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Is Screening and Intervention Associated with Treatment Receipt Among Individuals with Alcohol Use Disorder? Evidence from a National Survey

Sachini N. Bandara, PhD, MS^a, Hillary Samples, PhD, MHS^b, Rosa M. Crum, MD, MHS^c, and Brendan Saloner, PhD^d

^aDepartment of Mental Health, Johns Hopkins Bloomberg School of Public Health, 624 North Broadway, Baltimore, MD 21205

^bDepartment of Epidemiology, Columbia University Mailman School of Public Health, 722 W. 168th Street, New York, NY 10032

^cDepartment of Epidemiology, Johns Hopkins Bloomberg School of Public Health, 615 N Wolfe, Baltimore, MD 21205

^dDepartment of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, 624 North Broadway, Baltimore, MD 21205

Abstract

Background: Most individuals with alcohol use disorder do not receive treatment and little national-level United States (U.S.) data exist on the association between screening and intervention with receipt of treatment.

Methods: The sample includes adults 18 years and older reporting prior year symptoms of alcohol use disorder from 2013 and 2014 National Survey on Drug Use and Health. Survey-weight adjusted prevalence of prior year receipt of ambulatory care, alcohol screening in a medical setting, alcohol intervention in a medical setting and alcohol treatment receipt and setting were calculated. Regression-adjusted odds ratios were calculated for alcohol treatment outcomes of interest.

Results: Despite high use of ambulatory care (74.4%, 95%CI: 72.8, 75.6), prevalence of screening (52.5%, 95%CI: 50.5, 54.5), intervention (13.5%, 95%CI: 12.1, 15.0) and treatment (6.8%, 95%CI: 5.8, 7.9) were low. Screening (AOR: 1.7, $p < 0.050$) and intervention (AOR: 4.7, $p < 0.001$) were associated with increased odds of treatment. Screening and intervention were associated with increased odds of receiving treatment in medical and specialty behavioral health settings and decreased odds of receiving treatment in only self-help groups.

Conclusions: While prior year receipt of screening and intervention were low overall among adults with alcohol use disorder, receipt of these services was strongly associated with use of alcohol treatment. This likely indicates a missed opportunity to encourage a high-risk population to access treatment services. Receipt of screening and intervention was most strongly associated

with treatment in medical and specialty behavioral health settings. Future research should examine this prospectively to assess whether entry into treatment settings may be mediated by screening and intervention in ambulatory care settings or if brief intervention is occurring at the time of treatment.

Keywords

Alcohol; Alcohol Screening; Alcohol Treatment; United States

1. Introduction

In 2015, approximately 15 million United States (U.S.) adults – roughly 6% of the adult population – met diagnostic criteria for alcohol use disorder in the prior 12 months (Substance Abuse and Mental Health Services Administration, 2016). Heavy alcohol use is associated with increased risk of injuries, experiencing violence, liver disease, cancer, hypertensive heart disease, depressive disorders and social problems, such as unemployment (Booth & Feng, 2002; Parker & Auerhahn, 1998; Shield, Parry, & Rehm, 2013; Smith, Branas, & Miller, 1999; Stahre, Roeber, Kanny, Brewer, & Zhang, 2014). Despite the existence of effective treatments, most individuals with an alcohol use disorder do not receive treatment, even in more informal treatment settings (e.g., self-help groups such as Alcoholics Anonymous) (Alvanzo et al., 2014).

Increasing the uptake of treatment for alcohol use disorder is an important policy priority. Medical settings, and particularly primary care, can provide one important pathway into treatment. Many individuals with alcohol use disorder come into contact with medical providers, particularly because there is a high burden of comorbid physical and mental health problems in this population (Grant et al., 2015; Hasin, Stinson, Ogburn, & Grant, 2007; Rehm, 2011). A large body of research has focused on screening and brief intervention as a potential approach to improve alcohol use outcomes among individuals seen in primary care or emergency departments. Screening assesses all patients for risky drinking or other substance use behaviors using standardized screening tools, and brief intervention occurs when the provider engages patients who exhibit problem alcohol use in a short conversation and provides motivating information and advice about avoiding risky substance use (Substance Abuse and Mental Health Services Administration, 2017). The U.S. Preventive Services Task Force recommends that clinicians screen all adults for alcohol use disorder and provide brief interventions for individuals engaged in risky or hazardous drinking (Moyer & Preventive Services Task Force, 2013). Overall, screening and brief intervention has been associated with reductions in alcohol intake, risky drinking, and driving under the influence (Aldridge, Linford, & Bray, 2017; Babor et al., 2007; Kaner et al., 2007; Moyer & Preventive Services Task Force, 2013).

Despite the evidence base supporting screening and brief intervention in medical settings, relatively little national-level U.S. data is available about the role of screening and intervention in the overall pathway to treatment for individuals with an alcohol use disorder. In this study, we take advantage of 2013 and 2014 data from the National Survey on Drug Use and Health (NSDUH), a nationally representative survey that includes structured

questions used to identify symptoms of alcohol use disorder and detailed information about receipt of treatment for alcohol use disorder in a variety of settings. Beginning in 2013, the NSDUH added items related to receipt of screening and provider intervention among individuals who had received care in general medical settings. Using 2013 NSDUH data, Glass and colleagues found that few individuals with alcohol problems received alcohol intervention in ambulatory care settings and that disparities may exist in those who are offered intervention, with lower rates among women compared to men (Glass, Bohnert, & Brown, 2016). We build upon this work by exploring the extent to which receipt of screening or intervention is associated with the probability that individuals with an alcohol use disorder receive treatment. We hypothesize that among U.S. adults with alcohol use disorder, those who received an ambulatory care visit, screening, or provider intervention would be more likely to report any treatment for alcohol use disorder.

We also compare differences in receipt of screening and intervention across the specific settings in which individuals received alcohol treatment in order to provide information as to whether populations who receive treatment may be influenced by interactions with a medical provider relative to other potential referral sources. Prior research has shown that 38% of individuals in alcohol treatment programs were referred by the criminal justice system versus 8% referred by a substance use care provider and 10% referred by another health care provider (Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics & and Quality, 2015). Establishing a linkage between a clinician and treatment programs may be beneficial for coordinating the care of individuals with alcohol use disorder, yet some treatment settings may have relatively limited connection to medical care. We hypothesize that among adults who received alcohol treatment, receipt of screening and provider intervention would be more commonly reported among people receiving care in medical settings (such as a physician's office) compared to those in informal settings (e.g., self-help) or in jails.

2. Methods

2.1 Sample and Measures

NSDUH is a cross-sectional nationally representative survey of non-institutionalized civilians 12 years of age and older in the United States. NSDUH is administered to approximately 70,000 individuals annually. The survey uses an address-based household sampling strategy, and respondents are interviewed in their homes using computer-assisted interviewing to improve confidentiality for reporting on substance use. Cross-sectional data from the 2013 and 2014 waves of the NSDUH were analyzed. During this study period, overall response rates were 72% in 2013 and 71% in 2014.

NSDUH includes questions screening for alcohol abuse and dependence based on criteria from the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (Substance Abuse and Mental Health Services Administration, 2015). We define alcohol use disorder as the presence of symptoms of abuse (such as serious problems at home, work or school due to alcohol use) or dependence (such as feeling symptoms of withdrawal from non-use). To assess use of screening and intervention among individuals most likely to need intervention

and treatment, our sample is restricted to individuals 18 years of age and older who meet criteria for alcohol use disorder.

Our main predictors of interest are receipt of ambulatory care, receipt of alcohol screening and receipt of alcohol intervention. We define a respondent as having an ambulatory care visit if they report having “visited a doctor, nurse, physician assistant or nurse practitioner about (their) own health at a doctor’s office, a clinic or some other place” at least once in the prior year. Starting in 2013, NSDUH began collecting information on whether respondents who received medical care in the prior year (defined as having an emergency room visit, overnight hospitalization or outpatient visit) had discussions with providers about risky alcohol use, providing a new and unique opportunity to examine alcohol screening and intervention trends nationwide. Individuals were prompted with the following text: “Please think about all the talks you had with a doctor or other health professional during the past 12 months when you answer this question. Choose the statement or statements that describe any discussions you may have had in person with a doctor or other health professional about your alcohol use.” Individuals were considered to have received an alcohol screening from a health professional if they chose any of the following three statements: 1) “The doctor asked how much I drink.” 2) “The doctor asked how often I drink.” 3) “The doctor asked if I have any problems because of my drinking.” Individuals were considered to have received an intervention from a health professional if they chose either of the following statements: 1) “The doctor advised me to cut down on my drinking.” 2) “The doctor offered to give me more information about alcohol use and treatment for problems with alcohol use.”

Our outcomes of interest are receipt of alcohol treatment and the settings in which this treatment was received. In a separate set of NSDUH questions, individuals were asked, “During the past 12 months, that is, since [DATE], have you received treatment or counseling for your use of alcohol or any drug, not counting cigarettes?” Individuals were considered as having received alcohol treatment if they responded yes for receiving treatment for alcohol use only or both alcohol and drug use. Those who received alcohol treatment were then asked whether they were treated in any of the following settings: outpatient rehabilitation facility, inpatient rehabilitation facility, mental health center, emergency room, doctor’s office, jail, and self-help group. Respondents could select more than one setting. For our purposes, treatment occurring in a hospital, doctor’s office or emergency room was considered to have occurred in a medical setting. Treatment occurring in an outpatient or inpatient rehabilitation facility, or in a mental health center were defined as specialty behavioral health settings. Finally, treatment occurring in jails or self-help groups were considered non-medical settings. We generated a variable of receiving treatment “only in a self-help group” for respondents who endorsed receiving treatment in a self-help group but no other settings.

2.2 Statistical Analysis

We applied survey weights created by NSDUH analysts to calculate nationally representative estimates of the non-institutionalized adult population and adjusted standard errors to account for the complex sampling design. We examined the distribution of sociodemographic characteristics and the frequency of a prior year ambulatory care visit,

alcohol screening, alcohol intervention and receipt of alcohol treatment in our overall sample of adults with alcohol use disorder.

Next, we calculated four separate logistic regression models each with the outcome for receiving alcohol treatment in the prior year. In Model 1, the primary predictor was prior year receipt of ambulatory care. In Model 2 the primary predictor was prior year alcohol screening, and in Model 3 the primary predictor was prior year alcohol intervention. Model 4 included all three predictor variables (prior year ambulatory care, prior year alcohol screening, and prior year alcohol intervention) to determine the relationship between alcohol treatment and the three predictors together. All four regression models adjusted for sex, race/ethnicity, education, income, self-reported health, age and employment status.

Finally, to assess whether screening and intervention was predictive of the setting in which alcohol treatment was received, we examined the prevalence of treatment by setting type, restricting our sample to individuals with alcohol use disorder who received treatment in the prior year. We examined treatment received in four settings: 1) medical setting, 2) specialty behavioral health setting, 3) jail, and 4) receiving treatment only in a self-help group. Settings were not mutually exclusive, as individuals could report receiving treatment in more than one setting. Using each of the four treatment settings as outcomes, we calculated three separate logistic regression models each using one of the following independent variables: prior year ambulatory care visit, prior year alcohol screening, and prior year alcohol intervention. Each model included adjustments for sex, race/ethnicity, education, income, self-reported health, age and employment status.

3. Results

Our total sample size included 7,112 adults with prior year alcohol use disorder, representing 9% of the total sample of the two NSDUH survey waves (unweighted). Table 1 shows nationally representative estimates of the sample characteristics generated using survey weights. The sample of adults with alcohol use disorder was mostly male (64.7%) and non-Hispanic white (65.5%). Individuals with alcohol use disorder were split roughly evenly across the following age categories: 18–25, 26–34, 35–49 and over 50 years. Most individuals reported some college or a college degree (60.6%), having full-time employment (58.5%), and being in excellent or very good health (57.4%).

The prevalence of ambulatory care visits, alcohol screening, intervention, and treatment are illustrated in Figure 1. Between 2013–2014, 74.4% (95% CI: 72.8, 75.6) of the sample with alcohol use disorder received at least one ambulatory care visit in the prior 12 months, 52.5% (95% CI: 50.5, 54.5) received an alcohol screening, but only 13.5% (95% CI: 12.1, 15.0) received an alcohol intervention. Only 6.8% (95% CI: 5.8, 7.9) of individuals in the sample received alcohol treatment. Eighteen percent of individuals who received alcohol intervention did not receive alcohol screening, and 81% of individuals who received screening did not receive intervention.

Table 2 provides the odds ratios from different models predicting receipt of any treatment for alcohol use in the prior year, adjusting for sex, race/ethnicity, age, education, income,

employment and self-reported health status. Model 1, where the main predictor is any ambulatory care, demonstrates that individuals receiving ambulatory care in the prior year did not have statistically significant higher odds of receiving alcohol treatment (AOR 1.4, 95% CI: 0.9, 2.3) compared to those with no prior year ambulatory care visit. Model 2, where the main predictor is receipt of screening, demonstrates that those who received screening had 1.7 greater odds of receiving treatment compared to those who did not receive screening (95% CI: 1.2, 2.5). Model 3, where the main predictor is receipt of intervention, demonstrates that those who received alcohol intervention had 4.7 times the odds of receiving treatment compared to those who did not receive alcohol intervention (95% CI: 3.3, 6.6). Model 4, which included all three predictors, demonstrates that the relationship between treatment and receiving prior year ambulatory care remained non-significant at the $p < 0.05$ level when accounting for receipt of alcohol screening and intervention by a provider, but that the relationship between treatment and receiving screening and intervention remained significant, indicating that each has an independent association with receipt of alcohol treatment (Table 2).

Figure 2 illustrates that among individuals with alcohol use disorder who received alcohol treatment in the prior year ($N=518$), fewer received treatment in jail (8.1%) or only self-help groups (15.1%) compared to receiving alcohol treatment in specialty behavioral health settings (64.2%), or medical settings (43.3%).

Table 3 shows that, among individuals with alcohol use disorder who received alcohol treatment in the prior year, prior year receipt of ambulatory care and alcohol screening and intervention varied by treatment setting. The adjusted odds of receiving alcohol treatment in a medical setting was higher among those with prior year ambulatory care (AOR: 4.1, 95% CI: 2.0, 8.2), among those that received alcohol screening (AOR: 4.4, 95% CI: 2.5, 7.6), and among those that received alcohol intervention (AOR: 2.0, 95% CI: 1.0, 3.8). compared to those that did not receive these services.

The adjusted odds of receiving alcohol treatment in a specialty behavioral health setting were higher among those with prior year ambulatory care (AOR: 2.9, 95% CI: 1.5, 5.8), those that received alcohol screening (AOR: 2.3, 95% CI: 1.3, 3.9), and those that received alcohol intervention (AOR: 2.6, 95% CI: 1.4, 4.7) compared to those that did not receive these services. The adjusted odds of receiving alcohol treatment in only a self-group setting was lower among those that those that received alcohol screening (AOR: 0.4, 95% CI: 0.2, 0.8) and among those that received alcohol intervention (AOR: 0.4, 95% CI: 0.1, 1.0) compared to those that did not receive these services. The adjusted odds of receiving alcohol treatment in jail was not statistically significantly different based on prior year ambulatory care or receipt of screening or intervention.

4. Discussion

4.1 Discussion

People with alcohol use disorder frequently come into contact with medical providers who could screen and refer them to treatment, yet most of these individuals do not receive treatment. We provide one of the first demonstrations of the relative association between

traditional clinical intervention for problematic alcohol use (screening and intervention) and the settings of alcohol use treatment using national-level U.S. data. Providing recent national-level information on prior year receipt of these services fills a key research gap in the alcohol screening and intervention literature by illuminating the relative association of clinical intervention versus other pathways with alcohol treatment.

Overall, we find that despite high prevalence of contact with general medical providers (measured by at least one ambulatory care visit in the prior year), the prevalence of screening and intervention remains low among adults with alcohol use disorder in the U.S., indicating a missed opportunity in the health system to address problematic alcohol use by individuals who could benefit from intervention. The research literature on screening and brief intervention has identified several barriers to alcohol screening and intervention in medical settings that may explain the low prevalence of these services, including clinician time constraints, financial limitations, reluctance to engage patients in difficult conversations around alcohol use, and inadequate referral resources (Babor et al., 2007; Neushotz & Fitzpatrick, 2008; Rahm et al., 2015).

Despite the fact that our study population was limited to individuals who met diagnostic criteria for alcohol use disorder, and therefore would be candidates for both screening and intervention, the prevalence of screening was much higher than the prevalence of intervention (52.5% vs. 13.5%). This may be partially explained by clinician beliefs that intervention is not effective, a lack of confidence physicians may experience around diagnosing alcohol use disorder, and a lack of access to available alcohol treatment for referrals (Vendetti et al., 2017). Prior research has shown that these barriers are alleviated by implementing screening and intervention by non-medical health professionals in medical settings (e.g. health educators) and adopting pre-screening tools that allow health professionals to efficiently screen out individuals who are unlikely to benefit from such protocols (e.g. non-users) as well as the presence of leadership committed to increasing screening and intervention (Babor, Del Boca, & Bray, 2017; Vendetti et al., 2017).

The low prevalence of screening and intervention is particularly concerning given our findings that alcohol screening and intervention is associated with increased odds of receiving alcohol treatment in models that include these predictors separately and together. Intervention has the strongest association with receipt of alcohol treatment and is much more strongly associated than screening alone. This association could indicate that intervention is effective at encouraging more people to engage in alcohol treatment. Alternatively, it may reflect unmeasured severity of alcohol problems that prompt physicians to provide intervention. Nonetheless, all individuals in our sample met criteria for alcohol use disorder and, therefore, could benefit from intervention. The association between alcohol treatment and receipt of screening and intervention in combination with the lack of an association between alcohol treatment and prior year ambulatory care suggests that receiving medical care alone may not be sufficient for receiving alcohol treatment, but that specific clinical interventions, such as screening and intervention, are more strongly associated with receiving alcohol treatment. This association, combined with the low prevalence of intervention (13.5%) suggests an opportunity for medical providers to offer services that may increase the likelihood that this at-risk population receives alcohol treatment. However

future research should examine these relationships prospectively using measures of screening, intervention and treatment that are not self-reported.

Among individuals who received alcohol treatment, we find that those who received screening and those who received intervention from a provider are more likely to have received alcohol treatment in medical settings and specialty behavioral health settings, compared to those who received alcohol treatment but did not receive these services. This could either suggest that individuals who receive screening and intervention from a medical provider have closer contact with the medical and behavioral health system for treatment, or it could suggest that screening and intervention are themselves mechanisms for better linking the specialty addiction treatment system with the medical care system. Individuals who received screening and those who received intervention from a provider were also less likely than individuals without these services to receive alcohol treatment in only self-help groups, suggesting that individuals who receive screening and interventions are less likely to receive alcohol treatment in settings that bypass clinician assessment. The low overall prevalence of alcohol screening, intervention and treatment combined with these findings suggests that some individuals are engaging in alcohol treatment without the support of a clinician and provide evidence of fragmented medical and specialty addiction care (Barry & Huskamp, 2011).

4.2 Limitations

Several limitations to this study should be considered. NSDUH is limited to non-institutionalized populations and therefore does not capture individuals who are currently incarcerated or homeless, populations at high risk for substance use disorder. All measures of alcohol use, and receipt of alcohol screening, intervention and treatment were self-reported and subject to recall bias and were not confirmed by providers or medical charts. Also, respondents were asked if a doctor or health care professional provided screening or intervention but the survey measures did not specify where these services occurred, and respondents may have reported screenings and interventions conducted by health professionals outside of medical settings. Because the data are cross-sectional, the temporal sequence between screening and intervention and use of alcohol treatment cannot be determined. Thus, it may be possible that physicians apply screening and intervention when they learn that patients have received alcohol treatment. It may also be possible that individuals were screened or received intervention concurrently with receiving alcohol treatment. Furthermore, the data do not include information about the specific medical setting in which screening and intervention occurred, which would allow for a more detailed examination across ambulatory care settings, or information about the specific content of individuals' contact with providers. For example, we could not ascertain if medical providers utilized standardized, evidence-based alcohol screening and brief intervention tools or the specific alcohol treatment services received (e.g., pharmacotherapy, psycho-social therapy, or group therapy).

Because the measures were self-reported and the specific setting, content, and date of services were not reported, it is possible that respondents reported the same interaction as i) screening (i.e. doctor asked how much and/or how often I drink and/or if I have problems

because of drinking), ii) intervention (i.e. doctor advised me to cut down and/or gave me more information about alcohol use and treatment), and/or iii) treatment (i.e. received treatment or counseling for my use of alcohol or any drug, not counting cigarettes). In particular, the same event may be categorized by the respondents as both an intervention and treatment, despite these variables being treated as different in the study. This may explain the strong association between intervention and treatment and the higher odds of receiving alcohol treatment in a medical setting compared to self-help group as predicted by receiving intervention by a medical provider. The treatment items were collected during different sections of the survey from the screening and intervention items, which might reduce respondent misunderstanding about the separateness of different medical encounters.

The causal relationship between screening and intervention and alcohol treatment cannot be determined. For example, individuals might receive alcohol treatment regardless of screening and intervention or those who seek medical care in settings with linkages to alcohol treatment may be more likely to receive screening and intervention and have access to treatment. We also conducted a sensitivity analysis to test for effect modification by screening and intervention status, where we regressed receipt of alcohol treatment on prior year ambulatory care, receipt of screening and receipt of intervention, along with an interaction between screening and intervention, and the interaction term was not statistically significant. To examine whether questions in the intervention measure operated differently, we conducted a sensitivity analysis that treated these questions (advise to cut back and information on treatment) as two separate exposures and found no significant differences in results. Finally, the relatively low prevalence of alcohol treatment in settings such as jails make it difficult to precisely estimate the association between treatment in these settings and screening and intervention.

4.3 Conclusion

Our study confirms that receipt of screening and intervention is low among adults with alcohol use disorder. However, individuals who receive screening and intervention are also more likely to receive alcohol treatment. Among those that receive alcohol treatment, screening and intervention are associated with a greater likelihood of having received prior year treatment in a medical setting or a specialty behavioral health setting and lower likelihood of prior year treatment in only self-help groups.

This study highlights a missed opportunity in medical settings to better engage this at-risk population of adults with alcohol use disorders in alcohol treatment and support their connection to specialty addiction systems. The findings suggest a need to identify and overcome barriers to implementing screening and intervention programs in medical settings. The findings may also inform U.S. policy efforts to encourage screening and intervention adoption, such as those funded by the U.S. Substance Abuse and Mental Health Services Administration, or additional policy approaches, such as insurance reforms in behavioral health parity laws and the Affordable Care Act, which guarantees coverage for addiction services as an essential health benefit. Increasing attention from U.S. policymakers and commensurate investments in primary care that enhance access to screening and intervention

and the provision of substance use treatment services provide an important strategy for reducing the burden of alcohol use disorder.

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Figure 1. Prevalence of Ambulatory Care, Screening, Intervention and Treatment Among Individuals with Alcohol Use Disorder (N=7,211)

Source: Estimates are survey-weighted to be nationally representative. Source: National Survey on Drug Use and Health, 2013–2014.

Figure 2. Prevalence of Treatment Location Among Individuals with Alcohol Use Disorder Who Received Alcohol Treatment (N=518)

Note: Medical Setting is defined as hospital, doctor's office or emergency room. Specialty behavioral health setting is defined as inpatient rehabilitation facility, outpatient rehabilitation facility or mental health center. Respondents could indicate multiple settings.

Source: National Survey on Drug Use and Health, 2013–2014.

Table 1:

Descriptive Characteristics of Sample

	Percent	95% CI	
Total Sample: n=7,211	100%		
Male	64.7	63.0	66.4
Age			
18–25	27.0	25.7	28.4
26–34	24.2	22.4	25.9
35–49	25.3	23.7	27.0
50+	23.4	21.5	25.3
Race/Ethnicity			
Black, Non-Hispanic	11.0	9.7	12.3
Hispanic	17.0	15.6	18.3
White, Non-Hispanic	65.5	63.5	67.5
Other	6.5	5.7	7.3
Education			
Less than High School	12.9	11.8	14.0
High School	26.5	25.1	27.9
Some College	30.1	28.4	31.8
College Graduate	30.5	28.6	32.4
Below 100% FPL	17.5	16.3	18.8
Employment Status			
Full Time	58.5	56.6	60.4
Part Time	16.0	14.6	17.3
Unemployed/Other	25.6	24.0	27.1
Self-Reported Health			
Excellent	19.8	18.3	21.3
Very Good	37.6	35.9	39.3
Good	29.2	27.5	30.9
Fair	10.8	9.5	12.1
Poor	2.6	2.0	3.3

Notes: Estimates are survey-weighted to be nationally representative.

Source: National Survey on Drug Use and Health, 2013–2014.

Table 2.

Predictors of Alcohol Treatment Among Individuals with Alcohol Use Disorder (N=7,211)

Predictors	Model 1 OR [95% CI]	Model 2 OR [95% CI]	Model 3 OR [95% CI]	Model 4 OR [95% CI]
Prior Year Ambulatory Care Visit	1.4 [0.9, 2.3] p=0.127	N/A	N/A	0.8 [0.5, 1.3] p=0.379
Prior Year Alcohol Screening	N/A	1.7 [1.2, 2.5] p=0.004	N/A	1.4 [1.0, 2.0] p=0.042
Prior Year Alcohol Intervention	N/A	N/A	4.7 [3.3, 6.6] p<0.001	4.5 [3.2, 6.2] p<0.001

Note: Alcohol treatment is the outcome for all models. In Model 1, the predictor variable is prior year ambulatory care visit. In Model 2, the predictor variable is prior year alcohol screening. In Model 3, the predictor variable is prior year alcohol intervention, and Model 4 includes all three predictors. All models are adjusted for sex, race/ethnicity, education, income, self-reported health, age and employment. "N/A" indicates that the variable was not included in the model. OR=odds ratio. Source: National Survey on Drug Use and Health, 2013–2014.

Table 3.

Adjusted Odds of Treatment Location by Receipt of Ambulatory Care, Alcohol Screening, and Alcohol Intervention Among Individuals with Alcohol Use Disorder Who Received Alcohol Treatment (N=518)

Predictors	Setting Where Treatment Was Received			
	Medical Setting OR [95% CI]	Specialty Behavioral Health Setting OR [95% CI]	Jail OR [95% CI]	Self Help Group Only OR [95% CI]
Prior Year Ambulatory Care Visit	4.1 * [2.0, 8.2]	2.9 * [1.5, 5.8]	0.4 [0.1, 1.5]	0.5 [0.2, 1.1]
Prior Year Alcohol Screening	4.4 * [2.5, 7.6]	2.3 * [1.3, 3.9]	0.5 [0.2, 1.3]	0.4 * [0.2, 0.8]
Prior Year Alcohol Intervention	2.0 * [1.0, 3.8]	2.6 * [1.4, 4.7]	0.6 [0.2, 1.8]	0.4 * [0.1, 1.0]

Note: Each cell represents a separate logistic regression with the setting where treatment was received as the outcome and all noted predictors included. All models are adjusted for sex, race/ethnicity, education, income, self-reported health, age and employment.

* p<0.050 OR=odds ratio Source: National Survey on Drug Use and Health, 2013–2014.