions asking about usual place of care when sick ("Do you have a place to go when you feel sick or need advice about your health?, ED as usual place to go, no place to go, or other place to go—ie, community health center, hospital outpatient clinic, or doctor's office), number of trips to the ED in the past year, experiencing a delay in receiving care, and not receiving care when needed. Subjects were asked if they had "a general medical checkup in the past 1 year," as well as if they "had a physical exam" in the past year. The latter question aimed to capture any medical visit, including acute visits (urgent care or ED visits), while the "general medical checkup" was designed to capture preventive health visits or "annual physicals" where preventive services and health behavior counseling would more likely be offered. Perceptions of quality of care were measured on a 5-point Likert scale from "excellent" to "poor" and grouped by excellent/very good/good versus fair/poor for analysis. The full list of questions and possible responses is available in the Appendix.

Data Analysis

Data analyses were completed using SAS 9.4 software (Cary, NC). First, demographic characteristics were compared across smoking status using Wald chi-square tests and weighted for the complex survey design. Survey weights attempted to make estimates representative of the state. Simple logistic regression models were run to examine potential associations between smoking status, care-seeking behavior, and quality-of-care perceptions that may be independently associated with smoking behavior. Crude odds ratios (OR) and adjusted ORs were calculated using simple logistic regression models weighted for the complex survey design to examine differences in care seeking and experience across smoking status, with never-smoking as the reference. Adjusted models were designed based upon similarly weighted multivariate logistic regression models, in order to control for age, sex, and insurance status.

RESULTS

Of the 1726 individuals included in the analysis, 15.3% reported current smoking, 25.4% former but not current smoking, and

59.4% had never smoked. A larger proportion of people who reported current smoking (vs former or never-smoking) were young (age 18-39), male, members of minority racial groups, with less than a high school education. A higher proportion of those who reported current smoking also reported poverty, heavy alcohol consumption, symptoms of depression, and a lack of health insurance. There was no difference by smoking status in the proportion of participants living in rural versus urban areas or being unemployed (Table 1).

People who reported current smoking were more likely than those who formerly or never smoked to report the ED as their "usual place to go when sick" (12% vs 3%) or to report they had no place to go when sick (16% vs 7% and 8%, respectively). People who currently smoke also reported more ED visits during the past year than people who formerly or never smoked (mean of 1.4 visits for current vs 0.5 for former- and 0.4 for never-smoking adults, $P<0.01$). In addition, 18% of people who currently smoke responded that they had "needed health care but didn't get it" over the past year, compared to 8% of those who formerly smoked and 6% of those who never smoked ($P<0.01$). They were also more likely to report a "delay in getting care" (16% vs 8% former and 9% never, $P=0.02$). There was no statistically significant difference by smoking status for having had a physical exam during the past year (75% for current, 85% former, and 80% never, $P=0.11$), but significantly fewer people who currently smoke reported having a "general health checkup" within the past year (58% current vs 73% former and 68% never, $P=0.01$) (Table 2).

Perceptions of care quality, though not the primary focus of this paper, may provide additional insight into care-seeking practices. People who currently smoke were more likely to rate the quality of their last physical exam as fair/poor as opposed to good/very good/excellent (21% current vs 13% former and 12% never, $P=0.01$). They also were more likely to rate their overall quality of care as fair/poor (47%

Table 1. Demographic Characteristics of SHOW Participants by Smoking Status, 2014-2016[a]

	Smoking Status						
	Current (n=231; 15.3%)		Former (n=485; 25.4%)		Never (n=1010; 59.4%)		*P* value
	n	% (SE)	n	% (SE)	n	% (SE)	
Age							0.01
18-39	79	44.3 (4.2)	94	28.1 (3.7)	322	38.6 (2.0)	
40-64	130	49.5 (3.8)	179	39.5 (1.9)	424	43.1 (1.7)	
≥65	22	6.2 (1.5)	212	32.4 (2.7)	264	18.3 (1.5)	
Sex							0.01
Male	106	55.5 (3.4)	253	55.3 (1.9)	398	44.7 (1.2)	
Female	125	44.5 (3.4)	232	44.7 (1.9)	612	55.3 (1.2)	
Race							<0.01
Non-Hispanic White	164	70.8 (3.6)	424	87.0 (1.6)	886	88.0 (1.8)	
Non-Hispanic Black	34	11.8 (2.1)	13	3.0 (1.0)	52	5.2 (1.2)	
Hispanic (Any Race)	15	9.4 (2.5)	16	3.9 (0.9)	30	2.8 (0.7)	
Other	17	8.1 (1.1)	31	6.2 (0.7)	42	4.0 (0.6)	
Education							0.01
<High school	35	15.2 (2.2)	34	7.3 (1.4)	42	4.1 (1.0)	
High school diploma or GED	69	32.5 (4.6)	94	19.5 (1.9)	165	16.5 (1.7)	
At least some college	127	52.3 (5.9)	357	73.2 (1.6)	803	79.5 (1.4)	
Urbanicity							0.17
Urban	130	61.4 (13.0)	248	53.9 (15.3)	555	57.2 (12.1)	
Suburban	34	13.4 (4.9)	76	15.1 (3.3)	171	16.1 (3.4)	
Rural	67	25.2 (13.5)	161	30.9 (15.7)	284	26.7 (14.1)	
Poverty							<0.01
Below	53	26.3 (3.4)	34	7.7 (2.6)	81	9.7 (1.1)	
Above	165	73.7 (3.4)	429	92.3 (2.6)	886	90.3 (1.1)	
Insurance							<0.01
No insurance	27	12.6 (2.2)	11	3.8 (1.4)	22	2.4 (1.1)	
Medicare/Medicaid	96	40.6 (3.4)	252	44.5 (3.5)	355	30.3 (2.3)	
Private/employer/other	106	46.8 (3.4)	222	51.7 (3.6)	631	67.3 (2.1)	
Unemployment							0.12
Employed	207	89.8 (10.1)	472	96.7 (1.0)	1648	95.9 (0.8)	
Unemployed	22	10.1 (2.4)	11	3.3 (1.0)	70	4.1 (0.8)	
Depressive symptoms	44	20.0 (3.8)	31	8.0 (1.2)	70	7.0 (0.6)	<0.01
Heavy alcohol use	46	20.5 (3.6)	93	19.3 (1.6)	92	9.5 (0.8)	<0.01
Self-reported fair/poor health	68	28.6 (3.3)	64	12.6 (1.9)	81	8.0 (0.8)	<0.01

Abbreviations: SHOW, Survey of the Health of Wisconsin; SE, standard error; GED, General Educational Development.
[a]Percentages shown reflect weighted values for the state of Wisconsin.

Table 2. Access and Quality of Care by Smoking Status

	Current		Former		Never		*P* value
	n	% (SE)	n	% (SE)	n	% (SE)	
Usual place to go when sick							
No place to go	29	15.6 (3.3)	30	7.1 (1.4)	76	8.3 (1.6)	0.03
ED as usual place	25	11.7 (2.2)	11	3.0 (0.9)	31	3.2 (0.8)	
Other place to go (health center, clinic)	171	72.7 (3.9)	434	89.9 (1.7)	882	88.5 (1.8)	
Number of ED visits, past year (mean, SE)	1.37	(0.2)	0.47	(0.1)	0.43	(0.0)	<0.01
Needed care but did not get it	36	18.0 (2.1)	36	8.2 (1.6)	61	6.4 (0.7)	<0.01
Delay in getting care	36	16.1 (3.1)	38	8.1 (1.7)	95	9.1 (1.0)	0.02
Had physical exam, past year	176	75.0 (3.0)	421	84.8 (2.6)	829	79.8 (1.9)	0.11
Had general checkup, past year	135	57.7 (3.8)	348	73.4 (2.2)	694	67.7 (1.8)	0.01
Poor quality of care, physical exam	44	20.9 (3.0)	62	13.1 (1.7)	119	12.1 (1.1)	<0.01
Poor quality of care, overall	99	46.7 (5.2)	117	27.4 (2.6)	485	28.6 (2.3)	0.01

Abbreviations: ED, emergency department; SE, standard error.
[a]Percentages shown reflect weighted values for the state of Wisconsin.

Table 3. Multivariable Logistic Regression of Health Care Utilization Practices and Perceptions by Smoking Status

	Poor Quality of Care Overall (n = 1722)			Needed Care But Did Not Get It (n = 1720)			Delay in Getting Care (n = 1721)			Self-Reported Health Fair/Poor (n = 1713)		
	Point Estimate	95% Confidence Limits	*P* value	Point Estimate	95% Confidence Limits	*P* value	Point Estimate	95% Confidence Limits	*P* value	Point Estimate	95% Confidence Limits	*P* value
Current Smoking (ref = never)	1.81	1.27, 2.59	0.00	2.34	1.61, 3.40	< 0.001	1.79	1.08, 2.97	0.03	4.78	3.33, 6.88	< 0.001
Former Smoking (ref = never)	1.07	0.71, 1.59	0.75	1.47	0.84, 2.57	0.18	0.96	0.61, 1.51	0.84	1.59	1.20, 2.10	0.00
No insurance/ Medicaid[a]	1.39	1.11, 1.73	0.00	3.08	2.07, 4.59	< 0.001	1.48	0.98, 2.22	0.06	—	—, —	—
Age	0.97	0.97, 0.98	< 0.001	0.98	0.97, 1.00	0.06	0.99	0.98, 1.01	0.36	1.01	1.00, 1.01	0.04
Sex (ref = female)	1.52	1.09, 2.13	0.02	0.62	0.34, 1.11	0.10	0.57	0.42, 0.79	0.00	0.92	0.59, 1.44	0.71

[a] Reference = Private, Medicare, other.
— Insufficient sample size to make comparison.

of people who currently smoke vs 27% former and 29% never, $P = 0.01$) (Table 2).

There are many factors associated both with smoking and use of health care services, such as socioeconomic barriers to health care access and differences in health status.[12-14] After adjustment for age, sex, and insurance status, people who currently smoke were still more likely to report their health care quality was poor overall (47% vs 29%, adjusted OR [adjOR] 1.8 (95% CI, 1.3-2.6); $P < 0.01$), to delay seeking health care services (16% vs 9%; adjOR 1.8; 95% CI, 1.1-3.0; $P < 0.03$), to not get care when needed (18% vs 6%; adjOR 2.3; 95% CI, 1.6-3.4; $P < 0.01$) and to report fair/poor health (28.6% vs 8.0%; adjOR 4.8; 95% CI, 3.3-6.9; $P < 0.01$) (Table 3).

DISCUSSION

The results from this study of a representative sample of Wisconsin residents collected between 2014 and 2016 indicate that those who smoke are more likely to use the ED as their usual source of care or lack a usual source of care, report lower health care quality, and delay or avoid health care compared to those who have never smoked and those who have quit smoking. These findings suggest patients who smoke may use health care services differently than do nonsmoking patients and may skip care more often and rely more heavily on acute care services than do nonsmoking adults. Moreover, a lack of insurance did not account for this finding—the difference persisted after controlling for insurance status/type and demographics that are also associated with usual source of care, such as race.

These data suggest that offering smoking cessation treatment in EDs may be one way to extend the reach of smoking cessation treatments, given that 12% of adults currently smoking reported receiving their health care in ED settings. Secondary analysis of audiotapes from ED patient/clinician encounters suggest that many ED clinicians gather information about smoking behavior, but few counsel or advise patients to quit.[22] Best practices for doing so in the emergency setting have not yet been established.[23] A randomized trial[24] that compared enhanced care (advice, brief behavioral counseling, and provision of free nicotine patches with telephone follow-up) versus usual ED care (brief advice and a pamphlet) found no significant difference in 3-month abstinence between the groups. However, an unexpectedly high cessation rate in the control group suggested that even brief advice during an ED visit may be helpful (14.7% intervention and 13.2% control).[24] A 2017 systematic review and meta-analysis of 11 randomized control trials of ED-initiated tobacco interventions reported a combined RR of 1.40 (95% CI, 1.06-1.86, $P = 0.02$) for point-prevalence abstinence from tobacco up to 12 months postintervention.[25] The authors concluded that ED-initiated tobacco interventions may be critically important for engaging hard to reach patients who smoke, but essential components of successful ED cessation interventions have not yet been identified. Interventions that rely upon referral from the ED to an outside smoking cessation program, for example, have not been shown to be very effective,[26] underscoring the importance of understanding health care-seeking behaviors and motivations when designing tobacco cessation interventions for acute care settings.

Finding effective ways to expand health care system changes to emergency care is a high priority for smoking cessation research, but the current data suggest that this may still miss a substantial minority (16%) of adults who smoke.[11] Delaying and skipping care were more common among patients who smoke than those who do not, and many more patients who smoke reported having no usual source of care in Wisconsin than their nonsmoking peers. These data highlight the need for innovative population health strategies to bring smoking cessation more directly to patients. Proactive outreach via mail, phone, and digital means has the potential to increase demand for smoking cessation treatment and help more people

quit. Studies of proactive outreach in the Veterans Affairs and primary care settings support the promise of such approaches,[27-29] but the extent to which they will reach patients with no usual source of care is not yet known. Retail health services, which are becoming more widely available in some major retail stores and pharmacies, may also help to fill this gap. Evidence suggests that retail clinics typically serve younger adults without a usual source of primary care, and most visits are for preventive services (90% of visits) or simple acute issues.[30] This "on-demand" model could potentially provide an opportunity for preventive care interventions, such as tobacco treatment services, in a more familiar and accessible setting than an ED or urgent care center.[31] More research is needed to understand how preventive services, in general, might play a role at retail health systems. Finally, individuals who smoke are more likely to suffer from mental health diagnoses and/or poverty. Thus, ensuring that settings that care for such individuals (mental health treatment settings, community service agencies)[32,33] offer cessation treatment may further expand reach.

Disparities in ratings of health care quality also were observed for Wisconsin adults who smoke versus those who do not. Lower perceptions of general health care quality among patients who smoke could occur for a variety of reasons, including the fact that more of their encounters may be for acute needs in an urgent care or ED setting. Urgent and ED care tends to be narrowly focused on the acute presenting concern, as opposed to well-visits or chronic disease management visits in primary care. The fact that there is no difference in the proportion of patients who report having a physical exam in the past year but there is a significant difference in those reporting a general health checkup is consistent with the finding of acute care-seeking behavior being more common among patients who smoke. Physical exams occur with any type of health care encounter, including ED or urgent care visits, whereas general medical checkups imply preventive care or maintenance of chronic disease visits. If patients who smoke are also more likely to delay care until it becomes imperative, greater use of the ED or urgent care would also make them less likely to forge a consistent relationship with a primary care clinician who might provide pharmacotherapy and behavioral support for smoking cessation.

If patients who smoke do not perceive that their health care is of good quality, then their trust in the value of general medical exams and/or preventive screening services may likewise be low. It could be argued that people who continue to smoke do so because they have not yet suffered from the health consequences of smoking (the so-called "healthy smoker effect"),[34] but a higher proportion of currently smoking patients in this study reported fair/poor health compared to former and nonsmoking patients, leading to the more troubling conclusion that those who currently smoke may be in worse health and less likely to seek care. This is consistent with some utilization research in primary care settings. For example, Smith et al[35] found that among patients who reported cough and hoarseness within the past month, current smoking was associated with a reduced likelihood of help-seeking (OR 0.44; 95% CI, 0.23-0.83), even after adjusting for demographic factors.[35]

The consistent finding that people who quit smoking are more similar to those who never smoked than those who continue to smoke suggests that the differences in health care utilization, quality, and health observed are not due to sociodemographic or etiological factors associated with starting smoking. It may be either that smoking causes the differences observed or that the causal agents driving health care utilization, quality perceptions, and self-rated health are associated with factors (ie, third variables) that also promote success in maintaining abstinence from tobacco. An encouraging implication of this result is that a history of smoking is not necessarily associated with worse access to or trust in care or worse health. Instead, it is current smoking (or the factors that maintain smoking) that signals problems in health and health care quality and access.

This study has several limitations, most notably its reliance on retrospective self-report for care-seeking behaviors and perceptions of care quality. Data were also collected in a single state—one that has not adopted Medicaid expansion—so these results may not generalize to other states and health policy contexts. This is secondary analysis of a survey that had already been administered, so we were not able to ask additional questions about the motivation behind certain care-seeking behaviors. Such insights would greatly enrich our understanding and better inform the design of future smoking cessation intervention programs that can better meet the needs of patients who smoke. Finally, no interactions between variables shown to be different by smoking status were examined, such as the interaction between poor quality of care and use of the ED for primary care. In order to make assumptions about why care patterns and quality may differ by smoking status, an analysis that better accounts for the interaction and relative contributions of each predictor is warranted.

CONCLUSIONS

Wisconsin adults who currently smoke cigarettes are more likely to skip health care and less likely to have a usual source of care other than the ED than those who do not smoke. These disparities in primary care access and care quality persist after controlling for insurance and demographics. These findings suggest that efforts to address smoking need to extend beyond adult primary care to reach a substantial proportion of adults who smoke and to prevent smoking-related morbidity and mortality.

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Appendix: Available at wmjonline.org

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