Pain and Stress Influence Sleep Differently in Chronic Pain

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Introduction

- There are complex and cyclical relationships between stress, pain, and sleep
- Pain influences the body's stress system
- Stress exacerbates pain symptoms
- Stress exposure can be detrimental to sleep health

Study Aim

- How does stress impact sleep health in individuals with chronic pain?

Methods

- 43 undergraduate students
  - Mean age = 19.79 years
  - 83.7% Female
  - 16.3% Male
  - 60.5% White
  - 9.3% African American
  - 11.6% Asian/Asian American
  - 2.3% Native Hawaiian or Pacific Islander
  - 16.3% Other
- Self-reported chronic pain
- Actigraph watch worn for 14 days to assess objective sleep
- Brief College Student Hassles Scale to assess perceived stress
- PHQ-15 completed daily to assess physical and somatic symptoms
- PSQI completed daily to assess perceived sleep quality and sleep habits
  - 4-point Likert scale with higher scores indicating worse sleep quality

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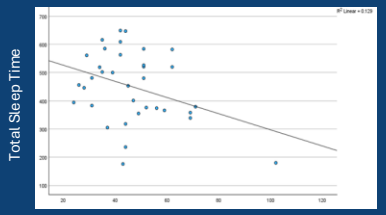
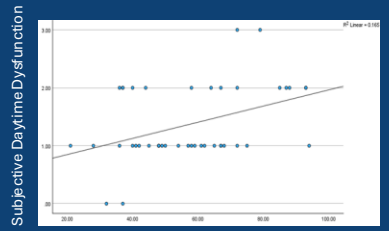
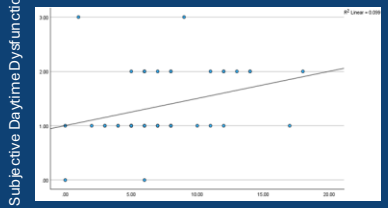
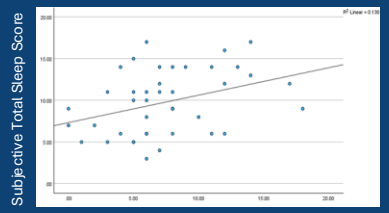
Stress is negatively correlated with sleep time and positively correlated with daytime dysfunction.

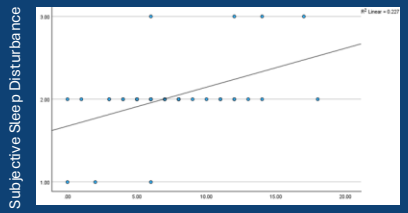




Pain symptoms are positively correlated with worse subjectively reported sleep outcomes.







Results

Pain and Stress Measures:

- Surprisingly, hassles only trended towards significance on correlation with PHQ scores, $r = 0.28$, $p = 0.07$.

Objective Actigraph Measures:

- Daily hassles negatively correlated with total sleep time, $r = -0.36$, $p = 0.03$.

Subjective Sleep Quality Measures:

- Hassles positively correlated with daytime dysfunction $r = 0.41$, $p = 0.007$.
- The relationships between hassles and other indices of subjective sleep quality only trended towards significance [higher scores reflect worse sleep; sleep quality, $r = 0.26$, $p = 0.09$, sleep duration, $r = 0.26$, $p = 0.09$, and sleep disturbance, $r = 0.26$, $p = 0.09$].
- PHQ symptoms related to worse subjective sleep disturbance, daytime dysfunction, and total sleep score (all $p < 0.05$).

Discussion

- Individuals reporting higher stress objectively demonstrated less total sleep time, but did not subjectively report significantly worse sleep.
- Individuals with more pain symptoms subjectively reported significantly worse sleep.
- Individuals with higher pain symptoms may be more aware of sleep disturbance, potentially attributing it to nighttime pain.
- Stress and pain may impact sleep health in different ways.
- More research with subjective and objective measures is needed.

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