

Factors Associated With Hospital Readmission Among Patients Experiencing Homelessness

Keshab Subedi, MS,¹ Binod Acharya, MS,² Shweta Ghimire, MS, DVM³



Introduction: Homelessness is associated with increased acute care utilization and poor healthcare outcomes. This study aims to compare hospital readmission rates among patients experiencing homelessness and patients who are not homeless and assess the impact of different clinical and demographic characteristics on acute care utilization among patients experiencing homelessness.

Methods: This was a retrospective study of patients encountered in 2018 and 2019 at ChristianaCare Health Systems. The analysis was done in August 2021. The prevalence of major chronic conditions among patients experiencing homelessness ($n=1,329$) and those not experiencing it ($n=143,360$) was evaluated. Patients experiencing homelessness were matched with nonhomeless patients using 1:1 propensity score matching. Time-to-event analysis approaches were used to analyze time-to-readmission and 30-day readmission rates.

Results: The 30-day readmission rates were 42.8% among patients experiencing homelessness and 19.9% among matched patients not experiencing homelessness. The hazard of 30-day readmission among patients experiencing homelessness was 2.6 (95% CI=1.93, 3.53) times higher than that among the matched nonhomeless cohort. In patients experiencing homelessness, drug use disorder, major depressive disorder, chronic kidney disease, obesity, arthritis, HIV/AIDS, and epilepsy were associated with shortened time to readmission. Moreover, Black racial identity was associated with shortened time to readmission.

Conclusions: Patients experiencing homelessness had higher acute care utilization than those not experiencing homelessness. Black racial identity and several comorbidities were associated with increased acute care utilization among patients experiencing homelessness. Efforts to address upstream social determinants of health, destigmatization, and healthcare management accounting for the whole spectrum of clinical comorbidities might be important in promoting the health of people experiencing homelessness.

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INTRODUCTION

Homelessness is a rising socioeconomic and public health issue in the U.S. and beyond. In the U.S., more than half a million people experienced homelessness in a single night in January 2020, with male, Black, and Hispanic Americans being disproportionately affected.¹ People experiencing homelessness are at increased risk of premature mortality, with around 2 decades shorter life expectancy than the general population.^{2–4} They experience an elevated burden of mental illness, substance use disorder, hypertension, and cardiovascular disease^{5–8} as well as infectious diseases such as

HIV/AIDS, tuberculosis, and hepatitis C.⁹ The coronavirus disease 2019 (COVID-19) pandemic has further exacerbated the health of people experiencing

From the ¹Institute for Research on Equity and Community Health, ChristianaCare Health Systems, Wilmington, Delaware; ²Urban Health Collaborative, Drexel University, Philadelphia, Pennsylvania; and ³Center for Bioinformatics & Computational Biology, University of Delaware, Newark, Delaware

Address correspondence to: Keshab Subedi, MS, Institute for Research on Equity and Community Health, ChristianaCare Health Systems, Avenue North, 400 Nexus Drive, CEI 300, Wilmington DE 19803. E-mail: Keshab9subedi@gmail.com.

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homelessness because they face an increased risk of infection and mortality but remain largely neglected in the response to the pandemic.¹⁰

For people experiencing homelessness, an array of structural and contextual factors limit access to and quality of preventive and ambulatory care, potentially exacerbating existing clinical conditions. In particular, lack of insurance coverage, inadequate social support, poor health literacy, lack of identification requirements, limited access to transportation, and challenges to medical adherence because of competing priorities for survival (e.g., acquisition of food) hamper their ability to seek timely care.^{11–14} Furthermore, the physical environment such as crowded living conditions in shelters and exposure to extreme weather conditions particularly among those who are unsheltered increase the risk of infestations, injuries, and violence.^{15–17} A higher burden of clinical conditions in conjunction with limited access to ambulatory care and poor living conditions could lead to higher acute care utilization, including emergency department (ED) visits, inpatient hospitalization, and readmissions.^{18–22}

Knowledge about the factors associated with higher acute care utilization among individuals experiencing homelessness is important to patients, healthcare providers, and policymakers because of its direct relevance in optimizing hospital resources, improving quality of care, and health outcomes. However, apart from mental illness, substance use disorders, and alcohol use disorder, other chronic conditions such as arthritis, epilepsy, and chronic kidney disease have not been studied extensively in relation to acute care utilization.^{5,9,23–25} This study evaluates 2 key metrics of acute care utilization: time to acute care (ED and inpatient) readmission and 30-day readmission rates. Specifically, the study aims to (1) compare the acute care utilization rates among patients experiencing homelessness and a matched cohort of patients not experiencing homelessness and (2) identify and quantify the effect of different clinical and demographic characteristics on acute care utilization among the patients experiencing homelessness.

METHODS

Study Sample

This retrospective analysis used data from the electronic health records at ChristianaCare Health Systems, one of the largest healthcare providers in the mid-Atlantic that serves Delaware and parts of Pennsylvania, Maryland, and New Jersey. The *first inpatient encounter during the study period* was defined as an index visit. The inclusion criteria were (1) ED or inpatient encounters between January 1, 2018 and December 31, 2019 and (2) patients aged ≥ 18 years at the index visit. As such, outpatients or those admitted under observation status were excluded from the analysis. The patients who died in the hospital during the index visit or who left against medical advice were excluded. The patient

selection flowchart is presented in [Appendix Figure 1](#) (available online). The follow-up end date was set to December 31, 2020 to provide a follow-up time ≥ 1 year to record the readmission outcomes. Analysis was performed in August 2021.

Patients experiencing homelessness were identified using ICD-10-CM code Z59.0 recorded at the index visit. This code is generically used for both sheltered and unsheltered homelessness.²⁶ Patients' demographic and clinical characteristics were extracted on the basis of the index visit. The data included patients' age, sex, race, ethnicity, primary insurance type, length of stay at the index visit, discharge disposition at the index visit, number of days to the first readmission, and a binary indicator of 30-day readmission. The Chronic Conditions Data Warehouse algorithm was used to define chronic conditions.²⁷ The extracted conditions were alcohol use disorder, drug use disorder, major depressive disorder, hypertension, chronic kidney disease, liver disease, chronic obstructive pulmonary disease (COPD), diabetes, obesity, cancer, cardiovascular disease, HIV/AIDS, arthritis, post-traumatic stress disorder (PTSD), and epilepsy. The outcomes of interest were time to readmission since the index visit and 30-day readmission status. The study was approved by Christiana Care's IRB.

Measures

Using propensity score matching, patients experiencing homelessness were matched against a pool of unique patients who had no indication of homelessness. Propensity scores were estimated with a logistic regression model using all the unique patients with or without indication of homelessness. The covariates included in the propensity model were age; sex; race; ethnicity; insurance type; length of hospital stay and discharge disposition at the index visit; year; month; type (ED versus inpatient) of index visit; and chronic conditions of alcohol use disorder, drug use disorder, major depressive disorder, hypertension, chronic kidney disease, liver disease, COPD, diabetes, obesity, cancer, cardiovascular disease, HIV/AIDS, arthritis, PTSD, and epilepsy. The estimated propensity score (p) represents the probability of having an indication of homelessness, conditional on the covariates. A 1:1 propensity match on the logit scale $\log(p/[1-p])$ was performed for each patient experiencing homelessness using the greedy algorithm with a caliper of 0.2 SD. Standardized mean differences were compared for each covariate to examine the balance of covariate distribution between the cohort of patients experiencing homelessness and matched cohort of patients not experiencing homelessness. The standardized mean difference is widely used to evaluate the balance of covariates in matched cohorts, with a value <0.1 indicating a good covariate balance.²⁸

Statistical Analysis

Summary statistics of the patients' characteristics for the homeless and nonhomeless cohorts were calculated. Next, to compare the hazard for readmission between the homeless and matched nonhomeless cohort, a Cox proportional hazard (PH) model was fit with time to readmission as the outcome variable and right censoring at the follow-up time of 365 days. The PH assumption was evaluated by introducing an interaction term of indicator for homelessness and time in the Cox PH model. To account for the diminishing impacts of homelessness on the hazard of readmission over time, the Cox PH model was extended by specifying a parametric functional form to the impact of homelessness on the hazard of readmission such that $\beta(t) = \beta(\text{homelessness}) - \beta(\text{time dependence}(\text{homelessness})) \times \log(t)$,

where $\beta(t)$ is the logarithm of the hazard ratio (HR) of readmission (homeless versus nonhomeless) at time t .

Factors associated with time to readmission among patients experiencing homelessness were examined by fitting a multivariable accelerated failure time model with a gamma distribution for time to readmission. The covariates included in the model were age; sex; race; insurance type; year and month of the index visit; and chronic conditions of alcohol use disorder, drug use disorder, major depressive disorder, hypertension, chronic kidney disease, liver disease, COPD, diabetes, obesity, cancer, cardiovascular disease, HIV/AIDS, arthritis, PTSD, and epilepsy. The variables included in the models were decided a priori on the basis of clinical relevance. For ease of interpretation, the effect estimates from the accelerated failure time model are presented as time ratios (TRs). To estimate the impacts of clinical and demographic factors on 30-day readmission among patients experiencing

homelessness, a similar model was fit, with censoring at 30 days since the index visit. The effect estimates are presented in terms of HRs. All statistical analyses and data visualization were performed in R, version 4.0.3. Statistical significance was set at $p < 0.05$.

RESULTS

There were 1,329 unique patients with an indication for homelessness and 143,360 nonhomeless potential control patients during the study period who met the inclusion criteria of the study. Investigators obtained 1,329 matched control (nonhomeless) patients from a 1:1 propensity match with a good covariate balance (standardized mean difference < 0.1) (Table 1). The average age of the patient experiencing homelessness was 45 years, and

Table 1. Demographic and Clinical Characteristics of the Study Population

Characteristics	Patients not experiencing homelessness (before match, $n=143,360$)	Patients not experiencing homelessness (after match, $n=1,329$)	Patients experiencing homelessness ($n=1,329$)	SMD ^a
Age, years, mean (SD)	40.08 (25.43)	45.54 (19.30)	45.04 (14.27)	0.029
Female	77,785 (54.3)	446 (33.6)	440 (33.1)	0.010
Black	39,576 (27.6)	522 (39.3)	560 (42.1)	0.058
White	82,680 (57.7)	701 (52.7)	686 (51.6)	
Other ^b	21,104 (14.7)	106 (7.9)	83 (6.2)	
Hispanic	10,709 (7.5)	72 (5.4)	73 (5.5)	0.003
Primary insurance type				0.058
Commercial	71,730 (50.0)	46 (3.5)	49 (3.7)	
Medicaid	29,777 (20.8)	797 (60.0)	830 (62.5)	
Medicare	29,914 (20.9)	303 (22.8)	277 (20.8)	
Uninsured	11,939 (8.3)	183 (13.8)	173 (13.0)	
Discharge disposition at the index visit				0.056
Court/law enforcement	380 (0.3)	21 (1.6)	16 (1.2)	
Home	134,600 (93.9)	1,019 (76.7)	1,021 (76.8)	
Hospice	1,037 (0.7)	17 (1.3)	11 (0.8)	
Other facilities	7,343 (5.1)	272 (20.5)	281 (21.1)	
Alcohol use disorder	5,074 (3.5)	573 (43.1)	614 (46.2)	0.062
Drug use disorder	6,211 (4.3)	772 (58.1)	800 (60.2)	0.043
Depression	13,483 (9.4)	757 (57.0)	794 (59.7)	0.056
Hypertension	41,096 (28.7)	576 (43.3)	616 (46.4)	0.061
Chronic kidney disease	15,587 (10.9)	359 (27.0)	375 (28.2)	0.027
Liver disease	3,521 (2.5)	178 (13.4)	206 (15.5)	0.060
COPD	6,471 (4.5)	309 (23.3)	355 (26.7)	0.080
Diabetes	15,808 (11.0)	240 (18.1)	274 (20.6)	0.065
Obesity	10,800 (7.5)	215 (16.2)	241 (18.1)	0.052
Cancer	6,165 (4.3)	59 (4.4)	61 (4.6)	0.007
Cardiovascular disease	17,054 (11.9)	268 (20.2)	266 (20.0)	0.004
HIV/AIDS	574 (0.4)	57 (4.3)	66 (5.0)	0.032
Arthritis	4,081 (2.8)	46 (3.5)	53 (4.0)	0.028
PTSD	1,155 (0.8)	137 (10.3)	168 (12.6)	0.073
Epilepsy	2,182 (1.5)	137 (10.3)	162 (12.2)	0.060

Note: The values are presented as count (percentage) unless otherwise mentioned.

COPD, chronic obstructive pulmonary disease; PTSD, post-traumatic stress disorder; SMD, standardized mean difference.

^aSMD between the cohort of patients experiencing and those not experiencing homelessness after the match.

^bOther race included Asian, American Indian, Pacific Islander, and those with race category other.

about one third were female. Approximately 42% of the patients experiencing homelessness were Black Americans, and 6% were Hispanic or Latinx. The majority of the patients experiencing homelessness were covered by Medicaid (63%), followed by Medicare (21%), and about 13% had no insurance coverage. The most prevalent chronic conditions were drug use disorder (60%) and major depressive disorder (60%), followed by hypertension (46%), alcohol use disorder (46%), chronic kidney disease (28%), and COPD (27%). Around 13% of the patients experiencing homelessness had PTSD, and 12% had epilepsy (Table 1). The prevalence of all the 15 chronic conditions was higher in the cohort experiencing homelessness than in the population not experiencing homelessness before matching (Appendix Figure 2, available online).

The median time to readmission in patients experiencing homelessness was 56 days (95% CI=43, 72) compared with 321 days (95% CI=256, 386) in the matched cohort not experiencing homelessness. A Kaplan–Meier curve of the probability of readmission over time (days) since the index visit is presented in Figure 1. Patients experiencing homelessness had a significantly higher prognosis of readmission than the matched nonhomeless patients at all times ($p<0.001$). Readmission rates in the homeless and matched

nonhomeless cohorts were 23.2% versus 8.7% at 7 days, 42.8% versus 19.9% at 30 days, and 54.6% versus 32.5% at 90 days. The time-varying impacts of homelessness on the hazard of readmission obtained from the extended Cox model can be expressed as $\beta(t) = 1.31 - 0.24 \times \log(t)$, where $\beta(t)$ is the logarithm of HR for readmission (homeless versus nonhomeless) at time t . The hazard for readmission among patients experiencing homelessness at 7 days was threefold higher than that among the matched patients not experiencing homelessness (HR=3.02, 95% CI=2.23, 4.09). Similarly, the HRs of readmission (patients experiencing versus those not experiencing homelessness) were 2.61 (95% CI=1.93, 3.53) at 30 days and 2.33 (95% CI=1.72, 3.15) at 90 days (Table 2).

The results from the accelerated failure time model showed that Black racial identity and Medicaid insurance were significantly associated with shortened time to readmission. Black Americans had an estimated 30% shorter time to readmission than White Americans (TR=0.70, 95% CI=0.52, 0.92). Similarly, patients experiencing homelessness covered with Medicaid had a 63% shorter time to readmission (TR=0.37, 95% CI=0.17, 0.83) than patients with commercial insurance. However, the expected time to readmission was not statistically different between the patients with Medicare

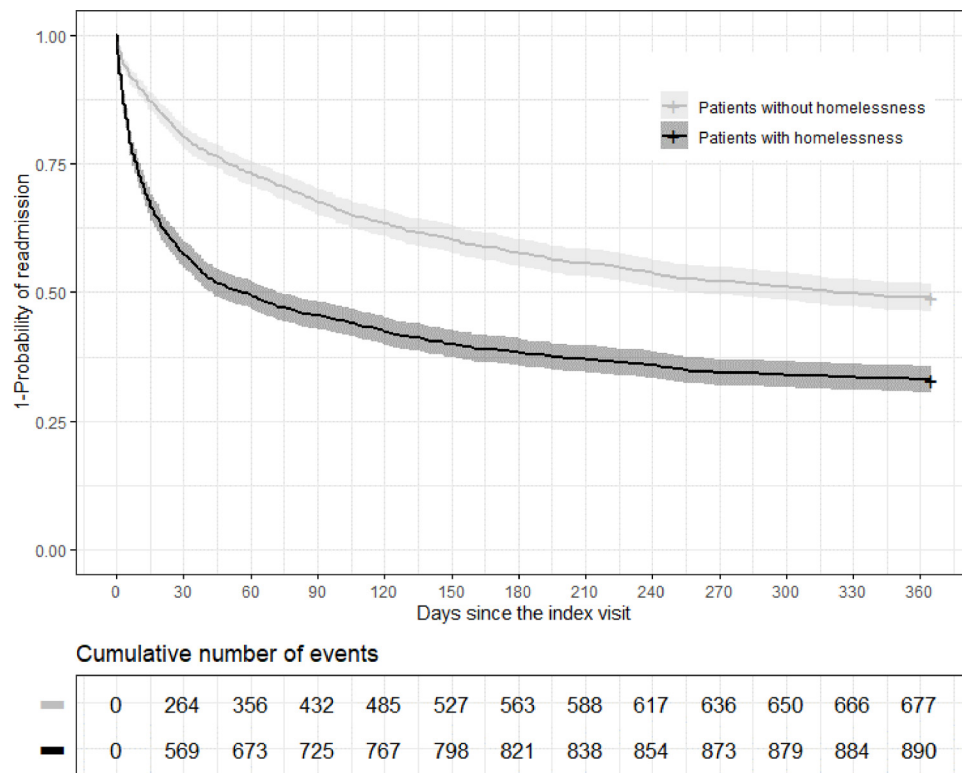


Figure 1. Kaplan–Meier curve of no readmission stratified by homelessness status (homeless versus nonhomeless).

Table 2. Count (Percentage) and HR for Readmission in Patients Experiencing Homeless Versus Matched Patients Not Experiencing Homelessness

Time	Patients experiencing homelessness (n=1,329)	Patients not experiencing homelessness (n=1,329)	HR (95% CI) ^a
7-day readmission	308 (23.2)	115 (8.7)	3.02 (2.23, 4.09)
14-day readmission	426 (32.1)	168 (12.6)	2.82 (2.08, 3.81)
30-day readmission	569 (42.8)	264 (19.9)	2.61 (1.93, 3.53)
90-day readmission	725 (54.6)	432 (32.5)	2.33 (1.72, 3.15)
180-day readmission	821 (61.8)	563 (42.4)	2.17 (1.60, 2.94)
1-year readmission	909 (68.4)	749 (56.4)	2.02 (1.49, 2.73)

HR, hazard ratio.

^aHR for patients experiencing homelessness versus matched patients not experiencing homelessness estimated from the extended Cox model.

and those with commercial insurance. The chronic conditions associated with shortened time to readmission were drug use disorder, major depressive disorder, chronic kidney disease, obesity, epilepsy, cancer, HIV/AIDS, and PTSD. The presence of HIV/AIDS and arthritis was associated with decreased time to readmission by 65% (TR=0.35, 95% CI=0.20, 0.58) and 60% (TR=0.40, 95% CI=0.23, 0.70), respectively. Patients' age, sex, and ethnicity were not associated with the time

to readmission. In addition, hypertension, liver disease, COPD, diabetes, and cardiovascular disease were not statistically significant.

Hazards of 30-day readmission among patients experiencing homelessness were significantly associated with race and the presence of chronic conditions of depression, chronic kidney disease, diabetes, cancer, HIV/AIDS, arthritis, and epilepsy (Table 3). The hazard of 30-day readmission among people with Black racial

Table 3. Adjusted TR of Time-to-Readmission and HR for 30-Day Readmission Among Patients Experiencing Homelessness

Parameter ^a	Time-to-readmission		30-day readmission	
	TR (95% CI) ^b	p-Value	HR (95% CI)	p-Value
Age	1.00 (0.99, 1.02)	0.357	1.00 (0.99, 1.01)	0.502
Female (versus male)	0.92 (0.69, 1.22)	0.277	0.90 (0.75, 1.09)	0.200
Black (versus White)	0.70 (0.53, 0.92)	0.006	1.22 (1.02, 1.46)	0.028
Hispanic (versus not Hispanic)	1.11 (0.61, 2.03)	0.361	0.79 (0.53, 1.19)	0.260
Medicaid (versus commercial)	0.37 (0.17, 0.83)	0.008	1.58 (0.93, 2.67)	0.092
Medicare (versus commercial)	0.47 (0.21, 1.08)	0.057	1.34 (0.77, 2.34)	0.296
Uninsured (versus commercial)	1.34 (0.52, 3.45)	0.275	0.96 (0.53, 1.76)	0.899
Alcohol use disorder	0.81 (0.61, 1.08)	0.079	1.07 (0.88, 1.30)	0.498
Drug use disorder	0.61 (0.44, 0.84)	<0.001	1.06 (0.86, 1.30)	0.588
Major depressive disorder	0.66 (0.48, 0.92)	0.006	1.24 (1.01, 1.52)	0.042
Hypertension	1.01 (0.71, 1.45)	0.47	1.05 (0.84, 1.31)	0.659
Chronic kidney disease	0.60 (0.43, 0.83)	<0.001	1.36 (1.10, 1.68)	0.005
Liver disease	0.93 (0.65, 1.34)	0.349	1.09 (0.86, 1.37)	0.473
COPD	1.01 (0.73, 1.40)	0.465	0.92 (0.75, 1.14)	0.462
Diabetes	0.78 (0.55, 1.09)	0.074	1.26 (1.01, 1.57)	0.039
Obesity	0.59 (0.43, 0.81)	<0.001	1.09 (0.88, 1.36)	0.420
Cancer	0.55 (0.30, 1.00)	0.025	1.46 (1.01, 2.13)	0.047
Cardiovascular disease	0.95 (0.65, 1.38)	0.386	1.08 (0.85, 1.37)	0.524
HIV/AIDS	0.35 (0.20, 0.58)	<0.001	1.76 (1.27, 2.43)	<0.001
Arthritis	0.40 (0.23, 0.70)	<0.001	2.06 (1.47, 2.89)	<0.001
PTSD	0.69 (0.47, 0.99)	0.023	1.10 (0.86, 1.41)	0.449
Epilepsy	0.58 (0.40, 0.84)	0.002	1.35 (1.07, 1.71)	0.012

Note: Boldface indicates statistical significance ($p < 0.05$).

COPD, chronic obstructive pulmonary disease; HR, hazard ratio; PTSD, post-traumatic stress disorder; TR, time ratio.

^aAdditional variables adjusted for in the models were admission year, admission month of the index visit, and discharge disposition category at the index visit (estimates are not shown in the table).^bTR < 1 represents a shorter time to readmission than the reference.

identity was 22% higher than that among their White counterparts (HR=1.22, 95% CI=1.02, 1.96). The presence of arthritis had the highest effect on 30-day readmission with a 2-fold increase in the hazard (HR=2.06, 95% CI=1.47, 2.89). Similarly, the presence of major depressive disorder was associated with an increased hazard of 30-day readmission by 24%, HIV/AIDS by 76%, cancer by 46%, chronic kidney disease by 36%, epilepsy by 35%, and diabetes by 26%.

DISCUSSION

A higher burden of homelessness on Black and male Americans was observed in this study population, consistent with estimates at the national level.^{1,29,30} The prevalence of drug, alcohol, and depressive disorders was remarkably higher among patients experiencing homelessness, showing a documented interconnectedness among housing instability, mental illness, and drug use.^{31–33} The most striking difference in prevalence was observed for PTSD, with 15.8 times higher prevalence in the patients experiencing homelessness. A higher prevalence of obesity among the patients experiencing homelessness was found, perhaps exemplifying a food insecurity–obesity paradox.³⁴

The 30-day readmission rate was more than 2-fold higher in patients experiencing homelessness (43%) than in the matched cohort of patients not experiencing homelessness (20%). Past studies report 1.17–3-fold higher 30-day readmission rates among individuals experiencing homelessness than among the nonhomeless.^{35–38} Among the patients experiencing homelessness, Black racial identity was associated with a 33% shorter time to readmission and 22% higher hazard of 30-day readmission. Similarly, HIV/AIDS was associated with a 65% shorter time to readmission and a 76% higher hazard of 30-day readmission among patients experiencing homelessness. Other chronic conditions associated with shorter time to readmission and an increased hazard for 30-day readmission were major depressive disorder, PTSD, drug use disorder, chronic kidney disease, cancer, arthritis, and epilepsy.

The higher acute care utilization among the patients experiencing homelessness than among patients not experiencing homelessness even after adjusting for demographic characteristics and major chronic conditions highlights the role of socioeconomic and structural factors in defining the health of individuals experiencing homelessness. Untreated and undertreated clinical conditions because of inadequate access to regular care have been identified as one of the major reasons for higher acute care utilization among the people experiencing homelessness.^{20,21,38} Stigma toward people experiencing

homelessness, people with mental illness, and people who use substances could potentially create barriers in receiving quality care.^{39–42} The prevailing social attitude toward people experiencing homelessness in conjunction with elements of institutional racism across health systems^{43–45} could contribute to premature discharge and inadequate discharge planning, especially for racial minorities who are over-represented in the population of people experiencing homelessness. Medical adherence, including the ability to get prescriptions filled in time, appropriately store and take medicines, keep up with follow-up appointments, and obtain adequate nutrition and rest, is critical to prevent rehospitalization. However, limited financial resources, poor living conditions, lack of social support, and co-occurring substance use and mental health illness make medical adherence challenging in the population of people experiencing homelessness.

Knowledge about clinical conditions linked with higher readmission rates is important for efforts to minimize acute care utilization burden among people experiencing homelessness. Mental health–related clinical conditions, including major depressive disorder, PTSD, and drug use disorder, were significantly associated with increased readmission rates. Mental health problems and drug abuse not only lead to increased acute care utilization but could also force people to experience homelessness.^{19,46,47} As such, it is important to address these comorbidities as part of interventions aimed at reducing the healthcare utilization burden and reducing homelessness in general. Such interventions should consider incorporating early identification and treatment of substance abuse and mental health issues. Several chronic conditions, including arthritis, cancer, and chronic kidney disease, were associated with significantly higher readmission rates. However, many of the past studies on acute care utilization among people experiencing homelessness focus primarily on only a few specific health conditions such as mental illness, substance use, and HIV/AIDS. This suggests a need for a departure from a focus on a narrow set of conditions to a wider list of chronic conditions that might influence acute care utilization and thus should be incorporated in the healthcare management of patients experiencing homelessness.²⁵

Preventing frequent hospitalizations among patients experiencing homelessness involves major policy departures that address the factors leading up to homelessness itself. Past studies have shown that provisions of stable housing and income support programs are effective in promoting the health of the individuals experiencing homelessness, including reduced readmissions.^{48–50} In many cases, the healthcare needs of the individuals

experiencing homelessness might be qualitatively different from those of housed individuals and thus require targeted and focused programs. For instance, primary care practices focused on people experiencing homelessness as done with Health Care for Homelessness Program could be helpful in addressing the challenges of engaging individuals without housing in primary care,^{23,51} whereas the programs such as Critical Time Intervention model could help ensure community support and continuity of care and decrease homelessness,²⁴ especially among individuals with mental illness and substance use. The challenges in discharge planning for patients who are unsheltered are some of the key factors leading to frequent readmissions, which could be mitigated by ensuring proper coordination between the health system and community centers and discharging patients to appropriate locations such as respite care, medical facilities, and temporary housing. Past studies have reported that having a case manager and discharging to respite care integrated with health services is helpful in reducing acute care utilization.^{52–54}

Limitations

There are several limitations to this study. The authors analyzed the data from a single healthcare system, and the results might not be generalizable to other hospitals. Although the healthcare outcomes and utilization patterns might differ across typologies of homelessness (e.g., sheltered versus unsheltered; chronic, transitional versus episodic homelessness), these subgroup analyses could not be performed because of the lack of such data. In addition, the study could not distinguish whether hospital readmission is preventable and ascertain whether a patient has established and used primary care or whether the housing status changed since the index visit. Furthermore, patients experiencing homelessness leaving against medical advice, who were excluded from the study population, may have different acute care utilization patterns and warrant separate studies focused on them. Finally, usage of ICD-10-CM code Z59.0 may not have identified all patients experiencing homelessness because the use of this code began in 2015 and its adoption might have been low in the early years.⁵⁵

CONCLUSIONS

Patients experiencing homelessness had a shorter time to readmission and a higher hazard of 30-day readmission than patients with stable housing. Black racial identity and the presence of PTSD, major depressive disorder, drug use disorder, chronic kidney disease, cancer, obesity, HIV/AIDS, arthritis, and epilepsy were associated with increased acute care utilization among patients

experiencing homelessness. Improving the health of the population experiencing homelessness involves patient-, provider-, and system-level factors, and thus holistic efforts that address the upstream social determinants of health, including programs aimed at destigmatizing patients experiencing homelessness, ensuring fair housing, and breaking financial and nonfinancial barriers to access ambulatory care are crucial. Furthermore, appropriate medical care accounting for the whole spectrum of clinical comorbidities and coordinated care transitions are equally important in reducing hospital readmissions.

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SUPPLEMENTAL MATERIAL

Supplemental materials associated with this article can be found in the online version at <https://doi.org/10.1016/j.amepre.2022.02.004>.

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