

## **Burden of Musculoskeletal Disease in Unhoused Adults Residing in Shelters**

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**INTRODUCTION:** People experiencing homelessness have been shown to have a high prevalence of chronic pain, mobility impairment, arthritis, injury, and amputation. Little is known about the prevalence of specific musculoskeletal disorders and injuries, the specific symptoms that people experiencing homelessness describe, or factors associated with injury in this population.

**METHODS:** We conducted a cross-sectional study of 200 adults staying in homeless shelters to describe the prevalence and patient-associated characteristics of several common musculoskeletal disorders (arthritis, spinal deformity/problem, osteoporosis, congenital limb deformity, and bone tumor), injuries (fracture, dislocated joint, torn ligament/tendon), and subjective joint, neck, and back pain. In multivariable analysis, we evaluated factors associated with reporting a history of a musculoskeletal diagnosis.

### **RESULTS:**

Participants had a median age of 47 (IQR 29-56), and reported a median of 8 years unhoused (IQR 3-15). Participants were ethnically diverse (White 36%, Black 31%, Latinx 12%) and predominantly male (79%). The majority of patients reported never having received a musculoskeletal diagnosis (60%); the most commonly reported diagnoses included arthritis (21%) and spinal problem/deformity (15%), with osteoporosis (2%), congenital limb deformity (1%), and bone tumor (0%) being rare or not reported. Knees (66%) and hands (39%) were the most commonly reported sites of diagnosed arthritis. Herniated disk (50%) and scoliosis (30%) were the most commonly reported spinal problems/deformities. Most participants reported joint pain (55%), including back pain (50%) and neck pain (25%). In multivariable analysis, military service (AOR 4.2, CI 1.3-13.8) and prison experience (AOR 2.4, CI 1.0-5.4) were associated with increased odds of a diagnosed spinal problem or deformity.

In terms of musculoskeletal injuries, the majority of patients reported lifetime fracture (69%). Some participants reported a history of dislocated joint (40%) and torn ligament (33%). The most commonly dislocated joint was the shoulder (15%). Causes of dislocated joint included violent victimization (30%), auto accident (22%), and work-place injury (11%). Increased odds of dislocated joint was associated with injection drug use (AOR 3.6, CI 1.8-7.3) and becoming homeless at an earlier age (AOR 1.03, CI 1.00-1.06). Having a usual occupation that involved lots of driving was associated with decreased odds of dislocated joint (AOR 0.4, CI 0.1-0.9). The most commonly torn ligament was in the knee. Causes of torn ligament/tendon included violent victimization (22%), auto accident (17%), and work-place injury (8%). The majority of participants (56%) did not have regular primary care, and therefore diagnoses are likely underreported.

### **DISCUSSION AND CONCLUSION:**

There is a substantial burden of musculoskeletal disease in the unhoused population. While the majority of participants reported never having received a diagnosis of musculoskeletal disorder, the lack of access to regular primary care likely has resulted in under-diagnosis, with most participants reporting joint and back pain. Prevalence of spinal deformity/problem, dislocation, and torn ligament/tendon are higher in this population than in the general population. Military service and prison experience were independently associated with increased odds of diagnosed spinal problem or deformity while injection drug use and earlier age of homelessness were independently associated with the odds of dislocated joint. With the aging of the homeless population, there is a need to consider patient-specific factors that influence the musculoskeletal health in the unhoused population and address musculoskeletal disparities and downstream consequences of under- or delayed treatment of these conditions.