Prevalence and Predictors of Substance Use Disorders Among Homeless Women Seeking Primary Care: An 11 Site Survey

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Abstract

Background and objectives—Homeless women have shown high rates of substance use disorders (SUD), but many studies are more than a decade old, limited in geographic location, or focus only on women living outdoors or in shelters. The purpose of this study was to obtain a more current and representative sample of homeless women and the prevalence and predictors of substance use disorders among women seeking primary care at Health Care for the Homeless clinics across the US.

Methods—Eleven Health Care for the Homeless (HCH) clinics in 9 states contributed proportionally to a sample of n=780 female patients who completed a self-administered survey including demographics, housing history, health, mental health, and drug and alcohol use.

Results—Compared to the general population of women, rates were 4 times higher for an alcohol use disorder, and 12 times higher for a drug use disorder.

Discussion and Conclusions—The findings indicate a significant need for SUD services, with an equally high need for mental health services. In addition, high rates of victimization and use of tobacco, and overall poor health status, indicate overall health disparities.

Scientific Significance—Addressing barriers to full integration of substance use and mental health services, such as improving screening, reimbursement, clinician training, and addressing biases about motivation of this population to engage in treatment, are necessary to improve the health of women seeking care in HCH settings.

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Background

Studies of substance use disorders (SUD) among homeless women have consistently shown they have higher rates of abuse, compared to other poor women or the general population.[1-3] For example, a study of 1344 Los Angeles women from the street or in shelters conducted in the mid-1990s found 25% had past year problems with alcohol and 56% with drugs.[2] A 2001 study comparing homeless with housed low income women, also in Los Angeles, indicated over 1/3 of homeless women reported last year binge drinking and almost 50% reported drug use, while comparable figures in housed women were about 17% for both binge drinking and drug use.[3] However, only 4.2% of the general female population in the National Epidemiological Survey of Alcohol and Related Conditions (NESARC) survey in 2001-02 reported both past year alcohol and drug use.[4]

The comorbidity of substance use disorders with victimization, health risk behaviors, mental health, and health problems has also been well established among both the general population of women, and among homeless women. Among women who were not homeless, for example, those who reported a history of child or adult physical or sexual abuse had significantly increased odds of having a past year drug abuse disorder. [6] Further, female participants in SUD interventions had high rates of interpersonal sexual and physical violence (IPV), and those with poorer baseline mental health, poorer physical health, and exposure to IPV had significantly less improvement in drug use severity during treatment.[6] Among sheltered homeless women, sexual risk behavior (e.g., multiple partners, and trading sex for money or drugs) has also been linked to history of IPV and with substantially higher drug and alcohol dependence.[7] Depression has also been a consistent predictor of SUD among women. [8-10] Thus most studies addressing homeless women's SUD strongly indicate the need to consider the burden of past trauma, IPV, mental health, and health conditions to understand SUD.[11]

Despite agreement that homeless women may be particularly vulnerable to problem substance use, accompanied by other serious comorbidities, most data on SUD of homeless women either were collected more than a decade ago, were focused on chronically homeless women in shelters and on the street, or were limited to only a few geographic sites.[1-3] Since then the proportion of women meeting the definition of homelessness has grown (in 2015 almost 40% of all homeless in the US were women), and includes an increasing number of unstably housed, sheltered homeless, and a decreasing number of street homeless women.[12] In addition, homelessness is present in all US states, although 50% of all homeless in the US come from just 5 states (California, Florida, Massachusetts, New York and Texas). [12,13] However, sampling the homeless/unstably housed population can be challenging.[14] One approach is to use the network of 295 Health Care for the Homeless Program (HCH) health centers funded by the US government Health Services and Resources Administration (HSRA). The HCH grant program is authorized under Section 330 (h) of the Public Health Service Act, and provides funds for primary health care, mental health, addiction, and social services to individuals seeking health care and are homeless or formerly homeless who meet the US Department of Housing and Urban Development (HUD) definition of homelessness: living in outdoor areas, public facilities, vehicles, or emergency shelters; unstably housed (e.g. doubled up or staying with others because they have no housing of their own); or are

housed in transitional shelters or treatment programs.[15] In 2015, the HCH program funded 295 grantees in all 50 states, the District of Columbia, and Puerto Rico, and delivered health care to over 890,000 individuals, 46% of whom were female.[16] Thus it was expected a survey about SUD from HCH clinic patients would provide a more representative sample of homeless women than past studies.

The goal of this study was to update the literature on the prevalence of homeless women's SUD, including assessing potential predictors, by exploring the comorbidity of mental health, health, victimization, and risk behavior, from a proportional random sample of adult women (ages 18-64) seeking primary health care in 11 geographically distributed HCH programs that were members of the Practice Based Research Network (PBRN) of the National Health Care for the Homeless Council (NHCHC). A secondary goal was to see how closely the medical records for primary problem lists at the sites reflected rates of SUD self-reported in the survey to determine if clinics were accurately recognizing prevalence of SUD. The NHCHC is a membership organization for HCH grantees, Medical Respite providers, and other stakeholders, addressing the nexus of poor health and homelessness. In 2007 the NHCHC formed a PBRN which is defined as a group of ambulatory health care practices devoted principally to the primary care of patients, affiliated with each other (and often with an academic or professional organization) in order to investigate questions relate to health care practice. Sites were selected based on willingness to participate and geographic distribution.

Method

Sites, sampling methods, and procedures

Sites that agreed to participate were: Mercy Care, Atlanta Georgia; Care Alliance, Cleveland OH; Health Care for the Homeless, Houston TX; JWCH Institute, Los Angeles CA; Catholic Medical Center/Health Care for the Homeless, Manchester NH; Contra Costa County Health Services, Martinez CA; Care for the Homeless, NYC; Charles Drew Health Center, Omaha NE; Maricopa County Health Care for the Homeless, Phoenix AZ; and Health Care for the Homeless/Mercy Health Center, Springfield MA. They represent 4 of the 5 states with the highest national homeless populations, as well as 5 states disbursed around all regions of the country except the Northwest. [12, 13] Total sample size was set at 750 based on the estimated proportion of sample members with and without substance abuse from prior literature, in order to have adequate power for subsample analyses. The Institutional Review Board of the University of Massachusetts Medical School reviewed and approved study procedures.

Sample size (as a proportion of n=750) by site was calculated based on the proportion of the total annual number of female patients served during the most recent calendar year across all sites, contributed by each site, and ranged from n=19-130. Inclusion criteria were age between 18 and 64 and ability to complete the survey in Spanish or English. Women over 64 were excluded due to their potential eligibility for Medicare which might reduce service barriers, as well as women who were pregnant, due to concerns about state reporting requirements about such patients. Sites collaborated in creating and pre-testing a 13-page patient self-administered survey that included questions on demographics, homeless history, physical health, mental health, IPV, risky health behaviors, use of alcohol and drugs, and

consequences of substance use that would indicate SUD. Surveys were anonymous, and verbal consent was obtained. A data collection manual was created by research staff which was adapted to each site to specify the site sampling procedure, emergency procedures, and procedures for handling completed surveys and distributing participant gift cards. Sites were provided a $20 gift card for each participant, and an additional $20 per collected survey to offset administrative costs. Staff who collected data (which included patient advocates; outreach workers; and social work, public health, medical school and nursing school interns, depending on the site) were required to read the study manual, be supervised by a health care professional, sign a confidentiality agreement, and participate in a one hour webinar run by the research team. This was followed by monthly phone calls to review and solve data collection issues.

Surveys were collected between February and August 2015. Each site implemented a random sampling plan in primary care clinic waiting rooms by recruiting every second or third woman (depending on clinic volume) coming for an appointment for randomly selected half day clinic sessions spread over several weeks. Most surveys were completed in the waiting room, while other sites were able to use another space for survey completion.

Study measures

Demographic questions were drawn from prior studies, including age, race/ethnicity, education, income, and partner and child status.[17] Information on housing and homelessness were adapted from Lewis et al., and the US Department of Housing and Urban Development (HUD), [18,19] and included place slept last night as well as length of time and number of episodes of homelessness. Health conditions were drawn from the National Health Interview Survey (NHIS)[20] and NESARC. [21] Participants were also asked if they smoked and if they had health insurance. In addition, the 10-item Global Health Scale from the PROMIS item bank was used to calculate physical and mental health status scores. The PROMIS measures have had extensive development and testing. Four items (α reliability =.81) yield a general physical health T-score and an additional four items (α reliability=.86) yield a mental health T-score that places the respondent in a continuum of the responses of the general population.[22] Questions about exposure to physical and sexual victimization and health risk behaviors, including trading sex for money or drugs, and number of sexual partners were drawn from prior studies of homeless women.[23, 24] Measures of mental health included screening items for depression, PTSD, psychosis, and bipolar disorder. The PHQ-8 was used as the depression measure due to its high sensitivity and specificity for detecting major depression in the general population.[25] Post- traumatic stress disorder (PTSD) was measured using the Primary Care PTSD Screen (PC-PTSD). This scale asks four yes/no questions about symptoms experienced in the last month related to any prior traumatic event. [26] Respondents are considered to be at a clinical level of PTSD symptoms if they answer yes to 3 or 4 of the symptoms (sensitivity = .78 and specificity = .87). Psychosis and bipolar screening questions were drawn from the Mini International Neuropsychiatric Interview MINI).[27, 28] A participant was deemed positive for psychotic symptoms if they answered yes to either or both of two questions: 1) currently believing some force outside of oneself put thoughts in their head or directed their behavior; and/or 2) feeling special messages were being received from TV, radio, news etc. Bipolar questions included two general questions

about mania and irritability, and if either or both were endorsed as positive, then seven specific symptoms were listed, of which four had to be endorsed for a classification of bipolar disorder. The MINI correlates well with other more lengthy psychiatric tools and is frequently used in research and population studies.

Finally, questions were asked about both alcohol and drug use. The AUDIT-C assesses level of alcohol use with three questions (score range 0-12) to identify frequency and volume, with a cut off score of 4 or more indicating misuse. It has adequate sensitivity (.73) and specificity (.91) in women.[29] The list of problem drugs was drawn from the NESARC survey questions[30] and from the National Institute on Drug Abuse [31] and included common street names for categories such as marijuana, cocaine, inhalants, heroin/opioids, stimulants, hallucinogens, sedatives and tranquilizers. Participants were asked if they used the drugs 'never', 'yes, in the past year', or 'yes, but not in the past year' to indicate current, lifetime or no illegal use of drugs. Further, participants were asked about behavioral consequences to indicate if their use constituted abuse or dependence according to DSM-IV criteria. Eleven consequences of alcohol or drug use were listed. The 11 items were drawn from NIAAA materials with one set using the words related to drinking alcohol and the other set using words related to using drugs.[32, 33] The first four items indicated functional consequences, such as driving while intoxicated or having trouble with family or friends because of substance use. At least one positive response resulted in categorization as abusing alcohol or drugs. [34] The last 7 indicated physical dependence, such as having to drink or do more drugs to get high, having withdrawal symptoms, and not being able to stop or cut back. Any 3 positive responses resulted in categorization as being dependent on alcohol or drugs.[34]

Chart audits

In addition to obtaining the survey data from patients, each site conducted a separate, random chart audit of their electronic medical records, sampling the same target number of women's records as their assigned survey sample size using the population of women's records indicating at least one primary care visit for the same time period as the surveys were being conducted. The chart abstraction form included demographic items (age, ethnicity, and housing status) and a list of ICD-9 codes to record which substance use or mental health conditions were listed on the current problem list of the patient. Chart data were not linked to the anonymous self-report survey data. The surveys and chart audits were considered two independent ways to obtain SUD prevalence data from the female clinic populations of the participating sites, however because the survey participants were not identifiable, some could be represented in the records pulled from the random chart audit.

Analysis

An analysis was conducted comparing demographics of patients who completed versus those who refused to complete or partially completed the survey. Basic frequencies (means, proportions), standard deviations (SD), and confidence intervals (CI) were calculated on all the stand alone variables, and recoding/scoring into summary scores was conducted for the various scaled measures. Bivariate analyses were conducted to assess which demographic, housing, health, and mental health variables were significantly associated (p<.05) with SUD. These variables, along with age and ethnicity, were then entered into two logistic

regressions, one for alcohol use disorder (AUD) and one for drug use disorder (DUD) as the dependent variable to determine predictors of SUD.

Results

A total of 758 complete surveys and 22 partially complete surveys were collected. Of 857 women invited to participate, 23 were ineligible (16 were 65 years or older, 1 was <18 years, and 6 were pregnant), and 54 refused. Analysis of demographic differences between the 77 refusals or partially completed surveys and completed surveys found that there were no differences in mean age, but women who refused or did not complete the survey were more likely than those who completed the survey to be white (40% vs. 31%) or Hispanic (21% vs. 18%) and less likely to be Black (25% vs. 42%, *p=.02*, Fishers Exact). Refusers/ incomplete surveys were less likely than completers to be living in a shelter or transitional housing program (44% vs. 63%) and more likely to be living in places not designed for habitation such as outdoor areas, vehicles, public buildings (14% vs 4%), in their own apartment (21% vs. 18%), or to have missing data (14% vs. 0.5%, *p=<.01*, Chi square). Comparisons were also made between chart audit data and self-report data. The patients from random chart audits reflected no differences in age or housing status, but were more likely to be white women (36.0% vs 31.5%, *p=<.001*).

Demographic characteristics of the sample, including partially completed surveys can be found in Table 1. Women were on average in their early 40s, and predominantly Black (almost 42%). Almost one-third had not graduated from high school, two thirds had annual incomes below $5000, but over two-thirds had health insurance (80% Medicaid, 11% Medicare, 5% private, and 5% other city or state programs). One third spent the last night in a longer term shelter or program, while a little over 30% were in an emergency shelter, 28% were living with friends/family or in their own housing (28%), and 4% were living somewhere not designed for habitation. Since age 18, most women had been homeless multiple times (60.6%) and more than half (56%) had experienced more than a year of homelessness. Some, 7.2% (n=52), reported no homeless episodes, but we are aware that some respondents viewed living with family or friends because they did not have their own housing, as not being homeless. Women had multiple chronic health conditions and their Global Physical Health score was lower than their Global Mental Health Score. The most frequently mentioned health issues were (data not shown): hypertension (36.3%, n=281); arthritis (29.9%, n=232); heart problems (28.0%, n=218); asthma (25.1%, n=195); schizophrenia or psychosis (17.5%, n= 135), and diabetes (15.7%, n=122). In their lifetime, almost half had been victims of sexual assault, and over 60% physical assault by someone known to them. Over half reported being a current smoker, and almost one third reported 'ever' having traded sex for money or drugs.

Table 2 shows past year mental health and substance use rates, comparing self-report to the National Survey on Drug Use and Health (NSDUH),[35] which sampled women from the general population during the same time frame the current study data were collected. It can be seen that there are very high rates of meeting screening criteria for current depression, PTSD, bipolar disorder and psychosis. In addition, while a substantial proportion of the sample reported no drinking in the last year (45%), 18.5% reported a past year alcohol use

disorder. Compared to the NSDUH data for women, rates in this sample of homeless women patients were 4 times higher for serious mental illness, 5 times higher for major depression, 4 times higher for an alcohol use disorder, and 12 times higher for a drug use disorder. However, the rate of nondrinkers in the current sample, 45%, exceeded the general female population of 33.2%. Women who reported both a SUD and at least one mental health disorder made up 26% of the sample (n=203).

Comparing self-report survey rates of SUD and mental health conditions to the chart audit results (data not shown), except for past year alcohol abuse, the chart audit findings significantly underestimated the rate of women's SUD and mental health problems. Charts indicated a SUD prevalence only about half the rate from the self-report survey: 4.3% for alcohol dependence, vs. 11.8% self-report (*p=<.001*); and 9.6% for drug dependence vs. 18.8% self-report (*p=<.001*). In addition, depression (69.1% self-report vs. 24.6% chart audit), PTSD (44.7% self-report vs. 6.4%), bipolar illness (32.8% vs. 11.2%), and psychosis (23.2% vs. 6.6%), were all significantly under-reported in the medical charts (*p=<.001* for each condition).

Finally, Tables 3 and 4 show predictors of current alcohol and drug use disorders (combining abuse and dependence). Neither age nor ethnicity was associated at the bivariate level with alcohol use disorders, but both were associated with drug use disorders. In the multivariate model for alcohol, current smoking, depression, and having ever traded sex for money or drugs were significant predictors. For drug use, younger age, major depression, number of sexual partners, and having ever traded sex for money or drugs were significant.

Discussion and Conclusions

To achieve more recent and more representative data on the substance use of women experiencing homelessness, we sampled women patients using primary health care at 11 HCH clinics in 9 geographically distributed states, including 4 of the 5 states with the highest national homeless populations, and one program in each region of the country except the Northwest. As expected, rates of self-reported past year SUD were high in this sample, yet not as high as found in prior studies that sampled mostly from the street and shelters.[1,3] The rates of mental health symptoms were, however, much higher than reported in other homeless women's studies.[2, 36] This may be because of use of different measures in studies, the comfort level of women reporting needs in the context of a health care setting, or the possibility that the population is changing and has more mental health needs than in the past.

Overall the rates of past year SUD in our sample were more than 3 times higher, drug use disorders more than 12 times higher, and major depression more than 8 times higher than the general population of women age 18 and older, [35] indicating significant need for substance use as well as mental health services. In addition, high rates of victimization and use of tobacco, and overall poor health status, indicate an extremely vulnerable population, even compared to other recent studies of homeless sheltered women.[36]

Despite the high proportion of past year self-reported SUD in the sample, however, housing status and frequency or longevity of homelessness were not associated with having a SUD.

Instead, the strongest associations were for depression and ever trading sex for money or drugs, as well as smoking (for AUD). While causation cannot be interpreted from cross sectional data, it confirms what others have described as a complex relationship between SUD and homelessness, with SUD potentially both a predictor and an outcome, as well as a factor influencing housing stability. [37, 38] In addition, while some predictors were significantly correlated, the explained variance was small, and the few moderate correlations clustered around the overlap of PTSD, depression, and experiencing violence or sexual assault, which may explain why PTSD was not a significant independent predictor. Further, while the settings were chosen because they facilitated a more representative sample of homeless women than past studies, it is also important to note that there is increasing emphasis on addressing problem substance use in primary care. Babor et al.,[39] suggest universal screening and brief intervention for SUD, in primary care, and several different approaches have been studied with strong outcomes in reduction of alcohol and drug use based on primary care interventions in the general population, [40,41] as well as among homeless women.[42] Thus study results should provide further guidance to HCH primary care settings about improving SUD services for women.

A limitation of the study is that the mental health and SUD measures were self-report, or brief screening questions and do not fully evaluate meeting diagnostic criteria. In comparing to the chart review data, the differences between fully evaluated diagnoses and screening tools may account for some of the gap. It is also possible that a few women in the sample may not have met the HUD definition for homeless or formerly homeless, but we do know that some women view staying with family and friends as not being homeless. Because we were not able to distinguish those from others who may meet the definition we choose to retain all women in the analysis. However, since housing variables were not significantly associated with SUD, we do not believe retaining this group in the sample changes the basic findings. The comparisons to rates of SUD and mental health issues in the general female population also may have some room for error, since NSDUH and the study survey questions were somewhat different.

Scientific Significance

Self-report of SUD and mental health disorders among a large, geographically distributed homeless women patient population indicates substantial disparities compared to the general female population that warrant targeted and improved health care interventions. While not new findings, considering the disconnect between the high rates of self-reported SUD and mental health issues, and what was found in the audits of primary care problem lists in this study, there is a need to better document such issues in medical charts and actively address them. This gap is particularly concerning since a recent study found that 50% of deaths among the homeless are attributable to tobacco, alcohol, and drug use, and mortality rates were higher for women than men. [43]

The potential health benefits of primary care intervention for SUD have been advocated for the general population, [39-41] and strongly indicated for use with women using homeless health care. [42] This study demonstrates that women seeking healthcare in homeless primary care settings are at risk for past year SUD, regardless of their current housing situation.

Further, our findings suggest that treating SUD and mental health conditions, as well as sexual and physical victimization and exploitation, are equally important to addressing the high physical health burden in this population, as these multiple patterns of comorbidity have been shown to affect SUD treatment effectiveness.[6] Addressing barriers to full integration of physical health, mental health and SUD care, including improving screening and financing for SUD and mental health treatment, strengthening clinician training, and addressing clinician biases about motivation of this high risk population to engage in SUD treatment,[44] are necessary to improve the health, and to reduce the rates of SUD in this high risk population.

Acknowledgments

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Table 1

Demographic and health characteristics of the sample (n=753-780)[*]

Variable	M (SD) or Proportion (n)
Age	43.5 years (11.9)
Ethnicity	
Hispanic	18.1% (141)
White/non Hispanic	31.4% (245)
Black	41.5% (324)
Asian	0.5% (4)
Native American	2.2% (17)
Mixed or Other	6.2% (48)
Education	
Mean years	11.9 (3.0)
<high school graduation	28.7% (224)
High school diploma/GED or more	69.2% (540)
Associate degree	13.0%(103)
BA degree	5.1% (40)
Have children living with you	16.8% (131)
Have partner living with you	13.3% (104)
Annual income	
No income	2.7% (21)
<$5000	65.4% (510)
$5,000-$10,000	12.6% (98)
$10,001-$20,000	12.1% (94)
>$20,000	3.8% (30)
Where slept last night	
Transitional shelter/program	33.1% (258)
Emergency Shelter	30.4% (237)
Own apartment/home	17.6% (137)
With family/friends	10.5% (82)
Street	4.4% (34)
Other (motel, house sitting etc.)	3.6%(28)
Mean times homeless since age 18 (missing =62)	3.1 (3.9) (Range 0-40)
Total time homeless since age 18 (missing=65)	
<3months	20.3%(158)
<1 year	23.9%(186)
1-2 years	14.7%(115)
2-4 years	19.2% (150)
>5 years	13.6%(106)
Total #chronic health conditions	2.6 (2.6)
Smoker, current	54.5% (425)
Has health insurance	69.2% (540)

Variable	M (SD) or Proportion (n)
Global Physical Health Score	39.4 (4.7)
Global Mental Health Score	44.8 (5.5)
Physical violence from family member/ someone known, ever	62.80% (490)
Sexual assault from family member/someone known, ever	49.4% (385)
Engaged in sex in exchange for money or drugs, ever	31.4% (245)
# Sexual partners last 12 months (missing=171)	1.8 (3.4)

*
Unless otherwise indicated. Missing varies from 1-27 cases on various variables.

Table 2

Self- reported past year substance use, substance use disorder, and mental health indicators among homeless women patients compared to 2015 National Survey on Drug Use and Health

Variable	Self-report (N=753-776)	2015 National Survey on Drug Use and Health[1]
Depression	69.1% (539)	Major depressive episode
Mild	26.3% (205)	8.5%
Moderate to severe	42.8% (334)	
PTSD	44.7% (349)	N/A
Bipolar	32.8 %(256)	N/A
Psychosis	23.2% (181)	Serious MH 6.3%
Alcohol use last year		
Non drinker	45.0% (346)	33.2%
Low risk drinker	16.7% (128)	N/A
Risky drinking	21.0% (161)	N/A
Problem drinking	17.4% (133)	N/A
Past Year alcohol use disorder		4.2%
Abuse	5.5% (43)	N/A
Dependence	11.8% (90)	N/A
Mean # of different illegal drugs used past year	1.4 (2.0) (Range 0-11)	N/A
Any past year illegal drug use	52.8% (408)	15.3%
Past year drug use		
Marijuana	30.5% (238)	10.8%
Painkillers	21.7% (169)	4.0%
Tranquillizers	16.8% (169)	2.1%
Sedatives	15.8% (123)	0.7%
Cocaine	15.6% (122)	1.6%
Stimulants	12.6% (98)	1.6%
Heroin	9.6% (75)	0.3%
Other	9.5% (74)	N\A
PCP, Hallucinogens, inhalants	7.3% (57)	1,4%
Past year drug use disorder		1.9%
Abuse	5.3% (41)	
Dependence	18.8% (145)	

[1]Substance Abuse and Mental Health Services Administration (SAMHSA). 2015 National Survey on Drug Use and Health (NSDUH). Based on nationally representative sample of 125,753 females 18 and older. http://www.samhsa.gov/data/sites/default/files/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015.htm Frequency tables reporting percent of sample, female 18+ only

Table 3

Multivariate logistic regression analysis of demographic, health, and mental health characteristics and presence of a past year alcohol use disorder among homeless women patients (n=692)[1]

Predictor	Odds Ratio Estimate	95% Wald CI	Unadjusted bivariate analysis
Age	0.99	0.97-1.01	1.53[2]
Black (vs White Non-Hispanic)	0.86	0.53-1.40	
All Other Races/Ethnicities (vs White Non-Hispanic)	0.77	0.44-1.34	5.20[3]
# times homeless since 18	1.02	0.97-1.06	**-2.57[2], ***
Current smoker	**1.72*****	**1.10-2.70**	**16.44[3], ******
Mild depression (vs no depression), current	**1.90***	**1.01-3.57**	
Moderate/severe depression (vs no depression), current	**2.06***	**1.11-3.80**	**18.76[3], ******
PTSD score, current	1.07	0.66-1.74	**12.12[3], *****
Physical abuse, ever	1.65	0.93-2.92	**17.56[3], ******
Sexual abuse, ever	0.67	0.41-1.09	**4.62[3], ***
Traded sex for money or drugs, ever	**2.93******	**1.87-4.60**	**39.66[3], ******

[1] Total number of observations used in the model; 123 were positive for alcohol abuse/dependence, 565 were negative and 92 were deleted due to missing values for the response or explanatory variables.

[2] Statistic presented is the t-value from an independent sample t-test comparison. Fewer times homeless was associated with not having an alcohol use disorder.

[3] Statistic presented is the Likelihood Ratio Chi-Square.

*
p<.05

**
p<.01

***
p<.001

****
p<.0001

Table 4

Multivariate logistic regression analysis of demographic, health and mental health characteristics and presence of a past year drug use disorder among homeless women patients (n=559)[1]

Predictor	Odds Ratio Estimate	95% Wald CI	Unadjusted Bivariate Analysis
Age	**0.98**[*]	**0.96-1.00**	**4.39**[2,****]
Black (vs. White Non-Hispanic)	0.68	0.41-1.16	
All Other Races/Ethnicities (vs. White Non-Hispanic)	0.71	0.40-1.26	**8.08**[2,*]
Last night on the street, in a car or abandoned building	0.74	0.27-2.01	**7.52**[3,**]
Last night in own home or apartment	0.53	0.26-1.07	**16.86**[3,****]
# times homeless since 18	1.00	0.95-1.06	**-3.41**[2,***]
Smoker, current	1.35	0.86-2.12	**19.72**[3,****]
Mild depression (vs no depression), current	1.03	0.53-1.98	
Moderate/severe depression (vs no depression), current	**1.86**[*]	**1.00-3.44**	**37.40**[3,****]
PTSD score, current	1.40	0.83-2.35	**43.93**[3,****]
Psychosis	1.53	0.90-2.60	**14.01**[3,***]
Physical abuse, ever	1.68	0.93-3.04	**37.94**[3,****]
Sexual abuse, ever	0.78	0.47-1.29	**21.99**[3,****]
Traded sex for money or drugs, ever	**3.55**[****]	**2.23-5.66**	**69.86**[3,****]
# Sexual partners last year	**1.12**[**]	**1.03-1.22**	**-6.82**[2,****]

[1] total number of observations used in the model; 150 were positive for drug abuse/dependence, 409 were negative and 221 observations were deleted due to missing values for the response or explanatory variables.

[2] Statistic presented is the t-value from an independent sample t-test comparison. Younger age, and being White, non-Hispanic were associated with having a drug use disorder. Fewer times homeless and fewer sexual partners were associated with not having a drug use disorder.

[3] Statistic presented is the Likelihood Ratio Chi-Square.

[*] $p<.05$

[**] $p<.01$

[***] $p<.001$

[****] $p<.0001$