Implementation of a Home-Based Walking Program to Address Cancer-Related Fatigue

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Implementation of a Home-Based Walking Program to Address Cancer-Related Fatigue

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Michelle Payne, DNP, RN, Project Community Chair
Mary Catherine Hyatt is a doctoral student at the College of Nursing, University of Tennessee, Knoxville.

There are no disclosures or conflicts of interest.
Problem Identification

• Cancer-related fatigue (CRF) occurs in 80-100% of patients living with cancer

• Less than 10% of patients receive treatment or recommendations to manage CRF

(American Cancer Society, 2020)
Significance

Locally
• 90-93% of patients at clinic experience CRF
• < 10% of CRF is addressed

Globally
• 40% report CRF at the time of diagnosis
• 80-90% report CRF during active treatment

Impact on survivorship
• Increased survival rates from 49% in mid-1970s to 63% in 2017
• 18.1 million cancer survivors in 2022; increase by 24.4% to 22.5 million by 2032
• 21-54% of cancer survivors reported CRF 3 years post-diagnosis

(Fabi et al., 2020; National Cancer Institute, 2022; S. Poindexter, personal communication, February 21, 2022)
CRF Impact

- Quality of life
- Social and family interactions
- Activities of daily living
- Mood
- Workability
- Physical functioning
- Cognitive performance
- Nausea/vomiting
- Pain

(American Cancer Society, 2020; Fabi et al., 2020; National Cancer Institute, 2020; National Cancer Institute, 2021)
Project Purpose & Goals

- To increase the frequency of addressing CRF
- To decrease the prevalence and severity of CRF
- To enhance patients’ perceptions of the significance of being active during treatment
Guiding Framework

PICOT Question

“In adult outpatient oncology patients (P), how does physical activity (I) compared to no physical activity (C) affect cancer-related fatigue (O) during active treatment (T)?”
PRISMA Diagram

Critical Appraisal

Appraisal Process
John Hopkins Evidence-Based Practice (JHEBP):
• Evidence level guide
• Research Evidence Appraisal Tool
• Nonresearch Evidence Appraisal Tool
• Agree-II appraisal tool

Literature
Quantitative research studies (10):
• Level I-II
• A-B: high and good quality evidence

Nonresearch studies (6):
• Level IV-V
• A-B: high and good quality evidence

(Dang et al., 2021)
## Synthesis Table

### Table 1

**Outcomes Synthesis Table**

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Fatigue</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
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</tr>
<tr>
<td>Post-intervention</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatigue</td>
<td>↓ (12 weeks)</td>
<td>↓ (12 weeks to 6 months)</td>
<td>↓ (18 weeks)</td>
<td>∅</td>
<td>∅</td>
<td>∅</td>
<td>∅</td>
<td>∅</td>
<td>∅</td>
<td>∅</td>
</tr>
<tr>
<td>Follow-up</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample Size</td>
<td>70 patients</td>
<td>4,826 patients</td>
<td>33 patients</td>
<td>4,068 patients</td>
<td>764 patients</td>
<td>1,064 patients</td>
<td>50 patients</td>
<td>50 patients</td>
<td>SR = 552 patients; MA = 206 patients</td>
<td>50 patients SR = 1,892 patients; MA = 826 patients</td>
</tr>
<tr>
<td></td>
<td>(56 studies)</td>
<td>(56 studies)</td>
<td>(8 studies)</td>
<td>(12 studies)</td>
<td>(17 studies)</td>
<td>(12 studies)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of Evidence</td>
<td>I</td>
<td>II</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>Quality of Evidence</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Setting</td>
<td>Home-based and partially supervised exercise program</td>
<td>Home-based, partially supervised, and supervised exercise program</td>
<td>Supervised exercise program</td>
<td>Home-based, partially supervised, and supervised exercise program</td>
<td>Home-based walking program</td>
<td>Supervised and home-based walking program</td>
<td>Home-based walking program</td>
<td>Home-based and supervised exercise program</td>
<td>Supervised walking program</td>
<td>Supervised and home-based exercise program</td>
</tr>
<tr>
<td>Type of Exercise</td>
<td>Aerobic and strength</td>
<td>Aerobic and/or strength</td>
<td>Aerobic and/or strength</td>
<td>Aerobic – walking only</td>
<td>Aerobic – walking only</td>
<td>Aerobic – walking only</td>
<td>Aerobic and/or strength</td>
<td>Aerobic – walking only</td>
<td>Aerobic – walking only</td>
<td>Aerobic – walking only</td>
</tr>
<tr>
<td>Duration of Program</td>
<td>12 weeks</td>
<td>3 weeks to 6 months</td>
<td>18 weeks</td>
<td>3 weeks to 1 year</td>
<td>6 weeks to 6 months</td>
<td>5 weeks to 35 weeks</td>
<td>12 weeks to 24 weeks</td>
<td>10 days</td>
<td>3 to 36 weeks</td>
<td></td>
</tr>
</tbody>
</table>

Note. Legend: ↓ = decrease; ↑ = increase; ∅ = not discussed in study; * = statistical significance; † = clinical significance; # = no difference; SR = systematic review; MA = meta-analysis.
Clinical Expertise

American College of Sports Medicine
American of Sports Medicine
LEADING THE WAY

Oncology Nursing Society

National Comprehensive Cancer Network
Recommendations

• Implementation of a walking program to reduce CRF
• Walking program to be home-based
• Home-based walking program to be 6- to 12-weeks in length
Home-Based Walking Regimen

- 8-week walking regimen
- Gradual walking regimen based on ONS’ “Get up, Get Moving” EBP initiative
- Duration starts at 15 minutes
- Duration ends at 30 minutes
- 3-5 times per week
Project Team & Stakeholders

- DNP student
- DNP project chair
- Community member
- Director of Hematology and Oncology Clinic
- Nurse manager
- Infusion nurses
- Oncologists/APPs
- Patients
- Nurse affiliate
- Statistician
Patients/Participants

• 18 years of age or older
• Diagnosed with cancer
• On active treatment, including chemotherapy, immunotherapy, and/or targeted therapy
• Medically cleared by oncology provider
Implementation Process

- **Plan**
  - Secure support & resources
  - Finalize exercise regimen
  - Educate team members

- **Implement**
  - 3-week recruitment process
  - 8-week home-based walking program
  - Data collection

- **Disseminate**
  - Data analysis
  - Report results to stakeholders
  - Disseminate findings
Project Timeline

- Sept-Oct 2022: Seek IRB determination
- Oct-Nov 2022: Prepare for implementation
- Dec 2022: Educate team members
- Dec 12-Jan 2: Recruitment period
- Dec 12-Feb 27: Walking program
- Feb 6-Feb 27: Completion of program
- Feb 6-March 17: Collect post-intervention data
- March 2023: Data analysis
- June 2023: Defend DNP project
- June-July 2023: Dissemination of findings (2)
Barriers & Facilitators

**Barriers**
- Time constraints
- Resistance to change
- Concern for adherence to regimen

**Facilitators**
- Facility committed to EBP and quality improvement
- Active communication with project team and stakeholders
- Use of a standardized approach
Ethical Considerations

Institutional review board (IRB)
- University of Tennessee, Knoxville
  - Not human subjects’ research
- Project site IRB
  - Not human subjects’ research
Implementation

1. Educational sessions
2. Recruitment
3. Adhere to walking regimen
4. Post-implementation
Educational Sessions

Oncologists/APPs
• Email with extensive details
• Director of Hematology and Oncology Clinic presented at the section meeting the week of implementation

Infusion nurses
• Mini-educational sessions
• DNP student presented at staff meeting the week of implementation
Recruitment

December 12, 2022 to January 2, 2023

STOP if you experience:
- Onset of chest pain
- Dizziness
- Confusion
- Shortness of breath/wheezing
- New or increased swelling
- New or increased pain

Why?
To address cancer-related fatigue, which is the #1 symptom reported by cancer patients.

To Do:
- Fill out registration form
- Fill out FACIT/Fatigue questionnaire pre and post-walking program
- Log minutes walking on calendar
- Fill out post-walking program survey

8-Week Program
- Gradual increase in duration
- Walk 3 to 5 times per week

<table>
<thead>
<tr>
<th>Week</th>
<th>Duration</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15 minutes</td>
<td>3-5 times a week</td>
</tr>
<tr>
<td>2</td>
<td>15 minutes</td>
<td>3-5 times a week</td>
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<tr>
<td>3</td>
<td>20 minutes</td>
<td>3-5 times a week</td>
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<tr>
<td>4</td>
<td>20 minutes</td>
<td>3-5 times a week</td>
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<tr>
<td>5</td>
<td>25 minutes</td>
<td>3-5 times a week</td>
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<tr>
<td>6</td>
<td>25 minutes</td>
<td>3-5 times a week</td>
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<tr>
<td>7</td>
<td>30 minutes</td>
<td>3-5 times a week</td>
</tr>
<tr>
<td>8</td>
<td>30 minutes</td>
<td>3-5 times a week</td>
</tr>
</tbody>
</table>

Benefits
- Reduce fatigue levels
- Increase energy levels
- Manage anxiety and depression
- Improve sleep patterns

Contact Us
Contact the clinic with any questions or seek medical attention in the event of an emergency.
Recruitment Forms

8-Week Home-Based Walking Program
Registration Form

MRN_________________________ Date_________________________

Please fill out response(s) on blank line.

Age_________________________

Sex__________________________

Race_________________________

Cancer Type__________________

Treatment____________________

Days spent walking per week pre-program______________________

Medical Clearance
As the oncologist/APP, I, __________________________, medically clear the patient, __________________________, to participate in the 8-Week Home-Based Walking Program.

# Walking Regimen

## 8-Week Home-Based Walking Program

<table>
<thead>
<tr>
<th>Week</th>
<th>Duration</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15 minutes</td>
<td>3-5 times/week</td>
</tr>
<tr>
<td>2</td>
<td>15 minutes</td>
<td>3-5 times/week</td>
</tr>
<tr>
<td>3</td>
<td>20 minutes</td>
<td>3-5 times/week</td>
</tr>
<tr>
<td>4</td>
<td>20 minutes</td>
<td>3-5 times/week</td>
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<tr>
<td>5</td>
<td>25 minutes</td>
<td>3-5 times/week</td>
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<tr>
<td>6</td>
<td>25 minutes</td>
<td>3-5 times/week</td>
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<tr>
<td>7</td>
<td>30 minutes</td>
<td>3-5 times/week</td>
</tr>
<tr>
<td>8</td>
<td>30 minutes</td>
<td>3-5 times/week</td>
</tr>
</tbody>
</table>

- If preferred, the patient may split up the walking duration into multiple sessions per day.
  - Example: Patient can walk for 5 minutes, 3 times a day to equal 15 minutes.

## January

<table>
<thead>
<tr>
<th></th>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minutes:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Minutes:</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Minutes:</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>Minutes:</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>Minutes:</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td>Minutes</td>
<td>Minutes</td>
<td>Minutes</td>
<td>Minutes</td>
</tr>
</tbody>
</table>
Post-Walking Regimen

Below is a list of statements that other people with your illness have said are important. Please circle or mark one number per line to indicate your response as it applies to the past 7 days.

1. Before this program, did your oncologist encourage you to exercise or refer you to an exercise program?
   1. Yes
   2. No

2. Did you find the program helpful in managing cancer-related fatigue?
   1. Not at all
   2. A little bit
   3. Somewhat
   4. Quite a bit
   5. Very much

3. Was the program possible during active treatment?
   1. Not at all
   2. A little bit
   3. Somewhat
   4. Quite a bit
   5. Very much

4. Do you plan to continue walking as exercise after the program?
   1. Not at all
   2. A little bit
   3. Somewhat
   4. Quite a bit
   5. Very much

5. If you completed the program, what did you like about the program?

6. If you did not complete the program, why did you not continue with the program?

# Data Collection & Security

<table>
<thead>
<tr>
<th>Collection</th>
<th>Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Registration form at recruitment</td>
<td>• Paper forms located in locked location</td>
</tr>
<tr>
<td>• Pre-intervention FACIT-Fatigue tool</td>
<td>• De-identified all data</td>
</tr>
<tr>
<td>• Post-intervention FACIT-Fatigue tool</td>
<td>• Password protected Excel spreadsheet stored in Microsoft OneDrive through UTK</td>
</tr>
<tr>
<td>• Calendar diary</td>
<td>• UT vault used for data transfer to statistician</td>
</tr>
<tr>
<td>• Post-intervention survey</td>
<td></td>
</tr>
</tbody>
</table>
Data Analysis

Paired $t$ test
- Difference between pre- and post-intervention CRF levels

Two-proportion $z$ test
- % of patients recommended to walk pre- vs. post-intervention

Descriptive statistics
- Age, sex, race, cancer diagnosis, treatment type
## Demographics & Characteristics

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Participants (N = 14)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (M) in years</strong></td>
<td>58.9</td>
</tr>
<tr>
<td><strong>Sex n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1 (7.1)</td>
</tr>
<tr>
<td>Male</td>
<td>13 (92.9)</td>
</tr>
<tr>
<td><strong>Race n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>13 (92.9)</td>
</tr>
<tr>
<td>Black</td>
<td>1 (7.1)</td>
</tr>
<tr>
<td><strong>Cancer Diagnosis n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>AML</td>
<td>2 (14.3)</td>
</tr>
<tr>
<td>CML</td>
<td>1 (7.1)</td>
</tr>
<tr>
<td>Colon</td>
<td>2 (14.3)</td>
</tr>
<tr>
<td>Multiple myeloma</td>
<td>8 (57.1)</td>
</tr>
<tr>
<td>Rectal</td>
<td>1 (7.1)</td>
</tr>
<tr>
<td><strong>Treatment n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>Chemotherapy</td>
<td>6 (42.9)</td>
</tr>
<tr>
<td>Immunotherapy</td>
<td>1 (7.1)</td>
</tr>
<tr>
<td>Targeted therapy</td>
<td>4 (28.6)</td>
</tr>
<tr>
<td>Immunotherapy + Targeted therapy</td>
<td>3 (21.4)</td>
</tr>
<tr>
<td><strong>Walked Pre-Program n (%)</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2 (14.3)</td>
</tr>
<tr>
<td>No</td>
<td>12 (85.7)</td>
</tr>
</tbody>
</table>
Findings

Provider recommended patient to participate in physical activity:

$N = 14$

- **Pre-Program**: 28.6% (n = 4) No, 71.4% (n = 10) Yes

- **Post-Program**: 100% Yes

$p = 0.03$
Findings

% of patients compliant with regimen: 
N = 14
## Findings

Difference between pre- and post-intervention FACIT-Fatigue levels – All participants:

<table>
<thead>
<tr>
<th>All Participants</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$N$</td>
<td>$M$</td>
<td>$SD$</td>
<td>$p$ value</td>
</tr>
<tr>
<td>Pre-FACIT-Fatigue Total</td>
<td>14</td>
<td>33.50</td>
<td>7.76</td>
<td>$p = 0.031$</td>
</tr>
<tr>
<td>Post-FACIT-Fatigue Total</td>
<td>14</td>
<td>39.14</td>
<td>7.41</td>
<td></td>
</tr>
</tbody>
</table>
## Findings

### Difference between pre- and post-intervention FACIT-Fatigue levels – Compliant participants:

<table>
<thead>
<tr>
<th>Compliant Participants</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-FACIT-Fatigue Total</td>
<td>12</td>
<td>32.43</td>
<td>7.47</td>
<td>p &lt; 0.001</td>
</tr>
<tr>
<td>Post-FACIT-Fatigue Total</td>
<td>12</td>
<td>40.25</td>
<td>6.92</td>
<td></td>
</tr>
</tbody>
</table>
Did you find the program helpful in managing CRF?  
$M = 3.33$
Post-Intervention Survey

Was the program possible during active treatment?

$M = 4.25$
Do you plan to continue walking after the program?  

$M = 4.25$
Discussion

- Project findings aligned with existing research
- Prevalence of addressing CRF improved
- CRF levels improved
- Statistically and clinically significant
- Sustainable: home-based, cost-effective, gradual and flexible regimen, and evidence-based walking regimen
Implications for Practice

• Acknowledge that CRF is an impactful symptom with severe consequences
• Initiate home-based walking program at initiation of treatment course
• Introduce form to be uploaded into Epic for easy access and sustainability

Walking with Cancer

Research has proven that walking is safe before, during, and after cancer treatment. The intensity and duration of each walking session can be individualized to each patient’s abilities, needs, and goals. The regimen below is an effective gradual walking regimen for patients with cancer in all phases of treatment.

<table>
<thead>
<tr>
<th>Week</th>
<th>Duration</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>15 minutes</td>
<td>3-5 times/week</td>
</tr>
<tr>
<td>3-4</td>
<td>20 minutes</td>
<td>3-5 times/week</td>
</tr>
<tr>
<td>5-6</td>
<td>25 minutes</td>
<td>3-5 times/week</td>
</tr>
<tr>
<td>7-8</td>
<td>30 minutes</td>
<td>3-5 times/week</td>
</tr>
<tr>
<td>9-10</td>
<td>35 minutes</td>
<td>3-5 times/week</td>
</tr>
<tr>
<td>11-12</td>
<td>40 minutes</td>
<td>3-5 times/week</td>
</tr>
<tr>
<td>13-14</td>
<td>45 minutes</td>
<td>3-5 times/week</td>
</tr>
<tr>
<td>15-16</td>
<td>55 minutes</td>
<td>3-5 times/week</td>
</tr>
<tr>
<td>17-18</td>
<td>55 minutes</td>
<td>3-5 times/week</td>
</tr>
<tr>
<td>19-20</td>
<td>60 minutes</td>
<td>3-5 times/week</td>
</tr>
</tbody>
</table>

Benefits:
- Reduced fatigue levels
- Increased energy levels
- Manage anxiety and depression
- Improve sleep patterns

STOP if you experience:
- Onset of chest pain
- Dizziness
- Confusion
- Shortness of breath
- New or increased swelling or pain
Limitations

- Small sample size
- No follow-up CRF levels
- Not analyzed by cancer type or treatment
Dissemination

Submit manuscript to Clinical Journal of Oncology Nursing (CJON)

Present at Oncology Quality Council meeting
References

• Available upon request
• Refer to pages 27-31 of manuscript