

Follow-up evaluation to determine short-term effectiveness of a nutrition education program in a primarily Latino population

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Abstract

The purpose of this study was to determine the extent to which skills and behaviors taught during a weekly group nutrition education program were sustained three months after the end of the nutrition lessons. Participants (n=81) were recruited from adult English as a Second Language/English Language Learners classes. Intervention (n=45) and control (n=36) groups were compared. Data were collected using a Food Behavior Checklist. Intervention group participants showed significant change on eight of the eleven behavioral items measured. Skill-based behaviors were more likely to be sustained after the end of the lessons, as opposed to food consumption behaviors.

Keywords: nutrition education, EFNEP, Latino

Introduction

The Expanded Food and Nutrition Education Program (EFNEP), funded through the United States Department of Agriculture and the National Institute of Food and Agriculture, celebrated

its fortieth anniversary in 2009, which marks a long history of providing nutrition education to low-income families. Over the past several decades EFNEP delivery has moved from a one-on-one method to small groups (Dollahite and Scott-Pierce 2003). While data are collected for the purposes of evaluating this group nutrition program, only pre/post measurement instruments are required for reporting purposes in the state where this study was conducted, with no follow-up assessment to determine if behavior change continues beyond the period of the program.

The Dietary Guidelines for Americans, 2010, indicates that poor diet and lack of physical activity can lead to chronic diseases such as diabetes and heart disease (U.S. Department of Health and Human Services and U.S. Department of Agriculture 2010). The Centers for Disease Control and Prevention, the Department of Health and Human Services, the Center for Nutrition Policy and Promotion, and the World Health Organization all recommend engaging in daily physical activity; consuming more fruits, vegetables, and whole grains; and consuming less of foods high in calories, fat, or sugar (U.S. Department of Health and Human Services 2009; World Health Organization 2009). Various methods are used to convey these recommendations from broad social marketing campaigns to one-on-one telephone counseling. A popular method for delivering nutrition information is through group nutrition education classes. EFNEP is one such program that has been shown to have an influence on eating behaviors (Cullen et al. 2009).

One component of nutrition education classes is reaching and maintaining a healthy weight through consumption of a proper diet and regular physical activity. Awareness of the health properties of certain foods has been associated with a greater intent to change food consumption behaviors (Pelletier, Kundrat, and Hasler 2002). Research has shown that people who are not aware of particular behaviors that are beneficial to overall health are less likely to practice them and are also less likely to understand the connection between positive health behaviors and good health (Sharma, Gernand, and Day 2008).

Effective nutrition interventions are those that continue over an extended period of time (such as six months or more), are more intensive (e.g., group retreats or personal counseling), and are conducted with a specific at-risk population such as patients in a hospital with cardiovascular heart disease (Ammerman et al. 2002). However, such approaches are not always practical for general populations. Researchers have found that some group nutrition education interventions are promising when they consist of small groups with a curriculum that incorporates goal-setting (Ammerman et al. 2002). According to Contento, Randall, and Basch (2002), a primary component of EFNEP is acquisition of nutrition-based knowledge, so, therefore among other items, its evaluation focuses on knowledge of concepts such as the number of servings of fruits or vegetables one should consume per day. Another important aspect is skill-based learning or learning by doing (Contento 2007). The research project described in this article contributes to the overall understanding of the effectiveness of small group nutrition education interventions conducted through Cooperative Extension nutrition programs.

Purpose

The purpose of the research project described in this article was to determine the effectiveness of the EFNEP program in two counties, one primarily urban and the other rural, as to behavioral changes pertaining to eating behaviors, food resource management, and food safety practices three months after participating in the program.

Methods

All participants, both control and intervention groups, were recruited from adult English as a Second Language (ESL) and English Language Learners (ELL) classes, as well as other forms of adult education classes that commenced in fall 2008, and ran through spring 2009. Nutrition educators delivering the nutrition classes work closely with the ESL or ELL instructors to assist with language acquisition, such as identifying foods in English or learning to read food labels in English. Classes were conducted at locations that typically serve families with limited resources. No incentive was offered for participating other than the benefits of being in a nutrition class. Participants signed a consent form prior to volunteering to participate in the study. The intervention group received their EFNEP classes in the fall, and the control group did not receive EFNEP classes until after the study was completed.

Four paraprofessionals delivered a series of nutrition education classes using the *Eating Right is Basic* curriculum developed at Michigan State University (Michigan State University Extension 2007). The curriculum covers topics concerning general nutrition, stretching food dollars, and food safety, and is delivered in a series of six, one- to two-hour classes over a six-week period. At the time of this study, the *Eating Right is Basic* curriculum was aligned with the 2005 Dietary Guidelines for Americans. The EFNEP curriculum is based on Social Cognitive Theory (Karen Martin, personal communication, June 29, 2009), which emphasizes learning by doing (Contento 2007). Thus, during EFNEP classes, participants are provided with opportunities to practice skills such as reading labels, planning meals, and preparing healthy snacks or meals.

All participants completed a study consent form at the beginning of the study and completed surveys at mid-fall, late fall, and late winter. The survey included a Food Behavior Checklist, which asked about eating behaviors, food resource management, and food safety practices. Surveys were provided in both English and Spanish. Height and weight measures were taken using a height board and a portable scale. Most data collection was conducted in person during classes, however some follow-up data were collected over the telephone.

All data were analyzed using statistical software: SPSS 17.0. Paired sample *t*-tests were conducted to determine if there were any changes in behavior from pre-test to follow-up. Intervention and control groups were tested separately to determine if any changes detected were

due to participation in the nutrition classes rather than outside influences such as social marketing campaigns or news events. There were no differences between the intervention and control groups based on age, ethnicity, income, education, number of children, or body mass index (BMI). However, there was a significant difference based on gender. While there were no male participants in the control group, one of the intervention classes happened to have a number of men enrolled.

Findings

This study had 81 participants (45 intervention; 36 control), the majority of whom were women (90 percent) with an age-range of 18 to 65 years, and an average age of 35 years. Most participants identified themselves as Hispanic (95 percent). One-third of the participants had a BMI between 25 and 30, while nearly half (48 percent) had a BMI above 30. The average BMI was 30.5. Consistent with the study protocol approved by the Institutional Review Board, participants were allowed to not answer questions if they chose not to. Therefore, not all respondents reported on income level. However, the majority of respondents who did report income (70 percent) were below the federal poverty level. The retention rate for this research project was 81 percent (81 participants completed the pre-survey, and 66 completed the follow-up survey).

Participants were asked to complete an eleven-item behavior checklist (see Table 1 for checklist items) by indicating the extent to which they practiced specific nutrition and food safety behaviors, based on the following response set: “Do Not Do” (1), “Do Seldom” (2), “Do Sometimes” (3), “Do Most of the Time” (4), or “Do Always/Each Day” (5). Participants completed the questionnaire at Time 1 in the fall, at the beginning of the study, and then again at Time 2, approximately two months later (after completion of the classes), and finally at the three-month follow-up, or Time 3, in late winter. An analysis of variance was conducted to determine any initial difference in baseline responses between the intervention and control groups. Time 1 responses were comparable for both the intervention and control groups, with the exception of “Cooking without salt” and “Feeding children in the morning.” The control group mean at Time 1 for “Cooking without salt” was approximately “Do Seldom,” whereas the mean for the intervention group showed the behavior being practiced slightly more frequently. The intervention group was more likely to indicate “Do Sometimes” in regard to “Feeding children in the morning,” whereas the control group reported practicing this behavior somewhat more frequently.

We then looked at change in behaviors from Time 1 to Time 3 by conducting *t*-tests for matched pairs. Results are shown in Table 1. Statistically significant changes were found in eight of the eleven items for the intervention group, and three of the eleven for the control group. “Meal planning,” “comparing food prices when out shopping,” “grocery shopping with a list,” and

“thawing frozen foods at room temperature” were all significant for the intervention group at the $p < .05$ level. “Thinking about nutrition,” “reading food labels,” “feeding children in the morning,” and “exercising or participating in some form of physical activity” were all significant for the intervention group at the $p < .01$ level. “Comparing food prices while shopping,” “cooking without salt,” and “reading food labels” were all significant for the control group at the $p < .05$ level.

Table 1. Behavioral Checklist Results — Time 1 to 3

Checklist Item	Intervention (n=35)			Control (n=31)		
	Mean Time 1	Mean Time 3	t-value	Mean Time 1	Mean Time 3	t-value
Meal planning	3.29	3.71	-2.23*	3.52	3.59	-0.28
Comparing food prices	3.70	4.24	-2.67*	3.79	4.14	-2.17*
Running out of food	2.09	1.94	0.87	2.20	2.64	-1.70
Shopping with a list	3.26	3.94	-3.70*	3.04	3.30	-1.07
Letting meat and dairy sit out	1.77	1.71	0.40	1.92	2.15	-1.03
Thawing frozen foods at room temperature	3.00	2.39	2.03*	3.32	3.21	0.41
Thinking about nutrition	3.03	4.21	-5.13**	3.54	3.82	-1.44
Cooking without salt	2.48	2.67	-0.73	1.88	2.58	-2.54*

Reading food labels	2.44	3.32	-3.77**	1.93	2.57	-2.31*
Feeding children in morning	2.93	4.11	-3.86**	3.68	3.75	-0.24
Exercising	3.03	3.82	-3.86**	3.64	3.00	1.55

* $p < .05$, ** $p < .01$

[**Table 1 Summary:** This table shows the results of conducting *t*-tests for matched pairs on the eleven Behavioral Checklist items. Statistically significant changes were found in eight of the eleven items for the intervention group, and three of the eleven items for the control group.]

Discussion

The purpose of this study was to determine the extent to which behavioral changes promoted through EFNEP classes were sustained by program participants three months beyond the end of the program. Results of the research project indicate that skill-based behaviors, such as reading food labels, appear to have the desired effect for most of the measured outcomes for at least a three-month period after the conclusion of the intervention.

Participants in the intervention group, after receiving the nutrition classes, reported thinking about nutrition more frequently, in addition to practicing most of the skills measured that lead to healthier choices, such as reading labels and planning meals. Food safety practices were also employed more frequently, as well as better nutrition habits for children and more physical activity. Those behaviors that were low to begin with, such as running out of food or letting meat and dairy sit out, remained low in terms of reported frequency at follow-up. Overall, changes were in the desired direction and showed tendencies to sustain beyond the conclusion of the program.

Interestingly, the control group also showed significant change in several areas. Over the period of this study the economy in the United States took a severe downturn, which may have influenced behaviors such as comparing food prices. It should be noted that this phenomenon may have influenced the behavior of the intervention group as well.

It is important to understand that participants in these classes did not choose to join a nutrition class, but rather were provided with EFNEP lessons by virtue of being in a literacy program. Participants in the nutrition education program evaluated here did not choose to enroll in a

nutrition class, but rather were enrolled in literacy and English language classes. Therefore, these participants may not have been at a point of preparation and readiness to engage in new food behaviors, such as cooking without salt.

Summary and implications for Extension

In summary, the adult nutrition intervention described in this article, when administered in similar settings and to similar populations, shows some limited evidence of effectiveness in terms of short-term change in skill-related behaviors. Recommendations for Extension, in terms of similar interventions, include identifying where individuals are in their readiness to make change, based on specific food behaviors. The intervention can then be tailored to better address individual needs based on specific placement in the Stages of Change construct.

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