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Comparison of Homeless and Non-Homeless Problem Drug Users Recruited from Primary Care Safety-Net Clinics

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Abstract

Introduction—The present study of homeless non-treatment-seeking problem drug users was designed to complement and extend previous studies which focused exclusively on treatment-seeking homeless problem drug users.

Method—Data were available for 866 primary care patients with drug problems, 30% homeless and 70% housed.

Results—In the 2 years prior to baseline, homeless participants had less chronic medical co-morbidity than problem drug users who were housed yet were significantly more likely to have used emergency department services, to have used them more frequently, and at higher cost. Compared to their housed counterparts, homeless participants were also more likely to have been admitted to specialized chemical dependency treatment and/or detoxification services, to have been arrested for a felony or gross misdemeanor, and to report having psychiatric problems in the prior 30 days.

Conclusions—Additional support may be necessary for homeless patients presenting in primary care to benefit from substance abuse treatment given their more severe drug use problems coupled with their co-morbid health, psychiatric, and psychosocial problems.

Keywords

Homeless; medical service utilization and costs; arrests; mental health problems; primary care

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1. Introduction

Drug abuse among homeless adults is well-documented with evidence that substance use disorders and poverty are reliable predictors of first-time homelessness (Thompson, Wall, Greenstein, Grant, & Hasin, 2013). Although there is limited information about homelessness among problem drug users, available evidence suggests about a third of persons seeking substance abuse treatment are homeless at admission (Eyrich-Garg, Cacciola, Carise, Lynch, & McLellan, 2008; Orwin, Scott, & Arieira, 2005), and that those homeless at admission report more serious alcohol and/or drug problems (Eyrich-Garg et al., 2008; Kertesz et al., 2005; Orwin et al., 2005), more serious consequences of their alcohol/drug use (Kertesz et al., 2005), more frequent emergency department visits (Kertesz et al., 2005), higher likelihood of having been treated in an ED (Kemp, Neale, & Robertson, 2006), lower levels of social/family support (Eyrich-Garg et al., 2008; Kemp et al., 2006; Orwin et al., 2005), and more legal problems (Orwin et al., 2005) than their housed counterparts. Evidence for mental health problems in homeless individuals seeking substance abuse treatment is mixed with Eyrich-Garg et al. (2008) and Kertesz et al. (2005) reporting more mental health problems in homeless samples and Orwin et al. (2005) reporting no difference in psychiatric severity between homeless and non-homeless individuals in their study.

Previous studies of homelessness among problem drug users have been based on samples seeking substance abuse treatment. It is not known whether persons with problem drug use who are not seeking treatment would have similar characteristics. The present study was designed to address this gap by studying the socio-demographic characteristics, health status, service utilization, and criminal justice involvement of non-treatment seeking homeless problem drug users recruited from safety net primary care clinics. This information may be relevant in the context of the Affordable Care Act (ACA), with its emphasis on person-centered care and expectations for better outcomes and reduced costs for patients with comorbid conditions including those with the combination of problem drug use, poverty, and homelessness (Kaiser Commission on Medicaid and the Uninsured, 2014). As such, it is hoped that the present study will provide descriptive information about this complex population that may inform the planning and delivery of their care.

2. Methods

2.1. Participants

This study is a secondary analysis of a large randomized controlled trial designed to examine the impact of brief interventions for problem drug use in a primary care setting (Roy-Byrne et al., 2014; Krupski et al., 2012) and is based on baseline data for the 868 individuals who participated in the larger trial. A total of 866 had complete data for the analyses reported here. Participants were recruited between April 2009 and September 2012 from 7 primary care clinics in a safety-net medical system in Seattle, Washington. Participants were adults aged 18 and older who acknowledged using an illegal drug or a prescription medication for nonmedical reasons at least once in the 3 months prior to screening. To be included in the study, they needed to be currently receiving care in the primary care clinic and planning to continue such care for the next year; to be English-speaking; to be able to read and understand screening and consent forms (6th grade literacy); and to have phone or e-mail

access in order to facilitate scheduling follow-up assessments. Exclusion criteria included attending formal substance abuse treatment in the past month (excluding self-help groups such as Narcotics Anonymous), being at high suicide risk, having a current life-threatening medical illness, severe cognitive impairment, or active psychosis. Patients representing the full range of drug use, abuse, and dependence were included. All participants gave written informed consent and received a $25 gift card for completing baseline study procedures. The study was approved by the University of Washington Institutional Review Board and an independent Data and Safety Monitoring Board.

2.2. Measures

Self-report measures included the Drug Abuse Screening Test (DAST-10) (Skinner, 1982), the Addiction Severity Index Lite (ASI) (Cacciola, Alterman, McLellan, Lin, & Lynch, 2007), the Treatment Services Review (TSR) (Cacciola et al., 2008), and standard demographic information. We used the DAST-10 as a measure of drug use severity. The ASI was used to assess type and frequency of drug use, intravenous drug use, as well as frequency of alcohol and nicotine use. The ASI composite scores were used as measures of problem severity for the domains of drug use, alcohol use, psychiatric status, family/social relations, and legal involvement. The TSR provided us with the measure of homelessness. Of the 868 individuals with problem drug use recruited from primary care, 30.4% were found to be homeless at baseline with homelessness defined as spending one or more days in the previous 90 days either living on the streets, in an abandoned building, in a car, or in a shelter. Homeless persons so identified spent a mean of 60.6 days homeless in the previous 90 (Standard deviation [SD]=30.1) and the median number was 71.0 days.

Administrative records including state chemical dependency (CD) treatment records, felony and gross misdemeanor arrest records from the Washington State Patrol, and medical costs and utilization (including emergency department (ED) visits, inpatient hospital admissions, and outpatient medical visits) from encounter and billing records maintained by the safety-net medical center where the study took place were also used. Number of chronic conditions for each participant was derived using International Classification of Diseases version 9 (ICD-9) codes from medical records and the Chronic Illness and Disability Payment System (CDPS) (Kronick, Gilmer, Dreyfus, & Lee, 2000). Data were available for the 2 years prior to baseline for all administrative measures.

2.3. Analysis

We used summary statistics to characterize the distribution of homelessness in study participants. Bivariate analyses were conducted to compare homeless to housed participants. We examined differences in demographic, medical, psychiatric, substance use/treatment and other psychosocial characteristics. Statistical tests consisted of independent sample t-tests (for continuous data with parametric distributions), Wilcoxon/Mann-Whitney tests (for continuous data with non-parametric distributions), and chi-square tests (for categorical data). Statistical significance was evaluated at the 0.05 level.

3. Results

Demographic characteristics, substances used, chemical dependency treatment utilization, and other psychosocial characteristics of homeless and non-homeless subgroups are summarized in Table 1. Persons in the homeless subgroup were predominantly male (82.5%) and somewhat less educated than their housed counterparts. Homeless participants also had higher drug use severity than non-homeless participants as measured by DAST-10 scores. This was also reflected in their greater likelihood of using stimulants (cocaine, amphetamines), alcohol, and nicotine as well as higher ASI drug and alcohol composite scores. They were less likely to use marijuana. In the 2 years prior to study enrollment, homeless participants were more likely to have been admitted to chemical dependency treatment and/or detoxification services not followed by an admission to treatment. Homeless participants also had more involvement with the criminal justice system in the two years prior to study enrollment than non-homeless participants with a higher likelihood of being arrested for a felony or gross misdemeanor and also having higher ASI composite scores (indicating more severe problems) in the legal domain.

Data summarized in Table 2 indicate that homeless participants differed from their housed counterparts in their use of ED and outpatient medical services but not in the use of inpatient medical services. A higher percentage used ED services, had significantly more ED visits, and accrued significantly higher ED costs for these services. At the same time, they used outpatient medical services less intensively and at less cost although the overall percent using outpatient medical services was similar to the percent of non-homeless individuals using such services. Medicaid (38%), Medicare (27%), or unsponsored/uncompensated care (31%) paid for these episodes of care with only 4% covered by a commercial payer.

Homeless participants were not more likely to have a psychiatric diagnosis in the medical record nor were they more likely to have been prescribed a psychiatric medication in their lifetime compared to their housed counterparts. They did, however, have higher ASI psychiatric composite scores, indicating more severe problems in the psychiatric domain in the last 30 days, and also were less likely to have been prescribed psychiatric medication in the last 30 days

Data summarized in Table 3 indicate that homeless participants had a significantly lower average number of chronic medical comorbidities (6.9) than their non-homeless counterparts (7.6) as indicated by the CDPS and illustrated by the smaller proportion of persons in the homeless subgroup having specific diagnoses of chronic illnesses in their medical record.

There were no significant differences between homeless and non-homeless participants in the proportion who died in the year after enrollment in the study, 2.3% versus 1.9% (n=6 versus n=11, p=0.67), respectively.

4. Discussion

Previous studies of homelessness among problem drug users have been based on samples seeking substance abuse treatment. A question of the present study was whether a non-treatment-seeking sample of problem drug users recruited from primary care would have

similar characteristics to those reported in the literature for treatment-seeking samples. Results suggested a number of similarities. For example, ours and previous studies report about 1/3 of persons with problem drug use to be homeless (Eyrich-Garg et al., 2008; Kemp et al., 2006; Orwin et al., 2005) and also report the homeless subgroup to have more serious alcohol and/or drug problems (Eyrich-Garg et al., 2008; Kemp et al., 2006; Orwin et al., 2005), more frequent emergency department visits (Kertesz et al., 2005) as well as a higher likelihood of receiving ED services (Kemp et al., 2006), and more legal problems (Orwin et al., 2005). Thus, in a number of important respects, treatment-seeking and non-treatment seeking primary care samples appear similar. At the same time, we found a number of characteristics of homeless problem drug users not discussed in previous studies and, as such, were able to expand upon previous reports.

Previous studies have reported mixed findings on the extent of mental health problems in problem drug users seeking treatment who were also homeless, with some reporting problems (Eyrich-Garg et al., 2008; Kertesz et al., 2005) and others not (Orwin et al., 2005). In our primary care sample, we found over 70% of participants, whether homeless or not, had been prescribed psychiatric medication at some time in their lives. Similarly, close to 60% of all participants, whether homeless or not, had one or more psychiatric diagnoses in the medical record. Neither of these variables significantly differentiated homeless and non-homeless subgroups but, instead, suggested that mental health problems were characteristic of the majority of participants in our study. Subgroups did differ on two mental health measures, both captured for the last 30 days: the homeless subgroup had a higher ASI psychiatric composite score than the housed subgroup, suggesting more serious self-reported mental health problems in the last 30 days. The homeless subgroup was also less likely to report having been prescribed psychiatric medication in the last 30 days. One possible explanation for this finding is that the living circumstances of the homeless population interfered with their ability to access to psychiatric medication. If this were the case, it could explain why they may have been experiencing more serious mental health problems than their housed counterparts. Higher rates of untreated mental illness in the homeless population could lead to more serious self-reported mental health problems.

By most standards, both housed and homeless problem drug users in the present study were seriously ill, with individuals in both subgroups having a mean of almost 7 or more chronic health conditions. To put this finding in context, the average Medicaid disabled beneficiary has 2 chronic conditions (Kronick et al., 2000). Although all had serious medical conditions, we found homeless problem drug users to have fewer chronic medical conditions and, as such, to be somewhat healthier than their housed counterparts and to have significantly different patterns of medical service utilization. Despite being somewhat healthier, persons in the homeless subgroup were more likely to seek care for their medical problems in the ED (similar to reports by Kertesz et al. [2005] and Kemp et al. [2006]) and to use outpatient medical care less intensively, resulting in higher mean ED costs and lower outpatient medical costs than housed problem drug users. These costs were borne almost exclusively by public dollars. Clearly, an implication of these findings is that more intensive use of outpatient medical care, especially coordinated and person-centered care, would be more consistent with the intent of the ACA and, as such, may lead to a greater likelihood of

achieving its goals of reduced costs and improved outcomes (Kaiser Commission on Medicaid and the Uninsured, 2014).

Others have suggested that more frequent ED use in homeless individuals is a result of poor access to primary medical care which, in turn, results in failure to address preventable illness and injury (Tsai, Doran, & Rosenheck, 2013). However, in the present study, all participants were accessing primary care and thus were, by definition, not experiencing barriers to such care yet were still frequent users of ED services. Tsai and colleagues (Tsai et al., 2013; Tsai & Rosenheck, 2013) found similar patterns of ED use among homeless veterans despite their having full access to ambulatory health care. In the Tsai et al. (2013) and Tsai and Rosenheck (2013) studies, frequent use of ED services was associated with greater psychiatric and medical conditions. Given that homeless problem drug users in the present study also reported experiencing more current mental health problems than their non-homeless peers, this could be a possible explanation for their more frequent ED use and suggests the need for specialized mental health services tailored to this population. An implication of these finding is suggested by Tsai et al (2013) who point out that EDs may serve as an important location for specialized homeless outreach services to address mental health and addictive disorders.

Like Orwin et al. (2005), we found homeless drug users to have more severe problems in the legal domain (as measured by the ASI legal composite score) than their more stably-housed peers. In addition, we found problem drug users who were homeless more likely to have been arrested for a gross misdemeanor or felony in the two years prior to study enrollment compared to their housed counterparts. Felony and gross misdemeanors are serious crimes and can include controlled substance charges, robbery, theft, burglary and the like. As such, our result is in contrast with the view of homeless individuals as typically being arrested for relatively minor transgressions such as panhandling, public intoxication, and squatting rather than for more serious crimes (e.g., de Vet et al., 2013). It is possible that the higher likelihood of arrest for serious offences among homeless participants in the present sample may be related to their pattern of drug use, i.e., greater use of stimulants such as cocaine and amphetamines relative to their non-homeless counterparts, and/or a reflection of their attempts to meet their survival needs (Fischer, Shinn, Shrout, & Tsemberis, 2008).

In the 2 years prior to baseline, homeless participants were more likely to have been admitted to CD treatment than housed participants, with almost a quarter being admitted one or more times. Homeless participants were also more likely to have received detoxification services not associated with a treatment admission than housed participants during this same period. A higher likelihood of CD treatment and/or detoxification admissions is not surprising given the more severe drug problems among homeless participants. However, the observation that they continued to display severe drug problems following participation in CD treatment suggests that they may require additional support to that offered in traditional CD treatment (Ibabe, Stein, Nyamathi, & Bentler, 2014). In addition to severe drug problems, acute mental health problems coupled with housing instability and criminal justice involvement may complicate homeless participants' ability to comply with treatment protocols. An implication of these observations is that homeless problem drug users may

benefit from case management/care coordination as well as specific help with housing and specialized mental health treatment.

4.1. Strengths and Limitations

Strengths of this study include the large non-treatment seeking sample (n=868) drawn from primary care. There are also limitations. First, our study design does not allow us to determine whether the associations between homelessness and certain patient characteristics, such as drug use, were causal in nature. We are not able to rule out the possibility that observed or unobserved differences between the homeless and non-homeless participants confounded the associations we observed. Our study was an initial exploration of whether previous findings might apply to a non-treatment-seeking sample. As such we emphasize that our results are best viewed as a rich source of hypotheses for the design of future studies rather than being definitive. Second, we did not have information about how many days participants were homeless in their lifetime and as such, were not able to examine how length of homelessness may have been related to the variables we studied. Third, data were collected in a safety-net setting so results may not generalize to other settings. The prevalence of homelessness is likely to be higher in our setting than in others, while the gap between homeless and not homeless might be smaller. Fourth, limitations associated with death records include the fact that deaths that occur out-of-state will not appear in state death records. Finally, the relatively short follow-up period may have limited our ability to detect group differences in deaths.

5. Conclusions

The present study of homelessness among problem drug users recruited from primary care was designed to complement and extend previous studies based on homeless problem drug users seeking substance abuse treatment. Results suggested the primary care sample was similar to treatment-seeking samples in the proportion homeless, about 30% in both cases, with the homeless subgroup having more serious alcohol/drug and legal problems. On the other hand, our findings related to mental health, patterns of medical care utilization, arrests, and CD treatment expand upon previous studies. Despite having fewer chronic medical conditions than their non-homeless counterparts, a higher proportion of homeless participants used EDs, used them more intensively, and at higher cost while using outpatient medical services less intensively despite having full access to them—an expensive medical utilization pattern which is also inconsistent with the goals of the ACA. They also continued to display severe drug problems even though almost a quarter participated in CD treatment in the 2 years prior to baseline. Taken together, these findings suggest that homeless problem drug users may require additional support to that offered in traditional CD treatment, a conclusion also suggested by others (Ibabe et al, 2014; Onyeka et al, 2013). In addition to severe drug problems, homeless participants' acute mental health problems coupled with housing instability and criminal justice involvement may complicate their ability to comply with treatment protocols. As such, they may benefit from case management/care coordination especially in relation to their medical problems as well as from specific help with housing and specialized mental health treatment.

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Highlights

- 30% of primary care patients with drug problems were homeless
- Almost 27% of these homeless patients had a felony or gross misdemeanor arrest compared to 9% of housed patients over a 2-year period
- Homeless patients averaged 5.7 emergency department visits compared to housed patients who averaged 3.1 visits over a 2-year period
- 24% of homeless and 15% of housed patients had been admitted to chemical dependency treatment over a 2-year period
- Additional support may be necessary for homeless patients to benefit from substance abuse treatment

Table 1

Baseline demographic characteristics, substances used, chemical dependency treatment utilization, and other psychosocial characteristics of all participants (overall) and by homeless status.

Characteristics	Overall (n=866)	Homeless Status [a]		*p*-Value [b]
		Homeless (n=263)	Not Homeless (n=603)	
Demographics				
Age, mean in years (SD)	47.8 (10.9)	47.6 (9.7)	47.9 (11.4)	0.69
Male	69.6%	82.5%	64.0%	**<0.001**
Race category				0.26
White	45.0%	43.2%	45.7%	
Black	37.5%	41.3%	35.8%	
Other	17.6%	15.4%	18.5%	
Hispanic	8.3%	8.4%	8.3%	0.94
Marital status				**<0.001**
Married/living with partner	18.6%	5.7%	24.3%	
Divorced/separated/widowed	40.1%	52.5%	34.6%	
Never married	41.3%	41.8%	41.1%	
Education				**<0.001**
Some high school or less	19.1%	22.5%	17.6%	
High school graduate	29.3%	36.3%	26.2%	
Beyond high school	51.7%	41.2%	56.2%	
Employment status				**<0.001**
Working	9.0%	3.8%	11.3%	
Unemployed/retired/in school/homemaker/other	27.5%	31.7%	25.7%	
Disabled and unable to work	63.5%	64.5%	63.0%	
ASI employment composite score, mean (SD) [c]	0.79 (0.23)	0.88 (0.16)	0.75 (0.24)	**<0.001**
Substances Used				
ASI days used, most frequently used drug, mean (SD) [e]	13.8 (11.0)	12.1 (10.6)	14.6 (11.1)	**0.003**
ASI Drug Use composite score, mean (SD) [c]	0.11 (0.10)	0.14 (0.11)	0.10 (0.10)	**<0.001**
ASI drug use, any in past 30 days [e, f]				
Marijuana	76.0%	66.5%	80.1%	**<0.001**
Stimulants	44.3%	58.2%	38.3%	**<0.001**
Cocaine	39.2%	52.9%	33.2%	**<0.001**
Amphetamines	8.8%	12.2%	7.3%	**0.02**
Opiates	27.1%	29.7%	26.0%	0.27
Heroin	9.1%	11.0%	8.3%	0.20
Other opiates/analgesics non-prescribed [g]	23.1%	24.3%	22.6%	0.57
Sedatives/hypnotics/tranquilizers	12.5%	14.8%	11.4%	0.17
Other drugs [e,h]	6.2%	5.7%	6.5%	0.67
2 or more drugs used in past 30 days [e]	75.2%	76.8%	74.5%	0.46

Characteristics	Overall (n=866)	Homeless Status [a]		p-Value [b]
		Homeless (n=263)	Not Homeless (n=603)	
Intravenous drug use in past 30 days	34.5%	38.8%	32.7%	0.08
DAST-10 score, mean (SD)	4.26 (2.52)	5.5 (2.6)	3.7 (2.3)	**<0.001**
ASI Alcohol Use composite score, mean (SD)	0.15 (0.20)	0.20 (0.24)	0.12 (0.18)	**<0.001**
ASI alcohol use, any in past 30 days	68.8%	74.1%	66.5%	**0.03**
Nicotine use, any in past 30 days	71.5%	79.1%	68.0%	**<0.001**
CD Treatment Utilization				
Admitted to CD treatment	17.3%	23.6%	14.5%	**<0.001**
Detoxification (not followed by CD treatment)	7.6%	14.7%	4.4%	**<0.001**
Other Psychosocial				
Arrests for felony or gross misdemeanor [d]	14.4%	26.6%	9.0%	**<0.001**
ASI Family/Social composite score, mean (SD) [c]	0.17 (0.22)	0.17 (0.21)	0.17 (0.22)	0.37
ASI Legal composite score, mean (SD) [c]	0.06 (0.13)	0.08 (0.16)	0.05 (0.12)	**<0.001**

Note: Data are reported as % of participants unless otherwise indicated. Missing values are excluded from the denominator.

ASI = Addiction Severity Index; CD = chemical dependency; CDPS = Chronic Illness and Disability Payment System; DAST-10 = Drug Abuse Screening Test 10-item; ICD-9 = International Classification of Diseases Ninth Revision; SD = Standard Deviation.

[a] At baseline; homeless defined as spending one or more days in the previous 90 either living on the streets, in an abandoned building, in a car, or in a shelter.

[b] Statistical tests consisted of independent sample t-tests (for continuous data with parametric distributions), Wilcoxon/Mann-Whitney tests (for continuous data with non-parametric distributions), and chi-square tests (for categorical data).

[c] ASI composite scores range from 0 to 1, with 1 indicating greatest problem severity.

[d] Administrative data available for 846 participants in the 1 year prior to enrollment.

[e] Excludes use of alcohol or nicotine.

[f] ASI drug use groups reported are not mutually exclusive.

[g] Includes use of non-prescribed methadone.

[h] "Other drugs" can include all other abused medications (e.g., antihistamines, antidepressants) or drugs of abuse (e.g., hallucinogens) that do not fall in the existing categories.

Table 2

Baseline medical and psychiatric characteristics of all participants (overall) and by homeless status

Characteristics	Overall (n=866)	Homeless Status[a]		p-Value [b]
		Homeless (n=263)	Not Homeless (n=603)	
Medical [c]				
Emergency department				
% with any use	62.2%	74.1%	56.9%	**<0.001**
Mean visits (SD)	4.0 (4.8)	5.7 (6.8)	3.1 (2.8)	**<0.001**
Median visits	3.0	3.0	2.0	
Mean cost (SD)	$2,161.35 ($2,789.18)	$2,870.01 ($3,245.44)	$1,753.97 ($2,401.59)	**<0.001**
Median cost	$1,186.27	$1,641.92	$1,006.36	
Outpatient medical				
% with any use	92.0%	90.0%	92.8%	0.16
Mean visits (SD)	20.6 (17.8)	14.1 (14.1)	23.3 (18.5)	**<0.001**
Median visits	16.0	9.0	19.0	
Mean cost (SD)	$7,748.58 ($9,050.03)	$4,779.77 ($5,232.82)	$9,020.15 ($9,997.31)	**<0.001**
Median cost	$5,146.03	$3,296.69	$6,651.70	
Inpatient medical				
% with any admissions	26.7%	31.3%	24.7%	**0.05**
Mean admissions (SD)	1.6 (1.2)	1.5 (1.0)	1.7 (1.2)	0.78
Median admissions	1.0	1.0	1.0	
Mean cost (SD)	$22,531.65 ($38,692.53)	$16,972.16 ($19212.31)	$25,637.29 ($45,902.91)	0.56
Median cost	$9,507.56	$9,749.46	$9,390.72	
No. of Chronic Illness and	7.7	9.9	6.8	0.12
Disability Payment System diagnosis categories				
Psychiatric				
ASI Psychiatric Status composite score, mean (SD) [d]	0.38 (0.24)	0.42 (0.23)	0.36 (0.24)	**<0.001**
≥1 Mental illness ICD-9 diagnosis code [c]	63.8%	59.5%	65.8%	0.08
Prescribed medication for psychological or emotion problems, lifetime	71.3%	70.7%	71.5%	0.82
Prescribed medication for psychological or emotional problems, last 30 days	49.3%	43.5%	51.7%	**0.03**

Note: Data are reported as % of participants unless otherwise indicated. Missing values are excluded from the denominator.

ASI = Addiction Severity Index; ICD-9 = International Classification of Diseases Ninth Revision; SD = Standard Deviation.

[a] At baseline; homeless defined as spending one or more days in the previous 90 either living on the streets, in an abandoned building, in a car, or in a shelter.

[b] Statistical tests consisted of independent sample t-tests (for continuous data with parametric distributions), Wilcoxon/Mann-Whitney tests (for continuous data with non-parametric distributions), and chi-square tests (for categorical data).

[c] Administrative data available for 846 participants in the 1 year prior to enrollment.

[d] ASI composite scores range from 0 to 1, with 1 indicating greatest problem severity.

Table 3

Chronic Disability and Payment System (CDPS) diagnoses by homelessness.

	Homeless (n=259)	Not homeless (n=587)	*p*-Value
Number of diagnostic categories, mean (SD)[a]	6.95 (3.91)	7.62 (3.70)	**<0.001**
Diagnostic category type[a], %			
Cardiovascular	54%	63%	**0.01**
Skeletal	60%	65%	0.12
Nervous	57%	65%	**0.03**
Pulmonary	66%	61%	0.18
Gastrointestinal	53%	61%	**0.03**
Diabetes	20%	23%	0.34
Skin	65%	60%	0.25
Renal	29%	31%	0.54
Cancer	9%	18%	**<0.001**
Metabolic	38%	54%	**<0.001**
Genital	21%	28%	**0.04**
Eye	17%	19%	0.51
Ear	10%	11%	0.76
Cerebrovascular	5%	6%	0.52
Infectious disease	45%	45%	0.89
Blood	17%	20%	0.37

Note: The *p*-values presented in bold indicate a statistically significant difference.

[a]Diagnostic categories are based on the Chronic Disability and Payment System classification system.