The PHIT Project:
Pilot Study of a Childhood Obesity Intervention

Brandy L. Clarke, PhD, Munroe-Meyer Institute, UNMC
Lorey A. Wheeler, PhD, CYFS, UNL

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Project Team

• Key Investigators
  – Susan Sheridan, PhD, CYFS, UNL
  – Cristina Fernandez, MD, Pediatrics, Creighton/Children’s Hospital
  – Terry Huang, PhD, College of Public Health, UNMC

• Implementation Team
  – Kristen Derr, MA, CYFS, UNL
  – Mackenzie Sommerhalder, MA, CYFS, UNL

• Consultants/Advisors
  – Jung-Min Lee, PhD, School of Health, Physical Education & Recreation, UNO
  – Nancy Foster, PhD, Munroe-Meyer Institute, UNMC; Co-Director, Building Health Families, UNK
  – Timothy Nelson, PhD, Psychology, UNL
  – Karla Lester, MD, President, Teach a Kid to Fish Board of Directors
  – Dipti Dev, PhD, Child, Youth, and Family Studies, UNL
Project Partners

- Village Pointe Pediatrics
- Complete Children's Health: All about the Health of your Child
- Lincoln Family Medicine Program
- Children's Hospital & Medical Center: We know children.
Childhood Obesity

- Estimated medical costs associated with obesity-related morbidity are 209.7 billion and rising (Cawley & Meyerhoefer, 2012).

- Obese children are more likely to become obese adults and the cumulative effect of decades of obesity is severe (Freedman, Dietz, Srinivasan, & Berenson, 2009).

- Although prevalence rates among our youngest children have improved, overall, obesity rates continue to rise as children get older (Biro & Wien, 2010).

- Treating obesity in childhood may have lasting health and economic impacts.
Obesity Intervention

- Childhood obesity results from dynamic interactions among genetic, behavioral, and environmental factors (Spruijt-Metz, 2011).

- Interventions that support behavioral and environmental changes are needed.

- The early formative years of a child’s life may be crucial to impacting health trajectories as this is the period when habits are formed, contingencies established, and early relationships are developed.
Partners in Health: In It Together (PHIT)

• **PHIT** is an innovative approach that utilizes a patient-centered, problem solving model delivered via home-visitation for preschoolers (3-5 y.o.) who are overweight or obese (BMI > 85%ile).

• Based on an ecological-behavioral consultation approach (Sheridan & Kratochwill, 2008) that promotes environmental and behavioral changes across settings through an integrated implementation of evidence-based interventions.
PHIT Process

- Pediatric behavioral consultants work with families to promote children’s healthy habit formation via 6 biweekly, one-hour home visits.

- Structured, databased problem solving process includes individualized goal-setting and treatment planning to address specific obesity related behaviors (dietary intake, activity level, and sleep).

- Treatment plans include:
  - Environmental control (e.g., access to food options)
  - Positive behavior management (e.g., modeling, monitoring)
  - Cross-setting linkages (communication with physicians, treatment planning with care providers when possible)
Project Aims

- Determine the efficacy of PHIT for improving standardized BMI levels (zBMI) for overweight or obese preschoolers immediately and over time.

- Determine the efficacy of PHIT at improving dietary behavior and physical activity for overweight or obese preschoolers immediately and over time.

- Ascertain the efficacy of PHIT for (a) improving parents’ (and caregivers’) practices, (b) altering environmental contexts, and (c) enhancing cross-system integration for overweight and obese preschoolers immediately and over time.
Research Plan

- 70 preschool children identified by pediatricians and other health providers with BMIs ≥ 85%ile.

- Children are randomized to the PHIT intervention or control condition (monitoring typical care, basic educational information).

- Measures of children’s health status, health behaviors (dietary intake, physical activity, and sleep), and parent surveys are collected at 4 time-points (baseline, mid-point, post-treatment, and 6-month follow-up).
Sample

– 21 families participating in the control \( (n = 13) \) and treatment \( (n = 8) \) conditions of the PHIT intervention project
  • 67% of families are Latino; 33% White

  • 95% of parents are mothers; on average age 34; median education level of 12th grade, but no diploma

  • 67% of children are female; on average age 4
Preliminary Glance

Measures

– Body mass index (BMI) calculated from child height and weight
  • Normal or Healthy Weight: 5\textsuperscript{th} percentile to less than 85\textsuperscript{th} percentile
  • Overweight: 85\textsuperscript{th} to less than the 95\textsuperscript{th} percentile
  • Obese: 95\textsuperscript{th} percentile or greater

– Children’s \textit{physical activity} levels measured in minutes by accelerometer over 7 day period

– Children’s \textit{food consumption} as reported by parents through dietary recall questions adapted from The Early Childhood Longitudinal Study-averaged over three days in a week
  • Fast Food: 0 = no fast food in the past 24 hours to 4 = 4 or more times per day
  • Vegetables: 0 = none to 7 = 3 cups or more
Method

Analytic Approach

- Analysis of Covariance (ANCOVA)

- Examined differences between the control and treatment groups at mid-point (1.5 months into treatment)

- Covariates (Pretest)
  - Child gender
  - Pretest levels of outcomes
Results

<table>
<thead>
<tr>
<th></th>
<th>Treatment</th>
<th>Control</th>
<th>F-test</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Adjusted M</td>
<td>Adjusted M</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SE</td>
<td>SE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raw BMI</td>
<td>19.40 0.20</td>
<td>20.41 0.22</td>
<td>10.53*</td>
<td>0.54</td>
</tr>
<tr>
<td>Z-BMI</td>
<td>1.96 0.08</td>
<td>2.34 0.08</td>
<td>10.63*</td>
<td>0.54</td>
</tr>
<tr>
<td>Weight for age</td>
<td>93.96 0.68</td>
<td>96.47 0.74</td>
<td>18.21*</td>
<td>0.40</td>
</tr>
<tr>
<td>Percentile BMI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sedentary activity</td>
<td>4549.18 434.72</td>
<td>6680.46 479.45</td>
<td>25.10**</td>
<td>0.49</td>
</tr>
<tr>
<td>Light physical activity</td>
<td>1221.26 249.79</td>
<td>330.69 269.96</td>
<td>5.82*</td>
<td>0.39</td>
</tr>
<tr>
<td>Parent report fast food</td>
<td>0.14 0.04</td>
<td>.33 0.04</td>
<td>9.77*</td>
<td>0.62</td>
</tr>
<tr>
<td>intake</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent report vegetables</td>
<td>3.79 0.83</td>
<td>1.44 1.03</td>
<td>3.01</td>
<td>0.33</td>
</tr>
</tbody>
</table>

Note. Effect size: small = .10, medium = .25, large = .40
*p < .05. **p < .01.
Results

BMI

- Treatment
- Control

Sedentary Activity

- Treatment
- Control

Fast Food

- Treatment
- Control
Implications

• Results are preliminary and participants are still being recruited to study.

• Children in PHIT intervention are making significant improvements in healthy habits leading to improvements in health status compared to children in control group.

• Further analysis is needed to determine efficacy of PHIT intervention and long-term effects on health trajectory.
Take Away Points

• Treating obesity in childhood may have lasting health and economic impacts.

• A family-centered, problem-solving model can promote environmental and behavioral changes that impact children’s health.

• Collaboration across early care systems is important to addressing childhood obesity.
Contact Information

Brandy L. Clarke, PhD, LP
Assistant Professor
Munroe Meyer Institute, UNMC
brandy.clarke@unmc.edu
402-559-8477

Lorey A. Wheeler, PhD
Research Assistant Professor
CYFS, UNL
lorey@unl.edu
402-472-6944