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Using text messages to engage low-income parents in school-based nutrition education

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ABSTRACT

Because children spend significant time in school settings, school-based programs have great potential to prevent childhood obesity. Nutrition education and physical activity programs may be more effective, however, when they engage parents to reinforce key messages and behaviors outside of school settings. The Maryland Food Supplement Nutrition Education program (FSNE) partnered with 23 Title I elementary schools in Maryland to develop and administer Text2BHealthy, an innovative text message program that engages parents in their children’s school-based nutrition education. Text2BHealthy sends 2 behaviorally focused text messages to enrolled parents each week. These messages provide actionable nudges that encourage improved nutrition and physical activity and reference upcoming free or low-cost opportunities and events in the child’s school and the surrounding community. Preliminary evaluation results suggest that Text2BHealthy resulted in improvements on a number of fruit and vegetable practices of parents and their children. Additional evaluation research is needed to demonstrate efficacy of text message programs and program components.

KEYWORDS

Community involvement; low-income parents; nutrition education; obesity prevention; parental involvement; school-aged children; school-based intervention; text messages

Children spend significant amounts of time in school settings, where school staff, peers, programs, and policies addressing nutrition, school meals, and physical activity have potential to substantially influence children’s food environments and weight health. Evidence of significant, long-term impact of school-based childhood obesity prevention programs on children’s eating patterns, physical activity levels, or weight status, however, is inconsistent and inconclusive and fails to identify necessary intervention components or strategies. 1,2 Programs that target both children and their parents may have a greater impact than those that only target children so that positive features of the school food environment can be replicated and reinforced at home, 3,4 but parents, especially low-income parents, can be hard to engage. Though most
parents are busy regardless of income, low-income parents may be less likely to engage with in-person, school-based programs\textsuperscript{5} due to logistical challenges (e.g., transportation, child care, work schedules),\textsuperscript{6,7} not due to lack of interest.

Text messages may be an effective way to deliver program content to busy parents for several reasons. Text messages are a quick, low-burden, cost-efficient method for communicating with hard-to-reach populations, including low-income, geographically remote, and low-literacy audiences.\textsuperscript{8,9} The vast majority of parents have cell phones that can receive text messages,\textsuperscript{10} and most pay a set monthly fee for unlimited text messages. There is also growing evidence that text message–based health promotion programs can lead to behavior change in a variety of populations.\textsuperscript{11–13} Though more research is needed to determine the long-term efficacy of text message health promotion programs and best practices in implementation, a recent meta-analysis of text message programs showed that the majority of programs addressing physical activity, weight loss, and diabetes self-management were found to be effective.\textsuperscript{13}

**Text2BHealthy program overview**

The Maryland Food Supplement Nutrition Education program (FSNE), the Supplemental Nutrition Assistance Program Education (SNAP-Ed)-implementing agency in Maryland, partnered with 23 unique Title I elementary schools (see Table 1) in Maryland to develop and administer Text2BHealthy. Schools with SNAP-Ed programs in at least half of the grades were selected to participate. Text2BHealthy was the first SNAP-Ed texting program to receive approval and funding and has been operating for 4 years following a 4-month pilot.

Parents who enroll in Text2BHealthy receive 2 text messages each week during the school year and 2–3 messages each month during the summer.

<table>
<thead>
<tr>
<th>Year</th>
<th>Schools, n</th>
<th>Free and reduced meal rate, (M, %)</th>
<th>Rural–urban continuum code, (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012–2013</td>
<td>10</td>
<td>80.89</td>
<td>2.2</td>
</tr>
<tr>
<td>2013–2014</td>
<td>18</td>
<td>81.07</td>
<td>2.6</td>
</tr>
<tr>
<td>2014–2015</td>
<td>15</td>
<td>77.47</td>
<td>2.5</td>
</tr>
<tr>
<td>2015–2016</td>
<td>16</td>
<td>76.69</td>
<td>2.4</td>
</tr>
</tbody>
</table>

\textsuperscript{a}2016–2017 data not yet available.

\textsuperscript{b}Free and reduced meal rate is the combined proportion of students receiving free and reduced meals.

\textsuperscript{c}Rural–urban continuum code is a classification system of the USDA Economic Research Service that classifies counties into one of 3 metropolitan or 6 non-metropolitan categories, with 1 representing the most urban and 9 representing the most rural. The classifications are issued decennially, and the current data are for 2013–2023.
Messages provide actionable nudges that encourage nutrition or physical activity behavior change and reference opportunities and events in the child’s school or local community. These messages complement the in-person, school-based nutrition education that FSNE provides to elementary school students to support parents in reinforcing key messages. In order to increase parent engagement and message relevance, FSNE staff collaborated with school staff to develop messages that are targeted to and unique by school location. Sample messages include the following:

- Some students had a lesson today on seeds, soil & sun. All students took home a newsletter. Check the backpack for more info on growing plants at home.
- Fresh berries like strawberries & blackberries are in season now. Visit the Catonsville Market for fresh local veggies. You can even use EBT cards!

**Text2BHealthy program evaluation**

Various forms of process and outcome evaluation are ongoing and include data from intervention and control schools. In order to examine whether Text2BHealthy improves outcomes in school-based FSNE programs, children at both Text2BHealthy schools and control schools received standard classroom-based nutrition education from FSNE educators and classroom teachers trained by FSNE educators using US Department of Agriculture (USDA) Food and Nutrition Service nutrition education curricula.

Data from the pilot and first 2 program years were used to refine recruitment, enrollment, and retention methods, as well as improve timing, frequency, and content of messages. During the first year, Text2BHealthy was offered in 11 schools and enrolled 1149 participants, 25% of eligible parents. Using recruitment and retention strategies refined over time, program enrollment and retention improved to enroll about a third of eligible parents ($n = 2297$) and consistently retain between 90% to 92% of participants (see Table 2) across 23 unique schools.

At the beginning and end of the third school year, a survey was conducted with a sample of 142 participants who consented to participate and had complete pre and post data. Parents chose whether to receive the survey in a web-based or paper format mailed to their homes. Parents self-reported food purchasing behaviors, characteristics of the home nutrition environment, and basic demographic characteristics and reported on children’s behavior related to eating and physical activity behaviors and screen time. However, insufficient data were collected from control participants to include them in data analysis. Overall, the intervention group significantly improved
from pre- to posttest over several domains, such as fruit and vegetable availability in the home, children’s fruit and vegetable consumption, and parents’ modeling fruit and vegetable consumption in the home. Additionally, from pre- to posttest, 31% and 29% of parents reported increased frequency of children’s vegetable and fruit consumption, respectively; 29% reported increased frequency of keeping both fruit and vegetables ready for children to eat; and 23% and 35% reported increased frequency of children seeing parents eating vegetables and fruits, respectively.

These findings are similar to those found in studies of similar programs, showing positive changes as a result of behaviorally focused text messages but lacking in research design sufficient to demonstrate long-term effects. Though more comprehensive outcome evaluation is needed to examine program efficacy and long-term effects, these preliminary findings indicate the potential of text message–based programs to reach low-income parents or other hard-to-reach populations with nutrition and physical activity messages. This tool may serve as an important means of engaging parents to reinforce key health messages learned and practiced by children in school settings. Text2BHealthy demonstrates the feasibility of implementing a targeted text message nutrition promotion program in community nutrition settings.

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References