Conclusions
- Given the significant health burden of chronic pain and the valuable health insights that daily behavioral patterns can provide, we aimed to utilize self-reported survey data and behavioral data (e.g., step and sleep patterns from activity trackers) to better understand:
  - Underlying causes of pain
  - Functional impact of pain
  - Behavioral indicators of breakthrough pain
- In this initial analysis, we explored the baseline prevalence of pain management strategies (including opioid use and digital health tools) and activity tracker use.

Methods
- Individuals with self-reported moderate to severe chronic pain (cohort 1) and those without chronic pain (cohort 2) were eligible to enroll in a currently ongoing, prospective, 1-year, virtual study.
- Enrolled participants completed daily and monthly surveys about their pain and overall health.
- Activity trackers and/or health/fitness apps could also be connected to the Achievement study platform in order to collect behavioral data.
- Aggregated activity tracker data was utilized to assess differences in behavior between the two cohorts.
- We report baseline findings for all enrolled participants, and behavioral metrics from participants with ≥30 days of behavioral data for the 90-day period prior to enrollment.

Results

PAIN MANAGEMENT STRATEGIES
- Participants reported using a wide variety of pharmacological and non-pharmacological treatments for pain.
- Behavioral indicators of breakthrough pain may help to distinguish between individuals with and without chronic pain.
- These behavioral differences may also suggest worse overall health for individuals with chronic pain compared to those without pain.
- Additional analyses will explore the feasibility of developing digital biomarkers for pain and overall health.

BEHAVIORAL FINDINGS FROM ACTIVITY TRACKERS
- On average, participants with chronic pain had lower activity levels, spent more time in bed, and had higher resting heart rates compared to those without chronic pain as measured by passively collected activity tracker data and health/fitness apps.
- Significant health burden of chronic pain in both cohorts.
- Although OTC pain relievers were the most commonly utilized pain treatment, they were not highly effective in helping to manage pain. Opioid medications and massage therapy were rated as the two most effective treatment options.
- Step, sleep, and heart rate metrics from consumer activity trackers and health/fitness apps showed that, on average, individuals with chronic pain walked less, spent more time in bed, and had higher resting heart rates.

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