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Factors associated with substance use in older homeless adults: Results from the HOPE HOME Study

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Abstract

Background—The median age of the single adult homeless population is 50 and rising. While the prevalence of substance use decreases as individuals age, older adults now have a higher prevalence of substance use than older adults did ten years ago. Homeless individuals have a higher prevalence of substance use disorders than the general population. However, little is known about substance use in older homeless adults.

Methods—We examined prevalence of and factors associated with substance use in a population-based sample (n=350) of homeless individuals aged 50 and older in Oakland, CA. We examined the prevalence of and factors associated with moderate or greater severity illicit drug symptoms (ASSIST score ≥4) and moderate or greater alcohol symptoms (AUDIT score ≥8). Our independent variables included demographics, mental health problems, and negative life course events such as physical and sexual abuse, school expulsion and onset of homelessness.

Results—Almost two-thirds of participants, 64.6%, had moderate or greater severity symptoms for at least one illicit drug; 25.8% had moderate or greater severity alcohol symptoms. History of psychiatric hospitalization was associated with moderate or greater illicit drug symptoms (AOR 1.9, 1.0–3.6). The presence of major depressive symptoms was associated with moderate or greater severity alcohol symptoms (AOR 1.8, 1.1–3.0).

Conclusions—In this sample of older homeless adults, substance use is common. There is a need for substance use treatment programs, integrated with mental health services, which are targeted towards the needs of older homeless adults.

Keywords

Substance-related disorders; homeless persons; aging

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The authors declare that they have no conflicts of interest

AUTHOR CONTRIBUTIONS

Drs. Spinelli and Kushel had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Spinelli, Guzman, and Kushel. Acquisition of data: Kushel and Ponath. Statistical analysis: Guzman. Analysis and interpretation of data: Spinelli, Ponath, Tieu, Guzman, and Kushel. Drafting of the manuscript: Spinelli. Critical revision of the manuscript for important intellectual content: Spinelli, Ponath, Tieu, Guzman, Kushel.

INTRODUCTION

Approximately 1% of the population experiences homelessness in a given year, with an estimated 600,000 Americans homeless nightly. Homelessness is defined by the Federal Homeless Emergency Assistance and Rapid Transition to Housing Act of 2009, which defines as homeless: people who lack a fixed, regular residence (i.e. sleeping outdoors, in an emergency shelter, or in a place not meant for habitation), and those who are at imminent risk for losing their housing in the next 14 days.[1] The median age of single adults experiencing homelessness is rising. Among homeless adults not living in families, approximately 50% are aged 50 and above.[2, 3] This trend is projected to continue: adults born in the second half of the "baby boom" (1954–1965) have an elevated risk of homelessness throughout their lives.[3] In the homeless population, adults 50 and older have prevalences of geriatric conditions (falls, cognitive impairment, and dependence in activities of daily living (ADLs)) higher than those of housed adults 15–20 years older.[4–6] As a result, experts consider homeless adults to be "older adults" at age 50.[4]

Homeless adults have a higher prevalence of substance use than housed individuals.[7–9] In 1996, a nationally representative study of homeless adults, the National Study of Homeless Assistance Providers and Clients (NSHAPC), found a higher prevalence of substance use disorders (SUDs) than those in the general population, but a lower prevalence of SUDs in older, compared to younger, homeless adults.[10, 11] Prevalence of SUDs are thought to decline with age, but this may be changing as those born during the baby boom age.[12] In the general population, the National Survey of Drug Use and Health has shown that the prevalence of illicit substance use in adults 50 and older has doubled since 2002.[12, 13] With the aging of the homeless population and the changes in substance use in older adults, little is known about the prevalence of substance use disorders in older homeless adults.[14] There are few community-based samples of substance use in homeless adults since NSHAPC, and none specifically examining older homeless adults.[15–19]

Older adults who use substances face additional health risks compared with younger adults. Substance-using older adults are more susceptible to interactions between illicit drugs and alcohol and their medications for chronic health conditions.[20, 21] They are at elevated risk of harm from substance use, due to higher risk of substance-induced delirium, cardiovascular events, and worsening of chronic pulmonary diseases.[22, 23] Older homeless adults with SUDs are at a higher risk of remaining homeless and of having impairments in ADLs than those without SUDs.[14, 24]

In the 1990s, the majority of substance use and substance use-attributable mortality occurred in younger adults. However, given that the homeless population is aging and substance use is rising in older adults, we hypothesized that older homeless adults may have a higher prevalence of substance use than in the past. We aimed to examine the prevalence of and factors associated with substance use in homeless adults aged 50 and older in a sample of older homeless adults recruited from the community.

METHODS

Sampling and inclusion criteria

From July 2013 to June 2014, we recruited 350 homeless adults to the Health Outcomes in People Experiencing Homelessness in Older Middle Age (HOPE HOME) cohort by conducting purposive population-based sampling of homeless individuals aged 50 and older in Oakland, CA.[25] The institutional review board of the University of California, San Francisco approved the study. Similar to prior research of homeless adults, we sampled from homeless shelters and free meal programs.[10] As our goal was to obtain a population-based sample of homeless individuals, we extended our sampling to include homeless encampments and recycling centers to avoid under-sampling unsheltered individuals. We included recycling centers in addition to encampments, because "recyclers" make up a distinct community and our community advisory board was concerned that we would not be able to recruit them in adequate numbers at our other recruitment sites. We sampled from homeless shelters in Oakland that served single adults over the age of 25 (n=5), all free and low cost meal programs that served homeless individuals at least 3 times a week (n=5), one recycling center near homeless service agencies, and encampments using methods to approximate the proportion of older homeless adults who are sheltered versus unsheltered.[26] To recruit from homeless encampments, study staff traveled with an outreach van on randomly selected shifts and enrolled participants. If they appeared eligible, we invited them back to the study site for detailed screening to assess eligibility criteria, which included: English speaking, age 50 or over, homeless based on the Homeless Emergency Assistance and Rapid Transition to Housing (HEARTH) criteria (lacked a fixed residence, resided in a place not typically used for sleeping, or at risk of losing housing within fourteen days),[1] and able to give informed consent as determined using a teach-back mechanism.[27]

Interview process

The investigators trained the study staff on all study instruments; senior study staff conducted observations to ensure reliability. The interview and clinical assessments lasted 3–4 hours, with rest breaks.

Demographics and life history

The initial interview included questions on demographics, including age, gender, and race/ethnicity (categorized as African American, white, Asian, Latino, other). For educational attainment, we dichotomized participants into those who had completed high school or received a General Education Development (GED) certificate and those who had not. Participants reported if they had served in active duty military, the National Guard, or military reserves, and if they had answered yes to any, we defined them as a veteran.[10] We asked participants if they had used homeless services in the last 6 months, including shelters and free and low-cost meal programs. We asked respondents to report the age at which they first became homeless as an adult. To classify respondents who became homeless earlier or later in life, we dichotomized responses to onset of homelessness before or after turning 50.[11, 14] We asked participants if their current episode of homelessness lasted for a year or more. To assess history of physical abuse, we asked participants if anyone had ever physically assaulted them and if so, whether this happened before the age of 18 and/or aged

18 or over.[10, 11] For sexual abuse, we asked participants if anyone ever pressured or forced them to have sexual contact before the age of 18, aged 18 or later, or both.[10, 11] We asked participants if they ever were suspended from school for more than a week or ever expelled.[11, 28]

Substance Use

We used questions derived from the World Health Organization's (WHO) Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST)[28] to assess current illicit drug use. Using a lengthened timeframe of the previous 6 months to match the time interval of other instruments used in the HOPE HOME Study, we administered the ASSIST for each illicit substance, classifying substance involvement risk as lower (score 0–3), moderate (4–26), and high severity (27+).[28] We administered the WHO's Alcohol Use Disorders Identification Test (AUDIT) with a shortened timeframe of the previous 6 months compared to one year in the original instrument to assess risk and severity of current alcohol use disorders.[29] We utilized modified time frames for both the ASSIST and AUDIT for all aspects of the study to match other instruments used in the study. We categorized AUDIT scores (maximum 40) as: moderate severity (8–15), and high severity (16+).[29] We defined participants with moderate or severe specific illicit substance involvement scores (4+) as having moderate or greater severity symptoms,[29] and moderate or high severity alcohol symptoms (score >=8) as moderate or greater severity alcohol use, as these were the threshold for which providers should consider additional substance use treatment intervention.[28] As some participants met moderate severity ASSIST scores despite not consuming illicit drugs within the last 6 months, we conducted a separate analysis in which we restricted the sample to those with illicit substance use in the prior six months and recalculated percentages of participants with moderate or greater severity ASSIST scores.

To assess regular lifetime use of alcohol, cannabis, cocaine, amphetamine, inhalants, sedatives, hallucinogens, and opioids, we used questions from the National Survey of Homeless Assistance Providers and Clients (NSHAPC)[10] adapted from the Addiction Severity Index.[30] As in NSHAPC, for each substance participants reported using in their lifetime, we captured age of first regular use (defined as 3 times a week or more), years of regular use, and any use in the last 6 months.[10] For participants with regular drinking, we asked participants how many drinks they consumed in a typical day using a question modified from NSHAPC.[10] If participants drank 5 or more equivalents in a day, we classified this as binge drinking.[10] We asked participants to report if they had ever received treatment for use of alcohol or illicit substances.

Health History

Participants self-reported their health status,[31] which we dichotomized as fair or poor versus good, very good, or excellent. Based on the National Health and Nutrition Examination Survey (NHANES), we asked participants to report whether a health care provider had told them that they had diabetes, emphysema or chronic obstructive pulmonary disease (COPD), asthma, stroke, coronary artery disease or a heart attack, congestive heart failure, cirrhosis, or cancer.[32] We asked participants whether they had tested positive for HIV infection or had ever been told they had AIDS. To assess functional status, we asked participants if they had

difficulty completing individual ADLs because of a physical, mental, emotional, or memory problem using the questionnaire developed by Katz.[33]

Mental Health

We evaluated for Post-Traumatic Stress Disorder (PTSD) symptoms using the Primary Care PTSD Screen (PC-PTSD; score ≥3) and depressive symptoms using the Center for Epidemiologic Studies Depression Scale (CES-D; score ≥22) for major depressive symptoms as suggested in past studies with older adults.[34, 35] We asked participants if they had ever been hospitalized for emotional or mental health problems.

Statistical Analyses

Using logistic regression, we assessed bivariate relationships between independent variables and the two dependent variables, moderate or greater severity alcohol symptoms (AUDIT score ≥8), and moderate or greater severity symptoms for any illicit substance (ASSIST score ≥4). We dichotomized race to African American versus non-African American because there were no significant differences among white, Asian, Latino, and other participants in the odds of substance use outcomes when only these participants were included. To construct multivariate models, we selected independent variables based on bivariate relationships with $p \leq 0.20$ and performed backward stepwise elimination, retaining independent variables with multivariate $p \leq 0.05$. As a sensitivity analysis, we created an alternate model including only participants with active illicit drug use in the previous six months to examine if participants who were scored with moderate severity symptoms for the ASSIST based on significant cravings alone differed significantly from those who were actively using.

RESULTS

Sample Characteristics

HOPE HOME participants had a median age of 58 years (Table 1). Over three-quarters, 77.1%, were male, and 79.1% African American; 21.7% were veterans. Approximately a third (32.6%) had PTSD symptoms and 38.3% had major depressive symptoms; 22.3% had both depressive and PTSD symptoms. Less than a fifth (18.9%) had been hospitalized in a mental health facility in their lifetime. Nearly half (43.4%) experienced their first episode of homelessness after they turned 50 years old. Approximately two-thirds (67.1%) were homeless for at least a year. Almost a third (31.2%) had ever been suspended or expelled from school. Almost all participants (98.4%) used homeless services in the last 6 months. About a third (33.3%) experienced physical abuse as a child, while 13.2% experienced sexual abuse as a child. Approximately half (51.2%) experienced physical abuse as an adult, while 13.2% experienced sexual abuse as an adult. The majority, 55.7%, reported fair or poor health status, and 38.9% reported they were dependent in one or more ADLs.

Substance Use

Almost two-thirds of our sample, 63.1% had used an illicit substance in the last 6 months, and 64.6% had moderate or greater severity symptoms for at least one illicit drug, with 14.5% reporting severe symptoms (Table 2). Almost half, 49.2% had used alcohol in the last

6 months, while 25.8% had moderate or greater severity alcohol use, with 14.6% reporting severe symptoms. Approximately a tenth (10.3%) of HOPE HOME participants reported binge drinking and 60% drank at least three times a week to get drunk at some point in their life. For illicit drugs, the drugs most commonly used in the last 6 months included cannabis with 48.0%, cocaine with 37.7%, opioids with 7.4%, and amphetamines with 7.1%. The three most commonly reported drugs with moderate or greater severity symptoms were cocaine (43.1%), cannabis (39.1%), and opioids (12.9%). For participants with ASSIST-defined moderate or higher severity illicit drug symptoms, 91.6% had used an illicit substance in the last six months. For cannabis, 92.7% of participants with moderate or higher severity symptoms had used that specific substance in the last 6 months: 79.5% for cocaine, 67.8% for opioids, and 67.9% for amphetamines. All participants with high severity illicit drug use, and all participants with moderate or greater severity alcohol use had used in the last 6 months. A smaller proportion (5.4%) reported injecting drugs in the last 6 months. Almost a third (31.7%) reported moderate or greater severity symptoms for more than one illicit substance; 21.4% reported moderate or greater severity symptoms for both cannabis and cocaine. Less than a tenth of the sample (9.1%) used illicit non-cannabis drugs regularly, three times a week or more, prior to age 18, while 36.6% used cannabis regularly and 15.1% used alcohol regularly before age 18.

Multivariate Analysis

In multivariate models (Table 3), having been expelled or suspended from school was associated with moderate or greater severity illicit drug symptoms (AOR 3.1, 1.8–5.4), as were having a history of psychiatric hospitalization, (AOR 1.9, 1.0–3.6) and having one's first episode of adult homelessness prior to the age of 50 (AOR 1.9, 1.2–3.1). In a multivariate model examining factors associated with moderate or greater severity alcohol symptoms, expulsion/suspension from school (AOR 1.7, 1.0–2.8), male sex (AOR 2.2, 1.1–4.4) and the presence of major depressive symptoms (AOR 1.8, 1.1–3.0) were associated. Neither age, race/ethnicity, veteran status, education, PTSD symptoms, nor a history of sexual or physical abuse were associated in either model. An alternate modeling strategy that restricted moderate or greater severity illicit drug symptoms to those with active current use, as opposed to including all who met moderate severity ASSIST scores, changed adjusted odds ratios less than 10%. In the alternate model history of psychiatric hospitalization was no longer significant.

DISCUSSION

In a sample of homeless adults aged 50 and older, we found high prevalence of substance use, with 14.5% reporting severe illicit substance symptoms compared to 6% of a sample of homeless-experienced adults of all ages engaged in primary care.[36] When comparing current illicit substance use of HOPE HOME participants to a community-based sample that included homeless adults of all ages from 1996, NSHAPC, we find higher current illicit substance use, 63.1% vs. 23%.[37] Moderate or greater severity alcohol use was high, with 25.6% of patients reporting moderate or greater severity alcohol use compared to 4.6% of adults of all ages in a VA primary care clinic.[38] When comparing current binge drinking of HOPE HOME participants to NSHAPC, 10.3% of HOPE HOME participants reported binge

drinking compared to 19% of NSHAPC participants.[37] Approximately three-fifths of both HOPE HOME participants, and NSHAPC participants drank at least three times a week to get drunk at some point in their life.[37] Participants were medically complex. They reported a high prevalence of chronic conditions, ADL dependencies, and poor health status, and therefore had an elevated risk of harm from substance use.[14, 24]

Consistent with prior research, we found that psychiatric hospitalization and depression were associated with substance use.[11, 39] The association between psychiatric hospitalization and illicit substance use is likely bidirectional. Individuals with severe mental illness may be prone to develop SUDs.[39] Individuals with SUDs may exhibit severe behavioral symptoms such as hallucinations, disorganization, or aggressive behavior that may lead to psychiatric hospitalization.[5, 40] The association of depressive symptoms with moderate or greater severity alcohol symptoms, and psychiatric hospitalization with moderate or greater severity illicit drug symptoms, has clinical relevance to programs designed to address substance use in older adults. An ideal program would integrate treatment of mental health conditions with substance use disorders. There are limited numbers of geriatric psychiatrists, particularly those who work in urban underserved populations.[41] Substance use programs have traditionally targeted younger adults.[41] They may be ill-equipped to accommodate an older adult with multiple medical comorbidities and functional dependencies.

Young adult life experiences prior to age 50, specifically onset of homelessness prior to age 50, and a history of expulsion or suspension from school, were associated with participants' later substance use. Substance use may be an important cause of homelessness for younger adults.[7] In contrast, other causes such as medical illness, financial hardship, or loss of social support may be more likely to cause homelessness for adults who become homeless later in life.[14] The finding that at-risk illicit drug use is associated with a history of homelessness earlier in life is germane to public health programs seeking to prevent incident homelessness in younger adults. The only factor associated with both moderate or greater alcohol and illicit substance symptoms was a history of expulsion or suspension from school. Suspension and expulsion could be a marker of early substance use. Prior research has shown that students who attend schools that suspended or expelled for drug infractions at high rates, while controlling for substance use prevalence, were more likely to have higher prevalence of substance use at one-year follow-up.[33,34] Unintended negative consequences of suspension and expulsion include disengagement from school, loss of social support, and increased risk of arrest.[42, 43] Adults who become homeless earlier in life tend to have more early life adverse experiences such as mental health, imprisonment, and substance use.[44] It is possible that the association between suspension or expulsion from school and greater severity illicit drug and alcohol use is a reflection of the impact of early life experiences on the development of substance use later in life.

When we compare HOPE HOME participants' illicit drug use prevalence to NSHAPC, we find higher prevalence of substance use for HOPE HOME participants, despite the HOPE HOME participants reporting on a shorter duration of time (6 months versus 12 months) and all being age 50 and older (compared to only 17% of NSHAPC participants). Our primary explanation is that adults born in the baby boom have different substance use patterns than those born in prior generations. This is supported by literature in the general population.[45]

However, we cannot exclude the possibility that local differences in substance use prevalence could contribute to the observed difference. Other alternative explanations are less likely. A higher percentage of HOPE HOME participants who were age 50 and older had been homeless for a year or more compared to NSHAPC adults of all ages, 67.1% vs. 55%. However, this is unlikely to account for the difference. Other data has shown that, regardless of substance use behaviors, there is a trend in increasing duration of homelessness in the United States.[15] Another alternative explanation is that HOPE HOME included individuals who did not access or had limited contact with homeless services, and therefore had less access to treatment interventions. However, only 1.6% of HOPE HOME participants did not access any services in the last six months, meaning that this difference alone is unlikely to contribute to the differences we found in substance use prevalence.

In spite of these possible alternate explanations, we believe that the magnitude of difference suggests that illicit substance use is higher in older homeless adults than was noted twenty years ago. The older homeless population now is made up of people born in the baby boom. Contemporary older homeless participants experienced the crack cocaine epidemic in their young adult lives. Data from the general population suggests that individuals born in the baby boom have a higher prevalence of substance use than those born in previous decades.[12]

We found lower prevalence of binge-drinking in HOPE HOME participants. The younger age distribution of NSHAPC participants may be responsible for the observed differences in binge drinking, as binge drinkers are less likely to survive to late adulthood.[46]

Our study has several limitations. We were not able to account for clustering of our sample among some sites as we did not have accurate counts of numbers of unique visitors at each site. We do not consider recruitment sites to be clusters because of the mobility of the population and the tendency of participants to frequent multiple venues of recruitment. Given that our sample was predominantly African American, and had a narrow age range, we were not powered to examine use by race and ethnicity, or age. A potential concern with usage of the ASSIST is that some participants were classified as having moderate severity illicit drug symptoms despite not having used that particular substance in the last 6 months, i.e. participants with remote use but active cravings for an illicit substance. The ASSIST is designed to identify patients at risk of harm from substance use and in most need of intervention. We chose to include these participants in our modelling strategy as identifying participants with moderate or greater ASSIST scores is clinically relevant. However, one variable, history of psychiatric hospitalization, was no longer significant when excluding those without active use.

With high prevalence of substance use in older homeless adults, there is increasing evidence of negative effects of substance use. When the median age of the homeless population was younger, the majority of substance use-related mortality in the homeless population occurred in younger homeless adults.[47–50] However, between 2003 and 2008, older homeless adults' mortality attributed to illicit drugs approached that of younger adults and older homeless adults' mortality attributed to alcohol exceeded that of younger adults.[51] Older homeless adults are more likely to utilize inpatient health care as a result of SUDs: older homeless adults visit the Emergency Department for substance use at similar rates as younger

homeless adults, but older homeless adults are more likely to be admitted.[5] Older homeless adults with SUDs interact frequently with the health care system, yet there are inadequate numbers of substance use and mental health treatment providers who have the expertise in treating older adults to meet the demand for services.[40] Older substance-using homeless adults will challenge both homeless services and substance use treatment programs, which have traditionally targeted younger adults and may be unprepared to deliver treatment to older adults with co-morbid conditions such as cognitive impairment or ADL difficulties.[40] Many shelters exclude participants with active substance use, requiring sobriety as a condition for entrance.[40] The high prevalence of chronic illness and functional disabilities of older homeless adults will increase the likelihood they will need services from long term care facilities, but some facilities exclude older adults with SUDs or do not have sufficient SUD treatment resources.[40] Providers that provide care to older homeless adults should screen for substance use and follow positive screens with brief interventions and referral to treatment. Long term care facilities that care for homeless clients will need resources for treatment of substance use. Long term care facilities, such as skilled nursing facilities, should reevaluate policies that exclude older adults with substance use given the need for services for this high risk population. Given the shortage of geriatric substance use and mental health providers, policymakers seeking to address substance use in homeless adults will need to provide incentives for expansion of training programs for geriatrics, geriatric psychiatry, and geriatric addiction medicine. Given the health risks of continued substance use, the low prevalence of treatment of older homeless adults with SUDs, and the rising proportion of mortality of older homeless adults attributable to substance use,[51] older homeless adults will benefit from targeted treatment programs and geriatric substance use workforce development.

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Table 1

Demographic characteristics of the HOPE HOME study population (N=350)

Characteristic	Total: %
Age	
50–54	29.1
55–59	33.4
60–64	25.4
≥65	12.0
Male Sex	77.1
Race and Ethnicity	
African American	79.1
White	10.9
Latino	4.6
Mixed/other	0.9
Currently married or partnered	4.9
Completed high school degree or General Education Development (GED) certificate	74.0
Veteran	21.7
Health Status	
Fair or poor *	55.7
Difficulty with 1 or more activities of daily living (ADL) †	38.9
Chronic health conditions ‡	
Diabetes mellitus	14.0
Stroke	11.2
Cancer	6.0
Coronary artery disease or myocardial infarction	9.1
Congestive heart failure	7.1
Asthma or chronic obstructive pulmonary disease (COPD)	19.1
Cirrhosis	2.6
Human immunodeficiency virus (HIV) infection	5.5
Use of homeless services in last 6 months	98.6
Mental health status	
Current major depressive symptoms §	38.3
Current post-traumatic stress disorder (PTSD) symptoms **	32.6
Ever hospitalized for psychiatric symptoms	18.9
Life course events	
First episode of homelessness age <50	56.6
Ever suspended or expelled from school	31.2
Physical abuse as an adult (age ≥18)	51.2
Sexual abuse as an adult (age ≥18)	13.2

Characteristic	Total: %
Physical abuse as a child (age <18)	33.3
Sexual abuse as a child (age <18)	13.2

[*] Health status assessed by self-reported general health using Ware, et al. 1-item health screen

[†] Activities of Daily Living assessed by self-report of difficulty dressing, bathing/showering, eating, getting in/out of bed, using the toilet

[‡] Comorbid conditions assessed by self-report of having received a diagnosis from a physician

[§] Major depressive symptoms defined as a Center for Epidemiologic Studies Scale score of ≥22 (range, 0–60; higher scores indicate more problems)

[**] Post-traumatic stress disorder symptoms defined as experiencing ≥3 out of 4 symptoms on the Primary Care PTSD Screen

Table 2

Current moderate or greater severity use by substance, N=350

Substance	Moderate Severity,* %	High Severity†, %	Total, %
Any illicit drug	50.1	14.5	64.6
Alcohol	11.2	14.6	25.8
Cocaine	32.3	10.9	43.1
Opioid	10.3	2.6	12.9
Amphetamine	6.6	1.4	8.0
Cannabis	38.3	0.9	39.1
Sedative	2.5	0	2.5
Hallucinogen	1.4	0	1.4
Inhalant	1.2	0	1.2

*Moderate severity illicit drug symptoms defined as Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) score ≥4 and ≤26. Moderate severity alcohol use defined as Alcohol Use Disorders Identification Test (AUDIT) score ≥8 and ≤15.

†High severity illicit drug symptoms defined as ASSIST score ≥27. High severity alcohol use defined as Alcohol Use Disorders Identification Test (AUDIT) score ≥16

Table 3

Factors associated with moderate or greater severity illicit drug and alcohol use, N=348 of 350 for illicit drug model and 342 of 350 for alcohol model

	Moderate or greater severity illicit drug symptoms*		Moderate or greater severity alcohol symptoms†	
	Unadjusted Prevalence, %	**Multivariate OR (95% CI)**	**Unadjusted Prevalence, %**	**Multivariate OR (95% CI)**
Overall	64.6	-	25.8	-
Age Categories				
50–54	77.5	-	27.5	-
55–59	49.6	-	28.2	-
60–64	46.7	-	20.5	-
≥65	44.5	-	26.2	-
Male Sex	72.0	-	41.9	**2.2 (1.1–4.4)**
Race/ethnicity				
African American	65.3	-	26.4	-
Non-African American	63.9	-	25.2	-
Education				
No high school or General Education Development (GED) degree	73.5	-	32.2	-
Ever suspended/expelled from school	86.6	**3.1 (1.8–5.4)**	41.6	**1.7 (1.0–2.8)**
Veteran	63.3	-	34.2	-
First homeless age<50	81.3	**1.9 (1.2–3.1)**	30.0	-
Abuse				
Child sexual abuse‡	76.9	-	31.8	-
Adult sexual abuse§	62.9	-	16.5	-
Child physical abuse‡	62.9	-	27.5	-
Adult physical abuse§	76.8	-	26.2	-
Mental health problems				
Major depressive symptoms**	72.0	-	40.3	**1.8 (1.1–3.0)**
Post-traumatic stress disorder (PTSD) symptoms††	75.0	-	36.5	-
Ever hospitalized for psychiatric symptoms	81.1	**1.9 (1.0–3.6)**	23.8	-

*Defined as Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) score ≥4

†Defined as Alcohol Use Disorders Identification Test (AUDIT) score ≥8

‡Child abuse defined as abuse occurring at age<18

§Adult abuse defined as abuse occurring at age≥18

** Major depressive symptoms defined as a Center for Epidemiologic Studies Scale score of ≥22 (range, 0–60; higher scores indicate more problems)

†† Post-traumatic stress disorder symptoms defined as experiencing ≥3 out of 4 symptoms on the Primary Care PTSD Screen