Original Contribution

Sick and unsheltered: Homelessness as a major risk factor for emergency care utilization

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ABSTRACT

Objective: Homelessness is a critical public health issue and socioeconomic epidemic associated with a disproportionate burden of disease and significant decrease in life expectancy. We compared emergency care utilization between individuals with documented homelessness to those enrolled in Medicaid without documented homelessness.
Methods: We conducted a retrospective cohort study consisting of electronic medical record review of demographics, chief complaints, and health care utilization metrics of adults with homelessness compared to a group enrolled in Medicaid without identified homelessness. The chart review spanned two years of emergency visits at a single urban, academic, tertiary care medical center. Descriptive statistics, bivariate and multivariate analyses were utilized.
Results: Over the study period, 986 patients experiencing homelessness accounted for 7532 ED visits, with a mean of 7.6 (SD 19.9) and max of 316 visits. The control group of 3482 Medicaid patients had 5477 ED visits, with a mean of 1.6 visits (SD 2.1) and max of 49 visits. When controlling for age, sex, race, ethnicity, and ESI, those living with homelessness were 7.65 times more likely to return to the ED within 30 days of their previous visit, 9.97 times more likely to return within 6 months, 10.63 times more likely to return within one year, and 11 times more likely to return within 2 years.
Conclusions: Compared to non-homeless Medicaid patients, patients with documented homelessness were over seven times more likely to return to the ED within 30 days and over eleven times more likely to return to the ED in two years.

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1. Introduction

Homelessness is a socioeconomic epidemic and a critical public health issue. In the United States, over three million citizens experience homelessness annually, and over 500,000 citizens are homeless on a given night [1]. People experiencing chronic homelessness suffer a massively disproportionate burden of disease, injury, mental illness and substance abuse [2-14]. Homelessness increases all-cause mortality and decreases life expectancy by up to 30 years, with the average age of death for homeless individuals between 42 and 52 years [2-14]. In addition to high morbidity and mortality, homelessness is associated with substantially higher health care utilization [2-4].

Homelessness is an independent risk factor for ED utilization [7, 15]. Compared to those living in stable accommodations, the homeless are more likely to visit an ED within five years and return to the ED within

a month of their initial visit [15, 16]. ED discharge to the streets or a shelter is associated with a significant increased risk for readmission [17]. The economic burden is substantial, and the cost of hospitalization and emergency department utilization for the homeless have been reported to be up to 3.8 times that of an average Medicaid recipient [3].

Increased utilization of emergency and acute care services for the homeless is multifactorial and has been found to be due to disproportionate burden of disease [3, 6, 15-19], high rates of unintentional injuries and traumatic injuries from assault [9-11], psychiatric illness and substance abuse [5, 6, 19-23], food insecurity [24-26], and poor access to primary and preventative care [18]. This increased ED utilization strains health care systems and may serve as a marker for inadequate access to ancillary services, and primary, specialty and preventative care [6, 8].

Research on interventions to improve health of individuals who are homeless has received substantial attention globally, specifically on poverty reduction, housing, and strategies to address social determinants of health [27-33]. To most effectively target these interventions, accurate descriptions of healthcare service utilization is needed.

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The primary objective of this study was to compare emergency department utilization of patients with documented homelessness to non-homeless individuals enrolled in Medicaid. The Medicaid group allows us to better control for the effects of low socioeconomic status on ED utilization. Previous work assessing ED utilization among homeless populations have been done without a control group [3-6, 34], or compared to the general population [35]. This makes it challenging to assess the effect of homelessness on healthcare utilization, as socioeconomic status is a major confounding factor.

2. Methods

We conducted a retrospective cohort study based on a medical chart review that describes characteristics, burden of disease, and health care utilization of homeless adults compared to a group enrolled in Medicaid not identified in the chart review as homeless. The retrospective chart review took place at a single urban, academic, tertiary care center over a two year time period - from January 1, 2013 to December 31, 2014. Institutional ethics approval was obtained through a Research Subjects Review Board. The retrospective chart review utilized the medical center's electronic medical record (EMR).

Inclusion criteria were designed to identify those individuals who were homeless at the time of their interaction with the ED. To be included in the homeless group, patients had address fields that contained: an address of "homeless," emergency shelter, hospital, place of worship, or keyword indicating homelessness [36]. We also screened for ICD-9 code v50, and used keyword searches for "homeless" or "homelessness" in chief complaint, clinician notes, social work notes, and discharge summaries. This data was abstracted by computer algorithm utilizing regular expressions. All patients that had one or more of the above elements describing homelessness during the study period were included in the study group. The comparison group had to be enrolled in Medicaid and not identified as homeless during the study period to be included. All patients included were over the age of 18. A flow diagram of study inclusion/exclusion is presented in Fig. 1.

Demographic variables including age, sex, race, ethnicity and insurance status were evaluated with descriptive statistics including means and standard deviations, medians and inter-quartile ranges, counts, percentages and p-values, as appropriate (Table 1). Age and homelessness were compared using means with two-sample t-test and medians with a non-parametric K-sample test on the equality of medians. Sex, race and ethnicity were compared using Pearson chi-squared statistical tests. Our primary outcome variable is ED utilization represented by the multivariate analysis of revisits after 30 days, 6 months, one and two years (Table 2). Mode of arrival, Emergency Severity Index (ESI) [37], social work (SW) encounter and ED disposition were compared between the study and control group with counts and percentages, 95% confidence intervals, odds ratios and p-values using Pearson chi-squared tests (Table 3). Chief complaints were similarly analyzed after being aggregated into categories and subcategories (Table 4).

Odds ratios, with 95% confidence intervals and p-values, were utilized for a multivariate analysis comparing revisit rates of study group and controls. The multivariate analysis consisted of a logistic regression model using generalized estimating equations to account for multiple index visits from the same patient. The model controlled for age, sex, race, ethnicity, and ESI. The same logistic regression model was utilized to compare odds of repeat visits with and without social work encounter documentation at the preceding visit (Table 2). Descriptive and bivariate analysis was undertaken using STATA version 14.2, and SPSS 23 was utilized for the multivariate analysis.

3. Results

During the two-year study period, 986 patients with documented homelessness accounted for 7532 ED visits (Table 1). The control group, with no indication of homelessness in their EMR, consists of 3482 Medicaid patients representing 5477 ED visits (Fig. 1). The homeless group has a mean of 7.6 visits (SD 19.9) and the control group has a mean of 1.6 visits (SD 2.1). The number of visits for the homeless and control groups range up to 316 and 49, respectively. Healthcare insurance status for visits of those experiencing homelessness was 53.5% Medicaid, 17.7% Medicare, 19.9% private insurance, and 8.3% uninsured.

Demographics (Table 1) show patients with documented homelessness were significantly older with a median age of 42.8 (IQR 28.9–52.6) compared to controls 31.1 (IQR 23.9–44.8). Those with homelessness were also significantly more likely to be male compared to controls (56.3% vs. 47.8%). A significantly greater proportion of those with homelessness were white (48.8% vs. 44.6%) and there was no significant
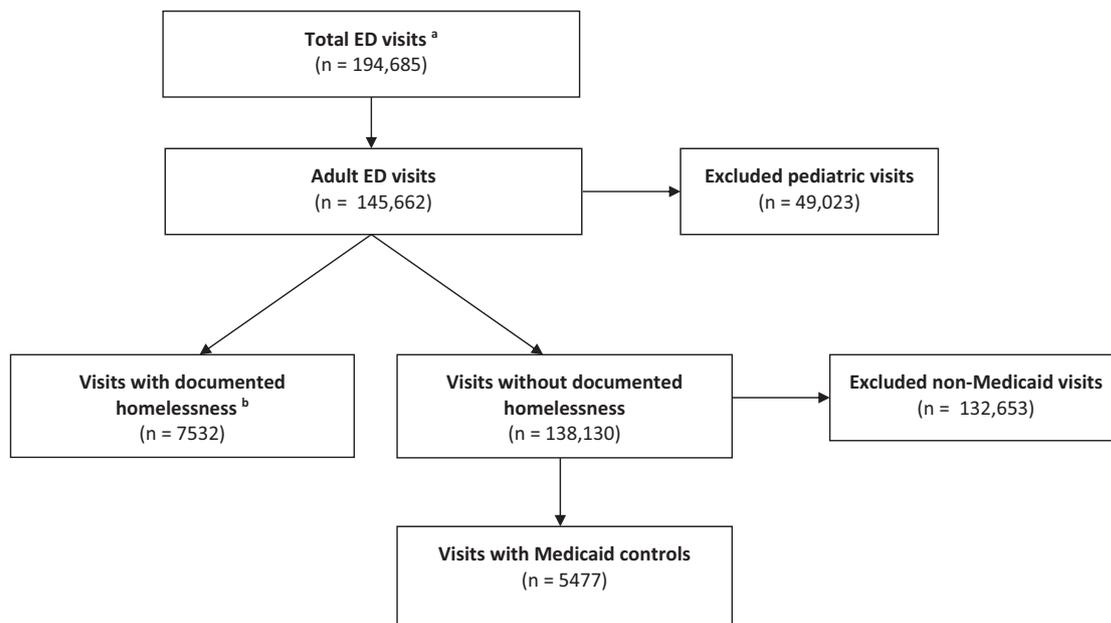
Fig. 1. Inclusion and exclusion flow diagram. [a]The two year study period was from January 1, 2013 through December 31, 2014. [b]Visits by patients with address fields that contained: "homeless," emergency shelter, hospital, place of worship, or keyword indicating homelessness, diagnosis with ICD-9 code v50, or keywords "homeless" or "homelessness" in chief complaint, clinician notes, social work notes, or discharge summary.

Table 1
Demographics represented as cases and visits by housing status.

Demographics	Patients				Visits			
	Homeless (n = 986)	Control (n = 3482)	Total (n = 4468)	p-Value	Homeless (n = 7532)	Control (n = 5477)	Total (n = 13,009)	p-Value
Age, mean (SD)	41.8 (14.4)	34.9 (13.2)	36.4 (13.8)	<0.001	42.9 (12.4)	35.7 (13.4)	39.9 (13.3)	<0.001
Age, median (IQR)	42.8 (28.9–52.6)	31.1 (23.9–44.8)	33.0 (24.8–47.5)	<0.001	45.1 (32.2–51.6)	32.4 (24.3–46.1)	41.1 (27.5–50.3)	<0.001
Male, n (%)	555 (56.3)	1663 (47.8)	2218 (49.6)	<0.001	4693 (62.3)	2408 (44.0)	7101 (54.6)	<0.001
White, n (%)	478 (48.8)	1507 (43.4)	1985 (44.6)	0.002	2776 (37.1)	2309 (42.3)	5085 (39.3)	<0.001
Black, n (%)	438 (44.7)	1631 (47.0)	2069 (46.5)	0.221	4386 (58.6)	2671 (48.9)	7057 (54.5)	<0.001
Other race, n (%)	63 (6.4)	334 (9.6)	397 (8.9)	0.002	327 (4.4)	481 (8.8)	808 (6.2)	<0.001
Hispanic, n (%)	85 (8.7)	421 (12.1)	506 (11.4)	0.003	569 (7.6)	633 (11.6)	1202 (9.3)	<0.001

difference between the proportions of black patients (44.7% vs. 47.0%). However, when compared to controls, black patients made up a significantly greater proportion of visits by those with homelessness (58.6% vs. 48.9%). A significantly smaller proportion of Hispanic patients were experiencing homelessness (8.7% vs. 12.1%).

Mode of arrival, ESI, social work (SW) encounter and ED disposition were compared between the study and control group (Table 2). In the setting of homelessness there was a significantly greater proportion of ED revisits within one month (65.1% vs. 18.5%), within 6 months (82.7% vs. 31.6%), within one year (85.8% vs. 35.2%), and during the two-year study period (86.8% vs. 36.4%). When controlling for age, sex, race, ethnicity, and ESI, those living with homelessness were 7.65 times more likely to return to the ED within 30 days of their previous visit, 9.97 times more likely to return within 6 months, 10.63 times more likely to return within one year, and 11 times more likely to return within 2 years. Having a documented social work encounter at a prior visit decreased the odds of a repeat visit after 30 days (OR 2.78 vs. 3.27). However, this difference was not statistically significant, and the 95% confidence intervals overlap for each revisit time period with and without a prior social work encounter.

For patients with a history of homelessness, the odds are significantly higher for utilizing emergency medical ambulance services (OR 1.82, CI 95% 1.69–1.95) and public bus services (OR 2.25, CI 95% 1.85–2.72) to get to the ED. The odds of arriving by private car (OR 0.29, CI 95% 0.27–0.32) and police vehicle (OR 0.66, CI 95% 0.47–0.93) are significantly lower in the setting of homelessness. The ESI score, ranging from 'Immediate' (1) to 'Non-urgent' (5), assigned at triage was utilized to assess visit acuity for the study and control group. There was no significant difference in 'Immediate' (1) severity assignments between the two groups. Patients with homelessness have significantly greater odds of presenting with an 'Emergent' (2) condition (OR 1.89, CI 95% 1.75–2.03) and 'Non-Urgent' (5) condition (OR 1.57, CI 95% 1.35–1.83). The odds are significantly lower for the homeless having conditions that are 'Urgent' (3) (OR 0.56, CI 95% 0.52–0.60) and 'Less Urgent' (4) (OR 0.83, CI 95% 0.76–0.91) (Table 3).

Patients with homelessness had higher odds of documented social work encounters (OR 1.72, CI 95% 1.57–1.89). For disposition, there were significantly lower odds for discharge (OR 0.59, CI 95% 0.54–0.64) and medical observation (OR 0.63, CI 95% 0.53–0.75) in the setting of homelessness. Those with homelessness were more likely to be sent for evaluation to the Comprehensive Psychiatric Emergency Program (CPEP) (OR 2.48, CI 95% 2.23–2.77), a psychiatric emergency unit adjacent to and part of the medical ED, which provides psychiatric evaluations and facilitates admission to inpatient psychiatric units (Table 3).

Chief complaints were categorized by mental health, medical and trauma complaints or conditions (Table 4). The most common chief complaints for those with a record of homelessness were alcohol intoxication (12.1%), abdominal pain (9.2%), psychiatric evaluation (8.8%), chest pain (8.7%), and suicide ideation or attempt (6.5%). In the control group the top five chief complaints were abdominal pain (13.9%), chest pain (8.7%), back pain (5.1%), psychiatric evaluation (4.4%), and headache (3.9%). A bivariate analysis of chief complaint categories revealed significantly increased odds for mental health issues (OR 2.18) including psychiatric evaluation (OR 2.09), suicide ideation or attempt (OR 2.29), depression (OR 2.88), homicidal (OR 4.70), hallucinations (OR 2.92), and paranoia (OR 3.83). There was a statistically significant difference by housing status for substance use disorders (OR 3.93) notably for alcohol intoxication or problem (OR 5.31), and withdrawal (OR 1.84). Additionally, there were a significant proportion of individuals experiencing leg pain (OR 1.77) and toe pain (OR 4.45) compared to the control group.

4. Discussion

4.1. Summary of results

When controlling for age, sex, race, ethnicity, and ESI, those living with homelessness were 7.65 times more likely to return to the ED within 30 days of their previous visit, 9.97 times more likely to return within 6 months, 10.63 times more likely to return within one year, and 11 times more likely to return within 2 years compared to patients enrolled in Medicaid. Those with documented homelessness had significantly higher ambulance and social service utilization, were assigned higher Emergency Severity Index (ESI) scores, and were more likely to be admitted to the Comprehensive Psychiatric Emergency Program (CPEP). They had significantly increased odds for mental health and substance use disorders.

We chose a control group of all Medicaid-enrolled patients in the two-year time period rather than the general population to better control for the effects of low socioeconomic status on ED utilization, and to more specifically demonstrate the effects of homelessness. Previous work describing ED utilization among homeless populations have been done without a control group [3-6, 34], or compared to the general

Table 2
Odds of emergency department revisits for patients with documented homelessness.

ED revisits[a]	All visits		Visits proceeded by SW encounter		Visits not proceeded by SW encounter	
	Odds ratio (95% CI)	p-Value	Odds ratio (95% CI)	p-Value	Odds ratio (95% CI)	p-Value
30 day	7.65 (5.89–9.94)	<0.001	2.78 (1.76–4.41)	<0.001	3.27 (2.48–4.33)	<0.001
6 month	9.97 (7.99–12.43)	<0.001	3.58 (2.34–5.47)	<0.001	3.53 (2.76–4.51)	<0.001
1 year	10.63 (8.62–13.11)	<0.001	3.28 (2.11–5.11)	<0.001	3.52 (2.78–4.45)	<0.001
2 year	11.00 (8.96–13.50)	<0.001	3.24 (2.11–4.98)	<0.001	3.52 (2.80–4.43)	<0.001

[a] Logistic regression models controlled for age, sex, race, ethnicity, and Emergency Severity Index (ESI).

Table 3
Bivariate analysis of service utilization indicators by housing status.

	Homeless visits (n = 7532)		Control visits (n = 5477)		Bivariate analysis	
	n (%)	CI (95%)	n (%)	CI (95%)	OR (CI 95%)	p-Value
Mode of arrival[a]						
Ambulance	4400 (58.4)	57.3–59.5	2407 (43.9)	42.6–45.3	1.82 (1.69–1.95)	<0.001
Walk-in	1482 (19.7)	18.8–20.6	1046 (19.1)	18.1–20.2	1.04 (0.95–1.14)	0.392
Car	785 (10.4)	9.7–11.1	1552 (28.3)	27.1–29.6	0.29 (0.27–0.32)	<0.001
Bus	427 (5.7)	5.2–6.2	143 (2.6)	2.2–3.1	2.25 (1.85–2.72)	<0.001
Other	148 (2.0)	1.7–2.3	115 (2.1)	1.7–2.5	0.94 (0.73–1.20)	0.596
Police	65 (0.9)	0.7–1.1	71 (1.3)	1.0–1.6	0.66 (0.47–0.93)	0.017
Taxi	83 (1.1)	0.9–1.4	46 (0.8)	0.6–1.1	1.32 (0.92–1.89)	0.135
Emergency Severity Index (ESI)						
Immediate (1)	11 (0.1)	0.1–0.3	11 (0.2)	0.1–0.4	0.73 (0.32–1.64)	0.453
Emergent (2)	3223 (42.8)	41.7–43.9	1555 (28.4)	27.2–29.6	1.89 (1.75–2.03)	<0.001
Urgent (3)	2493 (33.1)	32.0–34.2	2578 (47.1)	45.7–48.4	0.56 (0.52–0.60)	<0.001
Less urgent (4)	1273 (16.9)	16.1–17.8	1080 (19.7)	18.7–20.8	0.83 (0.76–0.91)	<0.001
Non-urgent (5)	532 (7.1)	6.5–7.7	253 (4.6)	4.1–5.2	1.57 (1.35–1.83)	<0.001
SW encounter						
Documented	1699 (22.6)	21.6–23.5	792 (14.5)	13.5–15.4	1.72 (1.57–1.89)	<0.001
ED disposition[a]						
Discharge	5005 (66.4)	65.4–67.5	4146 (75.7)	74.5–76.8	0.59 (0.54–0.64)	<0.001
AMA	206 (2.7)	2.4–3.1	115 (2.1)	1.7–2.5	1.31 (1.04–1.65)	0.021
Died	7 (0.1)	0.0–0.2	7 (0.1)	0.1–0.3	0.73 (0.27–1.99)	0.550
Admitted	109 (1.4)	1.2–1.7	93 (1.7)	1.4–2.1	0.85 (0.64–1.12)	0.256
CPEP[b]	1497 (19.9)	19.0–20.8	502 (9.2)	8.4–10.0	2.48 (2.23–2.77)	<0.001
Observation	237 (3.1)	2.8–3.6	269 (4.9)	4.4–5.5	0.63 (0.53–0.75)	<0.001
Transfer	41 (0.5)	0.4–0.7	37 (0.7)	0.5–0.9	0.81 (0.52–1.25)	0.340

[a] Out of 13,009 visits, 293 are missing data for mode of arrival and 738 for disposition.
[b] CPEP is a Comprehensive Program for Emergency Psychiatry that is adjacent to and part of the ED.

population [35]. A study of 6494 patients with homelessness in the Boston Health Care for the Homeless Program had an annual average of four ED visits, however this was not compared to a control group of low-income individuals in the area. This makes it challenging to assess the effect of homelessness on healthcare utilization, as socioeconomic status is a major confounding factor.

4.2. A need for policy change

Given the high utilization and significant costs of emergency department revisits by individuals who are unsheltered [3, 15-17, 38], discharge planning should address the biopsychosocial issues of those with homelessness. There is a clear need for comprehensive evaluation

Table 4
Bivariate analysis of chief complaints by housing status.

Chief complaint	Homeless		Control		OR (CI 95%)	p-Value
	n (%)	CI (95%)	n (%)	CI (95%)		
Mental health	1514 (20.1)	19.2–21.0	566 (10.3)	9.5–11.2	2.18 (1.97–2.42)	<0.001
Suicide ideation and/or attempt	491 (6.5)	6.0–7.1	162 (3.0)	2.5–3.4	2.29 (1.91–2.74)	<0.001
Depression	137 (1.8)	1.5–2.1	35 (0.6)	0.4–0.9	2.88 (1.99–4.17)	<0.001
Anxiety	78 (1.0)	0.8–1.3	63 (1.2)	0.9–1.5	0.90 (0.64–1.25)	0.528
Homicidal	77 (1.0)	0.8–1.3	12 (0.2)	0.1–0.4	4.70 (2.58–8.57)	<0.001
Hallucinations	60 (0.8)	0.6–1.0	15 (0.3)	0.2–0.5	2.92 (1.67–5.12)	<0.001
Delusional	10 (0.1)	0.1–0.2	4 (0.1)	0.0–0.2	1.82 (0.60–5.48)	0.306
Substance abuse disorder	1187 (15.8)	14.9–16.6	249 (4.5)	4.0–5.1	3.93 (3.41–4.52)	<0.001
Alcohol intoxication/problem	1008 (13.4)	12.6–14.2	155 (2.8)	2.4–3.3	5.31 (4.46–6.31)	<0.001
Drug overdose	84 (1.1)	0.9–1.4	58 (1.1)	0.8–1.4	1.05 (0.75–1.47)	0.765
Drug/alcohol withdrawal	48 (0.6)	0.5–0.8	19 (0.3)	0.2–0.5	1.84 (1.09–3.12)	0.023
Abdominal pain	698 (9.3)	8.6–9.9	785 (14.3)	13.4–15.3	0.61 (0.55–0.68)	<0.001
Chest pain	655 (8.7)	8.1–9.4	477 (8.7)	8.0–9.5	1.00 (0.88–1.13)	0.964
Trauma	588 (7.8)	7.2–8.4	643 (11.7)	10.9–12.6	0.64 (0.57–0.72)	<0.001
Assault	141 (1.9)	1.6–2.2	119 (2.2)	1.8–2.6	0.86 (0.67–1.10)	0.223
Sexual assault	19 (0.3)	0.2–0.4	13 (0.2)	0.1–0.4	1.06 (0.53–2.12)	0.868
Fall	127 (1.7)	1.4–2.0	118 (2.2)	1.8–2.6	0.78 (0.61–1.00)	0.051
Motor vehicle crash	19 (0.3)	0.2–0.4	16 (0.3)	0.2–0.5	0.86 (0.45–1.66)	0.662
Burn	13 (0.2)	0.1–0.3	14 (0.3)	0.1–0.4	0.67 (0.32–1.41)	0.303
Stab wound	4 (0.1)	0.0–0.1	14 (0.3)	0.1–0.4	0.21 (0.07–0.60)	0.002
Back pain	410 (5.4)	4.9–6.0	280 (5.1)	4.5–5.7	1.07 (0.91–1.25)	0.414
Headache	284 (3.8)	3.4–4.2	212 (3.9)	3.4–4.4	0.97 (0.81–1.17)	0.759
Dyspnea	232 (3.1)	2.7–3.5	166 (3.0)	2.6–3.5	1.02 (0.83–1.24)	0.881
Leg pain	204 (2.7)	2.4–3.1	85 (1.6)	1.2–1.9	1.77 (1.37–2.28)	<0.001
Emesis	136 (1.8)	1.5–2.1	181 (3.3)	2.8–3.8	0.54 (0.43–0.67)	<0.001
Seizures	123 (1.6)	1.4–1.9	148 (2.7)	2.3–3.2	0.60 (0.47–0.76)	<0.001
Toe pain	115 (1.5)	1.3–1.8	19 (0.3)	0.2–0.5	4.45 (2.75–7.21)	<0.001

and evidence-based, cost-effective interventions for those with the greatest healthcare expenditures [39].

Federal legislation through the Emergency Medical Treatment and Labor Act mandates the evaluation and treatment of all individuals coming to emergency departments regardless of ability to pay. However, there is no parallel emergency safe housing mandate [31]. Investing in targeted housing interventions for our most marginalized citizens on local, state and national levels is both ethically sound and a significant opportunity for improving outcomes and reducing healthcare costs. Interventions, such as Housing First, for individuals who are homeless have been shown to reduce utilization of emergency services as well as improve outcomes [9, 40-42].

Those experiencing homelessness were over 5 times more likely to present to the emergency department with alcohol intoxication, and this was our study group's most common chief complaint. Alcohol abuse interventions, including ED linked rehabilitation programs and sober centers, may serve to be high-impact for reducing morbidity, mortality, and emergency care utilization.

Importantly, by evaluating the extent of emergency health care utilization of those with documented homelessness, we can make more informed local public health and institutional policy changes to improve the integration of medical, mental health, substance abuse, and housing services. This information can also serve as a benchmark for future interventions. Next steps would include prospective studies evaluating the impact of targeted interventions on health service utilization and costs for our most marginalized population.

4.3. Limitations

There are a number of limitations inherent to this study. Generalizability of the population and comparison group is limited given the data was extracted from the electronic medical records of a single academic medical center. However, given this study's sample size and diversity of patients at this medical center, which serves as the region's largest tertiary care center, we felt that our sample was suited to address the purpose of this study. There are challenges in the identification of homelessness through a chart review – as homelessness can be chronic or episodic and may not be completely captured with the methods described. We did not evaluate for extended histories of homelessness for the study population and acknowledge that housing status would be more accurately described along a spectrum rather than as two categories. We tried to address this issue by including patients that had documentation indicating homelessness at any given time during the study period.

It is important to acknowledge that this study does not establish causality, and, as a retrospective study, it is strictly demonstrating associations. Particularly with our analysis of chief complaints, it would be reasonable to postulate that some presentations more common among those with documented homelessness (e.g. mental health, drug and alcohol conditions) contribute to the risk of homelessness and vice-versa. That being said, these data are powered to demonstrate a significant association between homelessness and emergency care utilization.

4.4. Conclusions

Compared to all Medicaid patients presenting to an urban academic medical center, patients with documented homelessness were over seven times more likely to return to the ED within 30 days and over eleven times more likely to return to the ED in two years. To reduce health care utilization and costs, it will be important to address the biopsychosocial issues of those with the greatest healthcare utilization and improve the integration of preventative primary care, mental health, substance abuse, social, and housing services for the homeless. Next steps include implementation science and prospective studies

evaluating the impact of targeted interventions on health service utilization and costs for one of our most marginalized populations.

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