Development and pilot testing of mHealth enhancements for a father-focused childhood obesity prevention program

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Abstract

Objectives: The objective of this research is to develop and pilot test mHealth enhancements to improve child feeding skills and mealtime behaviors of low income fathers.

Description: Parents, primary decision makers for young children, are a key target for obesity prevention interventions. However, interventions have primarily targeted mothers and little is known about the possible influence and needs of fathers. As childhood obesity rates remain high in the United States, novel strategies are needed in early life especially for low income, ethnic minority families who are at higher risk for obesity. To complement a currently funded father-focused childhood obesity prevention research project, the development and pilot testing of mHealth (mobile health) enhancements are needed as an innovative approach to further engage low income fathers in community-based programs.

The use of electronic (e-health) and mobile (m-health) technologies in behavioral nutrition interventions has received more attention in the past 10 years but data on acceptability and efficacy are lacking especially in certain populations.4-6 A primary challenge for low-income populations is to ensure internet access and cell phone/smartphone usage continues to increase. In 2013, 43% of low-income Americans (≥$20,000/year income) owned a smartphone with higher rates (77%) within younger age groups (18-29 years old).4 For many low-income Americans, cell phones and smartphones are a primary means of accessing the internet and social media.4 However, little if any evidence exists regarding the feasibility, acceptability and impact of e-health nutrition and parenting interventions on low-income families, particularly fathers.

Methods

This project is comprised of two phases to elucidate input from the target audience before conducting a pilot intervention.

Phase 1: Formative Research: One-on-one interviews will be conducted with low-income fathers (n=30-45) of preschool age children at a community site to determine current content, desired, preferred delivery method and weekly frequency of mHealth nutrition and parenting information. A trained interviewer will conduct the interview using a predetermined script. Interview questions will be based on constructs from the Social Cognitive Theory and Theory of Planned Behavior. Fathers will receive a $20 gift card incentive for their time.

Phase 2: mHealth 4-Week Pilot Study: Fathers (n=30-45) will be interviewed by a trained researcher to complete the Comprehensive Feeding Practices Questionnaire (CFPQ) and Meals in Our Household questionnaire as part of the pilot study. CFPQ will be adapted to assess intentions to change parenting feeding practices including: healthy eating guidance, monitoring, parent pressure, restriction and control.1 The Meals in Our Household questionnaire (MOHQ) will be also be adapted to assess intentions to change: 1) Structure of Family Meals; 2) Problematic Child Mealtime Behaviors; 3) Use of Food as a Reward; 4) Parental Concern about Child Diet; 5) Spousal Stress; and 6) Influence of Child’s Food Preferences. The post interview will also contain survey questions related to feasibility, acceptability and satisfaction with the mHealth enhancements. Furthermore, the number and intensity of interactions by each father with mHealth will be tracked through Google Analytics or comparable tool. Fathers will be provided gift card incentive ($10) each week of the four week pilot study for their time.

Expected Outcomes

Table 2. Expected Extension and Research Project Outcomes

<table>
<thead>
<tr>
<th>Type of Measure</th>
<th>Specific Variable/Tools</th>
<th>Interviews</th>
<th>Pilot Study</th>
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</thead>
<tbody>
<tr>
<td>Characteristics</td>
<td>Interview themes: mHealth preferred content, delivery method and frequency</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Demographics</td>
<td>Age, education, race/ethnicity, relationship to child household composition and living situation, marital &amp; employment status, participation in nutrition assistance programs</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Process</td>
<td>mHealth feasibility, acceptability, satisfaction</td>
<td>x</td>
<td>x</td>
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<tr>
<td>mHealth delivery and frequency of use</td>
<td>x</td>
<td>x</td>
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Planned Data Analysis

Phase 1: Audio-taped interviews will be transcribed verbatim and analyzed for themes using the classic analysis approach (Krueger & Casey). Interview transcripts will be reviewed by the analytic team to develop a code manual. Analysts will use the code manual to consensually code all transcripts while recording their thoughts and impressions of the data (e.g. memoing). The research team will then work on developing a theoretical model representing fathers’ attitudes, preferences and intentions related to the mHealth enhancements.

Phase 2: Repeated measures ANOVA or a non-parametric equivalent test will be used to evaluate intentions to change food-related parenting practices or mealtime behaviors. Descriptive statistics (means, frequencies) will be used to summarize acceptability, feasibility and user frequency data derived from the post questionnaire and Google analytic data.

Discussion

This seed grant project will develop and pilot test new mHealth tools to enhance an intervention with low-income fathers and their preschool age children in an effort to improve objective nutritional and parenting behaviors. The innovation of using mHealth approaches to enhance nutrition and parenting behaviors while targeting a novel population, low income fathers, for childhood obesity prevention will provide evidence and tools for future Randomized Controlled Trials and programs to be implemented in the US especially for high risk families participating in federally funded nutrition assistance programs.

References