A Randomized Controlled Trial of an mHealth Pain Coping Skills Training Intervention Designed for Patients following Hematopoietic Stem Cell Transplantation

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Background

• >50% of patients report moderate-severe pain, & 70-80% report significant physical disability after hematopoietic stem cell transplantation (HSCT or HCT). 1,2

• Physical activity leads to improved physical disability, symptom severity, & psychological functioning for HSCT patients. 3,4

• However, pain, fatigue & distress (common to HSCT patients) are major barriers to physical activity. 2,5

• Low self-efficacy for managing pain is related to problems with symptoms, adherence to activity recommendations, & physical disability. 6,8

• Cognitive behavioral coping skills training protocols show promise in 1) reducing symptom severity 2) improving self-efficacy for symptom management, & physical activity. 9

• Limitations: Reliance on in-person sessions, medical center delivery; inability to meet specific needs → low frequency of use & acceptability. 10

Aims

1) Test feasibility & acceptability of a hybrid in-person & mobile pain coping skills training (mPCST) protocol to acquire mastery of skills to enhance pain management for HSCT patients.

2) Examine outcome patterns suggesting efficacy of mPCST HCT protocol.

Methods

R21 RCT Study Design and Timeline

<table>
<thead>
<tr>
<th>Background</th>
<th>Participants</th>
<th>Predicted Results: Feasibility &amp; Acceptability</th>
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</thead>
<tbody>
<tr>
<td>• &gt;50% of patients report moderate-severe pain, &amp; 70-80% report significant physical disability after hematopoietic stem cell transplantation (HSCT or HCT). 1,2</td>
<td>Adult patients (≥ 18 years old) who have undergone HSCT due to oncological disease</td>
<td>We predict that in the intervention arm, participants’ mean skill use will increase over time (Figure 1).</td>
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<td>• Physical activity leads to improved physical disability, symptom severity, &amp; psychological functioning for HSCT patients. 3,4</td>
<td>Recruited from the Duke Adult Blood and Marrow Transplant Clinic</td>
<td>We predict that patients who improve their pain coping skills may be better able to manage their pain</td>
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<td>• However, pain, fatigue &amp; distress (common to HSCT patients) are major barriers to physical activity. 2,5</td>
<td>Serious psychiatric condition</td>
<td>PCST interventions that increase HSCT patients’ self-efficacy for pain &amp; decrease pain disability may lead to improved symptom severity &amp; overall quality of life.</td>
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<td>• Low self-efficacy for managing pain is related to problems with symptoms, adherence to activity recommendations, &amp; physical disability. 6,8</td>
<td>Endorse some level of pain, fatigue, &amp; physical disability</td>
<td>Mode of delivery decreases persistent patient access barriers to interventions, &amp; may increase intervention efficacy.</td>
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<td>• Cognitive behavioral coping skills training protocols show promise in 1) reducing symptom severity 2) improving self-efficacy for symptom management, &amp; physical activity. 9</td>
<td>Life expectancy ≥ 12m</td>
<td>Allows acquisition, practice, &amp; skills mastery in home environment.</td>
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Aims

1) Test feasibility & acceptability of a hybrid in-person & mobile pain coping skills training (mPCST) protocol to acquire mastery of skills to enhance pain management for HSCT patients.

2) Examine outcome patterns suggesting efficacy of mPCST HCT protocol.

 Intervention Group: mPCST HCT Smartphone App

• We developed a mobile PCST app with Pattern Health that includes:
  - Session content, handouts & assessments
  - Link to Zoom video-conferencing for weekly coping skills training & activity coaching sessions
  - Videos (i.e., progressive muscle relaxation & pleasant imagery)
  - Personalized coping messages and reminders
  - Sync with Fitbits to monitor daily steps

Discussion

• We predict that patients who improve their pain coping skills may be better able to manage their pain

• PCST interventions that increase HSCT patients’ self-efficacy for pain & decrease pain disability may lead to improved symptom severity & overall quality of life.

• Mode of delivery decreases persistent patient access barriers to interventions, & may increase intervention efficacy.

  - Allows acquisition, practice, & skills mastery in home environment.

References


