

Using Computer Games and Other Media To Decrease Child Obesity

Since 1979, scientists at the USDA-ARS Children's Nutrition Research Center (CNRC) at Baylor College of Medicine in Houston, Texas, have been studying the unique nutritional needs of pregnant and nursing mothers, infants, toddlers, and children. Much of this work is basic research to learn how best to nourish infants, children, and adolescents.

CNRC researchers also study how to translate their findings into practical ways to help children obtain the best possible nutrition—especially children in certain vulnerable socioeconomic groups. One approach to changing food choice/eating behaviors of children in various age groups has been to develop interactive computer games—called “edutainment”—that are both amusing and instructive.

Researchers at the CNRC have already created and evaluated several edutainment approaches that fall under the umbrella of what are called “eHealth” programs. The eHealth series of CNRC projects is aimed at engaging children in nutrition studies by using devices such as the Internet, video games, Web-based games, comic books, cartoons, and other media.

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The Food, Fun, and Fitness Internet Program for Girls uses culturally sensitive comic strips geared towards 8- to 10-year-old African-American girls to promote better food choices and physical activity.

One of the latest efforts, called “Food, Fun, and Fitness Internet Program for Girls,” focused on preventing obesity among 8- to 10-year-old African-American girls (of all economic classes), a group that has higher-than-normal obesity rates and higher risk of heart disease, some cancers, diabetes, and stroke once they grow up. CNRC behavioral scientist Deborah Thompson was the principal investigator for this interactive online computer program. She led the research team in developing and refining the design and in evaluating the effectiveness of this approach to promote two main healthy behaviors: increasing physical activity and consuming more fruit, juices, vegetables, and water.

The Internet program focuses on culturally sensitive web-based comic strips that are aimed at reaching African-American girls. The comic characters have different preferences. Some like to exercise more than others, and some dislike vegetables more than others. They also vary in personality and in physical features, like body shapes and hairstyles.

“This is a great way for the girls to relate to the comic characters a bit more,” says Thompson. “Characters were given different looks, styles, and personalities with the hope that the girls could identify with one or more of the characters. This would give the girls more incentive to participate and complete the program.”

Throughout the 8-week study with girls in the Houston area, Thompson examined the effect of incentives on the log-on rate to their new eHealth program. Each day throughout the study, the participants in the “Food, Fun, and Fitness” program had goals to eat five servings of fruit, juice, and vegetables; drink five glasses of water; and do 30 minutes of physical activity.

The website activities were structured to help participants learn ways to meet those goals. For example, the comic characters modeled asking, negotiation, and decisionmaking skills to meet their goals. They also participated in problem-solving activities. Based on these examples, the girls themselves set weekly personal goals and reported whether or not they met their goals.

Based on online questionnaire responses, it appears the program has had a positive impact. Preliminary results suggest the program was effective at helping the girls increase fruit



Interactive eHealth programs encourage children to consume more fruit, juices, vegetables, and water and increase their physical activity.

and vegetable intake and physical activity—behaviors likely to decrease obesity risk.

Family Web and Squire's Quest

CNRC behavioral nutritionist Karen Cullen has recently completed a similar project called "Family Web," another Web-based comic strip health program, geared towards parents of 8- to 10-year-old African-American girls. The comic strips depict possible solutions to different problems parents may face if their child does not want to eat healthier foods or increase physical activity. The program also provides fun-yet-healthy recipes even kids will like.

Another successful eHealth program is "Squire's Quest," a computer game developed by CNRC behavioral nutrition researchers led by behavioral nutritionist Tom Baranowski. It's oriented toward helping elementary school students eat more fruits and vegetables.

In the game, the "Kingdom of 5ALot" is invaded by snakes and moles attempting to destroy the fruit and vegetable crops. The King and Queen enlist the help of student "squires," who face challenges related to drinking more juices and eating more fruits and vegetables. The squires gain points by preparing recipes in a virtual kitchen using these foods.

Follow-up testing of 1,578 fourth-grade Houston Independent School District students who played Squire's Quest showed they soon began eating an extra serving of fruit a day.

A Badge for Better Health

Thompson and Baranowski collaborated in a "Multicultural 5-A-Day Badge Project," an intervention to increase consumption of fruit, juice, or vegetables and physical activity among Boy Scouts. That project was funded by the American Cancer Society. It led to a nine-session instructional program that included about 20 minutes per week of in-troop activities, such as recipe preparation and taste testing; 20 minutes of Internet activities, such as goal setting; a comic strip to show how to overcome problems in making dietary changes; problem solving; and goal reviewing. Forty-two Boy Scout troops participated in the program. The boys were divided evenly into two groups, one focusing on diet and the other on physical activity. Participants who completed

their programs received an achievement badge.

Combined, these different programs in various computer formats and with differing target age groups are providing Thompson, Baranowski, and other CNRC researchers with invaluable data for their studies.

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Obesity Studies at CNRC

Among the nine core research programs under way at the Children's Nutrition Research Center (CNRC) in Houston, Texas, are three that pertain to improving understanding of the causes of obesity. They are:

- Childhood Obesity: Regulation of Energy Balance and Body Composition
- Childhood Eating Behaviors: Prevention of Childhood Obesity and Chronic Diseases
- Development of Origins of Obesity, Cardiovascular Disease, and Other Chronic Diseases of Nutrition Lineage

To read about these and other major CNRC research programs, go to www.kidsnutrition.org/research/programs.html.

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