Kim L. Paxton DNP, ANP-BC, APRN
Promoting the Health of Nurses Through A Web-based Pedometer Intervention

Presenter Disclosures
Kim L. Paxton
The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:
"No relationships to disclose"

Background of the issue
Nurses have demonstrated:
• Impaired lifestyles
• Unhealthy Behaviors
• Increasing obesity rates
• Identified that physical activity is of low importance
• Lack knowledge
Scope and Significance of the Problem
Extends beyond the nurses own personal health
• Patients
• Professional image
• Role of educator
• Advanced Practice Roles

Regional Needs Assessment
• 85% (n=75) of nurses in a Midwest metropolitan community stated they do not practice healthy lifestyles consistently.
• 90% acknowledged that do not participate in regular physical activity.
• 82% do not participate in any type of focused physical activity.
• 65% had a BMI of 25 or >.

Identified Gap’s
• Healthy lifestyle education
• Physical activity knowledge
• Weight loss management skills
• Personal motivation
Pilot Intervention: STeP (Self Tracking Exercise Program)

Promote and address an activity that nurses already do: WALK

- Address knowledge gaps associated with the health promotion act of Physical activity
- Base program on EB Guidelines
- Need to break through the barrier of "no time"
- Incorporate technology
- Embrace IOM initiative for collaborative practice
  - Aligned with Exercise Science domain

Pedometer: Omron HJ 720 ITC

Device needed to be multi-functional and be able to:

- Record and track steps (normal & aerobic)
- Longitudinal memory
- Digital display
- Position tracking stability (vertical & horizontal)
- Energy expenditure
- Web-program tracking capabilities

Web Program

Web-based pedometer programs associated with tracking just beginning to be reviewed in the literature.

- Nurses did not know how to use
- Under utilized by health care professionals
- Under evaluated in general
  - Program chosen needed to possess capabilities that allowed access to personal trainer to obtain step data
Theory Application
The Health Promotion Model
• Self-care focus of the model strongly aligned with the purpose and anticipated outcome of the SteP intervention

The Transtheoretical Model
• Change strategy and the embedded human nature understanding of the model proved to be invaluable in addressing behavior issues and motivation

Assessment Tools
The Health Promoting Lifestyle Profile – II
• (1=Never, 2= Sometimes, 3= Often, 4= Routinely)

The General Self-Efficacy of Exercise Scale
• (1= very uncertain, 2= rather uncertain, 3= rather certain, 4 = very certain)

STeP (Self Tracking Exercise Program)
Intervention Goal: To increase the health promoting behavior of physical activity through walking and the use of a web-based pedometer program
• U.S Department of Health and Human Services 2008 Physical Activity Guidelines for Americans
• Education
• Emphasis on individual modification
• Gradually increase steps to equal 150 min/wk. (3,000) above baseline and maintain this increase to week 12 of the program.
STeP intervention

- HPLP-II and SEE completed at beginning and end of intervention
- Pedometers worn 7 days a week while awake
- Step data downloaded on a daily to weekly basis
  - Week one used as baseline measurement
  - Initial step goal for week 2 was derived for each participant based on their average steps for week 1
  - Consecutive step goals were self-derived by the participant with the aim of producing a gradual increase to equal 150min/week of step activity by week 7
  - Week 7 to week 12: sustain the increase achieved at week 7

The Results

Formal nursing educational background held no defining relationship to health promotion belief and physical activity engagement.

STeP tracking results

Estimated mean difference was significantly greater than zero supporting that overall participants did improve their average step count over the 12 week period.
87.5% (7/8) increased their step activity to equal 150 min/week of sustained physical activity.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Average Step Count</th>
<th>Change</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>68685</td>
<td>-24344</td>
<td>-61%</td>
</tr>
<tr>
<td>2</td>
<td>48526</td>
<td>-7782</td>
<td>-3%</td>
</tr>
<tr>
<td>3</td>
<td>48190</td>
<td>-4042</td>
<td>-28%</td>
</tr>
<tr>
<td>4</td>
<td>57877</td>
<td>-7436</td>
<td>-45%</td>
</tr>
<tr>
<td>5</td>
<td>29628</td>
<td>-8672</td>
<td>-17%</td>
</tr>
<tr>
<td>6</td>
<td>52207</td>
<td>-12593</td>
<td>-75%</td>
</tr>
<tr>
<td>7</td>
<td>41782</td>
<td>-14184</td>
<td>-11%</td>
</tr>
<tr>
<td>8</td>
<td>86360</td>
<td>-9755</td>
<td>-38%</td>
</tr>
</tbody>
</table>

**HPLP-II Physical Activity (PA) Rating**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Pre PA (Median, Range)</th>
<th>Post PA (Median, Range)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 (1, 4)</td>
<td>3 (2, 4)</td>
<td>0.26</td>
</tr>
<tr>
<td>2</td>
<td>3 (2, 4)</td>
<td>3 (3, 4)</td>
<td>0.08</td>
</tr>
<tr>
<td>3</td>
<td>3 (1, 4)</td>
<td>4 (3, 4)</td>
<td>0.01</td>
</tr>
<tr>
<td>4</td>
<td>4 (1, 4)</td>
<td>4 (3, 4)</td>
<td>0.01</td>
</tr>
<tr>
<td>5</td>
<td>4 (1, 4)</td>
<td>4 (3, 4)</td>
<td>0.01</td>
</tr>
<tr>
<td>6</td>
<td>3 (1, 4)</td>
<td>3 (1, 4)</td>
<td>0.01</td>
</tr>
<tr>
<td>7</td>
<td>2 (1, 4)</td>
<td>2 (1, 4)</td>
<td>0.01</td>
</tr>
<tr>
<td>8</td>
<td>3 (1, 4)</td>
<td>3 (1, 4)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Participant 3, 5, and 7 demonstrate statistically significant health promoting behavior changes related to physical activity. Participant 6 and 8 reflect changes though not statistically significant. (1= never, 2= sometimes, 3= often, 4 = routinely)

**General Self-Efficacy of Exercise Scale (SEE)**

Post intervention means for participant 1, 2, and 3 regressed. Participant 8 had no change in self-efficacy. (1=very uncertain, 2= rather uncertain, 3= rather certain, 4= very certain)
Effectiveness Ratio for Behavior Change and Physical Activity

<table>
<thead>
<tr>
<th>Participant</th>
<th>HPLP-II Pre-intervention Sum scores for physical activity</th>
<th>HPLP-II Post-intervention Sum scores for physical activity</th>
<th>Effectiveness Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>14</td>
<td>22</td>
<td>0.23</td>
</tr>
<tr>
<td>2</td>
<td>22</td>
<td>37</td>
<td>0.86</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>35</td>
<td>0.10</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>20</td>
<td>0.29</td>
</tr>
<tr>
<td>5</td>
<td>27</td>
<td>35</td>
<td>0.70</td>
</tr>
<tr>
<td>6</td>
<td>15</td>
<td>20</td>
<td>0.80</td>
</tr>
<tr>
<td>7</td>
<td>15</td>
<td>29</td>
<td>0.82</td>
</tr>
<tr>
<td>8</td>
<td>20</td>
<td>29</td>
<td>0.45</td>
</tr>
</tbody>
</table>

Effectiveness Ratio = (post-test score - pre-test score) / (target score - pre-test score).

Target score for the HPLP-II physical activity category equated to 32. One outlier is participant 4 who entered the program with high health promoting behavior of physical activity.

Web-based program Utilization

<table>
<thead>
<tr>
<th>Module Name: Search</th>
<th>Year: Feb 2016</th>
<th>Year: Feb 2017</th>
<th>Year: Feb 2018</th>
<th>Year: Feb 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Module Name: Physical Activity</th>
<th>Year: Feb 2016</th>
<th>Year: Feb 2017</th>
<th>Year: Feb 2018</th>
<th>Year: Feb 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Module Name: System</th>
<th>Year: Feb 2016</th>
<th>Year: Feb 2017</th>
<th>Year: Feb 2018</th>
<th>Year: Feb 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Module Name: Number of Wins</th>
<th>Year: Feb 2016</th>
<th>Year: Feb 2017</th>
<th>Year: Feb 2018</th>
<th>Year: Feb 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Expanded program use

Results beyond the Pilot Goals

- Enhanced experience of 4 participants who used nutrition monitoring/caloric tracking:
  - 2 participants lost 40 lbs.
  - 1 participant lost 15 lbs.
- Verbalization of 5/8 participants talking to patients about "open source" online programs for activity and nutrition monitoring.
- Self-awareness improved in relationship to acknowledging barriers of engagement and true ability to overcome them related to physical activity.

Lasting Effects

Participant 1: Now lost 50 lbs.; has dropped 3 pant sizes; Competed in her first triathlon; States that she feels better at 50 than she did in her 30-40s!

Participant 4: Competed in her first bike marathon of 100 miles; is peri-menopausal and is using the online tools for weight management and sodium control.

Participant 5: Now has lost 25 lbs.; hired a personal training and is now biking via stationary bike 1 mile 3x/wk. Achieved her first sit squat in "years".
Challenges of the Pilot

• Time organization for participants for orientation
• Resource withdrawal
• Web-based program change that occurred mid-pilot
• Motivating to come to education sessions
• Motivating to meet goals
• Adaptations for physical disabilities

Limitations of the Pilot Study

- Non-experimental
- Small sample size
- Participant pool
- Potential for a Hawthorne effect
- Lack of control for engagement of Personal trainers
- Participant ability to alter downloaded steps

Next steps

- Disseminating the potentials
- Share the relative inexpensive nature
- Assessing cost savings
- Continue to collaborate with the discipline of exercise science
- Experimental comparison
- Further evaluate for missed opportunities