



# Challenges of caring for homeless patients with inflammatory arthritis: 12-month follow-up observations and identification of certain barriers to care

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## Abstract

Homelessness is a public health crisis and there is a paucity of information about patients with rheumatic disease experiencing homelessness. We sought to develop approaches to improve care for this unique patient population. We previously reported observations on 17 homeless patients with inflammatory arthritis (15 rheumatoid arthritis (RA), 2 psoriatic arthritis (PsA)). We obtained follow-up information from our original 17 patients and compared this to data summarized and published about them from 12 months previously. We also created and administered a 100-question needs assessment survey. Follow-up 12-month clinical information was available from 13/17 homeless and 13/17 non-homeless controls. Homeless patients remained less well with more disease than non-homeless patients—poorer access to clinic appointments (80% vs 91%,  $p < 0.05$ ), more emergency services use (20 vs 5 ED visits), less DMARDs use (43% vs 100%,  $p < 0.01$ ), and more steroid use (29% vs 0%,  $p < 0.01$ ). Homeless patients also had higher inflammatory markers than non-homeless patients (ESR 32 vs 26 mm/h and CRP 17 vs 5 mg/L), although these findings were not statistically significantly different. Seventy-eight percent of homeless patients were stable, 14% improved, and 7% worse; 21% had stable controlled and 57% stable active disease vs 62% and 0% of non-homeless ( $p < 0.01$ ). Among the homeless, 6 (4 RA, 2 PsA) completed the survey, 2 declined, and 9 could not be reached. All 6 had found housing although all still had housing insecurity; 4 (67%) were homeless in the past. Three out of six (50%) obtained housing from social assistance during hospitalization following disease exacerbation while homeless. The average monthly income was \$873. 5/6 (83.3%), were unable to work due to health, and were in considerable pain that adversely impacted their physical and mental health and ability to perform ADLs. Their perceived “greatest need” included dental care, physical therapy, knee surgery, employment, socialization secondary to isolation, and stable housing. Our understanding of the unique challenges of patients with rheumatic disease experiencing homelessness is improved, but not complete. Strengthened collaboration between street medicine providers and rheumatologists is necessary to improve care for homeless patients, especially given poorer outcomes compared with non-homeless counterparts.

## Key Points

- We report 12-month follow-up information from our original 17 homeless patients with inflammatory arthritis (related in this journal in 2021) and their responses to an extensive needs assessment survey designed to identify barriers to care.
- Homeless patients with inflammatory arthritis continued to have worse disease outcomes, use more corticosteroids and less DMARDs, and be seen less often in rheumatology clinics and more frequently in emergency departments than their non-homeless counterparts.
- Survey data indicated that social assistance during hospitalization was a key area where healthcare providers could intervene to provide housing security for homeless patients and improve outcomes. Patients perceived “greatest needs” went beyond housing and rheumatological care and critically included access to social/specialty services.
- Street medicine is the direct delivery of healthcare to people experiencing homelessness wherever they reside. Our observations, obtained in collaboration with street medicine colleagues, suggest important and salutary opportunities for this partnership to improve care for these particular patients.

Portions of this work were presented at the American College of Rheumatology Annual Scientific Sessions (Convergence), November 7, 2021. Arthritis Rheum 73 (S9): Abstract 609, 2021 (see also “Acknowledgements” and reference #3).

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Homelessness is a public health crisis in the United States (US), indeed worldwide [1, 2]. On a single night in 2020, roughly 580,000 people were estimated to be experiencing homelessness in the US. The numbers of those affected continue to rise with 2020 being the fourth consecutive year that people experiencing homelessness have increased and the first year that there are more unsheltered individuals than sheltered individuals [2]. Moreover, as these data were tabulated prior to COVID-19, the consequences of the global pandemic on this population are yet to be fully known.

There is a paucity of data about the rheumatic and musculoskeletal disease in patients with housing insecurity. We are not aware of large-scale cross-sectional data about homeless patients with rheumatic disease. Rheumatic diseases such as rheumatoid arthritis (RA) and psoriatic arthritis (PsA) can have a significant chronic disease burden and impact on patients' quality of life, especially when left uncontrolled. The management of these diseases often requires strict medication adherence, polypharmacy, and close specialty follow-up, and thus it is not unexpected that individuals experiencing homelessness are at increased risk for adverse outcomes [1]. The psychosocial issues faced by homeless patients also create barriers to care that further contribute to this risk of poor outcomes.

The role of street medicine in addressing these barriers to care is critically important. Street medicine is the direct delivery of healthcare to people experiencing homelessness in their environment including on the street, under bridges, or wherever they reside. All care is performed on the street via walking rounds with supplies coming out of backpacks rather than a recreational vehicle. Street medicine teams commonly dispense medications, perform phlebotomy, and do a point-of-care ultrasound on site with the goal of providing the same quality of care on the street as in a formal clinic.

We have previously identified, studied, and reported observations on homeless patients with inflammatory arthritis [1]. Here we sought to obtain follow-up information about their course and outcomes and to better understand their unique challenges so as to be able to further develop approaches to improve their care.

## Materials and methods

### Study design and patients

We previously reported preliminary observations on 17 patients with inflammatory arthritis who were treated at the Los Angeles County Medical Center from December 2014

to June 2020 (15 RA, 2 PsA) [1]. We obtained follow-up clinical information from these original 17 patients from June 2020 to June 2021 and compared this to data summarized and published about them 12 months previously [3]. Institutional Review Board approval was granted to reach out to patients via direct communication to obtain follow-up clinical information, with electronic interpreters used for all non-English speaking patients.

### Data collection

Sociodemographic information and clinical features such as inflammatory markers, disease status, and use of emergency services, disease-modifying anti-rheumatic drugs (DMARDs), and corticosteroids were compared between homeless and non-homeless patients.

We created a 100-question survey to assess these patients' challenges and needs. We developed our survey by modeling questions after those in the Short Form (36) Health Survey (SF-36), a globally established, reliable, and validated 36-item tool that measures general health status and health-related quality of life in individuals with several chronic health conditions [4]. We also developed questions based on the Primary Care Quality-Homeless (PCQ-H) Instrument, which utilized item response theory to examine Test Information Function (FIT) curves with the goal of eliminating less informative items. Item selection for the PCQ-H instrument was based on survey administration to over 500 homeless patients [5].

In addition, we collaborated with the Division of Street Medicine at the Keck School of Medicine of USC to help identify and assess patients and to review study materials so as to assure that the unique perspectives and challenges of these individuals were being adequately assessed [6]. Survey questions included demographic information as well as questions pertaining to substance abuse, social support, general health, chronic pain, medications, mental health, chronic pain, transportation, housing, and patient-perceived greatest needs. Questions varied from multiple-choice, Likert scale, and free response.

### Statistical analysis

Data analysis was performed with chi-square tests, Fisher's exact tests, and Mann–Whitney tests. For all analyses,  $p < 0.05$  was considered statistically significant.

## Results

Follow-up 12-month clinical information was available from 13/17 homeless and 13/17 non-homeless, controls. Compared with non-homeless patients, homeless patients were

**Table 1** Demographic variables at 12-month follow-up

	Homeless (N= 13)	Non-homeless (N= 13)
Age (years ± SD)	57 ± 9	61 ± 8
Female (%)	54	92
Ethnicity (%)		
Caucasian	15.4	7.7
Hispanic	38.5	38.5
African American	38.5	30.8
Asian	0	15.4
Other	7.7	0
Unknown	0	7.7
Diagnosis (%)		
Rheumatoid arthritis	69.2	100
Psoriatic arthritis	23.1	0
Reactive arthritis	7.7	0
Lost to follow-up	4	4

younger (57 vs 61 years old), less frequently female (54% vs 92%), and more frequently African American (38% vs 30%) compared with non-homeless patients although these findings were not statistically significantly different (Table 1).

In addition, homeless patients remained less well with more disease than non-homeless— poorer clinic

**Table 2** Clinical and laboratory features at 12-month follow-up

	Homeless (N= 13)	Non-homeless (N= 13)
Disease activity (%)		
Stable controlled <sup>++</sup>	21.4	61.5
Stable active <sup>++</sup>	57.1	0
Improved	14.3	15.4
Worsened	7.1	23.1
Inflammatory markers		
Average last CRP (mg/L)	16.7	4.6
Average last ESR (mm/h)	31.8	25.9
Medications (%)		
DMARD <sup>++</sup>	42.9	100
Biologic	28.6	69.2
Infusion	14.3	7.7
Steroid <sup>++</sup>	28.6	0
Appointment compliance (%)		
Total <sup>+</sup>	80.1	91.3
Rheumatology <sup>++</sup>	74.9	93
Primary care <sup>++</sup>	82.8	100
Emergency room visits (# in past 12 months)	20	5

+ *p* < 0.05

+ + *p* < 0.01

**Table 3** Health Assessment Telephone Survey

	Phone survey participants (N= 6)
Age (years ± SD)	60.2 ± 7.3
Female (%)	66.7
Ethnicity (%)	
Hispanic	33.3
African American	16.7
Other	33.3
Multi-racial	16.7
Birthplace (%)	
Foreign born	33.3
US	66.7
Employment (%)	
Employed	0
Retired	0
Unable to work due to health	83.3
Have not looked for employment	16.7
Average monthly income	\$873.40
Tobacco use (%)	
Former use	33.3
Never use	66.7
Former recreational drug abuse (%)	33.3
Former EtOH abuse (%)	16.7
Current place of living (%) <sup>*</sup>	
Apartment	66.7
House	16.7
Board and care	16.7
Diagnosis (%)	
Rheumatoid arthritis	83.3
Psoriatic arthritis	16.7

<sup>\*</sup>Prior places of living: street, assisted living facility, car, security storage unit, prison

appointment attendance (80% vs 91%, *p* < 0.05), more emergency services use (20 vs five ED visits), less use of DMARDs (43% vs 100%, *p* < 0.01), and more steroid use (29% vs 0%, *p* < 0.01). Homeless patients also had higher inflammatory markers (ESR 32 vs 26 mm/h, CRP 17 vs 5 mg/L) than non-homeless patients, although these findings were not statistically significantly different. Moreover compared with non-homeless patients, homeless patients were less likely to have stable controlled disease (21.4% vs 61.5%, *p* < 0.01) (Table 2).

Among homeless patients, six (four RA, two PsA) completed the survey, two declined, and nine could not be reached. All six had found housing, although all still had housing insecurity; four (67%) were homeless in the past. Three out of six (50%) obtained housing from social assistance during hospitalization following disease exacerbation while homeless. Five out of six (83.3%) were unable to work

due to health, average monthly income was \$873, and they were in considerable pain that adversely impacted physical and mental health and ability to perform activities of daily living. Three out of six (50%) reported using walking assist devices at baseline (including a walker or wheelchair), and an equal percentage (50%) reported relying on public transportation to attend clinic appointments. Most patients (83%) reported living alone. Their perceived “greatest need” varied, including health and dental care, physical therapy, knee surgery, employment, socialization secondary to isolation, and stable housing (Table 3).

## Discussion

Homelessness is an important social determinant of health. Individuals experiencing homelessness are disproportionately affected by physical and mental illness and have unique barriers to healthcare that confound their outcomes and result in higher morbidity and mortality rates than their non-homeless counterparts [7]. For example, the mortality rate is nearly eight times higher than the average for men and 12 times higher for women, with an average age for death at 52 years for individuals experiencing homelessness [8]. In addition, these individuals are three times more likely to report chronic diseases and are unfortunately often ill-equipped to manage these diseases when they arise [7]. Indeed challenges in meeting basic human needs must often be prioritized for many individuals experiencing homelessness.

Los Angeles County Medical Center of the Keck School of Medicine of the University of Southern California (LAC + USC) is one of the largest public hospitals in the US and one of the largest safety-net hospitals in the Western United States. The institution provides care to a predominantly uninsured underserved population, including many of the approximately 66,400 homeless individuals in Los Angeles County [9]. Our study observations, while limited to modest numbers of patients and with difficulties sustaining contact, add to our understanding of the unique challenges of caring for this homeless population. That 76% could be followed at 12 months is notable, and it provides a basis to strengthen collaboration with street medicine providers in the care of these patients. While our homeless patients fared less well than their non-homeless counterparts, their inflammatory arthritis was potentially manageable, especially for those who were able to achieve stable housing. Patients’ perceived “greatest needs” went beyond housing and rheumatological care and indicate the importance of access to social and specialty services (i.e., mental health, physical therapy, dental care, and employment). These data suggest promising opportunities to offer

our homeless patients better quality and more equitable care.

The next steps to achieve better care for our homeless patients will require a multi-disciplinary approach. Collaboration among rheumatology and “street medicine” providers, as mentioned, will be critically important in this endeavor. Studies have shown that with street medicine, 70% of people experiencing homelessness were actively engaged in primary care within 1 week of hospital discharge, compared with 27% engaged if given 6 months to establish care in a traditional clinic [10]. In addition, standardized algorithms, such as social work consultations once patients experiencing homelessness are identified, will help to identify feasible goals for frequency of follow-up care and types of therapies prescribed [11]. Elsewhere, we consider adapting traditional management guidelines appropriate to this patient population [11]. Care for this patient population should focus not only on treating the rheumatologic disease itself, but also on disparities in housing, income, education, and transportation [1]. Future studies with larger sample sizes that quantitatively track homeless patients over time will allow us to better understand how to best deliver care to this uniquely vulnerable population. We all have a responsibility to promote social justice and help eliminate inequities in access and quality of care.

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## Declarations

**Disclosures** None.

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