Nutrition for Family Living

Susan Nitzke, Nutrition Specialist; susan.nitzke@ces.uwex.edu
Sherry Tanumihardjo, Nutrition Specialist; sherry.tan@ces.uwex.edu
Julia Salomon, Nutrition Specialist; julia.salomon@uwex.edu
Gayle Coleman, Nutrition Specialist; gayle.coleman@ces.uwex.edu

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Adolescents Need Effective Nutrition Education

By Susan Nitzke

Large gaps in teens' understanding of energy balance concepts were identified in a recent study from the University of Minnesota. Nelson and colleagues collected and analyzed data from 349 adolescents and their parents in 2006-07 to determine whether their knowledge of energy intake and expenditure was related to eating behaviors and body weights/BMIs. The participants in this research were relatively high-income and low in minority representation.

The knowledge test in this study included 15 questions about energy intake and expenditure (e.g., true/<u>false</u> "if someone sits all day they do not need to eat any calories") and calories from food (e.g., <u>true</u>/false "alcohol contains calories"). Both teens and parents had highly variable knowledge levels. For every item in the survey, teens' knowledge scores were lower than their parents' scores (averaging 50 and 71%, respectively).

Confusion about energy (calories) from macronutrients was common. For example, only 9% of the teens in this sample and 24% of parents chose the correct answer (false) for "one gram of carbohydrate contains more calories than one gram of protein." Similarly, only 29% of teens and 47% of parents chose the correct answer (false) for "one gram of carbohydrate contains more calories than one gram of fat."

Knowledge needed to follow the Dietary Guidelines for Americans' advice to minimize intakes of added sugars was poor. About 2/3 of teens and half of the parents in this sample failed to chose the correct answer (false) that 100% fruit juice contains added sugar. Only 43% of teens and 69% of parents chose the correct answer (false) for "The sweetener used in Gatorade® and other sports drinks is healthier than the sweetener used in soft drinks such as Coke® and Mountain Dew®."

Teens with higher knowledge scores were more likely to be physically active and spent less time watching TV than teens with low knowledge scores. However, other outcomes such as sweetened beverage consumption, fast food intake, weight status and percent body fat were not associated with knowledge levels.

<u>Implications for Extension Educators.</u> Many teens in this study lacked basic knowledge that is necessary to understand and follow advice in the Dietary Guidelines for Americans, use information in the Nutrition Facts panel on food labels, and monitor their intake of calories and nutrients. Furthermore, knowledge levels were not associated with several behavioral outcomes such as consumption of sweetened beverages. This verifies the importance of effective, behaviorally-oriented nutrition education. It also indicates the need to include more education for teens on concepts related to energy balance. Note that A.8.1 in the Wisconsin Nutrition Education Standards states, 'By the end of grade 8 students will explain the concepts of variety, moderation and balance, and balancing caloric intake and energy expenditure.' The Power of Choice curriculum includes two lessons related to balancing caloric intake and energy expenditure, Get Up and Move! (topic 2) and How Much Do You Eat? (topic 3).

Ideally, behavioral applications of nutrition education concepts would be reinforced and facilitated by environmental changes such as the school- and community-wide changes that were addressed in the Shape Up Somerville program, a project receiving special funding from the U.S. Centers for Disease Control and Prevention.

Note: There will be a media release on this topic available from FLP in March 2009.

References:

Nelson MC, Lytle LA, Pasch KE. Improving literacy about energy-related issues: the need for a better understanding of the concepts behind energy intake and expenditure among adolescents and their parents. *J Am Diet Assoc*. 2009;109:281-287.

Shape Up Somerville information available online at http://nutrition.tufts.edu/1174562918285/Nutrition-Page-nl2w_1179115086248.html

Wisconsin Department of Instruction, Nutrition Education Standards (current draft)

Impact of Garden-Based Youth Nutrition Intervention Programs

By Gayle Coleman

A review of 11 studies on garden-based youth nutrition intervention programs suggests that these programs may have the potential to promote increased fruit and vegetable intake among youth, and increased willingness to taste fruits and vegetables among younger children. However, the evidence in this area is very limited.

The studies reviewed were published in peer-reviewed journals between 1990 and 2007. Five studies to place in schools and were integrated into the school curriculum, three studies were conducted as part of an afterschool program, and three studies were conducted within the community. The studies used a variety of intervention designs and evaluations, and varied in duration and intensity. The following charts show some characteristics of the programs.

Characteristics of 5 studies in school classrooms

Study population	Design	Measurement tools	Nutrition outcomes
6th grade, Male/female, N=99, (Idaho)	Garden+nutr-ed, Nutr-ed only & control, (12 weeks)	Pre & post 3-day 24-hour recall workbooks	Increase in FV intake among garden+nutr-ed above nutr-ed only and control
4th grade, Male/female N=213 (California)	Garden+nutr-ed, Nutr-ed only & control, (9 lessons in 17 weeks and 6-month follow up)	Pre & post questionnaires	Postest preference scores for carrots and broccoli were greater for garden+nutr-ed and nutr-ed only above control; preference scores for snow peas and zucchini were greater for garden+nutr-ed above nutr-ed only and control; increase in general nutr knowledge
1st grade, Male/female, N=97 (California)	Garden+nutr-ed & control, (lessons throughout school year)	Pre & post one-on-one interviews	No significant improvement in vegetable preferences; intervention students more wiling to taste spinach, carrots, peas, broccoli, zucchini and red bell pepper; significant improvements in knowledge to identify food groups but not to identify vegetables
3rd-5th grade, Male/female, N=111 (Texas)	No control, (10 lessons),	Pre & post 24-hour recall journal, questionnaire	No increase in FV intake. Significant increases in vegetable preference but not fruit preference
Kindergarten, Male/female N not reported (South Carolina)	No control, (weekly lessons, duration not reported)	Pre & post interviewer-led survey	Increase in willingness to taste FV; increase in number of students able to identify FV

Characteristics of 3 after school studies

Study population	Design	Measurement tools	Nutrition outcomes
4th grade, Male/female, N=38, (Kansas)	Garden+nutr-ed & control (10 weeks)	Pre & post questionnaires	No improvements in FV preferences or knowledge; increased self-efficacy to consume FV
3rd-8th grade, Male/female N=43 (Oklahoma)	Garden+nutr-ed, no control (1 day per week, duration not reported)	Pre & post single-item survey question	Significant increase in report of daily vegetable intake
3rd-5th grade, Male/female, N=29 (Kansas)	Garden+nutr-ed, nutr-ed only & control, (8 lessons)	Pre & post questionnaires	No significant improvements in FV preference, knowledge, or self-efficacy among participants in intervention or comparison groups

Characteristics of 3 community studies

Study population	Design	Measurement tools	Nutrition outcomes
8-15 years old, Male/female, N=96 pre & 66 post, (Minnesota)	Garden+nutr-ed, no control (10 weeks, 3 days/week)	Pre & post 24-hour recall and survey	Significant increase in vegetable intake, boys only
9-15 years old, Male/female N=40 (Minnesota)	Focus groups (3 gardener/3 nongardener groups)	Focus groups	Youth gardening program participants were more willing to eat nutritious food, try ethnic and unfamiliar food, greater likelihood to cook and garden, and expressed a greater appreciation for other individuals and cultures
2nd-5th grade, Male/female, N=56 (Texas)	Garden+nutr-ed, no control, (duration ranged from 1 day/week for 12 weeks to daily for 1 week)	Pre, mid & post preference questionnaire, multiple choice exam, and interview	No significant differences in FV preferences; significant improvements in healthy snack consumption and knowledge of benefits of FV

This review suggests that although garden-based nutrition education programs for youth are considered a promising strategy for increasing preferences and improving dietary intake of fruits and vegetables, there is a need for well-designed studies to identify effective programs.

Implications for Extension Educators: Interest by teachers and community members in providing nutrition education through gardening is blossoming in Wisconsin. Well designed lessons and evaluations can help us build on this interest and achieve nutrition-related outcomes such as increased consumption of a variety of vegetables and fruits. We are hopeful that the new *Got Veggies?* lessons being developed by the Wisconsin Department of Human Services in partnership with UW-Extension will be one more tool we can utilize to motivate youth to eat more and a greater variety of vegetables and fruits. *Got Veggies?* is a set of nutrition education lessons to compliment the *Got Dirt?* curriculum. These lessons are scheduled to be available this spring.

References:

Robinson-O'Brien R, Story M, Heim S. Impact of Garden-Based Youth Nutrition Intervention Programs: A Review. *J Am Diet Assoc*. 2009;109:273-280.

Materials recently added to the FLP resource database under WNEP

- Serving Up Whole Grains flipchart, https://www.uwex.edu/ces/flp/apps/flrc/tch_res2/resourceDetails.cfm?rid=2870
- MyActivity Pyramid for Adults, https://www.uwex.edu/ces/flp/apps/flrc/tch_res2/resourceDetails.cfm?rid=2900
- MyPyramid for Pregnancy poster, https://www.uwex.edu/ces/flp/apps/flrc/tch_res2/resourceDetails.cfm?rid=2952
- WNEP new staff training lesson plans, https://www.uwex.edu/ces/flp/apps/flrc/tch_res2/resourceDetails.cfm?rid=2824
- CDC fruit and veggie educational materials, https://www.uwex.edu/ces/flp/apps/flrc/tch_res2/resourceDetails.cfm?rid=2863
- A chart and related comment were added to the Sisters in Health lessons, https://www.uwex.edu/ces/flp/apps/flrc/tch_res2/resourceDetails.cfm?rid=330
- Teen lesson plans, https://www.uwex.edu/ces/flp/apps/flrc/tch_res2/resourceDetails.cfm?rid=2928