The Association of Perceived Stress to Physical and Affective Health Outcomes in Sickle Cell Disease

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Problem

- **Pain**: Major *complication* of sickle cell disease (SCD)

- **Stress**: known to *trigger* acute pain crisis or intensify chronic pain in patients with SCD\(^1,2\)

- **Insufficient** evidence about the *effects of stress* on *fatigue*, a ubiquitous symptom of SCD or on affective (*anger, anxiety, and depression*) symptoms in adults with SCD
Background

- SCD is marked by repeated ischemic attacks and chronic inflammation

- **Predisposes** patients to the differential expressions of **genes** implicated in stress responses\(^3\)

- **SCD population** is prime for **understanding** the relationship of stress with physical and affective health outcomes
  - Stressful and complicated condition
Purpose

- To examine the relationship between **perceived stress** and physical (**fatigue**); and affective (**anger**, **anxiety**, and **depression**) symptoms in adult patients with SCD
Guided by the hypothalamic-pituitary-adrenal (HPA) axis theory

Stress could induce stress responses and the release of neurotransmitters and hormones (e.g., cortisol, norepinephrine, and epinephrine) that can adversely affect health outcomes, and has been implicated as part of SCD symptomatology.
Hypothesis

Patients with SCD who report high perceived stress would be more likely to also report increased fatigue, anger, anxiety, and depression symptoms compared to patients with SCD who report low perceived stress.
Study Design

- Descriptive comparative study
Sample Characteristics

- Sample: 54 adults with SCD
- Mean age: 36.3±10.9 years
  - [Range: 22-74 years]
- 96% African Americans
- 57% women
Measures

- **PAINReport®**: Demographic questions

- **Perceived Stress Questionnaire (30-item)**

- **PROMIS measures**
  - Fatigue (7-item)
  - Anger (7-item)
  - Anxiety (7-item)
  - Depression (8-item)
Analysis

- We analyzed data using the statistical software R
  - Descriptive
  - Comparative
Results: Descriptive

- Mean scores for the study variables:
  - Perceived stress (0.37±0.18)
  - Fatigue (56.5±9.4)
  - Anger (51.1±12.4)
  - Anxiety (52.9±9.1)
  - Depression (51.6±10.0)
## Results: Comparative

<table>
<thead>
<tr>
<th>Study Variables</th>
<th>Low Stress (PSI&lt;=0.35, n=27)</th>
<th>High Stress (PSI&gt;0.35, n=27)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatigue (10-90)</td>
<td>52.4 (8.6)</td>
<td>60.5 (8.6)</td>
<td>.001</td>
</tr>
<tr>
<td>Anger (10-90)</td>
<td>44.5 (10.5)</td>
<td>57.7 (10.6)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Anxiety (10-90)</td>
<td>47.9 (7.2)</td>
<td>57.9 (8.2)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Depression (10-90)</td>
<td>45.7 (8.1)</td>
<td>57.5 (8.2)</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>
Conclusions

Findings:

- Provide *preliminary* evidence of the relationship between *perceived stress*; and *fatigue, anger, anxiety*, and *depression* in patients with SCD
- **Support** the HPA axis theory and indicate that stress is *associated* with *negative* health outcomes in patients with SCD
Conclusions

- Results from future studies will:
  - **Confirm** current findings
  - Provide **extra evidence** to **decipher** the influence of perceived stress on **physical** and **affective** symptoms in patients with SCD

- This evidence would be pertinent:
  - Informing **future** cognitive-behavioral intervention studies to **decrease** fatigue, anger, anxiety, and depression in patients with SCD who report stress
Acknowledgements

- **Patients** with SCD at the University of Illinois at Chicago (UIC) Adult Sickle Cell Clinic for participating in the study

- **Staff** at the UIC Adult Sickle Cell Clinic for their support of the study

- This presentation was made possible by a grant number **R01 HL124945-01** from the National Institutes of Health/National Heart Lung & Blood institute (MPIs: Wilkie, Molokie, Wang) and the **Start-up funds** from the College of Nursing, University of Florida (Ezenwa)
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Questions

Thank you!