Health Outcomes of Obtaining Housing Among Older Homeless Adults

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Abstract

Objectives—To determine the impact of obtaining housing on geriatric conditions and acute care utilization among older homeless adults.

Methods—We conducted a 12-month prospective cohort study of 250 older homeless adults recruited from shelters in Boston, Massachusetts between January and June 2010. We determined housing status as reported at the follow-up interview. We examined 4 measures of geriatric conditions at baseline and 12 months: independence in activities of daily living and instrumental activities of daily living, depressive symptoms, and symptoms of urinary incontinence. We determined number of emergency department visits and hospitalizations over 12 months by medical record review. We used multivariate regression models to evaluate the association between obtaining housing and our outcomes of interest.

Results—At 12 months, 41% of participants had obtained housing. Compared to participants who remained homeless at follow-up, those with housing had fewer depressive symptoms. Other measures of health status at follow-up did not differ by housing status. Participants who obtained housing had a lower rate of acute care utilization over the follow-up period (IRR, 0.5; 95% CI, 0.4–0.6), with an adjusted annualized rate of acute care visits of 2.5 per year (95% CI, 1.7–3.3) among participants who obtained housed and 5.3 per year (95% CI, 3.8–6.7) among participants who remained homeless.

Conclusions—Older homeless adults who obtained housing experienced improved depressive symptoms and reduced acute care utilization compared to those who remained homeless.

INTRODUCTION

Over the past 2 decades, the proportion of the homeless population aged 50 and older has increased substantially. In 1990 only 11% of single homeless adults were aged 50 and older, but this percentage had increased to 32% by 2003[1] and is nearly 50% today.[2] Homeless adults aged 50 and older have distinct health problems from younger homeless adults, including higher rates of medical comorbidities[3] and of geriatric conditions such as functional and cognitive impairment.[4,5] Because homeless adults in their 50s develop medical and geriatric conditions at rates typical of adults 15–20 years older in the general population,[4,5] experts consider homeless adults to be elderly at age 50, 15 years earlier than housed adults.[4,6]

Among elderly adults who have geriatric conditions, environmental factors play a critical role in maximizing and maintaining independence. Older adults who live in a stable housing environment may be able to adapt to geriatric impairments more easily and maintain their independence longer than those who lack these advantages.[7,8] In contrast, older adults who live in shelters or on the street may encounter great difficulty in modifying their environment to accommodate functional impairments and other geriatric conditions.[9] Moreover, adaptive equipment used to cope with impairments – such as glasses, hearing aids, or walkers – may be lost or stolen. This mismatch between an older homeless person's

environment and their abilities may magnify the negative effect of geriatric conditions on their quality of life and ability to function independently, leading to the premature need for costly long-term care.[9,10]

Experts have hypothesized that access to housing could ameliorate high rates of disability and other geriatric conditions among older homeless persons and prevent or delay institutionalization.[9] Studies of the adult homeless population support the putative health benefits of housing, having found decreased rates of acute care utilization after housing is received.[11–13] However, little is known about the impact of housing on the unique health concerns of older homeless adults, including the geriatric conditions that play a key role in health and quality of life.

Therefore, we conducted a prospective cohort study of 250 older homeless adults in Boston, Massachusetts. We previously described the high prevalence of geriatric conditions at baseline in this cohort.[5] The goal of this study was to determine if obtaining housing was associated with subsequent improvements in health status and geriatric conditions and decreased acute care utilization.

METHODS

Design overview

We conducted a 12-month prospective study of a cohort of older homeless adults living in Boston.[5] We interviewed participants at baseline and 12 months, and we reviewed medical records to determine use of acute care services in the intervening year.

Setting and participants

We recruited participants between January and June 2010 from 8 homeless shelters in Boston serving 50 or more single adults daily. We selected shelter clients from bed lists or meal lines using systematic random sampling. Sampled clients were invited to participate if they were at least 50 years old, currently homeless, able to communicate in English, and able to provide written informed consent. We defined homelessness as living in an emergency or transitional shelter, a place not meant for human habitation,[14] or "doubled-up," i.e., forced to stay in another person's housing due to loss of housing or economic hardship. Clients were excluded if they were visibly intoxicated or screened positive for delirium.[15] At study enrollment and at 12 months, participants completed in-person interviews.

We used information provided at baseline to re-contact participants for follow-up interviews, including telephone numbers, e-mail addresses, preferred shelters, and case managers. For participants whom we were unable to re-contact at 12 months, we conducted Social Security Death Index reviews.[16]

Participants who completed interviews received a $5 pharmacy chain gift certificate at baseline and a $10 gift certificate at follow-up. The Institutional Review Boards of the following institutions approved the study: Beth Israel Deaconess Medical Center, Boston Medical Center, Carney Hospital, Hebrew SeniorLife, Lemuel Shattuck Hospital, Partners

HealthCare, St. Elizabeth's Medical Center, Tufts Medical Center, and the Veterans Affairs Boston Healthcare System, all in Boston, and the University of California, San Francisco and the San Francisco Veterans Affairs Research and Development Committee.

Measures

Primary predictor—The primary predictor variable was housing status, assessed using information reported at the follow-up interview. Participants reported if they had obtained housing since the baseline interview, the date when they moved into their current housing, and if they had experienced a period of homelessness after obtaining housing. Consistent with federal guidelines, we defined participants as housed at follow-up if they reported that they were currently living in a place of their own that was not part of a transitional housing program.[17]

We did not measure how participants obtained housing or the type of housing obtained. However, each shelter where we recruited participants offered on-site housing placement assistance, in which representatives of local housing agencies met with interested clients. These agencies offered a range of housing assistance programs, including rental assistance, housing subsidies, and assistance locating and obtaining affordable housing.

Outcomes

<u>Health status and geriatric conditions at follow-up:</u> We measured 4 co-primary health outcomes, which we chose *a priori* because we hypothesized that each could be influenced by the interaction between an individual and his or her environment, and that housing might provide the supportive environment to improve these outcomes. Outcomes included number of Katz activities of daily living (ADLs) that the participant reported difficulty performing independently (bathing, dressing, toileting, transferring, eating; range, 0–5);[18] number of instrumental activities of daily living (IADLs) that the participant reported difficulty performing independently, measured using the Brief Instrumental Functioning Scale (range, 0–6);[19] depressive symptoms, measured using the 9-item Patient Health Questionnaire (PHQ-9, range, 0–27; higher scores indicate more symptoms);[20] and symptoms of urinary incontinence, measured using the International Consultation on Incontinence Questionnaire (ICIQ, range, 0–21, higher scores indicate more symptoms).[21] We measured these outcomes at baseline and follow-up using identical methods.

<u>Acute care utilization:</u> We defined use of acute care services as an emergency department (ED) visit or overnight hospitalization during the 12-month follow-up. To describe use of acute care services, we reviewed medical records at all hospitals in the city of Boston that provide emergency medical services (n=10); participants provided written consent for these reviews at the baseline interview. Investigators searched electronic medical records for each participant by name, date of birth, and social security number. If the investigators found a matching medical record, they completed a review of ED visits and hospitalizations for each participant, including visit dates. ED visits leading to hospital admission were excluded.

Other measures—We collected demographic data by self-report, including age, gender, race/ethnicity (African American, White non-Latino, Latino, Multiracial and other), marital

status, education, and primary language. Measures of homelessness collected at baseline included self-reported age at first episode of homelessness, total years of lifetime homelessness, and number of months of homelessness during the past year.

Measures of health status included self-rated general health and self-reported medical and psychiatric comorbidities, health-related behaviors, and geriatric conditions. To assess comorbidity burden, we calculated the Charlson Comorbidity Index (scores 0, 1–2, and 3; higher scores indicate higher mortality risk).[22,23] We measured self-reported alcohol and drug use problems in the past 30 days using the Addiction Severity Index (ASI) (range, 0– 1).[24] We used cut-off scores developed for homeless adults to define alcohol use problems (ASI score 0.17) and drug use problems (ASI score 0.10).[14]

We assessed several geriatric conditions in addition to the ADL, IADL, depression and urinary incontinence measures described above. Participants reported if they had fallen to the ground during the prior year[25] and if they had difficulty walking.[26] Measures of cognition included the Mini-Mental State Examination (MMSE), which measures global cognitive function,[27] and the Trail Making Test Part B (TMT-B), which measures executive function, with increasing time required to complete the task indicating worse function.[28] We defined MMSE impairment as a score <24,[29] and TMT-B impairment as a TMT-B duration >1.5 standard deviations above population-based norms, or as stopping the task early.[30] We measured sensory impairment, including self-reported difficulty hearing despite using a hearing aid[31] and self-reported difficulty seeing despite wearing corrective lenses.[32]

To assess access to health services, we asked participants if they had health insurance and if so, what type. Participants reported if they had a place where they usually obtained medical care, and if so, what type of place (outpatient clinic versus ED); we defined participants who usually obtained medical care at a clinic as having a usual source of care.[33] Participants also reported their acute care utilization during the prior year (number of ED visits and hospitalizations).

Statistical Analyses

We compared baseline characteristics between homeless and housed participants using t-tests or Wilcoxon rank-sum tests for continuous variables and chi-square or Fisher's exact tests for categorical variables. To identify participant characteristics at baseline associated with obtaining housing, we used log-binomial regression models to estimate unadjusted and adjusted relative risks. We adjusted models for other variables selected *a priori* as potential confounders of the association between housing and health outcomes, including demographic characteristics (age, gender, race/ethnicity, education), medical comorbidity (Charlson score), history of depression, substance use problems, and usual source of medical care.[34]

To compare health outcomes between those who did and did not obtain housing, we used both linear regression models and more complex linear mixed effects models with an unstructured covariance matrix; both models used the same approach to predictors and outcomes. The primary predictor was housing status at the 12-month follow-up, modeled as a binary variable. Each of our co-primary outcomes was assessed on an ordinal scale,

including number of ADLs that the participant had difficulty performing (range, 0–5); number of IADLs that the participant had difficulty performing (range, 0–6); depressive symptoms measured using the PHQ-9 score (range, 0–27); and symptoms of urinary incontinence measured using the ICIQ score (range, 0–21). We adjusted models for the baseline value of each primary measure and for potential confounders, including demographic characteristics (age, gender, race/ethnicity, education), medical comorbidity (Charlson score), history of depression, substance use problems, and usual source of medical care. Because the results of the 2 modeling strategies were very similar, we presented the results of the simpler linear regression models as they are more clinically interpretable. For ease of interpretation, we presented predicted means adjusted for the potential confounders above (margins command, Stata 13), rather than full linear regression models with beta-coefficients.

To determine if obtaining housing was associated with a lower rate of acute care utilization, we used mixed effects Poisson models to estimate incidence rate ratios for acute care utilization in housed versus homeless participants (xtpoisson command, Stata 13). The primary predictor was housing status, and the outcome was the number of acute care visits. Because all participants were homeless at baseline and crossed over to being housed at varying times over the follow-up period, we used a time-varying covariate to represent housing status. Analyses accounted for exact move-in dates and acute care visit dates, allowing us to distinguish between acute care visits that occurred while participants were housed versus homeless. We accounted for intraparticipant correlation by including a random intercept for each participant. Based on these models, we then estimated the predicted rate of acute care visits over 12 months in the housed and homeless groups. Models were adjusted for potential confounders including baseline acute care utilization, demographic characteristics, medical comorbidity, history of depression, substance use problems, and usual source of medical care.

Analyses were conducted using SAS version 9.3 (SAS Institute, Cary, North Carolina) and Stata Version 13 (StataCorp).

RESULTS

Sample

Of the 472 shelter clients screened, 387 (82%) were eligible, of whom 250 (65%) were recruited. Eligible clients who declined to participate did not differ from enrolled participants by observed race/ethnicity, but were older (mean age 59.5 vs. 56.2 years, p=.002) and more likely to be men (90% vs. 78%, p=.02).

We conducted in-person follow-up interviews at 12 months with 204 (82%) of the 250 participants enrolled at baseline. Of the remaining 46 participants, 14 were contacted but did not complete a follow-up assessment and 28 could not be contacted. We confirmed that 4 of the 28 participants whom we could not contact had died. Baseline characteristics were similar between participants lost to follow-up and those who were re-interviewed, including demographics, substance use problems, and geriatric conditions. However, participants lost to follow-up were more likely to lack a usual source of medical care (44% vs. 26%, p=.01).

Participant characteristics

The overall mean age of the cohort was 56.5 years (standard deviation [SD], 5.5), 82% were men, and 40% were white. At 12 months, 41% of participants (n=84) reported that they had obtained housing. One participant briefly obtained but subsequently lost housing between baseline and follow-up and was considered to have been homeless throughout the follow-up period. Among participants who obtained housing between baseline and follow-up, the mean number of months housed was 5 (SD 3). Baseline demographic characteristics were similar in participants who obtained housing and those who remained homeless (Table 1). Baseline values of the 4 primary outcome measures were also similar between the 2 groups (Table 2). Among other measures of health status and health care utilization, having a prior diagnosis of depression and a usual source of health care was more common among participants who obtained housing (Table 2). After multivariate adjustment, the only baseline characteristic associated with obtaining housing was having a usual source of medical care (adjusted relative risk [RR], 1.7; 95% CI 1.0–2.8).

Relationship between housing status and subsequent health status and geriatric conditions

In analyses adjusted only for baseline depressive symptoms, depressive symptoms at 12-month follow-up were lower, at borderline statistical significance, in participants who had obtained housing than those who had remained homeless (unadjusted mean PHQ-9 score at follow-up, 6.2 [housed] vs. 7.5 [homeless], P=.05). However, after additional adjustment for demographic characteristics, medical comorbidity, history of depression, substance use problems, and usual source of medical care, participants who obtained housing had fewer depressive symptoms than participants who remained homeless at follow-up (adjusted mean PHQ-9 score at follow-up, 6.0 [housed] vs 7.6 [homeless], P=.02) (Table 3). Obtaining housing was not associated with improvement in other health status measures at follow-up, including number of ADL difficulties, number of IADL difficulties, or symptoms of urinary incontinence, either in analyses adjusted only for the baseline value of each measure or in fully adjusted analyses. As unadjusted analyses for these measures were very similar to adjusted analyses, Table 3 includes only the results of adjusted analyses.

Relationship between housing status and acute care utilization

Over the follow-up period, participants who obtained housing had a lower rate of ED visits and hospitalizations than participants who remained homeless (incidence rate ratio [IRR], 0.5; 95% CI, 0.4–0.6). The association was unchanged after adjusting for baseline characteristics. The unadjusted annualized rate of acute care visits was 2.5 visits per year (95% CI, 1.8–3.3) among participants who were housed at follow-up and 5.1 visits per year (95% CI, 3.9–6.2) among participants who were homeless; the adjusted rates were similar (housed, 2.5 visits per year (95% CI, 1.7–3.3) and homeless, 5.3 visits per year (95% CI, 3.8–6.7). The predicted annualized rates were similar to those observed in the chart review (housed, 2.9 visits per year and homeless, 4.9 visits per year).

DISCUSSION

In this study, older homeless adults who obtained housing experienced improved depressive symptoms and reduced acute care utilization compared to those who remained homeless. Obtaining housing was not associated with fewer difficulties in performing activities of daily living or instrumental activities of daily living, or with improved symptoms of urinary incontinence. These findings suggest that current housing strategies improve key health outcomes among older homeless adults but do not substantially impact these geriatric conditions.

The improvement in depressive symptoms among those who obtained housing is not surprising, given the psychological distress associated with housing instability.[35] The observed reduction in symptoms was relatively modest, consistent with previous research examining the effect of a housing assistance program on depressive symptoms among persons with HIV/AIDS.[36] However, a study of a supportive housing intervention for homeless veterans with mental illness did not find a significant reduction in depressive symptoms in those who received housing compared to those who did not.[37] This heterogeneity is not surprising given differing study designs, differing study populations, and the use of differing depression measures with varying sensitivity to change. Differences in the pathogenesis of depression by age may also contribute; psychosocial and environmental factors appear to play a larger role in the development of depression among older adults than younger adults,[38,39] and previous studies included homeless adults aged 18 and older.

We hypothesized that disproportionately high rates of geriatric conditions among older homeless adults might in part reflect the mismatch between their abilities and environment, and that access to housing might improve this mismatch. However, obtaining housing was not associated with improvements in self-reported difficulty performing daily activities or symptoms of urinary incontinence. There are several possible explanations for these findings. The majority of participants in this study were recruited from shelters. Homeless individuals who have geriatric conditions that are influenced by the person-environment interaction may seek the environment that best matches their abilities. For example, an individual who has difficulty bathing may stay in a shelter that has bathing facilities with grab bars. A move from this shelter environment to an apartment that lacks additional modifications might therefore provide only incremental benefits. In the general population, older adults who received a multicomponent intervention including home repair, nursing, and occupational therapy experienced less difficulty performing ADLs and IADLs.[8] Incorporating similar environmental modifications and supportive services into housing programs for older homeless adults who have geriatric conditions has the potential to provide similar benefits. Another potential explanation for our findings is that our sample size was limited, which may have limited our ability to detect small differences in our outcomes between groups, especially because about half of participants were independent in daily activities at baseline.

It is also possible that the move from a shelter to an independent apartment could worsen the functional status of some participants. Executive function, or one's ability to plan and

organize information, plays a large role in the ability to perform instrumental activities of daily living.[40] Research conducted among homeless persons with mental illness found that executive performance decreased after moving from a homeless shelter to an independent apartment, possibly due to the attendant loss of social structure and interaction.[41] Some individuals in the current study who obtained housing may have experienced a similar decrement in executive functioning, which could have negatively impacted their ability to perform instrumental activities.

Obtaining housing was associated with reduced acute care utilization, a finding consistent with a growing body of research. Studies of housing interventions conducted among chronically homeless persons with severe alcohol problems[11] and chronic illness[12] have found significant reductions in the utilization and cost of acute care services; a recent study of homeless seniors found similar reductions in health care utilization and cost after placement in a permanent supportive housing program compared to the preceding year.[10] Decreased acute care utilization is thought to result from several factors, including the stabilizing effects of housing coupled with improved access to supportive services such as case management and benefits counseling that may increase timely use of ambulatory care.[12] Some have hypothesized that the reductions in health care utilization and cost associated with housing older homeless adults may exceed those for younger adults, due to comparatively higher rates of chronic medical conditions,[3] hospitalizations,[42] and skilled nursing facility stays among older homeless persons. Further study is needed to test this hypothesis.

This study has several limitations. Because this was an observational study, it is possible that the differences in depressive symptoms and healthcare utilization between participants who obtained housing and those who remained homeless reflect baseline differences between these groups that were not controlled for in our analyses. However, the groups were similar at baseline across a wide range of characteristics, including those health outcomes that differed at follow-up. Participants who obtained housing were more likely to have a usual source of medical care at baseline than those who remained homeless. Having a usual source of care may reflect an individual's ability to form and maintain social connections, a characteristic that could potentially confound the relationship between obtaining housing and the health outcomes measured in this study. Although we adjusted for having a usual source of care in all models, residual confounding may exist. The study did not examine the effect of different types of housing programs on health outcomes, as we did not collect information on the type of housing obtained. Due to the relatively small sample size, power may have been limited to detect associations for some variables. Although not all participants completed follow-up interviews, follow-up exceeded 80%. Moreover, baseline characteristics were similar between participants who were re-interviewed and those who were lost to follow-up. Because we limited recruitment to shelters, our results are not generalizable to homeless persons who live only on the street, and may have higher morbidity rates and different patterns of acute care use compared to persons in shelters.[43] The study was conducted in Massachusetts, a state with a relatively high investment in social services including permanent supportive housing programs, and therefore the results may not be generalizable to other states.

As the number of older homeless adults continues to increase over the coming decades, identifying appropriate interventions to address the complex health and housing needs of this vulnerable older population will gain increasing importance. This study demonstrates that current housing strategies improve key health outcomes among older homeless adults but do not improve geriatric conditions including difficulty performing ADLs and IADLs and symptoms of urinary incontinence. Further study is needed to determine how to best promote aging in place and prevent or delay institutionalization among formerly homeless older adults who have high rates of geriatric conditions that may limit independence.

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Table 1

Baseline Demographic Characteristics of 204 Older Homeless Participants by Housing Status at Follow-Up

	Housing status at follow-up		P value
Characteristic at baseline	**Homeless (n=120)**	**Housed (n=84)**	
Demographics			
Age, years mean (SD)	56.6 (5.2)	56.3 (6.0)	0.84
Women, No. (%)	21 (18)	16 (19)	0.78
Race/ethnicity, No. (%)			0.92
African American	46 (38)	36 (43)	
White	50 (42)	32 (38)	
Latino	13 (11)	8 (10)	
Multiracial/Other	11 (9)	8 (10)	
Married or partnered, No. (%)	10 (8)	4 (5)	0.33
Less than high school education, No. (%)	33 (28)	19 (23)	0.46
Primary language English, No. (%)	103 (86)	72 (86)	0.98
Homelessness			
Age at first episode of homelessness, median (IQR)	45 (30–52)	45 (40–51)	0.62
Lifetime years homelessness, median (IQR)	5 (2–11.5)	3.5 (2–10)	0.19
Homeless for 1 year or longer, No. (%)	78 (65)	57 (68)	0.67

Table 2

Baseline Health Status and Health Care Utilization of 204 Older Homeless Participants by Housing Status at Follow-Up

Characteristic at baseline	Housing status at follow-up		P value
	Homeless (n=120)	Housed (n=84)	
Outcome measures			
Number of ADL difficulties, No. (%)			0.60
0	81 (68)	58 (69)	
1–2	29 (24)	22 (26)	
3–5	10 (8)	4 (5)	
Number of IADL difficulties, No. (%)			0.33
0	49 (41)	36 (43)	
1–2	52 (43)	29 (35)	
3–6	19 (16)	19 (23)	
Depressive symptoms, mean (SD)[a]	8.5 (7.5)	8.9 (7.3)	0.70
Symptoms of urinary incontinence, mean (SD)[b]	4.4 (5.6)	4.5 (5.9)	0.88
Health care utilization, prior year, No. (%)			
Self-reported number of emergency department visits, No. (%)			0.66
0	38 (32)	24 (29)	
1–3	49 (41)	39 (48)	
4	32 (27)	19 (23)	
Self-reported number of hospitalizations, median (IQR)	0 (0, 2)	0 (0, 1)	0.20
Other measures of health status and health care utilization			
Health status			
Self-rated general health good, very good, or excellent, No. (%)	74 (62)	47 (56)	0.41
Charlson Comorbidity Index score, No. (%)			0.89
0	47 (39)	31 (37)	
1–2	45 (38)	31 (37)	
3	28 (23)	22 (26)	
Depression, lifetime history	62 (52)	56 (68)	0.02
Alcohol use problem, No. (%)[c]	21 (18)	15 (18)	0.99
Drug use problem, No. (%)[d]	19 (16)	16 (19)	0.54
Geriatric conditions			
Falls during past year, 1 or more, No. (%)	62 (52)	50 (60)	0.23
Mobility impairment, No. (%)[e]	50 (42)	37 (44)	0.74
Cognitive status			
MMSE score, mean (SD)	26.2 (3.2)	26.3 (3.3)	0.80
MMSE impairment, No. (%)[f]	30 (25)	22 (26)	0.87
TMT-B mean (SD)	132.9 (67.2)	135.9 (67.3)	0.77

	Housing status at follow-up		P value
Characteristic at baseline	**Homeless (n=120)**	**Housed (n=84)**	
TMT-B impairment, No. (%)[g]	39 (35)	24 (29)	0.38
Sensory impairment, No. (%)			
Hearing impairment, self-report	42 (35)	23 (28)	0.27
Visual impairment, self-report	31 (26)	30 (36)	0.13
Health services			
Insurance, No. (%)[h]	112 (94)	81 (98)	0.31
Medicare	100 (89)	73 (90)	0.85
Medicaid	24 (21)	16 (20)	0.78
Military	14 (13)	10 (12)	0.97
Private	1 (1)	2 (3)	0.57
Usual source of medical care, No. (%)	79 (68)	68 (84)	0.009

Abbreviations: ADL, Activity of Daily Living; IADL, Instrumental Activity of Daily Living; MMSE, Mini Mental State Examination; TMT-B, Trail Making Test Part B.

[a] Depressive symptoms measured using the 9-item Patient Health Questionnaire (range, 0–27; lower is better).

[b] Symptoms of urinary incontinence measured using the International Consultation on Incontinence Questionnaire (range, 0–21; lower is better).

[c] Alcohol use problem defined as an Addiction Severity Index score 0.17.

[d] Drug use problem defined as an Addiction Severity Index score 0.10.

[e] Mobility impairment defined as self-reported difficulty walking.

[f] MMSE impairment defined as an MMSE score <24.

[g] TMT-B impairment defined as a test duration >1.5 standard deviations above population-based norms, or as stopping the test early.

[h] Percentages for type of insurance add to >100%, as some participants had more than one type of insurance.

Table 3

Measures of Health Status at 12-Month Follow-up in Housed vs. Homeless Participants

Measures	Mean value of outcome, adjusted (95% CI)[a]		
	Homeless	**Housed**	**P value**
Number of ADL difficulties (range, 0–5)	0.4 (0.3–0.6)	0.6 (0.4–0.7)	0.30
Number of IADL difficulties (range, 0–6)	1.9 (1.5–2.3)	1.6 (1.1–2.0)	0.27
Depressive symptoms (range, 0–27)[b]	7.6 (6.7–8.4)	6.0 (5.1–7.0)	0.02
Symptoms of urinary incontinence (range, 0–21)[c]	3.7 (3.0–4.4)	2.9 (2.1–3.8)	0.17

[a]Multivariate linear regression models adjusted for the baseline value of each primary measure and for potential confounders including demographic characteristics (age, gender, race/ethnicity, education), medical conditions at baseline (Charlson Comorbidity Index score, lifetime history of depression, alcohol use problems, drug use problems), and usual source of medical care. Results of unadjusted analyses were very similar to adjusted analyses and are not presented.

[b]Depressive symptoms measured using the 9-item Patient Health Questionnaire (range, 0–27; lower is better).

[c]Symptoms of urinary incontinence measured using the International Consultation on Incontinence Questionnaire (range, 0–21; lower is better).