Health Care Needs of Homeless Older Adults:

Examining the Needs of a Senior Center Cohort

Victor M. Ye, MS[1]; Richard J. Caplan, PhD[2]; Loretta Consiglio-Ward, MSN[3]; James M. Ellison, MD, MPH[4]

1. Value Institute, ChristianaCare; Department of Psychiatry and Human Behavior, Sidney Kimmel Medical College, Thomas Jefferson University

2. Value Institute, ChristianaCare

3. Institute for Learning, Leadership & Development, ChristianaCare

4. Swank Foundation Endowed Chair in Memory Care and Geriatrics, Swank Center for Memory Care and Geriatric Consultation, ChristianaCare; Professor, Psychiatry and Human Behavior, Sidney Kimmel Medical College, Thomas Jefferson University

Abstract

Objectives: To assess the medical status and health care needs of Wilmington's largest accessible group of homeless elders located at St. Patrick's Center in order to identify areas for improvement of medical screening, preventive health care delivery, and disease management. **Methods:** A cross sectional study was conducted between December 2016 and August 2018 at St. Patrick's center in Wilmington, DE. Utilizing a structured health needs assessment, 64 unique individuals aged 50 years and older were interviewed. Descriptive statistics were used to compare data from homeless older adults with data from non-homeless older adults. **Results:** Of the 64 total subjects, 17 self-reported as homeless at the time of interviewing. High rates of depressive and cognitive impairment symptoms were self-reported in both homeless and non-homeless participants. When compared to the non-homeless group at St. Patrick's Center, the homeless cohort was less likely to have received a non-acute assessment (such as a routine physical exam/well check-up) or a routine dental cleaning/x-ray within the past year. Tobacco and alcohol use and were frequently self-reported by homeless and non-homeless respondents and were more frequent in the homeless group. The homeless individuals were more likely to have engaged in illicit drug use. Overall, more than 90% of the subjects had some form of health insurance coverage. The most frequently cited reasons for lack of healthcare were inability to afford co-payments/deductibles and lack of transportation. **Conclusions:** To address the health care needs of this population, new programs to improve care should focus on facilitating access to services which address areas of deficiency. This group of older adults has benefited from a range of available services that reflect the work of a staff aware of their medical needs, as indicated by the high rate of insured individuals. Licit and illicit substance use assessment and treatment and dental screening remain areas of need for the homeless older adults interviewed in this study. The high rates of depression and cognitive impairment in both the homeless and non-homeless older adult groups suggest the need for further services in these areas as well. Access to care may be improved by addressing concerns regarding co-payments, deductibles, and transportation to care.

Introduction

Effective and affordable health care for those most in need requires that individuals with complex health issues have access to appropriate treatment resources. In the United States, more than 60% of the cost of health care is attributable to the sickest 5% of the population. Among the most medically compromised are the homeless elders, a growing population in the United States. On a single night in January 2017, over 550,000 people were experiencing homelessness in the US, of whom 23.1% were of age 51 or older.[1]

Access to care, of course, is not sufficient to assure good health in a population subject to the stresses of poverty and homelessness. Mortality and morbidity are directly linked to socioeconomic status, level of education, income level, social support systems, and race.[2] When compared to housed individuals, those without homes are more significantly impacted by these social determinants of health, which are associated with increased morbidity, mental illness, substance abuse, overall negative health behaviors and higher mortality.[3] The homeless population also experiences increased vulnerability due to unsafe living environments and lack of social support.[4] Access to health care is impeded by financial, geographic, provider, and other systemic barriers. In order to appropriately address the health care needs of homeless elders, it is important to assess the both care access and the larger domain of social determinants of health in this population.

Homeless individuals age more rapidly as a result of their exposure to the adverse effects of weather and their high rate of life-shortening chronic health problems including COPD, hypertension, obesity, diabetes, infections (including HIV), substance abuse, depression and other mental illnesses, and neurocognitive impairment. The prevalence of medical conditions characteristic of late life among homeless adults aged 50 and older is similar to that among adults aged 65 and older in the general population[5,6]; therefore, homeless individuals of age 50 and older are considered to be "older adults."[7] The health care they receive is sporadic and inadequate, based on urgency, and impeded by limited transportation, difficulty adhering to an appointment schedule, and distrust of medical providers. Homeless elders visit the Emergency Department (ED) four times as frequently as the general population[8,9] and account for a large proportion of the ED use by our homeless population.[10] These frequent visits to the ED often result in inpatient admissions.[11]

In January 2018, the annual Housing and Urban Development (HUD) Point-in-Time Count estimated that 1,082 individuals, of whom 51 were 62 years old or older, were homeless in Delaware.[12] The number of seniors aged 62 and older experiencing homelessness on the Point-in-Time survey increased by over 40% from 2015 to 2018. This count includes sheltered and unsheltered homeless individuals but excludes a possibly larger number of individuals in transient or insecure housing arrangements such as those relying on others for temporary shelter. The number of individuals aged 50 through 61 was not reported.

To understand the basic health needs of this population, we interviewed a cohort of 64 elders aged 50 or older who visited St. Patrick's Center, an urban Senior Center in Wilmington, between December 2016 and August 2018. St. Patrick's Center is a hub for Delaware's older homeless population, providing daily programs, which include meal assistance, distribution of groceries, clothing, transportation, daytime protection from the elements and social work services to facilitate access to additional resources such as shelters. The objective of this study was to assess the medical status and health care needs of Wilmington's largest accessible group

of homeless elders, located at this center which provides a variety of programs and services to 817 regular users, as part of a larger effort to address this population's health care needs. A structured interview explored the health needs of a convenience sample of homeless older adults with a focus on social determinants of health, chronic diseases, and barriers to accessing the health system. Statistical data analysis was used to identify the most frequent and highest priority needs of this group of homeless elders.

Methods

Study design

This cross-sectional study used a structured health needs assessment interview to assess the health needs of a sample of 64 adults aged 50 and older recruited from the "guests" of St. Patrick's Center, a senior center frequented by many of Wilmington's homeless elders. Homelessness in this study was defined by the participating subjects' self-report and included individuals who were sheltered, unsheltered, or relying on transient housing arrangements.

This study was approved by the institutional review board of Christiana Care Health System. Participation in the study was voluntary and informed consent was obtained and documented for all research participants. No compensation (monetary or non-monetary) was provided to subjects for participation in the research.

Subjects

Between December 2016 and August 2018, 92 interviews were administered by residents and medical students trained for this purpose. The transient nature of the St. Patrick's Center population makes it difficult to determine the percentage of all individuals served by the center during this interval. No individuals were refused participation, but data from duplicate interviews or subjects less than 50 years old were removed before data analysis. These final data, therefore, reflect the assessments of 64 unique individuals aged 50 years and older.

Assessment administration

A customized health needs assessment adapted, in part, from the EASY-Care needs assessment for community-dwelling older people with a minimum age of 60[13] and the Camberwell Assessment of Need for the Elderly (CANE),[14] which included those 59 and older, was used to gather data. Homeless older adults at St. Patrick's Center were surveyed about various health needs, conditions, and social determinants affecting their health through a series of yes/no, multiple choice and open-ended questions. The interviewees' verbal responses were transcribed by the interviewers.

Sociodemographic data

Subjects reported demographic information, including age, ethnicity, and gender. Highest level of education was categorized as college/graduate school, high school graduate, some high school, or K-8th grade. Employment status was categorized as full-time, part-time, retired, unemployed, or other. Subjects were also questioned as to whether they provided care to another individual or required a caretaker for themselves. Previous service in the military was reported. Subjects were also surveyed about current tobacco use, alcohol use, or illicit drug use, including the use of legal but non-prescribed medications such as opiates and narcotics.

Health and functional status

Subjects were asked whether a healthcare provider had ever informed them that they had any of the following health conditions: heart disease, high blood pressure, stroke, chest/lung disease, kidney/renal disease, liver disease, cancer, joint pain or back pain, diabetes, memory loss, obesity, depression and/or other mental health conditions, skin issues (leg ulcers/pressure sores), bowel/bladder incontinence, or dentition problems. They were also asked whether they had fallen within the past year.

Occurrence within the past year of the following health care maintenance services was noted: influenza vaccine, blood pressure check, blood sugar check, dental cleaning/x-ray, physical exam/well check up, vision/hearing screening, cholesterol screening, mammogram, pap smear, skin cancer screening, colorectal exam, prostate cancer screening, or bone density test.

Subjects were screened for depression by administration of the PHQ-2 and they were also asked whether they ever felt anxious, frightened or worried.[15] They were screened for cognitive impairment by administration of the Mini-Cog test.[16]

Health care access

Subjects were asked whether or not they had health insurance coverage, and if so, what type of health insurance: Medicare, Medicaid, private insurance, or military insurance. They were asked to identify barriers to health care including cultural/religious beliefs, lack of ability to find doctors, lack of understanding of the need to visit a doctor, fear of discussing health conditions, lack of availability of doctors, language barriers, lack of insurance or inability to pay for care, inability to pay co-payments or deductibles, or transportation issues. They were also asked whether they had trouble obtaining medications.

Utilization of healthcare services

The individuals in the study were asked where they would go for routine health care: physician's office, emergency room, urgent care clinic, other clinic, or no routine health care. They were also asked where they would go if they were sick: physician's office, emergency room, urgent care clinic, other clinic, or no health care utilization. In addition, the self-reported number of times they had utilized a physician's office or clinic, emergency room, and hospital for an overnight stay during the preceding year was recorded.

Homelessness, food and vulnerability

Participants were asked whether they were currently homeless and whether they had enough to eat every day. The number of meals eaten per day was categorized into the following groups: less than 1 meal, 1 to 3 meals, or find food throughout the day.

The issue of vulnerability was explored by asking subjects whether they felt safe inside places of shelter, felt safe outside, ever felt threatened or harassed, were victims of violence or witnessed violence in past year. They were also asked questions about close relationships, such as whether they have a close friend, relative, or partner, and whether they have support from someone.

Statistical analysis

We evaluated the study subjects' characteristics and healthcare need prevalence using descriptive statistics, including number and frequency. Our primary dependent variables included health

conditions, health care maintenance, access to healthcare services, and vulnerability. We assessed associations between homelessness and the dependent variables using Pearson chi-square tests and t-tests. We conducted analyses using IBM SPSS Statistics, Version 25.0 (IBM Corp., Armonk, NY).

Results

Sociodemographics

Data from 64 unique visitors to St. Patrick's Center who were 50 years of age or older were analyzed. The fraction of St. Patrick's Center's total population that this represents is not known. A total of 17 of these individuals self-identified as homeless. The mean age of these homeless individuals was 58.6 years old, while the mean age of non-homeless individuals was 69.4 (see Figure 1). The homeless group was predominantly male while the non-homeless group was predominantly female. Women comprised 29.4% of the homeless participants, compared to 60.5% of the non-homeless participants (p=0.045). African Americans comprised 64.7% of the homeless population and 76.2% of the non-homeless population. 58.8% of the homeless population was unemployed, compared to 25.6% of the non-homeless. Over half of the non-homeless population self-identified as retired, compared to none of the homeless population. Veterans comprised fewer than 20% of each group. Substance use among the homeless sample was significantly more common than in the non-homeless sample. Smoking was self-reported by 81.3% of homeless versus 30.2% of the non-homeless (p=0.001). Alcohol use was self-reported by 52.9% of the homeless versus 23.3% of non-homeless (p=0.035). Illicit drug use was self-reported by 43.8% of homeless versus 4.7% in non-homeless (p=0.001).

Figure 1. Sociodemographic Information

Table 1. Sociodemographic Information

	Non-Homeless (n=43)	Homeless (n=17)	Total (n=64)	P-value
Age (years), mean (SD)	69.4 ± 10.1	58.6 ± 4.7	66.4 ± 10.0	<0.0001
Female, no. (%)	26 (60.5)	5 (29.4)	32 (50.0)	0.045
Race, no. (%)				0.627
African-American	32 (76.2)	11 (64.7)	44 (68.8)	
White	7 (16.7)	5 (29.4)	14 (21.9)	
Other	3 (7.1)	1 (5.9)	4 (6.3)	
Highest Level of Education, no. (%)				0.808
College/graduate school	9 (20.9)	3 (17.6)	12 (18.8)	
High school/technical school	20 (46.5)	10 (58.8)	30 (46.9)	
Some high School	12 (27.9)	3 (17.6)	18 (28.1)	
K- 8th grade	2 (4.7)	1 (5.9)	3 (4.7)	
Employment Status, no. (%)				<0.001
Full time job	3 (7.0)	2 (11.8)	5 (7.8)	
Part time job	2 (4.7)	2 (11.8)	4 (6.3)	
Retired	22 (51.2)	0	24 (37.5)	
Unemployed	11 (25.6)	10 (58.8)	23 (35.9)	
Other	5 (11.6)	3 (17.6)	8 (12.5)	
Caretaker status, no. (%)				
Caretaker for other person, no. (%)	6 (14.0)	1 (5.9)	7 (10.9)	0.661
Have a caretaker	11 (25.6)	6 (35.3)	19 (29.7)	0.530
Veteran, no. (%)	8 (19.5)	3 (18.8)	11 (19.3)	1.000
Drug Use, no. (%)				
Current smoker	13 (30.2)	13 (81.3)	28 (43.8)	0.001
Alcohol use	10 (23.3)	9 (52.9)	20 (31.3)	0.035
Other drug use	2 (4.7)	7 (43.8)	9 (14.1)	0.001

Health conditions

High blood pressure was self-reported by 47.1% of these homeless subjects, compared to 72.1% of non-homeless (see Figure 2), but not verified by blood pressure measurement. Diabetes mellitus was self-reported by 5.9% of the homeless versus 37.2% of the non-homeless group (p=0.024). Skin conditions, including leg ulcers and pressure sores, were reported by 11.8% of the homeless population while none were reported in the non-homeless (p=0.077). Regarding mental health, 52.9% of the homeless self-reported depression and/or other mental health conditions, compared to 27.9% of the non-homeless (p=0.08). PHQ-2 screening for depression was positive in about 20% of individuals overall, with no significant difference between homeless and non-homeless groups. Over 70% of the homeless individuals reported feeling anxious, frightened or worried, compared to 48.8% of those who were non-homeless (p=0.156). About 20% of all the interviewed subjects screened positive for cognitive impairment on a brief performance test, with no difference between groups.

Figure 2. Medical History, Health Care Maintenance, and Mental Health Screening

	Non-Homeless (n=43)	Homeless (n=17)	Total (n=64)	P-value
Health Conditions, no. (%)				
Heart Disease	13 (30.2)	1 (5.9)	16 (25)	0.050
High Blood Pressure	31 (72.1)	8 (47.1)	41 (64.1)	0.080
Stroke	2 (4.7)	1 (5.9)	5 (7.8)	1.000
Chest/lung disease	6 (14)	6 (35.3)	12 (18.8)	0.081
Kidney/renal disease	4 (9.3)	0	5 (7.8)	0.570
Liver disease	1 (2.3)	2 (11.8)	4 (6.3)	0.191
Cancer	8 (18.6)	1 (5.9)	10 (15.6)	0.423
Joint pain or back pain	28 (65.1)	10 (58.8)	41 (64.1)	0.768
Diabetes	16 (37.2)	1 (5.9)	17 (26.6)	0.024
Memory	9 (20.9)	4 (23.5)	15 (23.4)	1.000
Obesity	11 (25.6)	0	12 (18.8)	0.025
Depression and/or other mental health	12 (27.9)	9 (52.9)	23 (35.9)	0.080
Skin (leg ulcers/pressure sores)	0	2 (11.8)	3 (4.7)	0.077
Bowel/bladder incontinence	6 (14.0)	2 (11.8)	9 (14.1)	1.000
Dentition	13 (30.2)	7 (41.2)	23 (35.9)	0.545
Fall within past year	12 (28.6)	5 (31.3)	19 (29.3)	1.000
Health Care Maintenance Within last year, no. (%)				
Flu shot	23 (53.5)	12 (70.6)	37 (57.8)	0.260
Blood pressure check	42 (97.7)	15 (88.2)	60 (93.8)	0.191
Blood sugar check	33 (76.7)	11 (64.7)	45 (70.3)	0.352
Dental cleaning/x-ray	13 (30.2)	0	14 (21.9)	0.012
Physical exam/well check up	35 (81.4)	11 (64.7)	49 (76.6)	0.190
Vision/Hearing screening	25 (58.1)	7 (41.2)	33 (51.6)	0.264
Cholesterol screening	29 (67.4)	8 (47.1)	38 (59.4)	0.238
Mammogram	14 (32.6)	1 (5.9)	15 (23.4)	0.046
Pap smear	7 (16.3)	1 (5.9)	8 (12.5)	0.420
Skin cancer Screening	6 (14.0)	2 (11.8)	8 (12.5)	1.000
Colorectal exam	15 (34.9)	2 (11.8)	17 (26.6)	0.112
Prostate cancer screening	7 (16.3)	1 (5.9)	8 (12.5)	0.420
Bone density test	8 (18.6)	1 (5.9)	9 (14.1)	0.423
Depression and Dementia Screening, no. (%)				
Positive depression screening (PHQ-2)	9 (21.4)	4 (23.5)	14 (22.2)	1.000
Felt anxious, frightened or worried	20 (48.8)	12 (70.6)	35 (54.7)	0.156
Positive dementia screening (Mini-Cog)	11 (26.8)	4 (23.5)	15 (23.4)	1.000

Health care maintenance

The most frequently received health care maintenance services within the past year were blood pressure checks and blood sugar checks (Figure 2). A blood pressure check was received by 88.2% of homeless, compared to 97.7% of non-homeless (p=0.191). A blood sugar check was received by 64.7% of homeless, compared to 76.7% of non-homeless (p=0.352). 64.7% of homeless received a physical exam/well check up within the year versus 81.4% of non-homeless (p=0.190). None of the homeless population had received a dental cleaning/x-ray, compared to 30.2% of the non-homeless population (p=0.012).

Health care access

Over 90% of these subjects reported having health insurance coverage with no significant difference between the two groups (see Figure 3). Over half of the subjects reported having Medicare and/or Medicaid. Only 12% of this cohort reported having private insurance.

Figure 3. Access and Utilization of Healthcare Services

	Non-Homeless (n=43)	Homeless (n=17)	Total (n=64)	P-value
Have Health insurance services, no. (%)	39 (92.9)	15 (88.2)	58 (90.6)	0.620
Type of Health insurance services, no. (%)				0.049
Medicare only	11 (33.3)	1 (7.7)	13 (20.3)	
Medicaid only	5 (15.2)	7 (53.8)	14 (21.9)	
Medicare and Medicaid	13 (39.4)	3 (23.1)	17 (26.6)	
Medicare and Private	1 (3.0)	0	1 (1.6)	
Private	2 (6.1)	2 (15.4)	4 (6.3)	
Military	1 (3.0)	0	1 (1.6)	
Where would go for routine health care, no. (%)				0.034
Physician's office	32 (76.2)	9 (52.9)	45 (70.3)	
Emergency room	5 (11.9)	1 (5.9)	6 (9.4)	
Urgent Care Clinic / other clinic	1 (2.4)	2 (11.8)	3 (4.7)	
No routine health care	1 (2.4)	4 (23.5)	5 (7.8)	
Other	3 (7.1)	1 (5.9)	4 (6.3)	
Where would go if sick, no. (%)				0.639
Physician's office	15 (36.6)	5 (29.4)	22 (34.4)	
Emergency room	21 (51.2)	9 (52.9)	31 (48.4)	
Urgent Care Clinic / other clinic	0	1 (5.9)	1 (1.6)	
Would not seek health care	2 (4.9)	1 (5.9)	4 (6.3)	
Other	3 (7.3)	1 (5.9)	4 (6.3)	
Average health care utilization in past year, mean ± SD				
Physician's office or clinic	4.63 ± 6.6	4.88 ± 8.9	4.88 ± 7.1	0.900
Emergency room	1.38 ± 1.8	2.31 ± 3.0	1.77 ± 2.3	0.180
Hospital overnight stay	0.42 ± 1.0	1.73 ± 4.1	0.90 ± 2.4	0.240
Reason for limited access to health care, no. (%)				
Cultural/religious beliefs	1 (2.3)	0	2 (3.1)	1.000
Don't know how to find doctors	1 (2.3)	0	1 (1.6)	1.000
Don't understand need to see a doctor	0	0	0	N/A
Fear (not ready to discuss health)	2 (4.7)	1 (5.9)	3 (4.7)	1.000
Lack of availability of doctors	3 (7.0)	2 (11.8)	5 (7.8)	0.616
Language barriers	1 (2.3)	0	2 (3.1)	1.000
No insurance/unable to pay for care	3 (7.0)	2 (11.8)	5 (7.8)	0.616
Unable to pay co-pays/deductibles	7 (16.3)	4 (23.5)	12 (18.8)	0.712
Transportation	8 (18.6)	3 (17.6)	12 (18.8)	1.000
Trouble getting medications, no. (%)	5 (11.9)	3 (21.4)	8 (12.5)	0.398

When asked about reasons for limited access to health care, the most common responses were inability to afford co-payments/deductibles (18.8%) and lack of transportation (18.8%). Individuals reporting no insurance or inability to pay for care comprised less than 10% of the total sample. Over 20% of the homeless subjects stated they had trouble obtaining medications, compared to 11.9% of non-homeless (p=0.398).

Health care utilization

When asked where they would go for routine health care, only 52.9% of the homeless subjects stated they would go to a physician's office, compared to 76.2% of non-homeless. Furthermore, 23.5% of the homeless subjects stated they receive no routine health care compared to 2.4% of non-homeless. When asked where they would go if sick, almost half of each group responded that they would use the emergency room. The physician's office was considered as an option for 29.4% of homeless and 36.5% of the non-homeless. The homeless population reported using the emergency room an average of 2.3 times during the past year, compared to 1.4 times reported by the non-homeless subjects (p=0.180). The homeless subjects reported an average of 1.73

overnights in the hospital in the past year, compared to 0.42 overnights in the non-homeless population (p=0.240).

Homelessness and vulnerability

About one quarter of the sample identified themselves as currently homeless (see Figure 4). In terms of the ability access food resources, 82.4% of the homeless sample stated they were able to eat enough everyday, compared to 93% of the non-homeless (p=0.338). When asked about safety, 88.2% of the homeless subjects stated that they feel safe inside compared to 93% of non-homeless (p=0.616), and 81.3% of homeless stated that they feel safe outside, compared to 71.4% of non-homeless (p=0.522). About 37% of homeless reported that they had ever felt threatened or harassed, compared to 23.8% of the non-homeless (p=0.336). Over 40% of the homeless subjects reported having been a victim of violence or witnessing violence in the past year, compared to 21.4% of non=homeless (p=0.195). With regard to support systems, 64.7% of homeless reported having a close friend, relative, or partner, compared to 88.4% in the non-homeless (p=0.059). Overall, over 90% of all subjects reported having support from someone.

Figure 4. Meals and Vulnerability

	Non-Homeless (n=43)	Homeless (n=17)	Total (n=64)	P-value
Able to eat enough every day	40 (93.0)	14 (82.4)	58 (90.6)	0.338
Meals/day, no. (%)				1.00
<1	1 (2.3)	0	1 (1.6)	
1 to 3	37 (86.0)	15 (88.2)	56 (87.5)	
Find food throughout the day	5 (11.6)	2 (11.8)	7 (10.9)	
Vulnerability, no. (%)				
Feel Safe inside	40 (93.0)	15 (88.2)	58 (90.6)	0.616
Feel Safe outside	30 (71.4)	13 (81.3)	46 (71.9)	0.522
Ever Feel threatened or harassed	10 (23.8)	6 (37.5)	17 (26.6)	0.336
Victim of violence or witnessed violence in past year	9 (21.4)	7 (41.2)	17 (26.6)	0.195
Have a close friend, relative, or partner	38 (88.4)	11 (64.7)	52 (81.3)	0.059
Have support from someone	40 (93.0)	17 (100)	60 (93.8)	0.551

Discussion

In our cohort of self-identified homeless older adults at the St. Patrick's Center, the average age was 58.6 years old. Similarly, the most prevalent group of elders in the national homeless population are adults between ages 51-61.[1] Our homeless population was 29.4% female compared to 37.6% female in the national sheltered homeless population. Nationally, African Americans comprised 43.0% of the sheltered homeless population, versus 64.7% in our cohort.

Overall, a large proportion of the older adult subjects in this study self-reported high blood pressure or joint pain or back pain. About a third of these subjects stated they were suffering from depression and/or other mental health conditions. The majority of subjects were able to receive some form of primary care health screening, including blood pressure and blood sugar checks.

Statistical analysis points to a few significant differences between the two groups. The homeless group was younger and predominantly male. There was more substance use recorded in the homeless population, including smoking, alcohol use, and illicit drug use. Dental issues were more common in the homeless subjects, and they were also less likely to have received routine dental care and x-rays.

The non-homeless cohort was more likely to report having heart disease, high blood pressure, and diabetes, differences that may reflect greater self-awareness as a result of more consistent access to primary care. Although the utility of the annual physical exam has been called into question by many experts recently[17] and has not been shown to improve outcomes in the general population, there may be value to the annual physical in the homeless population. It can help establish the patient-doctor relationship, especially in a population that tends to distrust the health care system as whole. These patients may find it easier to visit their primary care physician when ill if they feel welcomed by their health care providers, thus reducing hospital admission and emergency room visits.

Depression was common in both homeless and non-homeless older adults and the homeless individuals reported depression and other mental health conditions, including having felt anxious or frightened, more frequently than the non-homeless participants. These findings are consistent with a higher rate of vulnerability, including feeling threatened or being a victim of violence. The need for increased behavioral health services appeared significant in this group of older adults whether homeless or non-homeless.

Over 90% of the overall cohort reported having some form of health insurance, which seems to reflect the successful outreach of St. Patrick's Center's social work team; however, the homeless subjects were still much less likely to report receiving routine health care. Inability to pay co-pays/deductibles as well as transportation issues were the main reported barriers to receiving health care for both of the groups. If sick, almost half of both groups stated that they would go to the emergency room for care. The homeless cohort, however, had higher average visits to the emergency room and longer length of stays in the hospital overnight.

Transportation to and from health care providers in Delaware can be difficult due to lack of accessible public transportation in the state. Recently, there have been multiple case studies conducted by the American Hospital Association on innovative interventions that improve patient transportation.[18] For instance, Grace Cottage Family Health and Hospital in Vermont collaborated with a volunteer driver program and Denver Health Medical Center partnered with ride sharing company Lyft to provide patients with transportation services to healthcare appointments. Innovative approaches to transportation combined with new screening tools to identify patients with transportation needs could significantly improve the access to health care for the elderly homeless population.

Limitation of access to care on the basis of deductibles and co-payments is a problem that plagues our health care system and interferes with the care of the homeless and non-homeless older adults interviewed at St. Patrick's Center. Although such costs are very low for individuals whose primary or secondary insurer is Medicaid, those costs can be significantly higher for individuals with other forms of insurance.

The three major limitations of this study were the small sample size, the self-reported nature of these data, and the use of a convenience sample. Much of the information from the study subjects was from self-report only, including health conditions, health insurance, and health care utilization. The PHQ and Mini-Cog data were obtained directly by the interviewers. The inclusion of subjects by their presence in the center and willingness to participate in the study may limit generalizability of our findings. Furthermore, homelessness was self-defined by the subjects, who were asked whether they considered themselves homeless and for how long they had been homeless. There is also possible confounding of the comparison between the two

groups due to the differences in average age and proportion of each gender. Statistical analysis controlling for these potential confounders was not performed due to small sample size.

Conclusion

Among this cohort of older adults who identified themselves as homeless and who visited St. Patrick's Center in Wilmington, DE, we observed a high prevalence of chronic and debilitating health conditions, such as high blood pressure and joint and back pain. Lack of health care insurance was infrequent in this cohort, with over 90% of the population having some form of insurance; however, inability to pay co-pays/deductibles as well as transportation issues imposed barriers to care access. Homeless and non-homeless subjects self-reported equal likelihood of visiting the emergency room use if sick, but the homeless subjects reported more frequent emergency room visits and longer hospital stays. To address the health care needs of this population, new programs to improve care in the homeless population should focus on routine primary health care substance use and behavioral health services, and dental care. Clinicians should work to facilitate transportation to outpatient primary care services and recognize the access barrier imposed by deductibles and copayments.

Acknowledgements

References

1. The 2017 Annual Homeless Assessment Report (AHAR) to Congress, Part 2: Estimates of Homelessness in the U.S. (2017). Retrieved from https://www.hudexchange.info/resources/documents/2017-AHAR-Part-2.pdf

2. Galea, S., Tracy, M., Hoggatt, K. J., Dimaggio, C., & Karpati, A. (2011, August). Estimated deaths attributable to social factors in the United States. *American Journal of Public Health*, *101*(8), 1456–1465. PubMed https://doi.org/10.2105/AJPH.2010.300086

3. Fazel, S., Geddes, J. R., & Kushel, M. (2014, October 25). The health of homeless people in high-income countries: Descriptive epidemiology, health consequences, and clinical and policy recommendations. *Lancet*, *384*(9953), 1529–1540. PubMed https://doi.org/10.1016/S0140-6736(14)61132-6

4. Hwang, S. W., Kirst, M. J., Chiu, S., Tolomiczenko, G., Kiss, A., Cowan, L., & Levinson, W. (2009, September). Multidimensional social support and the health of homeless individuals. *J Urban Health*, *86*(5), 791–803. PubMed https://doi.org/10.1007/s11524-009-9388-x

5. Brown, R. T., Kiely, D. K., Bharel, M., & Mitchell, S. L. (2012, January). Geriatric syndromes in older homeless adults. *Journal of General Internal Medicine*, *27*(1), 16–22. PubMed https://doi.org/10.1007/s11606-011-1848-9

6. Brown, R. T., Hemati, K., Riley, E. D., Lee, C. T., Ponath, C., Tieu, L., . . . Kushel, M. B. (2016, August 1). Geriatric conditions in a population-based sample of older homeless adults. *The Gerontologist*, *57*(4), 757–766. https://doi.org/10.1093/geront/gnw011 PubMed

7. Eckerblad, J., Theander, K., Ekdahl, A., Unosson, M., Wirehn, A. B., Milberg, A., . . . Jaarsma, T. (2015, January 5). Symptom burden in community-dwelling older people with multimorbidity: A cross-sectional study. *BMC Geriatrics*, *15*(1), 1. PubMed https://doi.org/10.1186/1471-2318-15-1

8. D'Amore, J., Hung, O., Chiang, W., & Goldfrank, L. (2001, November). The epidemiology of the homeless population and its impact on an urban emergency department. *Acad Emerg Med*, *8*(11), 1051–1055. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11691667 PubMed https://doi.org/10.1111/j.1553-2712.2001.tb01114.x

9. Kushel, M. B., Perry, S., Bangsberg, D., Clark, R., & Moss, A. R. (2002, May). Emergency department use among the homeless and marginally housed: Results from a community-based study. *American Journal of Public Health*, *92*(5), 778–784. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11988447 PubMed https://doi.org/10.2105/AJPH.92.5.778

10. Brown, R. T., & Steinman, M. A. (2013, June). Characteristics of emergency department visits by older versus younger homeless adults in the United States. *American Journal of Public Health*, *103*(6), 1046–1051. PubMed https://doi.org/10.2105/AJPH.2012.301006

11. Brown, R. T., Kiely, D. K., Bharel, M., Grande, L. J., & Mitchell, S. L. (2013, October 28). Use of acute care services among older homeless adults. *JAMA Internal Medicine*, *173*(19), 1831–1834. PubMed https://doi.org/10.1001/jamainternmed.2013.6627

12. Housing Alliance Delaware. (2017). The State of housing & homelessness in The First State (2017 Joint Report). Retrieved from: www.housingalliancede.org

13. EASYCare Group. (2014). *EASYCare tool website*. Retrieved from: http://www.easycareproject.org/

14. Reynolds, T., Thornicroft, G., Abas, M., Woods, B., Hoe, J., Leese, M., & Orrell, M. (2000, May). Camberwell assessment of need for the elderly (CANE). Development, validity and reliability. *Br J Psychiatry*, *176*, 444–452. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10912220 PubMed https://doi.org/10.1192/bjp.176.5.444

15. Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2003, November). The Patient Health Questionnaire-2: Validity of a two-item depression screener. *Medical Care*, *41*(11), 1284–1292. PubMed https://doi.org/10.1097/01.MLR.0000093487.78664.3C

16. Borson, S., Scanlan, J., Brush, M., Vitaliano, P., & Dokmak, A. (2000). The mini-cog: a cognitive "vital signs" measure for dementia screening in multi-lingual elderly. *Int J Geriatr Psychiatry, 1*5(11), 1021-1027. http://www.ncbi.nlm.nih.gov/pubmed/11113982

17. Mehrotra, A., & Prochazka, A. (2015, October 15). Improving value in health care—Against the annual physical. *The New England Journal of Medicine*, *373*(16), 1485–1487. PubMed https://doi.org/10.1056/NEJMp1507485

18. Social determinants of health series: Transportation and the role of hospitals. (2017). *Heal Res Educ Trust*. Retrieved from: www.aha.org/transportation

---