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Tobacco Screening and Counseling in the U.S.: Smokers With Mental Health and Substance Use Problems

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Abstract

Introduction: Individuals with mental health and substance use problems have higher rates of smoking and tobacco-related morbidity and mortality than the general population. These increased rates can be explained, in part, by lower cessation rates compared with overall declines in tobacco use in recent years. The purpose of this study was to examine tobacco screening and cessation counseling in healthcare settings to compare rates for adults with mental health and substance use problems with those without such problems.

Methods: A nationally representative sample of adult smokers (N=42,534) from the 2013 to 2016 National Surveys on Drug Use and Health was analyzed using logistic regression to estimate ORs for screening and counseling, adjusting for demographic and socioeconomic characteristics, past-month smoking frequency, and past-year receipt of mental health and substance use treatment. Additionally, predicted probabilities of screening and counseling were calculated across groups to compare regression-adjusted rates of each service. Analyses were conducted in 2017.

Results: Compared with smokers without mental health or substance use problems, smokers with mental health and substance use problems and smokers with only mental health problems had higher odds of screening and counseling (all $p < 0.001$); however, smokers with only substance use problems did not (screening $p = 0.91$, counseling $p = 0.45$).

Conclusions: Like smokers with mental health problems, smokers with only substance use problems are at increased risk of tobacco-related morbidity and mortality. Yet, unlike smokers with mental health problems, their rates of tobacco screening and cessation counseling by general medical providers do not reflect this elevated risk.

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INTRODUCTION

Individuals with mental health and substance use disorders have elevated rates of smoking compared with those without mental health or substance use disorders.^{1,2} Current estimates show that fewer than 15% of adults in the general population are smokers,³ but studies of individuals with mental health and substance use disorders reveal smoking rates of about 37% for bipolar disorder,⁴ 40% for depression,⁵ 45% for anxiety,⁵ 50%–55% for substance use disorders,⁵ and 62% for schizophrenia.⁶ Although public health efforts to reduce the prevalence of smoking in the U.S. have achieved great success, the general population has achieved 2–3 percentage point larger reductions in smoking prevalence over time compared with reductions achieved by those with mental health and substance use disorders.^{7,8} Recent evidence has shown encouraging declines in smoking over time among individuals with less severe mental health disorders, such as depression or anxiety.⁵ However, similar declines in smoking have not been observed among individuals with substance use disorders.⁵ Overall, lower quit rates combined with higher smoking rates has contributed to an increasing concentration of smoking-related morbidity and mortality among individuals with mental health and substance use disorders.⁹

One effective strategy to encourage smoking cessation is to screen for tobacco use and then advise smokers to quit,¹⁰ but it is currently unclear whether smokers with and without mental health or substance use problems in the general population are equally likely to be screened and counseled by healthcare professionals. Evidence from clinical studies of individuals with mental health and substance use disorders is encouraging, showing similar counseling rates among those with more severe disorders and those without a disorder, and slightly higher counseling rates among those with less severe disorders.¹¹ Having a mental health or substance use problem may lead to greater contact with healthcare professionals and therefore more opportunities for screening and counseling. Yet, misconceptions about smokers with mental health and substance use problems may also lead to undertreatment (e.g., beliefs that smoking cessation is a low priority or interferes with treatment for other mental health and substance use problems).¹² Existing evidence for tobacco screening and counseling among subgroups with mental health or substance use problems focuses on clinical samples that are not representative of broader populations with mental health and substance use problems, including those who are undiagnosed or disconnected from care.¹¹

The objective of this study is to assess rates of tobacco screening and cessation counseling across a nationally representative sample of adults with and without mental health and substance use problems. The study focuses on current smokers because of the clinical importance of tobacco screening and cessation counseling for this group.

METHODS

Data were drawn from the 2013 to 2016 National Surveys on Drug Use and Health (NSDUH), which are cross-sectional annual surveys of non-institutionalized individuals in the U.S.¹³ The NSDUH samples individuals in all 50 states and the District of Columbia to obtain nationally representative estimates of drug use and mental health problems. The surveys collect data from >60,000 individuals each year using computer-assisted interview

methods. Overall weighted response rates are a product of screening (77.9%–83.9%) and interview (68.4%–71.7%) response rates for each year and were 60.2% (2013), 58.3% (2014), 55.2% (2015), and 53.3% (2016). Detailed information regarding NSDUH methods can be found in the Methodological Resource Book for each survey year.^{14–16}

Study Sample

The sample included current smokers ages 18 years, divided into four groups: individuals with (1) both mental health and substance use problems, (2) only mental health problems, (3) only substance use problems, and (4) no mental health or substance use problems.

Measures

Mental health problems were defined as any mental illness (AMI) in the past year. Past-year AMI was determined by a predictive model developed by the Substance Abuse and Mental Health Services Administration,¹⁷ which is based on survey responses to validated scales measuring psychological distress (Kessler Psychological Distress Scale, 6 items)^{18,19} and functional impairment (WHO–Disability Assessment Schedule).^{20,21} Substance use problems were defined as past-year drug or alcohol abuse or dependence, which were measured by survey items based on the DSM-IV.²² Individuals with mental health problems and no substance use problems were included in the group with only mental health problems, and individuals with substance use problems and no mental health problems were included in the group with only substance use problems. Smoking status was defined as past-month cigarette use. Past-month smoking frequency was defined using a survey item that asked respondents to quantify the number of days cigarettes were used in the past month (1–2 days, 3–5 days, 6–19 days, 20–29 days, 30 days).

Tobacco screening and counseling were defined using survey items that asked respondents whether a doctor or other healthcare professional screened them for smoking and advised them to quit in the past year. For tobacco screening, respondents were asked, *During the past 12 months, did any doctor or other health care professional ask, either in person or on a form, if you smoke cigarettes or use any other tobacco products?* For tobacco counseling, respondents were asked, *During the past 12 months, did any doctor or other health care professional advise you to quit smoking cigarettes or quit using any other tobacco products?* Individuals without past-year health care were classified as not receiving screening or counseling. As a sensitivity analysis, screening and counseling were examined among the subsample of individuals who received past-year health care.

Receipt of past-year mental health services was defined as any past-year inpatient or outpatient mental health treatment. Receipt of past-year substance use services was defined as any past-year alcohol or drug treatment.

Statistical Analysis

All analyses were conducted in 2017 using Stata statistical software, version 15, using the *svy* suite of commands to obtain nationally representative estimates of screening and counseling. Tobacco screening and counseling were evaluated using logistic regression adjusted for demographic and socioeconomic characteristics (sex, age, race/ethnicity,

education, income, marital status, and insurance), past-month smoking frequency, and past-year receipt of mental health or substance use services. Predicted probabilities were calculated using the *margins* command²³ to display regression-adjusted rates of screening and counseling for each subpopulation with: (1) both mental health and substance use problems, (2) only mental health problems, (3) only substance use problems, and (4) no mental health or substance use problems. Contrasts of margins were calculated comparing each group to the reference group of individuals with only substance use problems.

RESULTS

Most smokers had no mental health or substance use problems (63.3%), but 8.4% had mental health and substance use problems, 18.4% had only mental health problems, and 9.9% had only substance use problems. The sample was mostly male (54.1%) and white (68.9%). A minority had past-year mental health (9.4%) or substance use (4.2%) services, and most were frequent smokers (59.5%). Compared with smokers without mental health or substance use problems, smokers with mental health or substance use problems had different distributions of demographic and socioeconomic characteristics, past-month smoking frequency, and past-year receipt of mental health and substance use services (Table 1). For example, in relation to smokers without mental health or substance use problems, the group with only mental health problems included a significantly larger percentage of females, whites, and divorced or separated individuals, whereas the group with only substance use problems included a significantly larger percentage of males, younger adults, blacks, and single individuals (Table 1).

Controlling for demographic and socioeconomic characteristics, past-month smoking frequency, and past-year receipt of mental health and substance use services, the odds of screening for tobacco use were significantly higher for smokers with both mental health and substance use problems (OR=1.55, $p<0.001$) and smokers with only mental health problems (OR=1.70, $p<0.001$) than for smokers without mental health or substance problems, but not for smokers with only substance use problems (OR=0.99, $p=0.91$; Appendix Table 1). Compared with smokers with only substance use problems, the regression-adjusted predicted probability of screening was 15.8 percentage points higher for smokers with both mental health and substance use problems (95% CI=13.0, 18.6, $p<0.001$), 21.7 percentage points higher for smokers with only mental health problems (95% CI=18.8, 24.7, $p<0.001$), and 5.7 percentage points higher for smokers without mental health or substance use problems (95% CI=3.3, 8.1, $p<0.001$; Figure 1).

Controlling for demographic and socioeconomic characteristics, mental health and substance use problems, and past-year receipt of mental health and substance use services, higher past-month smoking frequencies were associated with increased odds of tobacco screening. Compared with those who smoked 1–2 days in the past month, those who smoked 3–5 days (OR=1.00, $p=0.98$) or 6–19 days (OR=1.08, $p=0.24$) had similar odds of screening; however, those who smoked 20–29 days (OR=1.16, $p=0.03$), or 30 days (OR=1.24, $p<0.001$) had significantly higher odds of screening (Appendix Table 1). Nonetheless, the regression-adjusted predicted probability of screening for smokers with only substance use problems was lower than for smokers in all other groups at each level of past-month smoking

frequency (Figure 2). Furthermore, the regression-adjusted predicted probability of screening for the heaviest smokers (30 days/month) with only substance use problems was 11.4 percentage points lower than the lightest smokers (1–2 days/month) with both mental health and substance use problems (95% CI= −14.9, −7.9, $p<0.001$), 17.5 percentage points lower than the lightest smokers with only mental health problems (95% CI= −21.2, −13.8, $p<0.001$), and comparable to the lightest smokers without mental health or substance use problems (95% CI= −4.0, 2.6, $p=0.67$; Figure 2).

Controlling for demographic and socioeconomic characteristics, past-month smoking frequency, and past-year receipt of mental health and substance use services, the odds of cessation counseling compared with smokers without mental health and substance use problems were significantly higher for smokers with both mental health and substance use problems (OR=1.56, $p<0.001$) and smokers with only mental health problems (OR=1.55, $p<0.001$), but not for smokers with only substance use problems (OR=1.04, $p=0.45$, Appendix Table 1). Compared with smokers with only substance use problems, the regression-adjusted predicted probability of counseling was 15.8 percentage points higher for smokers with both mental health and substance use problems (95% CI=12.6, 19.0, $p<0.001$), 22.8 percentage points higher for smokers with only mental health problems (95% CI=19.7, 25.8, $p<0.001$), and 7.7 percentage points higher for smokers without mental health or substance use problems (95% CI=5.4, 9.9, $p<0.001$; Figure 1).

Controlling for demographic and socioeconomic characteristics, mental health and substance use problems, and past-year receipt of mental health and substance use services, higher past-month smoking frequencies were associated with increased odds of cessation counseling. Compared with those who smoked 1–2 days in the past month, the odds of counseling were significantly higher for those who smoked 3–5 days (OR=1.35, $p<0.001$), 6–19 days (OR=1.87, $p<0.001$), 20–29 days (OR=2.36, $p<0.001$), or 30 days (OR=2.83, $p<0.001$; Appendix Table 1). At each level of past-month smoking frequency, the regression-adjusted predicted probability of counseling for smokers with only substance use problems was lower than for smokers in all other groups (all $p<0.001$; Figure 3).

Sensitivity estimates of screening and counseling limited to individuals with past-year health care were somewhat attenuated, but demonstrated similar statistical significance as the full sample (Appendix Table 2).

DISCUSSION

The findings show that smokers with mental health problems have higher odds of tobacco screening and cessation counseling, whereas a high-risk group of smokers with only substance use problems do not. Furthermore, smokers with only substance use problems had lower regression-adjusted probabilities of tobacco screening and counseling than smokers with mental health problems and smokers without mental health or substance use problems. At each level of past-month smoking frequency, smokers with only substance use problems had lower probabilities of tobacco screening and counseling than smokers in all other groups. Additionally, the heaviest smokers with only substance use problems had comparable or lower probability of tobacco screening compared with the lightest smokers in

all other groups. Lower screening and counseling rates among individuals with only substance use problems could be explained by lower rates of health service use. However, sensitivity analyses among only smokers with past-year health care showed the same pattern of results.

Higher screening and counseling rates among individuals with mental health problems could reflect a greater frequency of health service use and thus more opportunities to be screened and counseled, although guidelines recommend screening at each healthcare encounter.²⁴ These higher rates could also indicate screening and counseling practices among subgroups with the most common mental health problems, such as depression and anxiety, which have recently had reductions in smoking rates that are comparable to those in the general population.⁵ Although the NSDUH data include information about past-year depression, one limitation is the inability to analyze a comprehensive set of specific mental health problems. One study using NSDUH data to examine differences in nicotine dependence and successful smoking cessation across three groups of adult smokers—individuals with AMI but not serious mental illness, individuals with serious mental illness, and individuals with no mental illness—found that those with AMI had lower rates of nicotine dependence and higher quit rates compared with those with serious mental illness.²⁵ Nonetheless, the AMI group had higher rates of nicotine dependence and lower rates of quitting than those without any mental illness.²⁵

Another possible explanation for lower screening and counseling rates among individuals with only substance use problems is that general medical providers may feel less prepared to care for individuals with substance use problems than for those with mental health problems.²⁶ Though general medical providers have increasingly assumed responsibility for the treatment of individuals with mental health and substance use problems (largely because of psychotropic medication advances and the rise of managed care),²⁷ research suggests many prefer for specialists to treat individuals with substance use problems.²⁶ Respondents were asked about tobacco screening and smoking cessation counseling in the context of general questions about past-year health care, but another limitation of the data is the inability to identify which type of healthcare professional provided screening and counseling. Although general medical providers may screen and counsel smokers with mental health problems, they are also equipped to offer information to individuals with substance use disorders about the health conditions associated with tobacco use, which are widespread and contribute to higher morbidity and mortality in this group.⁹ Indeed, counseling by general medical providers is associated with successful cessation among individuals with mental health and substance use problems.²⁸ Moreover, recent health reforms have broadly supported the development of a value-based health system that emphasizes primary care while expanding access to cessation services that can be delivered by general medical providers.²⁹ Along with advising smokers to quit, general medical providers can prescribe evidence-based medications to assist with tobacco cessation or refer more complicated cases to specialty mental health and substance use providers.^{30,31}

Finally, public health efforts to reframe tobacco use and cessation among individuals with mental health and substance use problems may have been less successful for populations with substance use problems than mental health problems because of earlier responses by

mental health professional groups,³² despite confronting similar misconceptions about the efficacy of smoking cessation interventions in these patient populations. Contrary to common perceptions, individuals with substance use problems are interested in quitting smoking.^{33,34} As with treatments for others who have multiple medical conditions, tobacco cessation services for those with comorbid substance use may be more successful when treatment is customized; however, evidence-based approaches can be as effective for individuals with mental health and substance use problems as for those without such problems.³² In one study that examined high-risk groups that gained access to tobacco treatments, having a psychiatric or substance use disorder was associated with a greater likelihood of smokers using medication or counseling services to assist cessation.³⁵ Additionally, cessation treatments not only can be effective without adversely impacting treatment outcomes for other substance abuse, but smoking cessation has a positive relationship with other substance abuse outcomes.³⁶

Yet, these findings suggest there are opportunities to improve tobacco screening and counseling rates among smokers with substance use problems. Lower rates of tobacco screening and cessation counseling in combination with elevated smoking rates underscore the importance of identifying high-risk groups and subgroups that could benefit from programs and practices aimed at reducing smoking disparities.⁹ Introducing or strengthening provider education and training programs could address inaccurate beliefs and negative attitudes about smokers with substance use problems.³⁷ Establishing clear guidelines for payers and providers could mitigate financial challenges associated with reforming insurance coverage and reimbursement for cessation services.²⁹ Incorporating tobacco services and metrics into delivery and information systems could raise overall screening and counseling rates.³⁸ Further research is needed to characterize and overcome potential barriers to providing tobacco cessation services to groups with mental health and substance use problems in general healthcare settings and to identify priority areas to target for improvement.

Limitations

The results of this study should be considered in the context of additional limitations related to the self-report survey format. First, although the use of computer-assisted interviewing is intended to enhance the privacy and confidentiality of responses, the survey questions cover sensitive material about drug use and mental health that may result in some over- or under-reporting of behaviors and symptoms. Second, although the NSDUH surveys incorporate procedures to enhance recall, responses are dependent on participants' memory of past experiences, which may lead to some inaccuracies in the true rates of screening and counseling because of recall bias.

CONCLUSIONS

Smokers with only substance use problems have lower probabilities of receiving tobacco screening and cessation counseling after adjusting for demographic and socioeconomic characteristics, past-month smoking frequency, and past-year receipt of specialty mental health or substance use treatment. These findings are indicative of the complexities

associated with providing comprehensive medical and behavioral health care and signal a need to develop guidelines and promote practices that can ultimately reduce health disparities for these groups and decrease tobacco use overall. As healthcare systems continue to evolve, explicitly focusing on the needs of high-risk groups, such as smokers with only substance use problems, could help to alleviate the disproportionate impact of tobacco use within this population.

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APPENDIX

Appendix Table 1: Adjusted odds of tobacco screening and counseling among adult smokers (N=42,534)

	Screening			Counseling		
	OR	95% CI	p-value	OR	95% CI	p-value
<i>Mental health and substance use problems</i>						
None	Ref.	—	—	Ref.	—	—
MHSUD	1.55	1.38, 1.73	<0.001	1.56	1.40, 1.73	<0.001
MH only	1.70	1.52, 1.90	<0.001	1.55	1.41, 1.71	<0.001
SUD only	0.99	0.89, 1.11	0.91	1.04	0.94, 1.16	0.45
<i>Sex</i>						
Female	Ref.	—	—	Ref.	—	—
Male	0.47	0.44, 0.50	<0.001	0.63	0.59, 0.67	<0.001
<i>Age</i>						
18–25	Ref.	—	—	Ref.	—	—
26–34	0.89	0.81, 0.98	0.02	1.09	1.00, 1.18	0.04
35–49	0.98	0.88, 1.09	0.72	1.46	1.33, 1.60	<0.001
50–64	1.26	1.09, 1.46	0.002	2.21	1.96, 2.48	<0.001
65+	1.08	0.86, 1.37	0.51	2.29	1.88, 2.80	<0.001
<i>Race/ethnicity</i>						
White	Ref.	—	—	Ref.	—	—
Black	1.06	0.95, 1.18	0.29	1.05	0.95, 1.15	0.36
Hispanic	0.73	0.66, 0.81	<0.001	0.77	0.69, 0.86	<0.001
Other	0.82	0.74, 0.91	<0.001	0.92	0.84, 1.01	0.08
<i>Education</i>						
Less than HS	Ref.	—	—	Ref.	—	—
HS graduate	1.03	0.95, 1.12	0.48	1.05	0.97, 1.14	0.25
Some college	1.44	1.31, 1.57	<0.001	1.22	1.11, 1.34	<0.001
College graduate	1.56	1.35, 1.79	<0.001	1.08	0.96, 1.22	0.19

	Screening			Counseling		
	OR	95% CI	p-value	OR	95% CI	p-value
<i>Income</i>						
<\$20,000	Ref.	—	—	Ref.	—	—
\$20,000-\$49,999	1.00	0.92, 1.09	0.96	0.97	0.89, 1.07	0.58
\$50,000-\$74,999	1.08	0.97, 1.19	0.17	1.08	0.97, 1.22	0.16
\$75,000+	1.15	1.04, 1.27	0.007	1.13	1.01, 1.26	0.03
<i>Marital status</i>						
Never married	Ref.	—	—	Ref.	—	—
Married	1.24	1.13, 1.36	<0.001	1.21	1.12, 1.31	<0.001
Divorced/Separated	1.04	0.94, 1.15	0.48	1.04	0.94, 1.16	0.46
Widowed	0.91	0.74, 1.11	0.34	1.04	0.86, 1.26	0.69
<i>Insurance</i>						
Private	Ref.	—	—	Ref.	—	—
Medicaid	1.12	1.01, 1.24	0.03	1.37	1.24, 1.51	<0.001
Medicare	1.36	1.14, 1.61	0.001	1.40	1.22, 1.60	<0.001
Military	1.36	1.11, 1.66	0.003	1.50	1.25, 1.81	<0.001
Other	0.89	0.74, 1.07	0.21	0.97	0.80, 1.19	0.78
None	0.48	0.44, 0.52	<0.001	0.59	0.54, 0.64	<0.001
<i>Past-year mental health services</i>	2.39	2.00, 2.86	<0.001	1.62	1.43, 1.82	<0.001
<i>Past-year substance use services</i>	1.21	1.02, 1.45	0.03	1.40	1.21, 1.63	<0.001
<i>Past-month smoking frequency</i>						
1–2 days	Ref.	—	—	Ref.	—	—
3–5 days	1.00	0.87, 1.15	0.98	1.35	1.14, 1.58	<0.001
6–19 days	1.08	0.95, 1.22	0.24	1.87	1.62, 2.16	<0.001
20–29 days	1.16	1.02, 1.32	0.03	2.36	2.02, 2.76	<0.001
30 days	1.24	1.12, 1.38	<0.001	2.83	2.50, 3.21	<0.001

Note: Data are from the 2013–2016 National Surveys on Drug Use and Health.

Boldface indicates statistical significance ($p < .05$)

^aMHSUD indicates individuals with mental health and substance use problems.

^bMH indicates individuals with mental health problems only.

^cSUD indicates individuals with substance use problems only.

Appendix Table 2: Adjusted odds of tobacco screening and counseling among adult smokers who received past-year health care (N=32,944)

	Screening			Counseling		
	OR	95% CI	p-value	OR	95% CI	p-value
<i>Mental health and substance use problems</i>						
None	Ref.	—	—	Ref.	—	—

	Screening			Counseling		
	OR	95% CI	p-value	OR	95% CI	p-value
MHSUD	1.44	1.21, 1.71	<0.001	1.44	1.27, 1.63	<0.001
MH only	1.62	1.40, 1.88	<0.001	1.38	1.24, 1.54	<0.001
SUD only	0.94	0.81, 1.09	0.41	1.05	0.94, 1.18	0.36
<i>Sex</i>						
Female	Ref.	—	—	Ref.	—	—
Male	0.65	0.60, 0.71	<0.001	0.87	0.81, 0.93	<0.001
<i>Age</i>						
18–25	Ref.	—	—	Ref.	—	—
26–34	1.06	0.93, 1.21	0.40	1.25	1.13, 1.37	<0.001
35–49	1.11	0.99, 1.26	0.07	1.74	1.59, 1.90	<0.001
50–64	1.29	1.06, 1.57	0.01	2.63	2.32, 2.00	<0.001
65+	0.94	0.68, 1.28	0.68	2.66	2.12, 3.34	<0.001
<i>Race/ethnicity</i>						
White	Ref.	—	—	Ref.	—	—
Black	0.89	0.77, 1.02	0.09	0.94	0.84, 1.04	0.23
Hispanic	0.68	0.59, 0.78	<0.001	0.78	0.69, 0.88	<0.001
Other	0.72	0.61, 0.85	<0.001	0.90	0.80, 1.02	0.10
<i>Education</i>						
Less than HS	Ref.	—	—	Ref.	—	—
HS graduate	1.05	0.92, 1.19	0.47	1.07	0.95, 1.19	0.25
Some college	1.59	1.39, 1.83	<0.001	1.16	1.04, 1.30	0.01
College graduate	1.68	1.38, 2.06	<0.001	0.96	0.84, 1.10	0.54
<i>Income</i>						
<\$20,000	Ref.	—	—	Ref.	—	—
\$20,000-\$49,999	1.18	1.04, 1.33	0.01	1.05	0.94, 1.17	0.40
\$50,000-\$74,999	1.29	1.08, 1.54	0.01	1.20	1.06, 1.35	0.004
\$75,000+	1.16	0.99, 1.35	0.07	1.12	1.00, 1.26	0.06
<i>Marital status</i>						
Never married	Ref.	—	—	Ref.	—	—
Married	1.22	1.08, 1.39	0.002	1.14	1.04, 1.24	0.01
Divorced/Separated	1.06	0.92, 1.22	0.42	1.04	0.92, 1.17	0.52
Widowed	0.84	0.64, 1.09	0.19	1.01	0.81, 1.28	0.90
<i>Insurance</i>						
Private	Ref.	—	—	Ref.	—	—
Medicaid	0.91	0.79, 1.06	0.22	1.30	1.16, 1.45	<0.001
Medicare	0.91	0.72, 1.15	0.44	1.13	0.97, 1.31	0.10
Military	1.43	1.02, 2.02	0.04	1.56	1.24, 1.96	<0.001
Other	0.84	0.66, 1.07	0.16	0.98	0.79, 1.22	0.87

	Screening			Counseling		
	OR	95% CI	p-value	OR	95% CI	p-value
None	0.57	0.50, 0.65	<0.001	0.78	0.71, 0.86	<0.001
<i>Past-year mental health services</i>	1.47	1.18, 1.84	0.001	1.18	1.04, 1.34	0.01
<i>Past-year substance use services</i>	1.14	0.89, 1.46	0.30	1.36	1.16, 1.61	<0.001
<i>Past-month smoking frequency</i>						
1–2 days	Ref.	—	—	Ref.	—	—
3–5 days	1.12	0.95, 1.33	0.17	1.45	1.23, 1.72	<0.001
6–19 days	1.34	1.12, 1.60	0.001	2.16	1.86, 2.50	<0.001
20–29 days	1.53	1.29, 1.82	<0.001	2.89	2.45, 3.41	<0.001
30 days	1.91	1.67, 2.20	<0.001	3.89	3.41, 4.43	<0.001

Note: Data are from the 2013–2016 National Surveys on Drug Use and Health

Boldface indicates statistical significance ($p < .05$)

^aMHSUD indicates individuals with mental health and substance use problems.

^bMH indicates individuals with mental health problems only.

^cSUD indicates individuals with substance use problems only.

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Notes: Data are from the 2013–2016 National Surveys on Drug Use and Health. Rates are regression-adjusted for demographic and socioeconomic characteristics, past-month smoking frequency and past-year receipt of specialty MHSUD treatment as described in the text. Error bars indicate 95% CIs. Asterisks indicate statistical significance in relation to the group with only substance use problems (* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$).

MHSUD, individuals with mental health and substance use problems; MH, individuals with mental health problems only; SUD, individuals with substance use problems only

Figure 1.

Regression-adjusted predicted probability of tobacco screening and counseling among adult smokers, stratified by mental health and substance use problems (N=42,534).

Notes: Data are from the 2013–2016 National Surveys on Drug Use and Health. Rates are regression-adjusted for demographic and socioeconomic characteristics, past-month smoking frequency and past-year receipt of specialty MHSUD treatment as described in the text. Error bars indicate 95% CIs. Asterisks indicate statistical significance in relation to the group with only substance use problems (* $p<0.05$; ** $p<0.01$; *** $p<0.001$).

MHSUD, individuals with mental health and substance use problems; MH, individuals with mental health problems only; SUD, individuals with substance use problems only

Figure 2.

Regression-adjusted predicted probability of tobacco screening among adult smokers, stratified by past-month smoking frequency (N=42,534).

Notes: Data are from the 2013–2016 National Surveys on Drug Use and Health. Rates are regression-adjusted for demographic and socioeconomic characteristics, past-month smoking frequency and past-year receipt of specialty MHSUD treatment as described in the text. Error bars indicate 95% CIs. Asterisks indicate statistical significance in relation to the group with only substance use problems (* $p<0.05$; ** $p<0.01$; *** $p<0.001$).

MHSUD, individuals with mental health and substance use problems; MH, individuals with mental health problems only; SUD, individuals with substance use problems only

Figure 3.
Regression-adjusted predicted probability of tobacco counseling among adult smokers, stratified by past-month smoking frequency (N=42,534).

Table 1.

Unadjusted Characteristics of Adult Smokers, Stratified by Mental Health and Substance Use Problems
(N=42,534)

Variable	Total %	MHSUD ^a % ^d	MH ^b %	SUD ^c %	None %
N	42,534	4,358	7,669	5,198	25,309
Sex					
Female	45.9	45.2	63.0 ***	25.7 ***	44.1
Male	54.1	54.8	37.0 ***	74.3 ***	55.9
Age, years					
18–25	18.1	27.4 ***	13.7 ***	34.4 ***	15.6
26–34	21.6	29.6 ***	21.2	27.0 ***	19.9
35–49	27.3	25.6 *	30.2 **	21.4 ***	27.7
50–64	24.7	15.7 ***	27.4	14.8 ***	26.6
65	8.2	1.7 ***	7.6 **	2.5 ***	10.2
Race/Ethnicity					
White	68.9	68.3	73.9 ***	64.8 **	68.1
Black	12.8	12.6	9.2 ***	15.8 **	13.5
Hispanic	12.4	12.8	10.6 **	13.9	12.7
Other	5.9	6.3	6.3	5.6	5.8
Education					
Less than HS	18.3	17.9	19.2	18.5	18.0
HS graduate	35.2	29.4 ***	32.5 ***	34.2 *	36.9
Some college	31.7	37.6 ***	34.1 ***	30.4	30.5
College graduate	14.8	15.1	14.2	16.9 *	14.5
Income					
<\$20,000	26.8	34.5 ***	35.0 ***	27.0 **	23.4
\$20,000–\$49,999	35.4	33.2 *	35.8	33.9	35.7
\$50,000–\$74,999	15.2	12.2 ***	12.5 ***	14.8	16.4
\$75,000	22.7	20.1 ***	16.6 ***	24.3	24.5
Marital status					
Never married	38.6	57.0 ***	34.0	60.0 ***	34.2
Married	35.8	20.6 ***	32.1 ***	22.9 ***	40.8
Divorced/Separated	21.3	19.4	28.0 ***	14.9 ***	20.5
Widowed	4.4	3.0 **	5.9 **	2.2 ***	4.4
Insurance					
Private	51.4	42.3 ***	42.2 ***	53.2	55.0
Medicaid	19.8	26.2 ***	29.5 ***	17.1	16.5

Variable	Total %	MHSUD ^a % ^d	MH ^b %	SUD ^c %	None %
Medicare	13.8	8.3 ***	19.7 ***	5.3 ***	14.2
Military	4.5	3.9	4.6	3.2 **	4.7
Other	2.8	3.1	2.4	3.7 **	2.7
None	20.1	24.4 ***	18.4	23.8 ***	19.5
Past-year mental health services	9.4	25.7 ***	25.0 ***	5.7 ***	3.2
Past-year substance use services	4.2	17.8 ***	4.0 ***	9.3 ***	1.6
Past-month smoking frequency					
1–2 days	9.4	10.6	8.5	12.3 ***	9.0
3–5 days	7.7	7.6	6.0 ***	9.3 *	7.9
6–19 days	12.0	12.3	10.1 **	15.0 ***	12.1
20–29 days	11.4	13.2 *	10.2	13.7 ***	11.1
30 days	59.5	56.3 **	65.3 ***	49.7 ***	59.8

Notes: Data are from the 2013–2016 National Surveys on Drug Use and Health. Boldface indicates statistical significance of pairwise *t*-tests for differences in survey-weighted percentages in relation to the “None” group

*
p<0.05

**
p<0.01

p<0.001.

^aMHSUD indicates individuals with mental health and substance use problems.

^bMH indicates individuals with mental health problems only.

^cSUD indicates individuals with substance use problems only.

^dSample sizes are unweighted values, but percentages are weighted to be representative and may not add to 100.

HS, high school