PROMOTING HEALTHY HOME-COOKED FAMILY MEALS: EVALUATION OF A SOCIAL MARKETING PROGRAM TARGETING LOW-INCOME MOTHERS

Mollie Y. Dawahare

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Mollie Y. Dawahare, Student
Dr. Janet Mullins, Major Professor
Dr. Kelly Webber, Director of Graduate Studies
PROMOTING HEALTHY HOME-COOKED FAMILY MEALS:
EVALUATION OF A SOCIAL MARKETING PROGRAM
TARGETING LOW-INCOME MOTHERS

THESIS

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in the College of Agriculture, Food and Environment at the University of Kentucky

By

Mollie Yamin Dawahare

Lexington, Kentucky

Director: Janet Mullins, Ph.D., R.D., L.D.

Lexington, Kentucky

2016

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Objective: Evaluate how a social marketing approach compares to traditional nutrition education curriculum for promoting behavioral changes related to eating and food.

Design: Nonequivalent comparison group, entry-exit design. Participants from 12 Kentucky counties assigned either comparison or pilot group. Comparison group received traditional nutrition education curriculum and pilot group received the social marketing program, Cook Together, Eat Together (CTET) curriculum. EFNEP’s Behavior Checklist and 24-Hour Dietary Recall were administered at entry and exit of the 8-week programs.

Participants: Females (18-72 years of age) from families eligible to receive SNAP benefits (n=64 comparison group participants, n=60 pilot group participants).

Intervention: Comparison group completed an 8-week standard lesson and pilot group completed CTET program in varying time frames (1-8 weeks).

Main Outcome Measures: Eating behavior changes between entry and exit for comparison versus pilot.

Analysis: Quantitative data were analyzed using independent and paired t-tests with significance of $P \leq 0.05$ and 0.10.

Results: Groups were demographically similar. Both had significant differences in entry and exit scores for Behavior Checklist and 24-Hour Recall ($P \leq 0.05$).

Conclusion and Implications: Positive behavior change was observed in both comparison and pilot groups. A social marketing program proves to be a promising approach to nutrition education.

Key Words: Expanded Food and Nutrition Education Program, Supplemental Nutrition Assistance Program-Education, Cook-Together Eat Together, low-income mothers

Mollie Dawahare

March 30, 2016
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April 5, 2016
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Introduction

The Supplemental Nutrition Assistance Program (SNAP) is an economic and hunger assistance program for eligible, low-income families for food purchases (USDA, 2016). SNAP-Ed, the educational component of SNAP, promotes healthy, nutritious lifestyle choices and obesity prevention (USDA, 2012). SNAP-Ed works with state agencies, nutrition educators, and community organizations that provide outreach to qualified individuals. In addition to SNAP-Ed, the Expanded Food and Nutrition Education Program (EFNEP) promotes healthy lifestyles and disease prevention through community outreach (USDA, EFNEP). The Nutrition Education Program (NEP) is a nationally based organization that helps provide training and curriculum support to the Cooperative Extension Offices located in every county in Kentucky. The University of Kentucky Cooperative Extension Office in turn offers EFNEP and SNAP-Ed services through their trained paraprofessionals.

In the discipline of nutrition education, social marketing has shown to be a promising approach for program implementation aimed at behavior change (Grier & Bryant, 2005). Social marketing is a “process that applies marketing principles and techniques to create, communicate, and deliver value in order to influence target audience behaviors that benefit society as well as the target audience” (Kotler & Lee, 2008). Former nutrition education programs used the “top-down” method, where health professionals identified a health-related issue and then offered solutions. This approach puts the burden on the participant to make changes based on expert advice. The traditional approach did not take into account participant perceptions and characteristics. Social marketing uses a “bottom-up” method, focusing on
behavior change through nutrition and health education (Young, 2004). Social
marketing encourages the target audience to adopt healthier habits by using a
participant-centered approach to setting goals and personalized aspirations through
education (Grier & Bryant, 2005).

**Effectiveness of EFNEP and SNAP-Ed**

Many studies verify that EFNEP is successful in increasing nutrition-related
knowledge and behaviors (Wardlaw & Baker, 2012). Outcomes are assessed using
the EFNEP Behavior Checklist and 24-Hour Dietary Recall. Previous research has
demonstrated positive changes in shopping behaviors and nutrient intake for those
who participate in EFNEP (Hersey, Anliker, Miller, et al., 2001). In 2015, EFNEP
reported that 95% of adult participants improved their diet by consuming an
additional ½ cup of fruits and vegetables. Most adult EFNEP participants (89%)
reported improved nutrition practices. (USDA, NIFA, 2016).

SNAP-Ed programs have shown to be effective in improving nutrition and
health behaviors (Wardlaw & Baker, 2012; Long, et al., 2013). In 2010, SNAP-Ed
outcomes included reports that 50% of participants improved their eating
behaviors by consuming foods closer to recommended amounts for grains,
vegetables, and fruits; 40% began eating breakfast; 39% reported having fewer food
insecure days; and 78% tried new recipes/foods (Sexton, 2013). Reports also
confirm food insecurity significantly improved in target audiences through SNAP-Ed
programs (Kaiser, 2015).
Traditional Nutrition Education Curriculum

The Kentucky Nutrition Education Program (KYNEP) includes both SNAP-Ed and EFNEP with similar goals to educate low-income families and individuals on the benefits of adopting healthy lifestyles (Nutrition Education Program, 2012). The mission of KYNEP is to: 1) educate limited resource people to acquire knowledge; 2) improve skills; and 3) change behavior necessary to achieve health and well being (Nutrition Education Program, 2012). Curricula used for traditional programs consist of a variety of core lessons with optional and maternal nutrition subgroups. The traditional KYNEP core lessons include: Basic Keys to Food Preparation, Meal Planning, Plan for Food Spending, and Breakfast Makes a Difference (Appendix A) (Nutrition Education Program, 2012). The traditional KYNEP curriculum includes learning outcomes for each topic (Appendix A). Trained paraprofessionals implement the programs throughout each county in Kentucky, often in 8-12 lesson series (Nutrition Education Program, 2012).

Cook Together, Eat Together Program

Cook Together, Eat Together (CTET) is a new social marketing program developed in 2014 by KYNEP. It is designed to educate SNAP-eligible families on making healthier food purchasing, preparation, and cooking habits. Eight focus groups were conducted, comprised of target audience members representing both rural and urban counties. Questions asked pertained to cooking knowledge, preparation skills, barriers in cooking dinner, and cooking with children. Among the focus group participants, 65% reported eating a dinner made at home most (5-6) days of the week; 31% reported making dinner from scratch most days of the week;
31% stated shopping with a grocery list; and 48% disclosed running out of food sometimes to most of the time (Najor, 2014). Another key finding revealed participants preferred to learn through hands-on and interactive cooking experiences (Najor, 2014). These key research findings served as the basis for development of a cookbook and facilitator’s guide that pilot counties used to implement the social marketing program. The CTET facilitator’s guide includes a curriculum matrix (Appendix B) describing the lesson, skills taught, and behavior checklist questions covered in each lesson. In addition to the recipes, the extensive cookbook offers information on healthy eating, shopping smart on a budget, how to read food labels, etc. The CTET program is designed as a “cooking social” rather than a cooking class as requested by focus group participants (Najor, 2014).

In the field of food and nutrition, there has been an increase in the use of cooking interventions (Reicks, Trofholz, Stang & Laska, 2014). While many factors have influenced family eating behaviors over the past decade, including, but not limited to maternal employment, increased time pressure, and various family structures, research shows individuals desire to improve dining habits (Condrasky, et al., 2006). Studies such as Cooking with a Chef, Cooking Matters, and Simply Good Cooking demonstrate an improvement in shopping, cooking, and eating behaviors in targeted audiences (Condrasky, Graham, & Kamp, 2006; May, Brad, Offelen, & Johnson, 2014; Bess, 2015).

Effective nutrition education is associated with key components such as targeting specific behaviors through the interests and motivations of the targeted population (USDA, 2010). During the formative research, participants agreed a
“cooking social” along with nutrition lessons was the preferred method for education (Najor, 2014). This study evaluates how a social marketing approach compares to traditional nutrition education curriculum for promoting behavioral changes related to eating and food. Understanding which techniques of education appeals most effectively to the low-income population can aid in further research efforts.

Methods
Study Design

The current study was conducted within 12 counties of Kentucky using a nonequivalent comparison group, entry-exit design. Participants completed a behavior checklist (Appendix C) and 24-hour dietary recall (Appendix D) before and after the session to measure effectiveness of both the CTET curriculum independently and compared with the traditional curriculum. Of the 12 participating counties, six received usual KYNEP care (comparison group) while the other six received the CTET program (pilot group). The pilot and comparison counties were selected based on a willingness to participate, similar demographics, NEP program assistant position, percentage of poverty, SNAP usage, geographic location, and rural versus urban.

The traditional KYNEP nutrition education curriculum is presented to groups of 2-25 individuals. CTET was fashioned similarly in audience size, but used social marketing recruiting tactics. The participants for the pilot groups were recruited via flyers (Appendix E) hung in grocery stores, The Young Men’s Christian Association, Cooperative Extension Offices, places of worship, laundromats, libraries, and daycare centers. County extension agents utilized social media by
posting the recruitment flier on Facebook. Program coordinators visited homes and neighborhood facilities to personally recruit participants. The curriculum was delivered in various ways contingent upon the extension assistant’s discretion. Few counties extended the CTET program through all eight weeks. Many completed two lessons in the same day, compiled all lessons into a weeklong camp, or shortened the program to six weeks.

**Evaluation Instruments**

Both EFNEP and SNAP-Ed collect data through the EFNEP Behavior Checklist (Appendix A), and 24-Hour Dietary Recall (Appendix B). They are delivered at baseline and immediately following the intervention (entry-exit approach). The self-reported Behavior Checklist includes ten questions covering topics of food resource management (plan meals ahead of time, compare prices, run out food at the end of the month, shop with grocery list), food safety (time dairy or meat sit out, thaw foods at room temperature), and nutrition (making healthy food choices, adding salt, reading the Nutrition Facts label, and feeding children breakfast). The response options use a Likert Scale of 1-5 with one representing “never” and five representing “almost always” (Auld, et al, 2015). The 24-Hour Recall is used for participants to recall all foods and beverages they consumed (food, description, amount, and time of day) in the last 24 hours. A program assistant facilitates the recall. The assistant then enters the data into the Web-Based Nutrition Education Evaluation and Reporting System (WebNEERS) software for calculating vitamin, mineral, and nutrient data. WebNEERS is used on the federal, institutional, and regional level to collect, store, and manage data so to provide a variety of reports and diagnostic
assessments (USDA, WebNEERS). One of the outcomes measured through the 24-Hour Dietary Recall is the Healthy Eating Index (HEI) score. The HEI score is a measure of diet quality as defined by the USDA. It monitors the quality of the American population’s diet and the effectiveness of nutrition intervention programs (Guenther P, et al., 2013).

**Data Collection**

The first pilot program of CTET began in the summer of 2015 and was completed in the fall. The exact dates were chosen based on the extension assistant availabilities and workload. Demographic information was obtained from participants including age, race, ages of children in the household younger than 18, household size, and income. Participants were asked to answer the questions on the Behavior Checklist using the Likert scale. Program assistants worked with participants individually to complete 24-Hour Dietary Recalls, which were entered into WebNEERS data analysis software. Data collected from each county was transferred into an Excel spreadsheet using the double entry method to control for internal error.

**Data Analyses**

The data were analyzed using Statistical Package for the Social Sciences (SPSS 22) (version 3.51.59). An independent sample t-test measured differences between comparison and pilot group means at baseline (entry) and after intervention (exit). A paired t-test was chosen to compare means between pre- and post-intervention differences within the pilot and comparison groups. Significance for all test measures was defined by a Bonferroni-adjusted $P$ values of $\alpha \leq .05$, and $P \leq .10$ were also reported (Armstrong, 2014).
Results

Demographics

The study had a total of 64 participants; the comparison group consisted of 30 and the pilot consisted of 34 participants. One comparison individual’s data was discarded after the intervention because he was male and the study focused on women. The final data used 29 participants for the comparison group. Demographic information (Table 1) revealed most participants were Caucasian (75%) followed by African American (24%) and were between the ages of 26-40 (53%). Those who reported their income, 16 (25%) made less than $500/month. The average household size was 3.4 people, including parent figure(s).

Baseline Comparison of Traditional and CTET Groups

Overall, the pilot and comparison groups started the program with similar baseline behaviors as assessed by the checklist. The comparison group ran out of food before the end of the month more frequently and thought less about feeding their family healthy foods than the pilot group (Table 2). With significance at $P \leq 0.10$, the pilot group let meat and dairy foods sit out longer than two hours more frequently than the comparison group. When asked how often prepared foods were made without adding salt, the comparison group reported 0.54 points lower than the pilot group. The comparison group read the Nutrition Facts on the food label less often than the pilot group ($P=0.002$).

Few variables were found to be significantly different at baseline according to the 24-Hour Dietary Recall (Table 3). The comparison group recorded eating more meals (3.77) than the pilot group (3.09) and thus consuming significantly more total calories ($P=0.086$).
Outcome Measures for Traditional Nutrition Education Curriculum

This study evaluated comparison group entry mean scores and exit mean scores for the Behavior Checklist (Table 4) and found significant improvement in the areas of planning meals ahead of time, comparing prices, letting food sit out longer than two hours, letting foods thaw at room temperature, thinking about healthy food choices, and using Nutrition Facts on food label. The greatest percent change was found in reading food labels (82%) where the participants improved by 0.9 points between entry and exit.

The traditional curriculum proved to be effective according to the 24-Hour Dietary Recall in the areas of HEI of Vegetables \( (P \leq 0.10) \) and HEI Total \( (P \leq 0.05) \) (Table 5). While there was improvement in nine of the eleven categories, however, none of the observed improvement was sufficient enough to attain statistical significance.

Outcome Measures for CTET

The mean entry and exit scores of the pilot group for the Behavior Checklist (Table 4) showed improvement in the areas of planning meals ahead of time, comparing prices, running out of food before end of the month, shopping with a grocery list, letting food sit out longer than two hours, thawing food at room temperature, using Nutrition Facts on food label, and feeding children breakfast. The greatest percent change from entry to exit was in frequency of using Nutrition Facts on food labels (32%) where there was a 0.47 increase between entry and exit scores. The only questions where the improvement was not significant was in
comparing prices, making healthy food choices for the family, and adding salt when preparing food.

The pilot participants who completed the 24-hour Dietary Recall (Table 5) demonstrated significant improvement ($P \leq 0.05$) in the areas of number of meals, servings of vegetables and fruit, total grams of fiber, vitamin C, HEI of fruits and vegetables, and total HEI. While the pilot group appeared to have a greater progression in behavior change, these participants were already interested in cooking and in developing healthier habits before recruitment.

**Evaluation of Traditional versus CTET Approach**

When measuring the difference in means between the comparison and pilot groups for the Behavior Checklist (Table 6), the questions pertaining to thawing frozen foods, thinking about healthy choices, and using Nutrition Facts had significant results at $P \leq 0.10$ favoring the comparison group. The comparison group had a larger difference between entry and exit surveys, and thus, was impacted greatest from the intervention. However, it is important to note this group started with a lower baseline mean in these areas (Table 2).

The 24-hour Dietary Recall data showed a greater improvement for the pilot group in servings of fruit ($P=0.006$), vitamin C ($P=0.085$), HEI of fruits ($P=0.016$), and total HEI ($P=0.099$) (Table 7). While there were greater differences in categories such as total calories (318), total grams of fiber (0.85), and total grams of fat (13.12) for the comparison group, the data were not conclusive.
### Tables

#### Table 1. Demographics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Comparison</th>
<th>Pilot</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>30*</td>
<td>34</td>
<td>64</td>
</tr>
<tr>
<td><strong>Age N(%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-25</td>
<td>7(11)</td>
<td>3(5)</td>
<td>10</td>
</tr>
<tr>
<td>26-30</td>
<td>11(17)</td>
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<tr>
<td>51+</td>
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<td>7(11)</td>
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<tr>
<td>No Entry</td>
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<td>0</td>
</tr>
<tr>
<td><strong>Race</strong></td>
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</tr>
<tr>
<td>Caucasian/White</td>
<td>28 (44)</td>
<td>20(31)</td>
<td>48</td>
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<tr>
<td>African American/Black</td>
<td>1(2)</td>
<td>14(22)</td>
<td>15</td>
</tr>
<tr>
<td>American Indian</td>
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<tr>
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<td>0</td>
</tr>
<tr>
<td><strong>Income</strong></td>
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<tr>
<td>Less than $500</td>
<td>12(19)</td>
<td>4(6)</td>
<td>16</td>
</tr>
<tr>
<td>$501-$800</td>
<td>4(6)</td>
<td>3(5)</td>
<td>7</td>
</tr>
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<td>$801-$1,000</td>
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<td>$1,001 or more</td>
<td>4(6)</td>
<td>7(11)</td>
<td>11</td>
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<tr>
<td>No Entry</td>
<td>9(14)</td>
<td>16(25)</td>
<td>25</td>
</tr>
<tr>
<td><strong>Household Size</strong></td>
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</tr>
<tr>
<td>Less than 2</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>2 - 3</td>
<td>19(30)</td>
<td>20(31)</td>
<td>39</td>
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<tr>
<td>4-5</td>
<td>9(14)</td>
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<td>20</td>
</tr>
<tr>
<td>6+</td>
<td>2(3)</td>
<td>3(5)</td>
<td>5</td>
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<tr>
<td>No Entry</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td><strong>Support</strong></td>
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<tr>
<td>SNAP</td>
<td>13(20)</td>
<td>19(30)</td>
<td>32</td>
</tr>
<tr>
<td>EFNEP</td>
<td>17(27)</td>
<td>15(23)</td>
<td>32</td>
</tr>
<tr>
<td>No Entry</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

* One comparison participant was disqualified from the study due to discrepancy in gender (participant was male). Statistics in report include participant's results.
<table>
<thead>
<tr>
<th>Question</th>
<th>Variable</th>
<th>Baseline Mean (Std. Dev)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Score Range (1-5)</strong></td>
<td>Comparison (n=30)</td>
</tr>
<tr>
<td>1</td>
<td>How often do you plan meals ahead of time?</td>
<td>3.10 (0.960)</td>
</tr>
<tr>
<td>2</td>
<td>How often do you compare prices before you buy food?</td>
<td>3.63 (1.217)</td>
</tr>
<tr>
<td>3</td>
<td>How often do you run out of food before the end of the month?</td>
<td>2.83 (0.913)</td>
</tr>
<tr>
<td>4</td>
<td>How often do you shop with a grocery list?</td>
<td>3.57 (0.971)</td>
</tr>
<tr>
<td>5</td>
<td>How often do you let dairy and meat foods sit out for more than 2 hours?</td>
<td>1.23 (0.430)</td>
</tr>
<tr>
<td>6</td>
<td>How often do you thaw frozen foods at room temperature?</td>
<td>2.83 (1.177)</td>
</tr>
<tr>
<td>7</td>
<td>When deciding what to feed your family, how often do you think about healthy food choices?</td>
<td>3.30 (1.055)</td>
</tr>
<tr>
<td>8</td>
<td>How often have you prepared foods without adding salt?</td>
<td>2.37 (1.273)</td>
</tr>
<tr>
<td>9</td>
<td>How often do you use the Nutrition Facts on the food label to make food choices?</td>
<td>1.87 (1.137)</td>
</tr>
<tr>
<td>10</td>
<td>How often do your children eat something in the morning within two hours of waking up?</td>
<td>3.93 (1.388)</td>
</tr>
</tbody>
</table>

*P ≤ 0.05, ** P ≤ 0.10; Questions 3, 5, and 6 use reverse ordering. Equal Variances Assumed; Scores of 1-5 = never to almost always.
Table 3. Independent T-Test of Mean at Baseline for Pilot vs. Comparison Groups (24-Hour Recall)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Comparison Mean (Std. Dev)</th>
<th>Pilot Mean (Std. Dev)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Meals</td>
<td>3.77 (1.222)</td>
<td>3.09 (0.996)</td>
<td>0.017*</td>
</tr>
<tr>
<td>Servings of Vegetables</td>
<td>1.67 (2.469)</td>
<td>1.0752 (1.096)</td>
<td>0.211</td>
</tr>
<tr>
<td>Servings of Fruit</td>
<td>0.514 (0.908)</td>
<td>0.317 (0.551)</td>
<td>0.291</td>
</tr>
<tr>
<td>Total Calories</td>
<td>1848.59 (1343.78)</td>
<td>1371.264 (812.32)</td>
<td>0.086**</td>
</tr>
<tr>
<td>Total Grams of Fiber</td>
<td>10.62 (7.034)</td>
<td>9.45 (6.657)</td>
<td>0.498</td>
</tr>
<tr>
<td>Total Grams of Fat</td>
<td>71.07 (60.222)</td>
<td>56.83 (37.712)</td>
<td>0.256</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>409.49 (270.446)</td>
<td>426.75 (486.015)</td>
<td>0.864</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>38.26 (39.111)</td>
<td>44.14 (65.490)</td>
<td>0.670</td>
</tr>
<tr>
<td>HEI of Fruits</td>
<td>1.27 (1.905)</td>
<td>1.22 (1.832)</td>
<td>0.911</td>
</tr>
<tr>
<td>HEI of Vegetables</td>
<td>2.68 (1.823)</td>
<td>2.76 (1.862)</td>
<td>0.861</td>
</tr>
<tr>
<td>HEI Total</td>
<td>46.84 (15.404)</td>
<td>45.39 (14.105)</td>
<td>0.694</td>
</tr>
</tbody>
</table>

*P ≤ 0.05, ** P ≤ 0.10
Table 4. Paired T-test of Means of Entry and Exit for Comparison and Pilot Counties (Behavior Checklist)

<table>
<thead>
<tr>
<th>Question</th>
<th>Comparison Entry mean ± (SD)</th>
<th>Comparison Exit mean ± (SD)</th>
<th>Percent Change</th>
<th>P-value</th>
<th>Pilot Entry mean ± (SD)</th>
<th>Pilot Exit mean ± (SD)</th>
<th>Percent Change</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.10 (0.960)</td>
<td>3.73 (0.907)</td>
<td>29%</td>
<td>0.000*</td>
<td>3.12 (1.094)</td>
<td>3.50 (0.992)</td>
<td>22%</td>
<td>0.040*</td>
</tr>
<tr>
<td>2</td>
<td>3.63 (1.217)</td>
<td>4.03 (0.809)</td>
<td>29%</td>
<td>0.031*</td>
<td>4.00 (1.015)</td>
<td>4.29 (0.719)</td>
<td>16%</td>
<td>0.067**</td>
</tr>
<tr>
<td>3</td>
<td>2.83 (0.913)</td>
<td>2.57 (1.040)</td>
<td>6%</td>
<td>0.118</td>
<td>2.06 (1.071)</td>
<td>1.62 (0.985)</td>
<td>7%</td>
<td>0.030*</td>
</tr>
<tr>
<td>4</td>
<td>3.57 (0.971)</td>
<td>3.70 (0.915)</td>
<td>9%</td>
<td>0.326</td>
<td>3.50 (0.961)</td>
<td>3.79 (0.880)</td>
<td>13%</td>
<td>0.039*</td>
</tr>
<tr>
<td>5</td>
<td>1.23 (0.430)</td>
<td>1.03 (0.183)</td>
<td>-8%</td>
<td>0.031*</td>
<td>1.53 (1.088)</td>
<td>1.18 (0.521)</td>
<td>-6%</td>
<td>0.050*</td>
</tr>
<tr>
<td>6</td>
<td>2.83 (1.177)</td>
<td>1.40 (0.968)</td>
<td>44%</td>
<td>0.000*</td>
<td>2.62 (1.206)</td>
<td>4.00 (0.816)</td>
<td>28%</td>
<td>0.000*</td>
</tr>
<tr>
<td>7</td>
<td>3.30 (1.055)</td>
<td>3.80 (0.847)</td>
<td>27%</td>
<td>0.003*</td>
<td>3.91 (0.866)</td>
<td>4.0 (0.8)</td>
<td>7%</td>
<td>0.619</td>
</tr>
<tr>
<td>8</td>
<td>2.37 (1.273)</td>
<td>2.83 (1.177)</td>
<td>39%</td>
<td>0.014*</td>
<td>2.91 (1.190)</td>
<td>3.06 (1.153)</td>
<td>14%</td>
<td>0.443</td>
</tr>
<tr>
<td>9</td>
<td>1.87 (1.137)</td>
<td>2.77 (1.040)</td>
<td>82%</td>
<td>0.000*</td>
<td>2.82 (1.193)</td>
<td>3.29 (1.088)</td>
<td>32%</td>
<td>0.004*</td>
</tr>
<tr>
<td>10</td>
<td>3.93 (1.388)</td>
<td>4.03 (1.326)</td>
<td>12%</td>
<td>0.586</td>
<td>4.15 (1.077)</td>
<td>4.47 (0.929)</td>
<td>11%</td>
<td>0.003*</td>
</tr>
</tbody>
</table>

*P ≤ 0.05, ** P ≤ 0.10; Questions 3, 5, and 6 use reverse ordering. Equal Variances Assumed; Scores of 1-5 = never to almost always.
Table 5. Paired T-test of Means of Entry and Exit for Comparison and Pilot Counties (24-Hour Recall)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Comparison Entry mean ± (SD)</th>
<th>Comparison Exit mean ± (SD)</th>
<th>P-value</th>
<th>Pilot Entry mean ± (SD)</th>
<th>Pilot Exit mean ± (SD)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Meals</td>
<td>3.77 (1.222)</td>
<td>3.9 (1.029)</td>
<td>0.546</td>
<td>3.09 (0.996)</td>
<td>3.56 (1.021)</td>
<td>0.011*</td>
</tr>
<tr>
<td>Servings of Vegetables</td>
<td>1.67 (2.469)</td>
<td>1.52 (1.196)</td>
<td>0.682</td>
<td>1.0752 (1.096)</td>
<td>1.573 (0.959)</td>
<td>0.040*</td>
</tr>
<tr>
<td>Servings of Fruit</td>
<td>0.514 (0.908)</td>
<td>0.502 (0.763)</td>
<td>0.957</td>
<td>0.317 (0.551)</td>
<td>1.12 (1.154)</td>
<td>0.000*</td>
</tr>
<tr>
<td>Total Energy</td>
<td>1848.59 (1343.78)</td>
<td>1530.35 (592.986)</td>
<td>0.180</td>
<td>1371.264 (812.32)</td>
<td>1389.11 (471.00)</td>
<td>0.912</td>
</tr>
<tr>
<td>Total Grams of Fiber</td>
<td>10.62 (7.034)</td>
<td>11.467 (6.155)</td>
<td>0.510</td>
<td>9.45 (6.657)</td>
<td>12.76 (7.234)</td>
<td>0.033*</td>
</tr>
<tr>
<td>Total Grams of Fat</td>
<td>71.07 (60.222)</td>
<td>57.952 (23.225)</td>
<td>0.261</td>
<td>56.83 (37.712)</td>
<td>55.82 (28.763)</td>
<td>0.903</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>409.49 (270.446)</td>
<td>500.44 (313.18)</td>
<td>0.153</td>
<td>426.75 (486.015)</td>
<td>513.01 (426.892)</td>
<td>0.383</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>38.26 (39.111)</td>
<td>40.474 (40.124)</td>
<td>0.807</td>
<td>44.14 (65.490)</td>
<td>75.203 (63.540)</td>
<td>0.026*</td>
</tr>
<tr>
<td>HEI of Fruits</td>
<td>1.27 (1.905)</td>
<td>1.5 (2.033)</td>
<td>0.655</td>
<td>1.22 (1.832)</td>
<td>3.03 (2.158)</td>
<td>0.000*</td>
</tr>
<tr>
<td>HEI of Vegetables</td>
<td>2.68 (1.823)</td>
<td>3.38 (1.805)</td>
<td>0.059**</td>
<td>2.76 (1.862)</td>
<td>3.83 (1.653)</td>
<td>0.007*</td>
</tr>
<tr>
<td>HEI Total</td>
<td>46.84 (15.404)</td>
<td>53.14 (13.972)</td>
<td>0.050*</td>
<td>45.39 (14.105)</td>
<td>59.19 (10.621)</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

*P ≤ 0.05, **P ≤ 0.10
Table 6. Independent Sample T-Test of Differences in the Entry and Exit Scores for Comparison vs. Pilot Counties (Behavior Checklist)

<table>
<thead>
<tr>
<th>Question</th>
<th>Variable</th>
<th>Mean (Std. Dev)</th>
<th>P-value (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How often do you plan meals ahead of time?</td>
<td>0.63 (.850)</td>
<td>0.300</td>
</tr>
<tr>
<td>2</td>
<td>How often do you compare prices before you buy food?</td>
<td>0.40 (.968)</td>
<td>0.653</td>
</tr>
<tr>
<td>3</td>
<td>How often do you run out of food before the end of the month?</td>
<td>-0.27 (.907)</td>
<td>0.503</td>
</tr>
<tr>
<td>4</td>
<td>How often do you shop with a grocery list?</td>
<td>0.13 (.730)</td>
<td>0.406</td>
</tr>
<tr>
<td>5</td>
<td>How often do you let dairy and meat foods sit out for more than 2 hours?</td>
<td>-0.20 (.484)</td>
<td>0.453</td>
</tr>
<tr>
<td>6</td>
<td>How often do you thaw frozen foods at room temperature?</td>
<td>-1.43 (1.357)</td>
<td>0.096*</td>
</tr>
<tr>
<td>7</td>
<td>When deciding what to feed your family, how often do you think about healthy food choices?</td>
<td>0.50 (.861)</td>
<td>0.089**</td>
</tr>
<tr>
<td>8</td>
<td>How often have you prepared foods without adding salt?</td>
<td>0.47 (.973)</td>
<td>0.227</td>
</tr>
<tr>
<td>9</td>
<td>How often do you use the Nutrition Facts on the food label to make food choices?</td>
<td>0.90 (1.125)</td>
<td>0.094**</td>
</tr>
<tr>
<td>10</td>
<td>How often do your children eat something in the morning within two hours of waking up?</td>
<td>0.10 (.995)</td>
<td>0.272</td>
</tr>
</tbody>
</table>

*P ≤ 0.05, ** P ≤ 0.10; Questions 3, 5, and 6 use reverse ordering. Equal Variances Assumed; Scores of 1-5 = never to almost always.
Table 7. Independent Sample T-test of Differences Between Entry and Exit Comparison vs. Pilot Counties (24-Hour Recall)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (Std. Dev)</th>
<th>P-value (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Comparison (n=30)</td>
<td>Pilot (n=34)</td>
</tr>
<tr>
<td>Number of Meals</td>
<td>0.13 (1.20)</td>
<td>0.47 (1.022)</td>
</tr>
<tr>
<td>Servings of Vegetables</td>
<td>-0.15 (2.00)</td>
<td>0.50 (1.355)</td>
</tr>
<tr>
<td>Servings of Fruit</td>
<td>-0.012 (1.232)</td>
<td>0.81 (1.066)</td>
</tr>
<tr>
<td>Total Calories</td>
<td>-318.23 (1269.593)</td>
<td>17.85 (936.71)</td>
</tr>
<tr>
<td>Total Grams of Fiber</td>
<td>0.85 (6.940)</td>
<td>3.30 (8.658)</td>
</tr>
<tr>
<td>Total Grams of Fat</td>
<td>-13.12 (62.612)</td>
<td>-1.02 (47.948)</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>90.951 (339.59)</td>
<td>86.26 (568.411)</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>2.21 (49.101)</td>
<td>31.07 (77.693)</td>
</tr>
<tr>
<td>HEI of Fruits</td>
<td>0.23 (2.750)</td>
<td>1.81 (2.338)</td>
</tr>
<tr>
<td>HEI of Vegetables</td>
<td>0.70 (1.954)</td>
<td>1.07 (2.181)</td>
</tr>
<tr>
<td>HEI Total</td>
<td>6.30 (16.892)</td>
<td>13.81 (18.733)</td>
</tr>
</tbody>
</table>

*P ≤ 0.05, **P ≤ 0.10
Discussion

Characteristics of Groups at Baseline

Baseline scores were fairly similar between the pilot and comparisons groups. There were only a few baseline scores that were lower in the comparison group than the pilot group on the Behavior Checklist (Figure 2) and 24-Hour Recall. For example, at baseline, the pilot group reported using less salt when preparing food, reading the Nutrition Labels and considering healthy choices more often than the comparison group. The 24-Hour Recall demonstrated that the comparison group ate more meals (3.77) than the pilot group (3.09) and thus consumed significantly more total calories ($P=0.086$). All of these differences could be due to the fact that the recruitment flyer targeted participants who were already interested in learning “how to make healthy and affordable recipes” as well as getting “tips that make cooking fast, fun and delicious” (Appendix E). Promotion for CTET utilized social marketing techniques such as social media (i.e. Facebook posts), personally knocking on doors and community centers. Because of the short timeline available for recruitment and the focus of the CTET on home cooking, new strategies were used that may have influenced pilot group participant characteristics.

Outcomes for Traditional Nutrition Education Curriculum

Pre-post analysis of the entry and exit Behavior Checklist indicated that the comparison group (who received the traditional curriculum) achieved statistically significant positive behavior change in most areas. Exceptions were running out of food by end of the month, shopping with a grocery list, and feeding children breakfast (Figure 3). Conversely, the only outcome where the comparison group
showed improvement for the 24-Hour Recall after receiving the traditional curriculum was the HEI for vegetables and total HEI total score. This may be attributed to the emphasis in the traditional curriculum on fruit and vegetable consumption.

**Outcomes for CTET**

Pre-post analysis of the Behavior Checklist data showed positive behavior change outcomes for the pilot group in the areas of food resource management, food safety, nutrition, and feeding children breakfast (Figure 4). Analysis of the pilot group’s Food Recall data also showed pre-post improvements in the number of meals consumed, as well as, servings of fruit and vegetables and amounts of fiber and vitamin C consumed. Consequently, the pilot group showed positive pre-post changes in HEI for fruits and vegetables, and TOTAL HEI total score. Cumulatively, these positive changes reflect the success of the CTET curriculum. In particular, the recipes demonstrated in the cookbook incorporate fresh produce to encourage the target audience to buy and prepare healthier meals.

The social marketing approach achieved the EFNEP goals of “improving the total family’s nutritional well-being” by meeting the needs of diet quality, food resource management, food safety, and food security (USDA, 2016). Based on the pilot results, resources included in the CTET program (Appendix B) such as produce availability, portion sizes, measurements and substitutions, knife skills, and cooking basics, help to increase fruit and vegetable consumption, food safety practices, and healthy cooking habits in EFNEP and SNAP-Ed participants.
Comparison of Traditional Nutrition Education to CTET

Overall, the analysis suggests that the CTET group, compared to their counterparts in the traditional group or usual care, had higher pre-post gains in food resource management, feeding children breakfast, number of meals, fruit and vegetable consumption, total fiber, vitamin C, and HEI for fruits. Both the comparison and pilot groups showed positive pre-post changes in food practices including appropriate thawing of frozen food, thinking about healthy food choices, and reading Nutrition Facts (Figure 5). The baseline was lower for the comparison group in these areas, which may have led to a higher mean difference.

With regards to group differences in the 24-Hour Dietary Recall (Table 7), the comparison group reported a 0.13-point increase for number of meals but decreased consumption of fruits (-0.012), vegetables (-0.15) and total energy (-318.23). This could be due to limitations of the 24-Hour Dietary Recall, self-reporting error or data entry discrepancies. As for servings of vegetables and fruit for the pilot group, the participants reported half a serving increase for vegetables (0.50) and almost full serving increase for fruit (0.81). Likely due to the increase in fruit and vegetable consumption, vitamin C was significantly higher in the pilot group than the comparison group. The pilot group also had a larger mean difference for HEI for fruits and total HEI score than the comparison group; however, the pilot group had lower baseline scores. The recruiting practices for this social marketing program may have resulted in a group of pilot participants that differed from the comparison group with regard to food shopping, preparation, cooking, and eating behaviors.
The entry and exit design has shown to be the most telling of a program’s success by numerous studies in the EFNEP and SNAP-Ed field (Swindle, Baker, Auld, 2007). Wall and colleagues found significant improvements in fourth grader attitudes, preferences, and self-efficacy toward vegetable consumption when utilizing the pre- and post-test intervention (Wall, Least, Gromis, & Lohse, 2012). Chung and Hoerr found significant changes in fruit and vegetable intake among women with limited income using a pre- and post-intervention design (2007). A randomized controlled trial measuring the knowledge of low-income parents prior to and following EFNEP participation gave significant outcomes as well. The Behavior Checklist was administered pre and post intervention and found positive outcomes related to behavior change retained at least for 2 months (Dollahite, Pijai, Scott-Pierce, Parker, & Trochim, 2014).

While the CTET program was conducted in 12 counties of Kentucky varying in demographics, region, and size, it is not reflective of the national SNAP-eligible population hence the data may not be generalized to all programs. The SNAP population demographics range across the nation from urban to rural, ethnically diverse populations, hence, varying food preferences, as well as the various community resources that implement CTET. The majority of participants identified themselves as Caucasian (75%) likely due to Kentucky’s high Caucasian population (87%) (US Census Bureau, 2015). The data presented is fairly consistent throughout the participating counties, but should be applied with discretion to other incomparable regions.
Figures

Figure 1. Population of Complete Data Sets for First Pilot

![Map of Kentucky showing Pilot and Comparison Counties](image-url)
Figure 2. Independent T-Test of Mean at Baseline for Comparison vs. Pilot (Behavior Checklist)

* Indicates significance at $P \leq 0.10$. 
Figure 3. Paired T-test of Means of Entry and Exit for Comparison Counties (Behavior Checklist)

※ Indicates significance at $P \leq 0.10$. 
Figure 4. Paired T-test of Means of Entry and Exit for Pilot Counties (Behavior Checklist)

* Indicates significance at \( P \leq 0.10 \).
Figure 5. Independent Sample T-Test of Differences in the Entry and Exit Scores for Comparison vs. Pilot Counties (Behavior Checklist)

Indicates significance at $P \leq 0.10$. 
Implications for Research and Practice

The CTET program, using a social marketing approach, significantly increased fruit and vegetable intake, a primary objective. These results provide support for using “cooking socials” to enforce positive nutrition behaviors in low-income families. As predicted by other studies, focus group suggestions that guided new program development were key in the behavior change of the pilot group (Young, et al, 2006). A focus on cooking and direct education rather than traditional nutrition education, for adults, is a promising approach to improve diet quality for SNAP-Ed and EFNEP audiences (Auld, et al, 2013; Bess, 2016; & Condrasky, 2006). Although, more robust experimental studies are needed to conclude that participation in “cooking socials” are more effective in behavior change than traditional nutrition education programs. The findings of this study indicate that a social marketing approach promoting healthy home-cooked family meals is a promising way to improve diets of participants.

Before adopting a social marketing approach, there are many program characteristics that should be considered. The traditional classes are not child-friendly, whereas the social marketing classes encourage children attendance. This introduces concerns about the increased noise level, kitchen safety with knife lessons, distractions for the parent, and lengthier explanations. Further research regarding recruitment techniques and participant retention of social marketing programs would provide information helpful to program administrators. Another practical implication taken from the current study is that of the traditional
curriculum’s timeline and effectiveness. If the social marketing program can be merged into the traditional approximate 8-week graduation timeline, the efficiency of behavior change may not only improve, but potentially at a greater concentration.

Social marketing programs often address various levels of the socio-ecological model, especially the community, in order to improve health behaviors (Blitstein, et al., 2016; Dannefer et al, 2014). CTET offered grocery store and Farmers’ Market tours to better integrate the target audience into the community. Targeting multiple levels of the socio-ecological model through longitudinal studies has proven to enhance behavior change (Bliestein et al, 2016; Brink & Sobal, 1994, Dannefer et al, 2014). One preliminary retention study found EFNEP participants sustained behavior changes immediately after graduation and 1 year follow-up (Brink & Sobal, 1994).

This pilot study illustrates that a social marketing program targeting low-income families may be more effective for changing selected behaviors in SNAP-Ed and EFNEP participants than the traditional nutrition education curriculum. The CTET program appears to be more effective for promoting increased consumption of fruits and vegetables, a priority outcome for these programs.

The 2015 Dietary Guidelines for Americans (USDHHS, 2015) use a socio-ecological framework to depict how individual behavior changes can be supported by changes in social and cultural norms. This pilot study illustrates how a social marketing approach aimed at changing cooking norms can have a greater influence on food-related behaviors than direct education alone.
## Appendix A: Facilitator’s Guide for Traditional Nutrition Education Curriculum

<table>
<thead>
<tr>
<th>Core Lesson</th>
<th>Learning Outcomes</th>
</tr>
</thead>
</table>
| **Basic Keys to Food Preparation** | - Understand the importance of healthy food choices  
- Plan and prepare meals including a variety of foods using MyPlate  
- Consume a healthy diet consistent with USDA Dietary Guidelines  |
| **MyPlate**               | - Understand MyPlate recommendations for a healthy diet  
- Plan and prepare meals including a variety of foods using MyPlate guidelines  
- Participate in at least 30 minutes of physical activity every day  |
| **Grains Group**          | - Understand why bread, cereal, rice & pasta (grains) are an important part of our daily diet.  
- Know the number of ounce equivalents she needs daily from the Grains Group, and how many of these should be whole grains.  
- Identify recommended serving sizes of foods in the Grains Group.  
- Name at least one way to stretch the food dollar when purchasing bread and cereal products.  
- Identify high- and low- calorie choices from the Grains Group.  
- Plan and serve meals that include enriched or whole grain breads and cereals.  
- Name two ways to store grain products.  
- Calculate how much dry rice or pasta it will take to feed four people. |
| **Vegetable Group**       | - Understand why vegetables are an important part of the daily diet.  
- Know how many cups of vegetables should be eaten to meet daily needs.  
- Know how many cups of dark-green, orange and starchy vegetables and legumes should be eaten each week.  
- Identify recommended serving sizes for vegetables.  
- Identify vegetable sources of vitamins A and C.  
- Identify vegetable sources of minerals.  
- Name at least one way to stretch the food dollar when purchasing vegetables.  
- Describe and practice ways to store, prepare and cook vegetables in order to conserve nutrients. |

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| Fruit Group                                                                 | • Explain why fruits are an important part of the daily diet.  
|                                                                            | • Know the recommended daily amount of fruits for the eating plan.  
|                                                                            | • Know the recommended serving sizes for fruits.  
|                                                                            | • Identify fruits rich in vitamins A and C.  
|                                                                            | • Serve fruits rich in vitamin A and C to meet the family's needs.  
|                                                                            | • Identify fruits rich in iron and potassium.  
|                                                                            | • Serve fruits rich in iron and potassium to meet the family's needs.  
|                                                                            | • Serve fruits of many different colors.  
|                                                                            | • Try a new method of cooking or serving a fruit.  
|                                                                            | • Name at least one way to stretch the food dollar when purchasing fruits.  
| Protein Group                                                              | • Understand why meat, poultry, fish, dry beans and peas, eggs and nuts and seeds are an important part of the daily diet.  
|                                                                            | • Identify foods that are part of the Meat and Beans Group (Protein Group).  
|                                                                            | • Know the amount of foods from the Meat and Beans Group that USDA Dietary Guidelines recommend for her daily.  
|                                                                            | • Identify ways to save money when buying foods in the Meat and Beans Group.  
|                                                                            | • Demonstrate how to cut up a whole chicken into parts for cooking.  
|                                                                            | • Try a new, healthful method of cooking or serving a meat or meat-alternate.  
|                                                                            | • Describe at least one way to cook less expensive, lean meats to make them more tender and flavorful.  
|                                                                            | • Identify the number of servings per pound to expect from different types of meat  
|                                                                            | • Identify proper storage methods for raw and cooked meats and meat alternatives.  
|                                                                            | • Explain safe ways to thaw frozen meat, poultry and fish.  
|                                                                            | • Know safety measures for consuming locally caught fish.  
|                                                                            | • Identify soaking and cooking procedures for dry beans.  
| Dairy Group                                                                 | • Understand why calcium is an important nutrient for people of all ages.  
|                                                                            | • Identify calcium-rich foods from all food groups.  
|                                                                            | • Plan a balanced meal high in calcium to meet family needs.  
|                                                                            | • Name several ways to stretch the food dollar when purchasing calcium-rich foods.  
|                                                                            | • Practice at least three methods of preparing foods in the Milk Group (Dairy Group).  
| Oils and Empty Calories                                                     | • Know what discretionary calories are and how they fit into the MyPyramid eating plan.
| Meal Planning                                                                 | • Describe the benefits of planning menus.  
|                                                                             | • Plan a week's menu for the family using foods that meet her family's nutritional needs and money available.  
|                                                                             | • Make a shopping list based on menus for the week.  
|                                                                             | • Describe ways to make meals attractive and appealing.  
| Label Power                                                                 | • Demonstrate how to find the following information on food containers  
|                                                                             |   o Nutrition Facts  
|                                                                             |   o Ingredients list  
|                                                                             |   o Handling instructions  
|                                                                             |   o Net Weight  
|                                                                             | • 2. Use the Nutrition Facts to identify  
|                                                                             | • Serving Size  
|                                                                             | • Number of servings in the container  
|                                                                             | • Amounts of nutrients per serving  
|                                                                             | • 3. Use the list of ingredients to identify which are present in the greatest
| Plan for Food Spending | • Prepare a reasonable food spending plan for the family  
| | • Describe the steps in preparing a shopping list  
| | • Make a shopping list based on menus for one week  
| | • Recognize what should be considered before going shopping  
| | • Identify unit price shelf tags and determine the most economical buy using unit pricing  
| | • Be able to figure cost per serving and use it to find the best buys  
| | • Compare prices of convenience foods with prices of similar foods made at home  
| | • Identify factors that add to the cost of convenience foods  
| | • Give examples of ways to avoid food waste  
| | • Describe at least three ways to save at the grocery  
| Food Safety | • Know what food borne illness is  
| | • Describe signs and symptoms of food borne illness  
| | • Know safe temperatures for food  
| | • Know proper methods for storage, preparation, and serving of food  
| Breakfast Makes a Difference | • Explain why eating breakfast is important  
| | • Plan ways to provide a nutritious breakfast for their families within 2 hours of waking.  
| | • amounts.  
| | • 4. Demonstrate how to match label claims with health concerns.  
| | • 5. Identify at least three nutrients and the disease(s) each nutrient can help prevent.  
| | • Use the % Daily Value to describe a product as having a low, medium or high amount of a nutrient.  
| | • Identify one vitamin and one mineral to look for on the Nutrition Facts label.  
| 32 |
## Appendix B: Curriculum Matrix for CTET

<table>
<thead>
<tr>
<th>UNIT</th>
<th>RECIPES</th>
<th>SKILLS</th>
<th>EVALUATION QUESTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shopping</td>
<td>N/A</td>
<td>Shopping techniques, Reading labels</td>
<td>Behavior Checklist questions 1, 2, 3, 4, 7 and 9</td>
</tr>
<tr>
<td>Breakfast</td>
<td>Cinnamon Roll Oatmeal</td>
<td>Measure, mix</td>
<td>Behavior Checklist questions 1, 10 and 6 (Spinach Rice Egg bowl)</td>
</tr>
<tr>
<td></td>
<td>Sunrise Granola</td>
<td>Measure, mix, bake</td>
<td>Food Recall- whole grains, protein, vegetables</td>
</tr>
<tr>
<td></td>
<td>Frittata</td>
<td>Measure, crack eggs, whisk, chop, bake</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spinach Rice Egg Bowl</td>
<td>Measure, crack eggs, fry eggs, mix</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Breakfast Burritos</td>
<td>Measure, beat, säute, roll tortillas</td>
<td></td>
</tr>
<tr>
<td>Soup</td>
<td>Hearty Vegetable Soup</td>
<td>Pare and chop, mince, measure, säute, boil, simmer</td>
<td>Behavior Checklist question 5 (Chicken and Dumpling Soup)</td>
</tr>
<tr>
<td></td>
<td>Creamy Broccoli Soup</td>
<td>Chop, mince, measure, shred, säute, boil, simmer, blend</td>
<td>Food Recall- vegetables, protein (Chicken and Dumpling Soup)</td>
</tr>
<tr>
<td></td>
<td>Chicken and Dumpling Soup</td>
<td>Pare and chop, measure, shred, säute, simmer, mix, roll</td>
<td></td>
</tr>
<tr>
<td>Salad</td>
<td>Crunchy Apple and Cabbage Salad</td>
<td>Chop, shred, juice, measure, mix, whisk</td>
<td>Behavior Checklist question 5</td>
</tr>
<tr>
<td></td>
<td>Southern Corn Bread Salad</td>
<td>Measure, chop, mix, bake</td>
<td>Food Recall- fruit, vegetables, protein (Corn Bread and Taco salads)</td>
</tr>
<tr>
<td></td>
<td>Fresh Taco Salad</td>
<td>Measure, juice, chop, tear, mix</td>
<td></td>
</tr>
<tr>
<td>Vegetables</td>
<td>Crispy Oven Zucchini Fries</td>
<td>Slice, measure, crack an egg, separate an egg, beat, whisk, dredge, bake Pare, cut, slice, zest, toss, roast</td>
<td>Food Recall - vegetables</td>
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<tr>
<td>-----------</td>
<td>---------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td></td>
<td>Roasted Vegetables</td>
<td>Measure, pare, slice, mix, boil</td>
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<tr>
<td></td>
<td>Quick Pickles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One-Pot Meals</td>
<td>Harvest Chili</td>
<td>Chop, measure, brown meat, drain, simmer</td>
<td>Behavior Checklist questions 1, 3, 5</td>
</tr>
<tr>
<td></td>
<td>Creamy Broccoli Alfredo</td>
<td>Measure, mince, sauté, rolling boil, simmer</td>
<td>Food Recall - vegetables, protein, grain</td>
</tr>
<tr>
<td></td>
<td>Southwestern Chicken and Rice</td>
<td>Chop, measure, sauté, brown meat, toss</td>
<td></td>
</tr>
<tr>
<td>Slow Cooker Meals</td>
<td>Beef Stew</td>
<td>Pare and chop, mince, measure, brown meat, mix</td>
<td>Behavior Checklist questions 1, 5</td>
</tr>
<tr>
<td></td>
<td>Barbecue Chicken</td>
<td>Measure, broil, mix</td>
<td>Food Recall - Protein</td>
</tr>
<tr>
<td></td>
<td>Slow Cooker Soup Beans</td>
<td>Measure, chop, mince, sort beans</td>
<td></td>
</tr>
<tr>
<td>Snacks</td>
<td>Stovetop Popcorn</td>
<td>Measure, toss</td>
<td>Behavior Checklist question 7</td>
</tr>
<tr>
<td></td>
<td>Apple Crisp</td>
<td>Pare and slice, measure, mix liquid into cornstarch, cut in fat, bake</td>
<td>Food Recall - whole grains, fruit</td>
</tr>
<tr>
<td></td>
<td>Muffins</td>
<td>Measure, sift, crack an egg, mix egg and hot liquid, beat, bake</td>
<td></td>
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</tbody>
</table>
Appendix C: Behavior Checklist

## Nutrition Education Program
ENTRY Level Behavior Checklist

This is not a test. There are no wrong answers. These are questions about the ways you plan and fix food.

Name: ___________________________ Today’s Date: _______________________

Circle the response that best describes how you usually do things.

<p>| | | | | | |</p>
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>How often do you plan meals ahead of time?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>Never</td>
<td>Seldom</td>
<td>Sometimes</td>
<td>Most of the time</td>
</tr>
<tr>
<td>2)</td>
<td>How often do you compare prices before you buy food?</td>
<td>N/A</td>
<td>Never</td>
<td>Seldom</td>
<td>Sometimes</td>
</tr>
<tr>
<td>3)</td>
<td>How often do you run out of food before the end of the month?</td>
<td>N/A</td>
<td>Never</td>
<td>Seldom</td>
<td>Sometimes</td>
</tr>
<tr>
<td>4)</td>
<td>How often do you shop with a grocery list?</td>
<td>N/A</td>
<td>Never</td>
<td>Seldom</td>
<td>Sometimes</td>
</tr>
<tr>
<td>5)</td>
<td>This question is about meat and dairy foods. How often do you let these foods sit out for more than two hours?</td>
<td>N/A</td>
<td>Never</td>
<td>Seldom</td>
<td>Sometimes</td>
</tr>
<tr>
<td>6)</td>
<td>How often do you thaw frozen foods at room temperature?</td>
<td>N/A</td>
<td>Never</td>
<td>Seldom</td>
<td>Sometimes</td>
</tr>
<tr>
<td>7)</td>
<td>When deciding what to feed your family, how often do you think about healthy food choices?</td>
<td>N/A</td>
<td>Never</td>
<td>Seldom</td>
<td>Sometimes</td>
</tr>
<tr>
<td>8)</td>
<td>How often have you prepared foods without adding salt?</td>
<td>N/A</td>
<td>Never</td>
<td>Seldom</td>
<td>Sometimes</td>
</tr>
<tr>
<td>9)</td>
<td>How often do you use the “Nutrition Facts” on the food label to make food choices?</td>
<td>N/A</td>
<td>Never</td>
<td>Seldom</td>
<td>Sometimes</td>
</tr>
<tr>
<td>10)</td>
<td>How often do your children eat something in the morning within 2 hours of waking up?</td>
<td>N/A</td>
<td>Never</td>
<td>Seldom</td>
<td>Sometimes</td>
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Educational programs of Kentucky Cooperative Extension serve all people regardless of race, color, age, sex, religion, disability or national origin.

July 2014
Appendix D: 24-Hour Dietary Recall

Nutrition Education Program
24 Hour Food Recall at ENTRY

1. Name: ___________________________ Today’s Date: ______________________

2. Are you pregnant? __YES __NO

3. Are you breastfeeding? __YES __NO

4. Do you take nutritional supplements? __YES __NO

5. How much money did you spend on food last month (include SNAP and WIC)? ______

6. In addition to your regular daily activities, how much time do you spend doing physical activity? __Less than 30 minutes each day

   __30 to 60 minutes each day

   __More than 60 minutes each day

7. Write down everything you had to eat and drink. Please give as much detail as possible. Only put one food item per line.

<table>
<thead>
<tr>
<th>Food &amp; Description</th>
<th>Amount</th>
<th>Meal Type</th>
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</thead>
<tbody>
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**Meal or Snack Type**

1 = Morning  4 = Afternoon  
2 = Mid-morning  5 = Evening  
3 = Noon  6 = Late Evening  

**Serving Abbreviations**

Tablespoon = TBSP  Pound = lb  
Cup = c  Ounce = oz  
Teaspoon = tsp  Slice = sl

07/2014
<table>
<thead>
<tr>
<th>Food &amp; Description</th>
<th>Amount</th>
<th>Meal Type</th>
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</table>

**Meal or Snack Type**

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Pound = lb  
Ounce = oz  
Slice = si

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07/2014
Appendix E: NEP Cook Together, Eat Together Recruitment Flyer

A Cooking Social!

COOK TOGETHER EAT TOGETHER

A weekly event especially for SNAP-eligible families

At this fun cooking event you will:

- Cook with your kids (ages 5-18)
- Get tips that make cooking fast, fun and delicious
- Learn how to make healthy and affordable recipes
- Receive recipes to make vegetables “taste as good as a French fry”
- Get special tips on family meals, leftovers and “less mess” cooking
- Share shopping tips for buying healthy food on a budget
- Get the scoop on shopping at Farmers Markets

USDA is an equal opportunity provider and employer. This project was funded by USDA’s Supplemental Nutrition Assistance Program – SNAP.

DATE:

LOCATION:

TIME:

CONTACT:

A FREE event! Childcare provided for children under 5
References


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Najor, J. M. (2014). Promoting healthy, home-cooked meals: formative research for a social marketing program targeting low-income mothers. *Theses and


http://www2.ca.uky.edu/hes/internal/NEP/Guidelines_7_15/Introduction_and_Objects.pdf.


VITA

Mollie Y. Dawahare was born in Pikeville, Kentucky. In May 2013, she obtained a Bachelor of Science in Dietetics from the University of Kentucky. She is currently obtaining her Masters of Science in Nutrition and Food Systems. She has held professional positions as a dietetic intern and graduate teacher and research assistant.