Let's Cook, Eat, and Talk: Encouraging Healthy Eating Behaviors and Interactive Family Mealtime for an Underserved Neighborhood in Texas

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INTRODUCTION

Family meals are associated with significant benefits including increased dietary quality,^{1–4} reduced risk behavior for substance abuse^{3–5} and disordered eating behaviors,^{3,4} improved cognitive performance among children,^{3–5} and strengthened family connectedness.^{4,5} Promoting healthy eating through family meals is suggested to be an important public health strategy, but family meal-focused interventions that educate entire families are lacking.⁶ Furthermore, family programs that promote healthful family mealtimes through an experiential and observational learning environment for underserved families within a community setting are limited or not widely reported. The objective of *Let's Cook, Eat, and Talk* (LCET) was twofold: to promote healthy eating behaviors by providing combined nutrition education and cooking classes to underserved families in the community setting and to facilitate family mealtime communication to strengthen family relationships among participants in East Lubbock, TX.

PROGRAM OVERVIEW

The LCET program was part of a larger community-wide *East Lubbock Promise Neighborhood* grant program. To develop a culturally and socioeconomically sensitive program, the LCET research team established a community advisory board (CAB) of community leaders (eg, pastors and previous city council member), parents and teachers from schools, a foodservice program director from a food bank, nurses and doctors from the community health centers, and registered dietitian faculty from Texas Tech University in an effort to identify dietary and family communication patterns and develop a tailored intervention. The needs-based assessment through the CAB meetings found that a high prevalence of obesity and related chronic diseases, such as diabetes and high blood pressure, high rates of food insecurity, low accessibility to supermarkets, and low availability of fresh produce were underlying causes of the dietary habits and related chronic disease conditions in the East Lubbock community. Community advisory board

members emphasized the importance of cultivating healthy lifestyles and healthy family communication with the goal of creating a healthy environment for the individual family and the wider community.

Development of the LCET Program Curriculum

Two registered dietitian faculty members, 2 chefs from the Lubbock Chef Organization, and 1 home economics teacher developed and taught socioeconomically and culturally sensitive nutrition and cooking education content, which was based on their work experiences with underserved families from the East Lubbock community, outcomes and suggestions from the CAB, and previous family meal literature.^{3,7–9} A literature review about the use of imagery for health education suggested that patients' acceptance of and adherence to health-related messages and instruction might be improved through the use of culturally relevant imagery, especially for those with lower levels of education or literacy.¹⁰ Cultural reinforcement of poor dietary behaviors combined with varying literacy levels among African American¹¹ and Hispanic/Latino¹² populations could make nutrition education and health communication challenging in underserved communities, requiring techniques beyond written and verbal instruction. Therefore, the LCET program lessons used a variety of visual aids targeted to low-income African American and Hispanic families from East Lubbock, including PowerPoint (Microsoft Corporation, Redmond, WA, Version 14.7.2, November 2010) slides with large images and video clips, food models, food packaging, poster boards, and handouts.

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The LCET program was guided by Social Cognitive Theory (SCT), which emphasizes reciprocal interactions of personal, environmental, and behavior factors to change one's behavior.¹³ Indeed, a previous study demonstrated the successful application of SCT to the development of a family meals–focused nutrition intervention in a community setting.⁶ The program facilitated adolescents' behavior changes by increasing the self-efficacy of participants, helping them to set goals associated with behavior messages and providing a family mealtime environment. Likewise, LCET sessions incorporated constructs of SCT, such as improving nutrition knowledge and self-confidence of both parents and children through nutrition and cooking lessons and activities (personal factor), providing observational and experiential learning environment by working with chefs and family members, supporting nutrition education materials (eg, MyPlate tip sheets,¹⁴ serving size cards,¹⁵ and a family cookbook¹⁶) for home use, and increasing outcome expectations of healthy behavior (eg, increased fruit and vegetable consumption and frequency of family dinner table conversation at home).

Nutrition and cooking lessons emphasized building skills and self-efficacy to plan, purchase, and prepare healthful meals using affordable and culturally preferred foods available locally. Based on the 2010 Dietary Guidelines for Americans¹⁷ and MyPlate,¹⁸ those lessons focused on making nutrient-dense choices from each food group in proper portion sizes while limiting added sugars, solid fats, and sodium. To facilitate the collective meal preparation, each family had its own table to cook family meals with parents and child(ren) (experiential learning); chefs helped each table by demonstrating knife skills and recipe modification methods (observational learning). To ensure sustainability, easy, economic, and popular dinner menus were selected for the family cooking lessons. The chef determined easy recipes based on the estimated active preparation time (under 30 minutes), the skill level of food preparation and knife techniques required, and the local availability and number of

different ingredients used. Popularity of the menus was based on the chef's own experiences working in the East Lubbock community. Experiencing the flavors of different cuisines, such as Southwestern/Tex-Mex, Creole/Cajun, Korean, and Chinese American, tasting a variety of seasonal fruits and vegetables, and using various forms of produce (fresh, frozen, or canned) were notable aspects of the curriculum.

Communication lessons targeted increasing dinner table conversation to strengthen family relationships. Basic knowledge of communication, listening skills, conflict resolution, and stress management were discussed, and each lesson featured soft-skill development activities, such as creating and sharing family goals posters, to practice and promote dinner table conversation both in class and at home, as well as the exclusion of electronic devices such as televisions and cell phones from the family meal setting.

The readability of content from nutrition, cooking, and communication lessons was checked by using an online program;¹⁹ the researchers determined it to be at a sixth- to eighth-grade reading level, which was recommended for public information materials according to the National Institutes of Health Plain Languages Initiatives.²⁰ Program feasibility (eg, family attendance) and fidelity (eg, observations of session delivery) were conducted by a registered dietitian and a trained graduate student based on the previous literature.²¹ Average attendance of families at each session (during program implementation) was 92%; 94% of sessions were delivered as intended. The LCET team reviewed and finalized the curriculum (Table 1) and the CAB gave final approval for the program outline and implementation plan.

EVALUATION

A convenience sample of 45 families who lived with ≥ 1 child (aged 8–12 years) at home at the time of recruitment was recruited from community events in the target neighborhood. Of the 45 families who intended to

participate, 13 with their child(ren) ($n = 39$; 13 parents and caregivers and 26 children) took part in the LCET intervention for 4 Sundays at a community building located within the neighborhood that was equipped with lecture rooms and a commercial kitchen.

Validated survey questions from previous dietary and behavioral research^{22–27} were used to assess nutrition knowledge, self-confidence about cooking, home food environment, fruit and vegetable consumption, and frequency of family dinner conversation (Table 2). Five sociodemographic questions (age, gender, highest education level, race/ethnicity, eligibility for the *Supplemental Nutrition Assistance Program*, the *Special Supplemental Nutrition Program for Women, Infants, and Children*, or both), 1 program satisfaction question (*Overall, do you think this class satisfied you and your family?* with a 5-point Likert scale ranging from 1 = very dissatisfied to 5 = very satisfied), and 1 open-ended question (*What did you like the most from the program?*) were added into the questionnaire. A registered dietitian and a trained graduate student administered pre- and postsurveys before and immediately after the intervention.

After the postsurvey, a registered dietitian faculty member conducted an informal interview with the aid of a trained graduate assistant to obtain information regarding behavior changes at home and suggestions for program development. At the end of the communication lesson for week 3, the class instructor explained the interview information and schedule to all families and collected names and available times for possible interviewees. Each interviewee was allocated 10–15 minutes in a comfortable environment and a trained graduate student collected written notes (without audio recording) for further analysis. A general inductive analysis²⁸ was used to obtain frequent and dominant themes by categorizing interviewees' comments written in a note through careful readings, frequency of meaningful word counting, and labeling relevant words and phrases (coding). A summary of the interview results is mentioned in the Outcomes section.

Table 1. Description of the *Let's Cook, Eat, and Talk Program* Curriculum

Lesson Type	Nutrition	Cooking (Choose 1 of 2 Menu Options)		Communication
Structure	Session 1	Session 2	Session 3	
Session	30–40 min	1 h 30 min	30 min	
Duration	Classroom	Commercial kitchen	Classroom	
Place	1 Registered Dietitian	2 Chefs	1 Home economics teacher	
Instructor(s)	3 Undergraduate students (nutrition major)	3 Undergraduate students (nutrition major)	4 Undergraduate students (1 human development and family studies major and 3 nutrition majors)	
Volunteers				
<i>Week 1</i>				
Topics/menus	Economic meal planning	Herbed Turkey Burgers, Spinach Feta Mashed Potatoes, and Summer Squash Sauté	Honey BBQ Chicken Nuggets, Chili-Garlic Roasted Broccoli, and Roasted Corn with Honey-Chili Butter	Effective family communication
Objectives/cooking skills	Create a budget and shopping list; understand and read nutrition facts labels; determine essential materials for meal plan; learn grocery shopping strategies	Grill with low-fat meats; boil potatoes; sauté vegetables; knife skills: hold a chef's knife, peel, dice, mince, and slice; food safety for ground meats: avoid cross-contamination and check for correct internal temperature	Bake chicken; oven-roast vegetables; simmer sauces; knife skills: hold a chef's knife, mince, and zest; food safety for poultry: avoid cross-contamination and check for correct internal temperature	Learn 4 communication styles; understand importance of family meals and communication; develop a communication ritual for dinner time and establish expectations
Family activities/recipe modification	Compare cost per serving of different brands and package/container sizes; make your own family shopping list using local supermarket weekly advertisement; read nutrition facts labels with children; Store versus name brand taste testing	Reduce sodium with herbs and vegetables for flavor; choose lean meats; increase dark green vegetables; choose and taste 100% whole-wheat products (hamburger bun)	Reduce saturated fat and sodium content of recipes; bake instead of fry; choose lean meats; substitute with low-fat dairy products	Introduce your family; select 2–3 topics for family dinner talks at home; create a placemat for each family member; begin making family goals poster for class presentation at the end of program
SCT constructs	Nutrition knowledge improvement, self-efficacy, reinforcement, and environment (nutrition education material support)	Self-efficacy, cooking skill improvement, and environment (observational and experiential learning)		Self-efficacy, reinforcement, environment (experiential learning such as making family goals poster), and goal setting
<i>Week 2</i>				
Topics/menus	Healthy meal planning	Ginger Salmon, Spinach and Mushroom Egg Drop Soup, and Brown/Wild Rice	Creole Catfish, Roasted Cajun-Style Veggies, Whole-Wheat Roll, and Baked Stuffed Apples	Effective and active listening

(continued)

Table 1. (Continued)

Lesson Type	Nutrition	Cooking (Choose 1 of 2 Menu Options)		Communication
Objectives/cooking skills	Familiarize with MyPlate guide for healthy eating; identify 5 food groups; understand importance of balanced meals; learn about <i>Supplemental Nutrition Assistance Program</i> benefits	Bake or broil fish; caramelize technique; cook with a glaze; knife skills: mince and slice; food safety for fish: check internal temperature and physical attributes for doneness	Sauté, roast, and use <i>en papillote</i> technique for vegetables; bake or broil fish; simmer sauces; knife skills: mince, dice, and slice; food safety for fish: check internal temperature and physical attributes for doneness	Learn effective listening skills and improve personal listening skills at home
Family activities/recipe modification	MyPlate match game; faux food meal planning	Prepare homemade, reduced-sodium soup and using a slurry; substitute with egg whites	Reduce saturated fat and sodium content of recipes; use herbs and vegetables for flavor instead of extra salt; choose 100% whole-wheat products (dinner roll)	Family telephone game; sharing family dinner table communication experiences from past week
SCT constructs	Nutrition knowledge improvement, self-efficacy, reinforcement, and environment	Self-efficacy, cooking skill improvement, and environment (observational and experiential learning)		Self-efficacy, reinforcement, and behavior
<i>Week 3</i>				
Topics/menus	Portion sizing and kitchen organization	Build-Your-Own Pizzas, Sweet Potato Kale Salad, and Fruit Kebabs	Easy Oven Fajitas, Black Bean and Roasted Salsa Soup, and Brown/Wild Rice	Conflict resolution
Objectives/cooking skills	Recognize correct portion and serving sizes; avoid portion distortion at home/restaurants; create efficient kitchen layout; identify place of food storage in your home	Knead and proof dough and bake with whole-wheat products; oven-roast vegetables; knife skills: mince, dice, and slice; food safety for produce: select and store correctly, prevent cross-contamination, and identify hazardous vs nonhazardous produce items	Bake vegetables and chicken; oven-roast vegetables; purée vegetables; knife skills: dice and slice; food safety for poultry: avoid cross-contamination and check for correct internal temperature	Engage in learning about conflict resolution through definition, causes, examples of conflicts, and problem-solving skills; learn how to resolve conflicts
Family activities/recipe modification	Plate portion sizing game; taste fruits and vegetables with guest speaker from local farmers' market and learn about <i>Special Supplemental Nutrition Program for Women, Infants, and Children</i> and <i>Farmers' Market Nutrition Program</i>	Choose and adjust herbs to create low-sodium, low-sugar sauces at home; use vegetables and fruits from every color group; choose lean meats and meat substitutes	Reduce saturated fat and sodium content of recipes; use herbs and vegetables for flavor instead of extra salt; substitute with low-fat dairy products	Old lady/young lady optical illusion activity for seeing different perspectives

(continued)

Table 1. (Continued)

Lesson Type	Nutrition	Cooking (Choose 1 of 2 Menu Options)		Communication
SCT constructs	Nutrition knowledge improvement, self-efficacy, reinforcement, and environment	Self-efficacy, cooking skill improvement, and Environment (observational and experiential earning)		Self-efficacy and reinforcement
Week 4				
Topics/menus	Food safety, handling, and sanitation	Rainbow Bibimbap and Sliced Watermelon	Easy and Skinny Spicy Orange Chicken, Stir-Fried Vegetables, and Good-For-You <i>Fried</i> Rice	Stress management
Objectives/Cooking skills	Understand importance of food safety at home through learning control points, personal safety, prevention, proper food handling, and contamination prevention	Stir-fry and blanche vegetables; toast sesame seeds; advanced knife skills: julienne, slice on the bias, and fine mince; food safety for ground meats: avoid cross-contamination and check for correct internal temperature	Sauté chicken; stir-fry vegetables; boil rice; bake casserole-style; simmer homemade sauces; knife skills: mince, dice, and slice; food safety for poultry: avoid cross-contamination and check for correct internal temperature	Learn about stress and its symptoms; identify personal stressors; reduce stress through coping methods and exercise
Family activities/recipe modification	Effective hand washing with germ detection powder test; hazardous food detective game with model foods	Reduce saturated fat content of recipe; prepare a marinade and adjust sodium, sugar content, and flavor; use a variety of vegetable colors and types for flavor	Reduce saturated fat and sodium content of recipes; sauté and bake instead of fry; substitute with whole-grain ingredients	2-min relaxation exercises; crumple up your cares trash can toss game; present family goals poster (with photos, recipes, and dinner topics from past weeks)
SCT constructs	Nutrition knowledge improvement, self-efficacy, reinforcement, and environment	Self-efficacy, cooking skill improvement, and environment (observational and experiential learning)		Self-efficacy, reinforcement, environment (experiential learning), outcome expectations, and goal setting (for healthful family meal practices for the future)

SCT indicates Social Cognitive Theory.

OUTCOMES

Table 3 lists demographic characteristics of participants. A total of 92% of participants were satisfied with the program (mean $\pm$ SD = 4.38 $\pm$ 0.65). Cooking with professional chefs, learning how to make healthy dishes from different cultures, learning and practicing portion sizing, and practicing communication at the family table were the most satisfactory components of the program.

Nonparametric Wilcoxon matched pair test (2-tailed at $P < .05$) revealed

that adult participants' total nutrition knowledge improved significantly ($P = .007$), especially regarding portion sizing ($P = .02$) and MyPlate ($P = .004$). Frequency of family dinner conversation improved but not significantly ($P = .08$). However, scores for self-confidence about cooking, home food environment, and fruit and vegetable consumption did not improve.

Eight parents and caregivers participated in an informal interview. Most participants ($n = 7$) expressed that their families had fun during the program, that activities from the

LCET lessons helped with shopping and food preparation at home, that they tried to check nutrition and product labels during grocery shopping, and that their families had dinner table conversation every week while participating in the program. Three caregivers also mentioned that their families tried to eat more fresh fruits as desserts and vegetables as side dishes, and their children were more engaged in helping with meal preparation at home. Furthermore, they were motivated to try healthier recipes and foods from other cultures such as fresh spring rolls. In the

Table 2. Description of Survey Variables Based on Social Cognitive Theory Constructs

Variable	Item Description	Scoring/Score Range	Reliability (Cronbach α) ^a
<i>Personal</i>			
Nutrition knowledge (11 items) ²⁶	Knowledge of 5 food groups, portion sizes, and MyPlate	1 point for each correct answer Score range: 0–11 points	.75
Self-confidence about cooking (9 items) ^{22,23}	<i>How confident do you feel about ...?</i> Making a meal with fruits and vegetables Helping make a family meal Cutting up foods Making salad Measuring ingredients Following a simple recipe Tasting new foods that I have not been eaten before Preparing and cooking new foods and recipes Being able to cook from basic ingredients	1 point = not at all confident to 7 points = very confident Score range: 9–63 points	.85
<i>Environmental</i>			
Home food environment (8 items) ²⁴	We have fruits We have vegetables Vegetables are served at meals Fruits are served for dessert There are fruits available to have as a snack There are vegetables available to have as a snack There are cut-up vegetables in the fridge to eat There are fresh fruits on the counter, table, or somewhere else where I can easily get to them	1 point = never to 5 points = always Score range: 8–40 points	.84
<i>Behavioral</i>			
Fruit and vegetable consumption (5 items) ²⁵	<i>During the past 7 days, how many times did you ...</i> Drink 100% fruit juices such as orange juice, apple juice, or grape? (Do not count punch, Kool-Aid, sports drinks, or other fruit-flavored drinks) Eat fruits? (Do not count fruit juice) Eat green salad? Eat potatoes? (Do not count french fries, fried potatoes, or potato chips) Eat other vegetables? (Do not count green salad, or potatoes)	Points: 1 = 0 time/wk 2 = 1–3 times/wk 3 = 4–6 times/wk 4 = 1 time/d 5 = 2 times/d 6 = 3 times/d 7 = 4 times/d Score range: 5–35 points	.83
Frequency of dinner table conversation (1 item) ²⁷	How often do you use dinner as an opportunity for pleasant conversation and to catch up on activities of family?	1 point = never to 5 points = always Score range: 1–5 points	Not applicable

^aIndicates reliability of each variable (n = 13). Note: Superscript numbers indicate reference number.

Table 3. Demographic Characteristics of Adult Participants (Parents/Caregivers [n = 13])

Characteristics	Mean/Frequency	Valid (%)
Age, y (mean)	40.15	Not applicable
Gender		
Male	3	23.1
Female	10	76.9
Ethnicity		
African American	6	46.2
Hispanic	6	46.2
Others	1	7.6
Highest education level		
Middle school	1	7.7
High school	8	61.5
Some college	3	23.1
College degree or higher	1	7.7
Eligibility for <i>Supplemental Nutrition Assistance Program</i> and/or <i>Special Supplemental Nutrition Program for Women, Infants, and Children</i>		
Yes	10	76.9
No	3	23.1

interview, 2 elderly adults (aged > 60 years) expressed an increased desire to learn and follow nutritional recommendations for chronic disease prevention and management, especially related to diabetes and cancer. However, most participants (n = 7) stressed that their limited budgets, time constraints, family cooking preferences (such as frying), and poor local food environment were still barriers. Participants' perceived barriers to healthy eating behaviors were similar to those reported by adults in other underserved African American and Hispanic/Latino communities in the US. The poor local food environment (eg, cost, accessibility, and quality of produce),^{29–37} time constraints or the inconvenience of preparing healthy foods or produce,^{29,32,33,36} and the influence of family cooking preferences^{33–36} were challenges that were found in other underserved communities as well, especially as barriers to fruit and vegetable consumption. However, in some research studies, family cooking preferences and practices, especially during upbringing, were

instead mentioned as promoters of fruit and vegetable consumption for both African American and Hispanic/Latino families.^{29,32}

APPLICATION

The LCET program offered an interactive family-oriented nutrition education that reflected some of the neighborhood's needs and culture to increase understanding of healthy eating habits and communication skills for families in the community. In East Lubbock, the LCET curriculum was successful in increasing nutrition knowledge of program participants, which might help those underserved families transition to healthier eating practices and provide them with tools to improve family meal frequency and connectedness. Through partnerships with community organizations, the program might be transformed and sustained continuously, a process that is under way in East Lubbock by incorporating a local food bank.

This study had limitations. Significant improvement in nutrition knowledge of the participants was

confirmed after the program delivery, but the scores for self-confidence about cooking, home food environment, and fruit and vegetable consumption did not improve. The applicability of this program to similar populations is unknown because the results were based on a small convenience sample for both the program survey (n = 13) and interviews (n = 8). Although the program setting encouraged parents (and/or chefs in cooking lessons) to help their children to learn concepts from all lessons, the average readability of the content was at the sixth- through eighth-grade level, which was high for some children who were under the sixth grade in the intervention. To reduce this variation, trained undergraduate volunteers (who were majoring in nutrition and human development and family studies) supported families' needs in the class to enhance children's learning appropriate for their age and also facilitate family meal preparation. Although the LCET program was well received in East Lubbock, the feasibility of using this program with other populations has not been demonstrated. In addition, none of the participants shared their least favorite program components or suggestions for change. From the informal interview, interviewees might have wished to be courteous to the interviewer, which may have skewed self-reported results. Because most interviewees (n = 7) reported that their families had dinner table conversation every week while participating in the program, the program may have met its objective of increased conversation at family mealtime. However, this result was based on participants' self-report and may have been biased as well. For future studies, a qualitative assessment from both parents and children to explain significant barriers for healthy behavior and longitudinal study design to follow-up behavior changes after intervention will enhance the quality of interventions similar to LCET.

NOTES

Institutional review board approval for this LCET program was obtained by the Human Research Protection

Program at Texas Tech University. A copy of education materials is available by contacting the corresponding author. This program is a part of the East Lubbock Promise Neighborhood Grant program funded by the US Department of Education (Grant No. U215N120013).

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