

Peer-led text message intervention leads to fruit, vegetable, and goal setting improvements among rural adolescents.

Presenter: Alison Gustafson, PhD, MPH, RD
Department of Dietetics and Human Nutrition

Alison.Gustafson@uky.edu



Background

Rural adolescents are disproportionately disadvantaged for higher rates of obesity, lower intake of fruits and vegetables, and higher intake of added sugars and sugar-sweetened beverages. This peer-led text message intervention aimed to improve fruit, vegetable, and low-calorie beverage intake. In addition core constructs of self-efficacy and goal setting were targeted within the intervention messages. The primary aim was to determine if an 8-week peer-led text message intervention improved fruit and vegetable intake compared to control students. The secondary aims tested if the intervention improved low-calorie beverage intake, total calories from sugar-sweetened beverages, self-efficacy, and goal setting.

Table 1: Descriptive of study sample, adolescents ages 14-15 in 8 counties in Kentucky and North Carolina, 2017. n=432

Demographics	Total
Race	
White	62%
Black	26%
Other	12%
Average Age in Years	15
Gender	
Female	41%
Male	59%
Body Mass Index Categories	
Normal	55%
Overweight	24%
Obese	21%
Home Availability	
Fruits and vegetables are available in my home	
Disagree	42%
Vegetables are served at home	
Disagree	32%
"Junk food" is available in my home	
Disagree	29%
Potato chips/salty snack foods are available at home	
Disagree	29%
Chocolate/candy available at home	
Disagree	19%
Soda pop available at home	
Disagree	34%
Food Shopping Frequency of Food Items (times per week)	
Fruits and Vegetables	11
Fast-Food	12
Snacks	13
Healthy Beverages (low or no calorie drinks, milk, 100% fruit juice)	314
Unhealthy Beverages (sugar-sweetened beverages)	258
School Availability	
Healthy Beverages (low or no calorie drinks, milk, 100% fruit juice)	20
Unhealthy Beverages (sugar-sweetened beverages)	51
Healthy Snacks	9
Unhealthy Snacks	22
Consumer Food Availability (range of scores)	68-154
Locations of Food Purchases	
Supermarket	
Fruits and vegetables	85%
Fast-Food	58%
Snacks	76%
Healthy beverages	72%
Unhealthy beverages	59%
Convenience Store	
Fruits and vegetables	13%
Fast-Food	12%
Snacks	40%
Healthy beverages	46%
Unhealthy beverages	42%
School/Recreation Center	
Fruits and vegetables	9%
Fast-Food	12%
Snacks	13%
Healthy beverages	15%
Unhealthy beverages	13%
Fast-Food Restaurant	
Fruits and vegetables	4%
Fast-Food	77%
Snacks	9%
Healthy beverages	16%
Unhealthy beverages	15%

You may explain your image or add a caption here.

Methods

"Go Big and Bring it Home" (GBBH) Intervention Components

Undergraduate students in human nutrition and dietetics from the University of Kentucky were recruited through an e-mail listserv and asked to volunteer as peer mentors for enrolled GBBH participants. Undergraduate volunteers participated in an hour-long training about how to effectively send text messages as the peer mentor via the Group Me app. A total of 34 undergraduate students were enrolled as peer mentors. Of the peer mentors, 32 were females and 2 were males. These peer mentors were supervised by four MS/ RD graduate students at the University of Kentucky.

A total of 8 weeks of text messages were sent, every week on Tuesday (after 4pm so as not to disrupt the school day) and Saturday (between 12 and 2pm). There was a warm-up introduction week, where students got to know their mentor and work out any communication glitches. The next 6 weeks covered nutrition-related content. The summary week congratulated students and provided information about the goals that individual students and schools achieved.

Text message content each week focused on a different food venue where the adolescents reported purchasing or consuming food (convenience stores; supermarkets; fast-food restaurants) in the formative survey (20). The messages might suggest "choosing a fruit when shopping at the gas station"; or "I like to grab water when I eat fast-food, think that might work for you this week?". The text messages were affective in content and tone, to encourage adolescents to purchase fruits, vegetables, and lower calorie beverages[18]. Prior research indicates that adolescents want positive messages about behaviors, and do not want to hear negative messages about foods and beverages to avoid[15]. Therefore, the text messages avoided any negative wording such as "no" or "stay away from". The text message alternated over the 6 core weeks between fruit, vegetable, and low calorie beverages messages. Additionally, there was a focus on shopping with parents and how to improve the home food environment, based on our previous findings that several healthy changes could be made at home[5]. The core constructs of self-efficacy and goal setting for purchasing and consuming more fruits, vegetables, and low or no-calorie beverages were embedded within text messages. These constructs were grounded in social cognitive theory and a review of the literature[13, 23, 24].

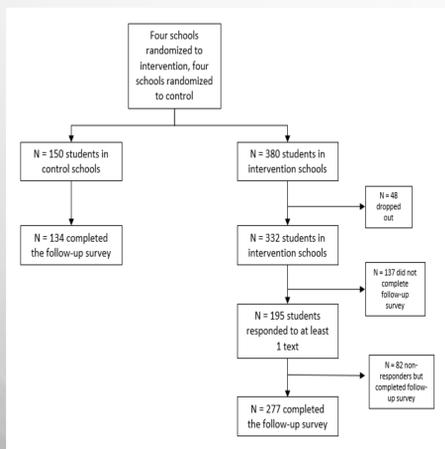
The first text message sent each week was a standardized script of a challenge or goal (e.g., "Have you eaten a fruit yet today?") sent to each high school student. After the first message was sent, text messages were tailored after the high school student responded with "got it" (indicating that he/she had achieved the goal) or "not yet" (indicating the goal or challenge had not yet been achieved). The text message was a "three way" communication between the undergraduate student and the high school students, meaning that messages were sent back and forth so communication was established between peer mentor and adolescents. Based on how the student responded, the undergraduate would offer encouragement, assistance with goal-setting, and try to improve the self-efficacy of the adolescent. At no point in this exchange was there "instrumental or informational messages" which would consist of "eat an apple because they are high in fiber". All exchanges centered on affective messages such as, "I know you can choose fruit again".

Students in the intervention group were provided a \$5 cash incentive each week if they returned the text message on Tuesday and Saturday. The undergraduate students also received gift cards for participating in the program (N=34).

Key Points:

Text messages were sent two times per week for 8 weeks
Each week focused on a different goal related to fruit, vegetable, and low-calorie beverage intake
Undergraduate students in dietetics and nutrition were their peer mentors who sent text messages each week
The language focused on improving self-efficacy and goal setting

Methods



Results

Table 2. Intervention Effect of peer-led text message on dietary intake, food shopping practices, and home availability

Dietary Intake and BMI	Change within intervention participants	Change within control participants	Difference between inte
Fruit and Vegetable servings	.71 (-.02, 1.45)	-1.52 (-2.48, -.56)*	1.28 (1.11, 1.48)*
SSB Calories	-61 (-125, 80)*	-39 (-149, 71)	-39 (-164, 85)
Total Beverage Calories	-26 (-139, 87)	-118 (-320, 83)	14.99 (-186, 216)
BMI z-score percentile	-.005 (-.02, .009)	.002 (-.01, .02)	.99 (.92, 1.07)
Food Shopping practices			
Fruit and Vegetables purchases over 7 days	2.55 (.69, 4.42)*	1.39 (-.65, 3.44)	1.07 (.94, 1.22)
Less healthy snack purchases over 7 days	.82 (-.88, 2.53)	-.18 (-2.13, 1.75)	1.06 (.85, 1.33)
Healthy snack purchases over 7 days	1.81 (.68, 2.94)*	1.87 (.54, 3.20)*	1.02 (.84, 1.23)
SSB beverage purchases over 7 days	-.26 (-.71, 1.24)	-.25 (-1.64, 1.14)	1.02 (.85, 1.21)
Water or no calorie beverage purchases	.87 (.18, 1.56)*	.36 (-.58, 1.31)	1.03 (.88, 1.21)

Key Result:

The intervention resulted in a mean increase of fruit and vegetable intake among intervention participants of 1.28 servings per day compared to controls

Table 3. Intervention Effect on Constructs embedded in the text messages

Self-Efficacy	Odds Ratio 95% CI
Fruit	.93 [.73, 1.29]
Vegetable	1.59 [1.19, 2.13]*
Healthy Snacks	.72 [.48, 1.09]
Goal Setting	
Fruit	1.52 [1.18, 1.95]*
Vegetable	1.75 [1.19, 2.58]*
Sugar-Free Beverage	1.94 [1.18, 3.27]*

Key Result:

Those in the intervention group reported higher odds of having high self-efficacy for eating vegetables compared to controls (1.59 OR 95% CI 1.19, 2.13). The goal setting construct indicates that those in the intervention report higher odds of goal setting for each dietary goal compared to controls.

Conclusion

A peer-led text message intervention with affective messages focused on a variety of individual- and environmental-level changes holds great promise for improving dietary and food shopping behaviors and the home food environment among rural adolescents. Future work will focus on replicating this study for further dissemination among health departments, Cooperative Extension, and health insurance companies.

Acknowledgements

- This work was funded by the United States Department of Agriculture (USDA) Afri Grant 30000045856
- The authors would like to thank the staff and students at each High School, Cooperative Extension agents in the various counties