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Resource Utilization Due to Breakthrough Pain in Patients With Chronic Painful Conditions

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Background

- Breakthrough pain, also referred to as a pain flare, has been defined as "a transitory increase in pain to greater than moderate intensity, which occurs on a baseline pain of moderate intensity or less in a patient receiving chronic opioid therapy"¹
- Limited research has been published to demonstrate the economic impact of pain flares in terms of direct and indirect costs

1. Portenoy RK, Hagen NA. Breakthrough pain: Definition, prevalence, and characteristics. Pain 1990;41:273-81.

Objectives

- Primary:** To capture healthcare resource consumption and work loss in a population of patients with chronic pain who have pain flares from one or more of the following non-cancer conditions:
 - Musculoskeletal problems (back, knee, shoulder, neck, and other areas)
 - Rheumatological diseases (arthritis, lupus, and others)
 - Chronic headache
 - Sickle cell anemia
- Secondary:** To explore the relationship between anxiety, depression, and pain in this population

Study Design

- A 3-month prospective, observational study of outpatients from a large tertiary U.S. medical center

Methods

Eligibility Criteria

- Inclusions**
 - Patients with chronic pain meeting the following definition: "Chronic pain is pain that continues a month or more beyond the usual recovery period for an injury or illness or that goes on for months or years due to a chronic condition. The pain is usually not constant, but can interfere with daily life at all levels."²
 - Age ≥18 years
- Exclusions**
 - Patients who were not able to communicate in English sufficiently well to complete the required follow-up
 - Patients deemed to be inappropriate for participation by their physician

2. American Chronic Pain Association. Definition of Chronic Pain. Available at: <http://www.theacpa.org>

Data Collection

- Participants were recruited through Jefferson University Physicians' practices
 - Jefferson Pain Center
 - Rheumatology
 - Hematology (sickle cell)
 - Neurology
- Data collection tools:
 - Patient diary where healthcare utilization and work loss were captured each day for 7 consecutive days upon study entry
 - Monthly patient survey at months 1, 2, and 3 to capture healthcare utilization, work loss, changes to employment, and/or changes in treatment

Study Measures

- Patient demographics
- Pain score (10 point scale)
- Sleep quality (Pittsburgh Sleep Quality Index)*
- Quality of life (SF-12, v2)*
- Pain Flare Definitions Questionnaire*
- Satisfaction with pain treatment (Pain Flare Treatment Satisfaction Questionnaire)*
- Healthcare utilization due to pain flare(s) or pain treatments:
 - Hospitalizations
 - Outpatient medical visits
 - Phone calls to physician office
 - Emergency room visits
 - Pain medications
 - Alternative treatments for pain
- Work productivity loss due to pain flares or pain treatments (Health-Related Productivity Questionnaire-Diary)
 - Hours of work missed (absenteeism)
 - Impact on work output (presenteeism)
 - Hours of work missed at home ("around the house")

*Results pertaining to these measures are beyond the scope of this abstract

Analysis

- Examined direct medical costs and work productivity by pain source, gender, ethnicity, occupation/employment status, and age
 - Results presented herein are limited to diary findings from the first 161 enrollees (data collection is ongoing)
 - Breakthrough pain was defined as 1 or more pain flares during the diary period
- This analysis was not limited to patients receiving opioids due to small sample size

Disclosure

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Acknowledgements

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Results

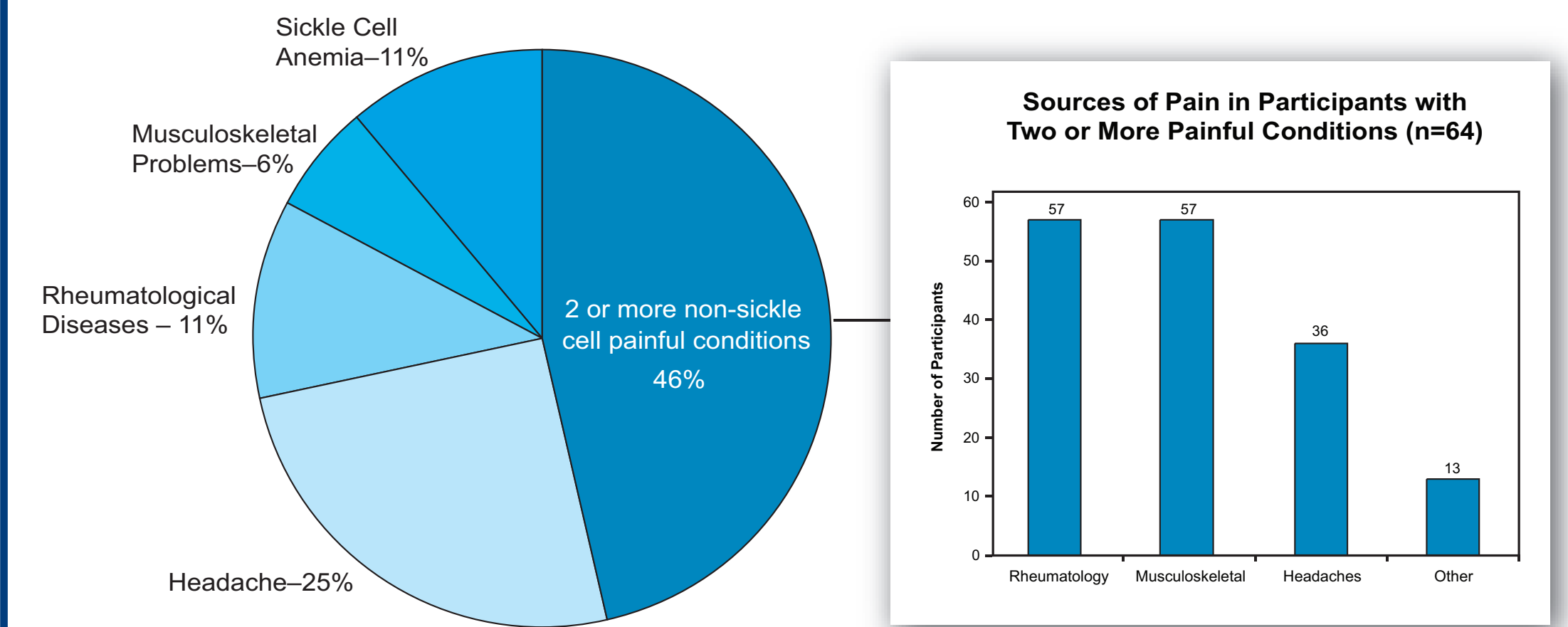
Demographics

A total of 161 participants completed the diary. Most were female (79%), caucasian (68%), and experienced at least 1 pain flare during the diary week (88%)

| Gender | n | % |
|---|-----|-----|
| Females | 127 | 79% |
| Males | 34 | 21% |
| Ethnicity | n | % |
| Caucasian | 106 | 68% |
| African American | 45 | 29% |
| Hispanic | 4 | 3% |
| Asian | 1 | 1% |
| Other | 1 | 1% |
| At Least 1 Pain Flare During Diary Week | n | % |
| Yes | 141 | 88% |
| No | 15 | 9% |

Sources of Pain Among Participants

Enrollment By Pain Source (n=141)



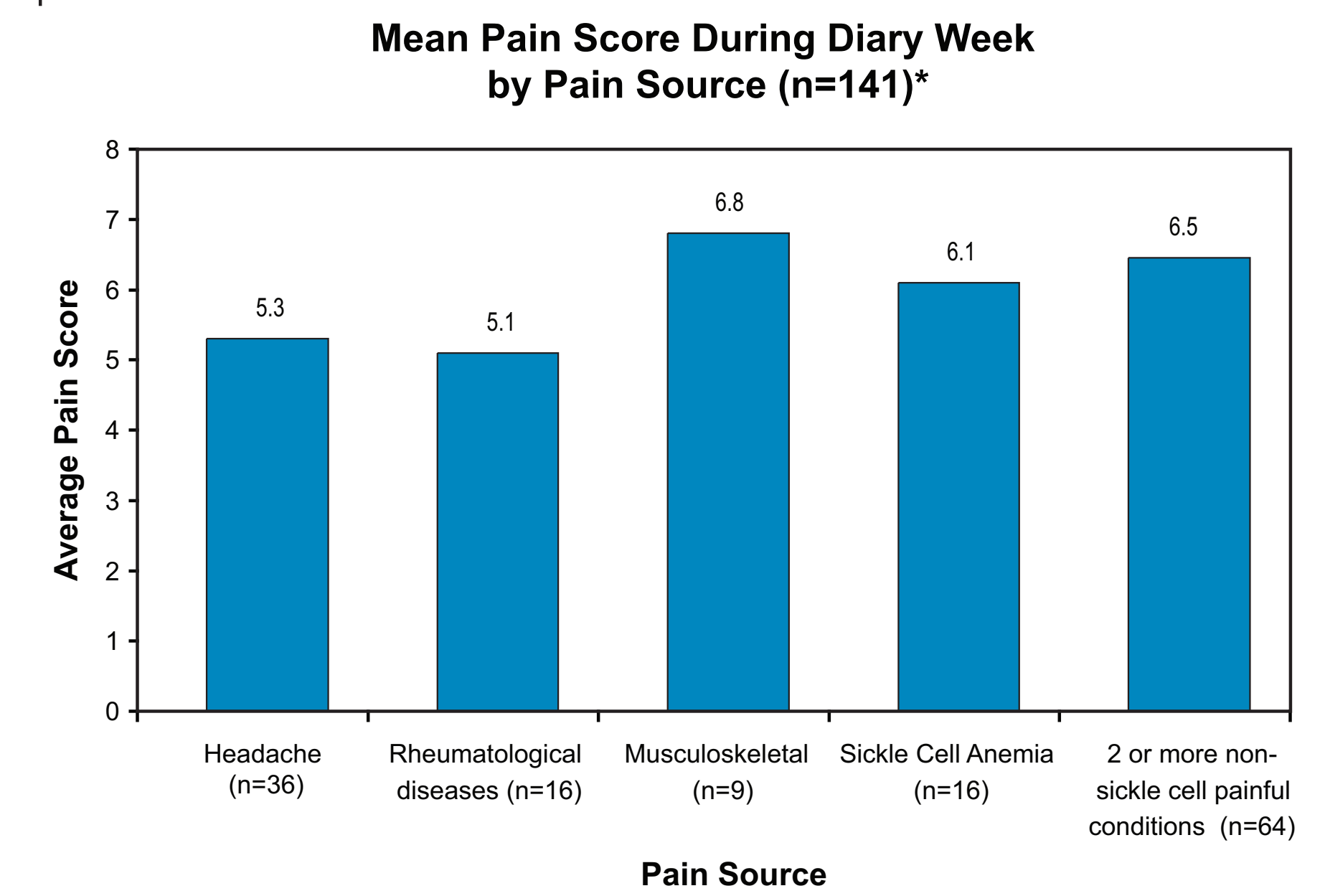
Pain Flares During Diary Week

The cohort experienced a total of 2559 pain flares (mean per patient per week=18.1)

| | Per Patient | | | | All Patients (n=141) |
|---------------------|-------------|--------|------|----------|----------------------|
| | Mean | Median | SD | Range | Sum |
| Total Pain Flares | 18.1 | 14.0 | 13.8 | 1.0-71.0 | 2559.0 |
| Pain Flares Per Day | 2.8 | 2.1 | 2.2 | 0.1-11.7 | 397.0 |

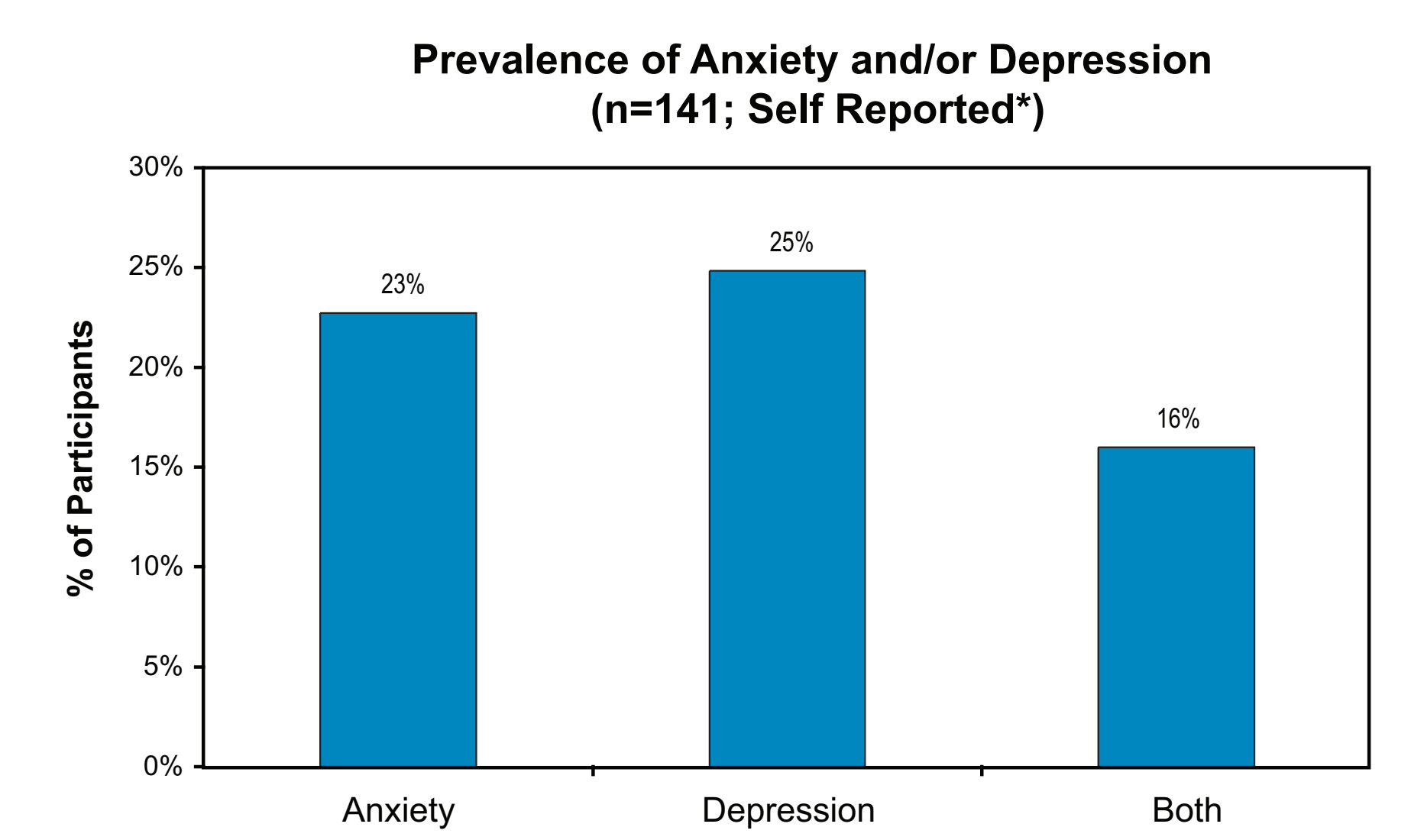
Baseline Pain Score By Pain Source

The mean pain levels were 5.3 for headache, 5.1 for rheumatological diseases, 6.8 for musculoskeletal problems, 6.1 for sickle cell anemia, and 6.5 for those with 2 or more painful conditions

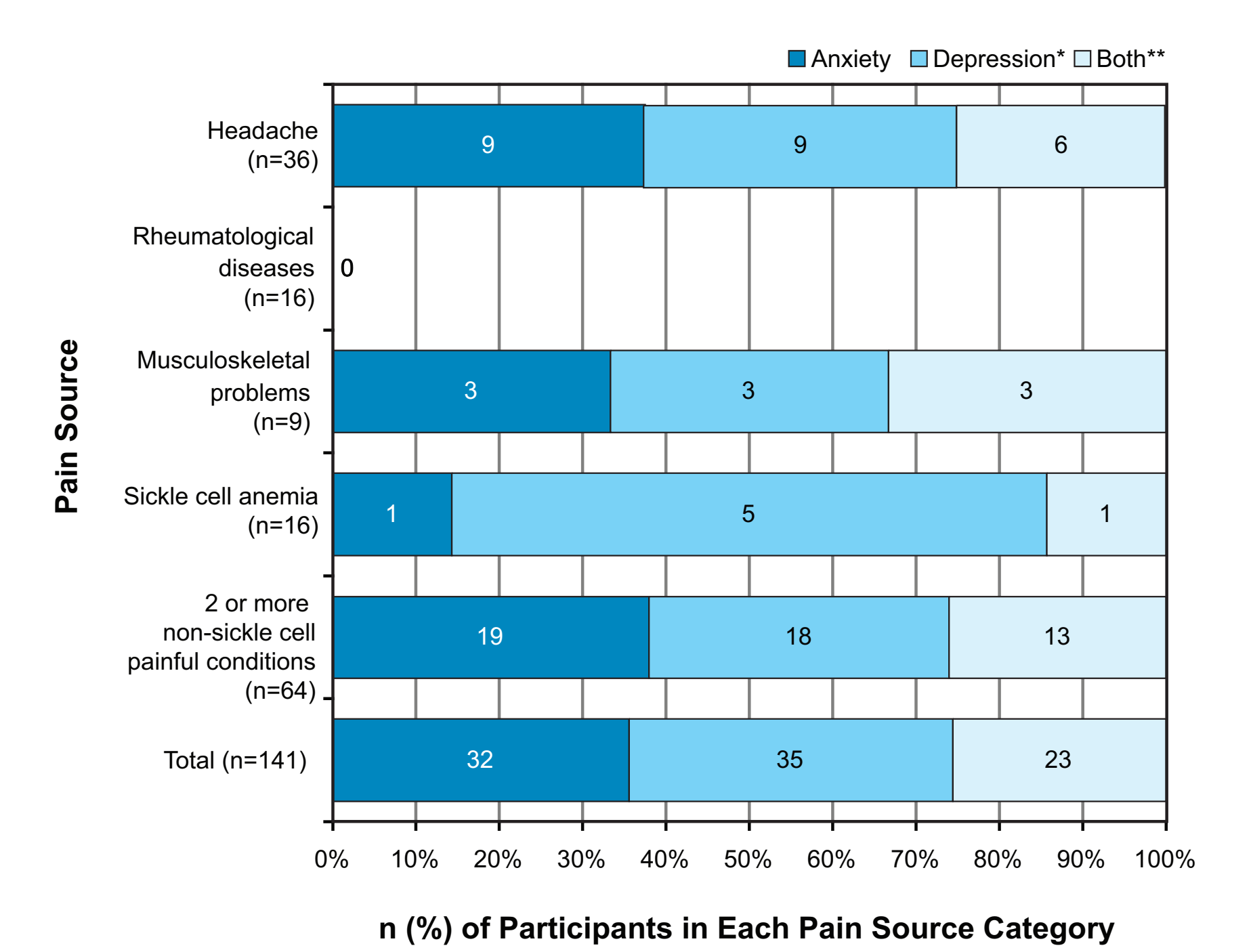


Anxiety and Depression

Anxiety and depression were noted to be prevalent (23% reported anxiety, 25% reported depression, 16% reported both)



Anxiety and Depression by Pain Source (n=141)



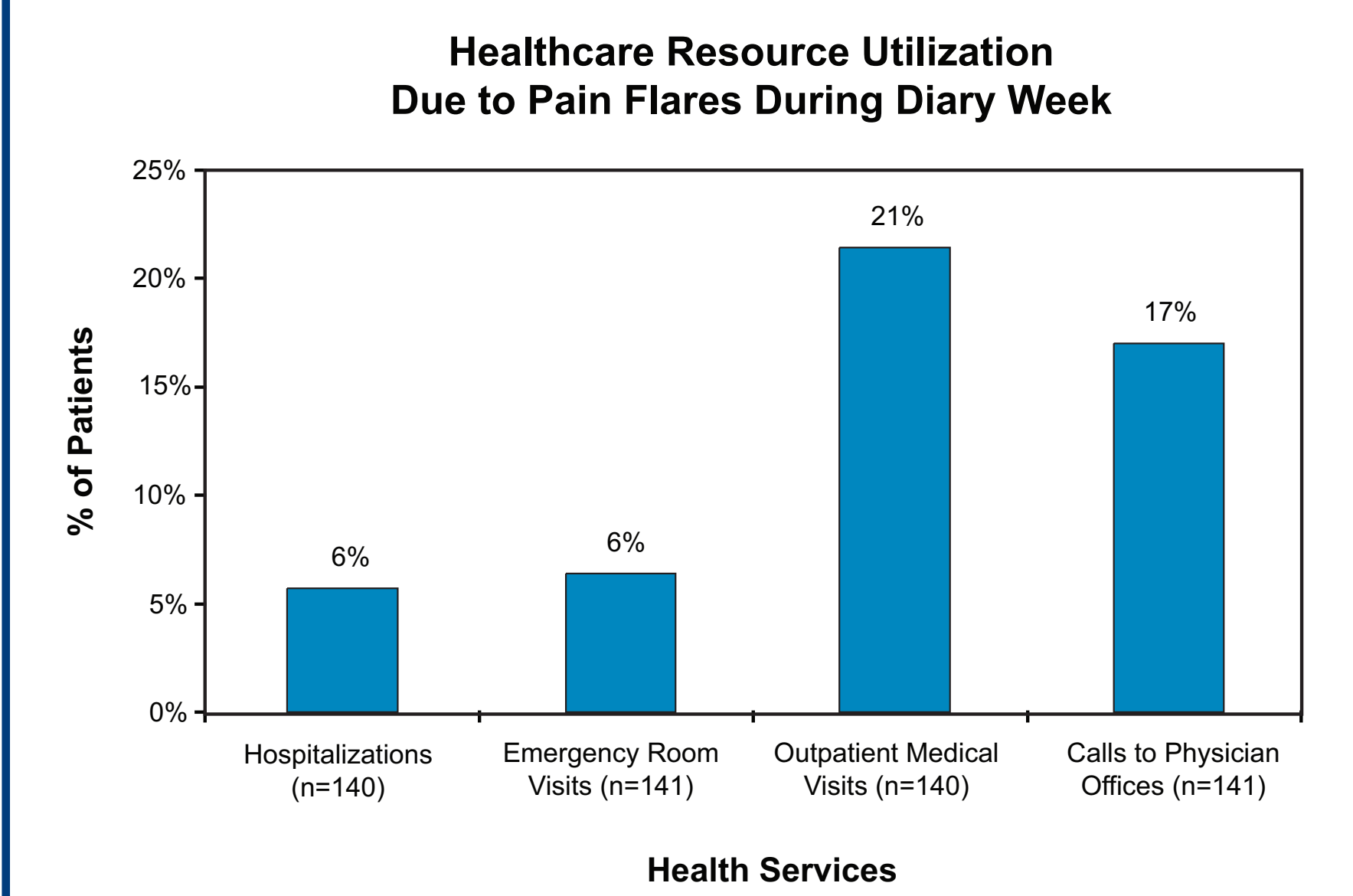
Alternative Methods Used to Relieve and/or Cope with Pain (at baseline; n=141)

| Method | n | % |
|---|-----|------|
| Rest | 111 | 78.2 |
| Change Position | 87 | 61.3 |
| Hot or Cold Packs | 86 | 60.5 |
| Exercise | 60 | 42.2 |
| Prayer | 58 | 40.8 |
| Massage | 54 | 38.0 |
| Relaxation Technique | 31 | 21.8 |
| Physical Therapy | 29 | 20.4 |
| Epidural | 29 | 20.4 |
| Talked to Someone | 29 | 20.4 |
| Psychological Counseling | 24 | 16.9 |
| TENS* | 16 | 11.3 |
| Herbal Remedies | 10 | 7.1 |
| Creative Technique (art or music therapy) | 9 | 6.4 |
| Acupuncture | 6 | 4.3 |

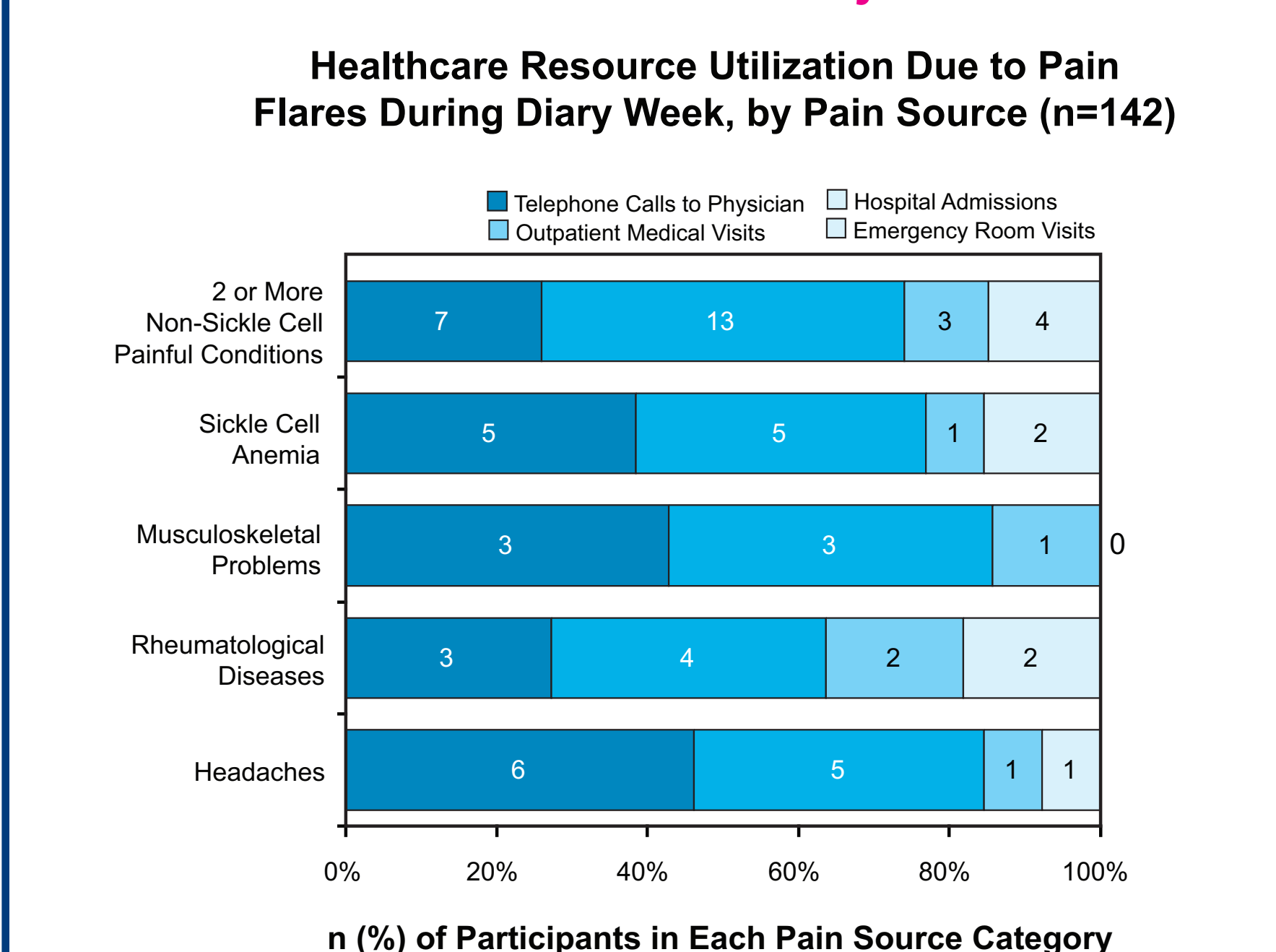
*Transcutaneous Electrical Nerve Stimulation

Healthcare Resource Utilization

During the diary week, pain flares resulted in 8 hospitalizations, 9 emergency room visits, 30 outpatient medical visits, and 24 calls to physician offices



Healthcare Resource Utilization By Pain Source



Work Productivity: Missed Hours

During the diary week, participants missed a total of 191 work hours and 905.3 hours of work "around the house" due to pain flares.

| | Per Patient | | | | All Patients |
|---------------------------|-------------|--------|-----|----------|--------------|
| | Mean | Median | SD | Range | Sum |
| Work Loss (hours) | 2.0 | 0.0 | 4.7 | 0.0-22.0 | 191.0 |
| At Home Work Loss (hours) | 6.9 | 4.0 | 8.0 | 0.0-39.0 | 905.3 |

Limitations

- Most participants experienced pain flares during the diary week, which precluded group testing between the pain flare vs. no pain flare groups
- Participants appear to have significant and persistent pain, limiting generalizability
- Analysis reflects only utilization, not costs

Conclusions

- Patients with chronic non-cancer pain frequently consume healthcare services to address pain flares
- Pain flares result in lost work time
- Relationship between treatment and economic outcomes (resource utilization and productivity), and the added burden of anxiety and depression in this population should be further examined

Most Commonly Reported Prescription Medications for Pain (n=141)*

| Prescription Medication | Number of Participants (n=141) | Percent of Participants (n=141) | Percent of Scripts (n=291) |
|---------------------------|--------------------------------|---------------------------------|----------------------------|
| Oxycodone/Acetaminophen | 26 | 18.4 | 8.93 |
| Naproxen | 20 | 14.2 | 6.87 |
| Hydrocodone/Acetaminophen | 19 | 13.5 | 6.53 |
| Tramadol | 19 | 13.5 | 6.53 |
| Gabapentin | 16 | 11.3 | 5.5 |
| Topiramate | 11 | 7.8 | 3.78 |
| Acetaminophen/Codeine | 8 | 5.7 | 2.75 |
| Cyclobenzaprine | 8 | 5.7 | 2.75 |
| Hydromorphone | 8 | 5.7 | 2.75 |
| Morphine | 8 | 5.7 | 2.75 |
| Nortriptyline | 8 | 5.7 | 2.75 |

*Figure shows prescription pain medications taken by at least 5% of participants, at baseline