Journal of Extension

Volume 55 | Number 2 Article 26

4-1-2017

Demonstrating Impact Through Replicable Analysis: Implications of an Evaluation of Arkansas's Expanded Food and Nutrition Education Program

Josh Phelps
University of Arkansas

Allison Brite-Lane
University of Arkansas

Tina Crook
University of Arkansas

Reza Hakkak
University of Arkansas

Serena Fuller
University of Arkansas

Recommended Citation

Phelps, J., Brite-Lane, A., Crook, T., Hakkak, R., & Fuller, S. (2017). Demonstrating Impact Through Replicable Analysis: Implications of an Evaluation of Arkansas's Expanded Food and Nutrition Education Program. *Journal of Extension, 55*(2), Article 26. https://tigerprints.clemson.edu/joe/vol55/iss2/26

This Feature Article is brought to you for free and open access by TigerPrints. It has been accepted for inclusion in Journal of Extension by an authorized editor of TigerPrints. For more information, please contact kokeefe@clemson.edu.

Journal of Extension
www.joe.org

April 2017
Volume 55
Number 2
Article # 2FEA2
Feature

Demonstrating Impact Through Replicable Analysis: Implications of an Evaluation of Arkansas's Expanded Food and Nutrition Education Program

Abstract

The evaluation described in this article focused on the effectiveness of Arkansas's Extension-based Expanded Food and Nutrition Education Program (EFNEP) but demonstrates an analytic approach that may be useful across Extension programs. We analyzed data from 1,810 Arkansas EFNEP participants' entry and exit Behavior Checklists to assess reliability of the checklist tool and explore behavior changes. The results demonstrate continued effectiveness of Arkansas EFNEP in delivering impactful health-related programming. Details of our process may provide direction for program leaders in determining which programmatic areas need attention to improve outcomes and in identifying best practices within particular program areas.

Josh Phelps
Assistant Professor
University of Arkansas for Medical Sciences
Little Rock, Arkansas
japhelps@uams.edu

Allison Brite-Lane
Graduate Student
University of Arkansas for Medical Sciences
Little Rock, Arkansas
abritelane@uams.edu

Tina Crook
Associate Professor
University of Arkansas for Medical Sciences
Little Rock, Arkansas
crooktinaa@uams.edu

Reza Hakkak
Professor
University of Arkansas for Medical Sciences
Little Rock, Arkansas
rhakkak@uams.edu

Serena Fuller
Associate Professor and Coordinator of Arkansas Expanded Food and Nutrition Education Program
University of Arkansas Division of Agriculture Research and Extension
Little Rock, Arkansas
sfuller@uaex.edu

Introduction

The Expanded Food and Nutrition Education Program (EFNEP) is a federal and state partnership that operates through Extension at land-grant universities (U.S. Department of Agriculture National Institute of Food and Agriculture [USDA-NIFA], n.d.). The program is taught by paraprofessionals trained as peer nutrition educators. Participant recruitment is focused on limited-income households with children and low-income youths. EFNEP aims to help participants attain knowledge, skills, and behaviors necessary for adhering to a healthful lifestyle by addressing health disparities associated with food insecurity, obesity, and other food-related issues (USDA-NIFA, n.d.).

Indeed, food insecurity and obesity are among the most prevalent societal challenges. Food insecurity disproportionately affects households of lower economic status (Alaimo, Briefel, Frongillo, & Olson, 1998), and budgeting concerns involving food purchases are more likely in food-insecure (70%) than food-secure (18%) households (DeMartini, Beck, Kahn, & Klein, 2013). To maintain an adequate amount of food for themselves and their families, low-resource individuals may resort to alternative means of food acquisition. Alternate and less healthful strategies among EFNEP participants have been identified (Kempson, Palmer Keenan, Sadani, Ridlen, & Scotto Rosato, 2002). Extension-based nutrition educators have reported that program participants compensate for food insufficiencies by consuming spoiled food or roadkill, overeating when food is available, and developing cyclic eating patterns constructed around receipt of public food assistance funds (Kempson et al., 2002). Additionally, obesity is a national concern, and dietary behaviors have been implicated in the etiology or management of obesity, cardiovascular disease, and diabetes mellitus (Vanstone et al., 2013; Vozoris & Tarasuk, 2003). In the context of food insecurity's influence on diet quality, low-income households report higher incidences of these chronic diseases (Vozoris & Tarasuk, 2003). Participation in EFNEP has favorably improved food security and dietary behaviors of low-income families (Auld et al., 2015; Chung, & Hoerr, 2007; Cullen, Lara-Smalling, Thompson, Watson, & Konzelmann, 2009; Cullen et al., 2010; Dollahite, Pijai, Scott-Pierce, Parker, & Trochim, 2014; Koszewski, Sehi, Behrends, & Tuttle, 2011).

According to national EFNEP data, during fiscal year 2012, EFNEP directly reached approximately 610,000 individuals (USDA-NIFA, 2012). Adult participants reported improvements in their nutritional practices (90%), food resource management practices (85%), diet quality (95%), and food safety practices (66%) (USDA-NIFA, 2012). Many participants also reported improvements in nonfocus areas, including community involvement, self-esteem, and quality of life (Auld et al., 2013). With food insecurity and diet-related chronic diseases as pressing public health challenges, Extension-based programs such as EFNEP are essential for addressing these issues (Rajgopal, Cox, Lambur, & Lewis, 2002). Because of the reach and considerable economic investment associated with EFNEP, evaluating program effectiveness is essential. Moreover, rigorous program evaluation can indicate the value of Extension work to diverse stakeholders (Stup, 2003).

Nationally EFNEP is evaluated on the basis of entry and exit data from 24-hr dietary recalls and the EFNEP Behavior Checklist (USDA-NIFA, n.d.). The Behavior Checklist is a validated set of 10 core items covering the four domains of food resource management, food security, nutrition practices, and food safety; supplementary items may be added according to implementing agencies' preferences (USDA-NIFA, n.d.; Wardlaw et al., 2012). EFNEP participants respond to Behavior Checklist items by applying a 5-point Likert scale with the following response set: 1 = *do not do*, 2 = *seldom*, 3 = *sometimes*, 4 = *most of the time*, 5 = *almost always* (Wardlaw et al., 2012).

Arkansas EFNEP practitioners use the broadly implemented Eating Smart • Being Active curriculum (Auld et al., 2015; Colorado State University Extension [CSUE], 2015; Natker et al., 2015; Rees, 2010). Modeled on adult learning, social, and experiential theories, the curriculum is designed for low-income adults and focuses on nutrition education and obesity prevention (CSUE, 2015; Hoover, Martin, & Litchfield, 2009; Natker et al., 2015; Rees, 2010). The curriculum consists of eight 60- to 90-min core lessons designed to be delivered sequentially (CSUE, 2015; Natker et al., 2015; Rees, 2010). As part of a larger study evaluating the Eating Smart • Being Active curriculum, Auld et al. (2015) found that during a 6-month period in 2009–2010, Arkansas participants showed significant behavior change at exit in the food resource management and nutrition practices domains.

Here we report on our assessment of the internal reliability of the Behavior Checklist's food resource management and nutrition practices domains, as indicated by data collected in Arkansas; our evaluation of the influence of EFNEP education on specific behaviors; and our attempt to verify findings from the previous study by

Auld et al. (2015) assessing effectiveness of the Eating Smart • Being Active curriculum. We also report on how behavior changes related to the food resource management domain and specific nutrition practices associate with certain Behavior Checklist items. As indicated in previous research (Auld et al., 2015), participation in Arkansas EFNEP positively influences food resource management and nutrition practices. Novel hypotheses tested and reported here are as follows:

1. Improvement in food resource management practices is related to improvement in food security.

2. Improvement in nutrition practices is related to improvement in making healthful food choices for the family.

Additionally, we detail the methodical approach we used for our analysis as the approach may be useful with other Extension programming. Our aims were to reduce selective reporting bias through the use of mean or simple imputation rather than pair-wise or case-wise deletion; to garner additional information through the use of a test that categorizes repeated measures data into groups reported as positive change, negative change, or no change; and to explore influences of confounding variables on outcomes of interest.

Methods

Data Source

Data were from Arkansas EFNEP participants: low-income adults 18 years of age and older who had primary responsibility for children or were pregnant and completed a minimum of six Eating Smart • Being Active lessons, an enrollment form, and an entry (preprogram) and exit (postprogram) EFNEP Behavior Checklist.

Study Design

Secondary data analyses were performed on 1,810 participant records from University of Arkansas Cooperative Extension Service EFNEP, which operates through Cooperative Extension offices in 15 Arkansas counties (University of Arkansas Division of Agriculture Research and Extension, 2015). Peer educators collected data using enrollment forms and the EFNEP Behavior Checklist as required by federal partners. Participants excluded from the analyses were those who were younger than 18 and those who had completed fewer than six or more than 15 lessons.

All data were self-reported and were collected between October 1, 2012, and September 30, 2013. Collected data included demographic data from enrollment forms and responses to food resource management items, a food security item, and nutrition practices items on the EFNEP Behavior Checklist (the evaluation tool). Local staff entered data into the Web-Based Nutrition Education Evaluation and Reporting System, or WebNEERS, where the data were electronically compiled. The study received institutional review board approval from the University of Arkansas, Fayetteville.

Evaluation Tool

Table 1 shows the nine EFNEP Behavior Checklist items we assessed. Of the nine items included in our study, seven are federally required and two are specific to Arkansas. The nine items comprise three food resource management items, one food security item, and five nutrition practices items. A federally required nutrition practices item ("How often do your children eat something in the morning within 2 hours of waking?") was not

included. This item does not address healthful food choices as it asks about eating *something* in the morning within 2 hr of waking rather than about eating something healthful.

Table 1.

Expanded Food and Nutrition Education Program Behavior Checklist Items

Domain	U.S. or Arkansas	Behavior checklist item
Food resource management	U.S.	How often do you plan meals ahead of time?
Food resource management	U.S.	How often do you compare prices before you buy food?
Food resource management	U.S.	How often do you shop with a grocery list?
Food security	U.S.	How often do you run out of food before the end of the month?
Nutrition practices	U.S.	When deciding what to feed your family, how often do you think about healthy food choices?
Nutrition practices	U.S.	How often do you eat or prepare foods without adding salt?
Nutrition practices	U.S.	How often do you use the "Nutrition Facts" on the food label to make food choices?
Nutrition practices	Arkansas	Do you eat more than one kind of fruit?
Nutrition practices	Arkansas	Do you eat more than one find of vegetable?

Statistical Analysis

We used descriptive statistics to obtain a summary of study population characteristics, including age, gender, household income, education, ethnicity, and race.

Prior to analysis, we reverse-scaled data from the Behavior Checklist item "How often do you run out of food before the end of the month?" because a higher value in the Likert scale response options for the item indicates a less desirable outcome. We also assessed data for normality using the Shapiro-Wilk test, and we assessed missing Behavior Checklist data (i.e., no response) to determine whether mean imputation of the missing data was preferable over pair-wise deletion. Two of 11 variables—the item "How often do you run out of food before the end of the month?" and the nutrition practices domain construct—met the threshold of 10% or more missing values. Therefore, we conducted two-sided *t*-test and Pearson chi-square analyses to ascertain any statistically significant differences at baseline between responders and nonresponders with respect to potentially confounding variables. There were significant differences at baseline in responders and nonresponders indicating that data

were not missing at random but rather that the occurrence of missing data was influenced by age, gender, household income, education, ethnicity, and race. Accordingly, we completed a simple mean imputation for missing data.

We performed Cronbach's alpha analyses to check for internal consistency between checklist items and their respective domains. For each domain, we calculated a domain-level change score that was the average change score across items within the domain. We performed Wilcoxon signed-rank tests to determine whether behavior change occurred (Guenther & Luick, 2015). We also performed stepwise regression analyses to determine the predictive capacity of certain item-level and domain-level change scores on food security and particular nutrition practices. Potentially confounding variables included in the regression analyses were age, gender, household income, education, ethnicity, race, and county.

We compiled the descriptive statistics, completed the mean imputation, and performed the Cronbach's alpha, Wilcoxon signed-rank tests, and stepwise linear regression analyses using IBM SPSS Version 22.0. Statistical significance was established at $p \leq .05$.

Results

Characteristics of EFNEP Participants

Of the 2,305 Arkansas EFNEP participants for fiscal year 2012–2013, entry and exit Behavior Checklists were completed by 1,932 participants; 122 participants were excluded on the basis of reported age (under 18) and number of lessons completed (fewer than six or more than 15). Analyses were performed on data for the remaining participants (n = 1,810). Table 2 contains EFNEP participant demographic information. The majority of EFNEP participants were females. Participants ranged in age from 18 to 90 years. Hispanics made up 22.9% of the total population. With regard to race, the population comprised African Americans (59.4%), Whites (39.2%), and those of other races (0.8%). Race was not reported by 0.6% of participants.

Table 2.

Participant Demographics

Characteristic	***M* (*SD*) or % (#)**
Age (years) (1,810 responses)	38.69 (14.42)
Gender (1,810 responses)	
Female	85.0 (1,539)
Male	15.0 (271)
Household income ($/month) (1,588 responses)	929.55 (670.66)
Education (1,810 responses)	
6th grade to 12th grade or GED	69.9 (1,266)
Some college to postgraduate	18.8 (341)
Not provided	11.2 (203)
Ethnicity (1,810 responses)	

Not Hispanic or Latino	77.1 (1,395)
Hispanic or Latino	22.9 (415)
Race (1,810 responses)	
Black or African American (AA)	59.4 (1,075)
White	39.2 (710)
Black or AA and White	0.2 (4)
American Indian (AI) or Alaskan Native (AN)	0.2 (4)
AI or AN and White	0.1 (2)
Asian	0.1 (1)
Native Hawaiian (NH) or Other Pacific Islander (OPI)	0.1 (2)
NH or OPI and Black or AA	0.1 (2)
Not provided	0.6 (10)

Behavior Change

We performed Cronbach's alpha analyses to check for internal consistency between Behavior Checklist items and their assigned domains (Table 3). Internal consistency for both domains was good and supports previous work (Wardlaw & Baker, 2012).

Table 3.

Results of Cronbach's Alpha Analyses to Determine Consistency Between Arkansas EFNEP Behavior Checklist Items and Their Domains

Domain and items	Entry (α)	Exit (α)
Food resource management	0.69	0.76
How often do you plan meals ahead of time?		
How often do you compare prices before you buy food?		
How often do you shop with a grocery list?		
Nutrition practices	0.75	0.78
When deciding what to feed your family, how often do you think about healthy food choices?		
How often do you eat or prepare foods without adding salt?		
How often do you use the "Nutrition Facts" on the food label to make food choices?		
Do you eat more than one kind of fruit?		
Do you eat more than one find of vegetable?		

Note. EFNEP = Expanded Food and Nutrition Education Program.

We completed Wilcoxon signed-rank tests to determine whether there were significant differences between entry and exit Behavior Checklist responses for the food resource management domain, the nutrition practices domain, and checklist items of interest. Results showed that there were significant ($p < .0005$) median increases in Behavior Checklist responses at exit relative to responses at entry. Table 4 shows changes for each domain and item with respect to numbers of participants who experienced positive change, negative change, and no change in behavior as indicated by changes in responses from entry to exit.

Table 4.

Results of Wilcoxon Signed-Rank Analysis of Arkansas EFNEP Preprogram/Postprogram Behavior Checklist Data

	Behavior change			
Behavior checklist domain or item (1,810 responses)	**Positive change (#)**	**Negative change (#)**	**No change (#)**	***Z* statistic**
Food resource management domain	1,452	165	193	30.74*
Nutrition practices domain	1,461	215	134	30.81*
How often do you plan meals ahead of time?	1,182	147	481	26.37*
How often do you compare prices before you buy food?	994	142	674	24.03*
How often do you shop with a grocery list?	1,120	166	524	26.10*
How often do you run out of food before the end of the month?	978a	300	532	19.27*
When deciding what to feed your family, how often do you think about healthy food choices?	1,129	185	496	24.78*
How often do you prepare or eat foods without adding salt?	990	286	534	19.16*
How often do you use the "Nutrition Facts" on the food label to make food choices?	1,287	159	364	28.65*
Do you eat more than one kind of fruit?	927	190	693	21.39*
Do you eat more than one kind of vegetable?	969	176	665	22.32*

Note. EFNEP = Expanded Food and Nutrition Education Program.

aPositive change indicates that participants *less often* run out of food before the end of

the month.
*$p < .0005$.

We performed analyses to determine whether certain factors contribute to food insecurity among and nutrition practices of Arkansas EFNEP participants. Specifically, we completed stepwise regression analyses to identify which independent variables significantly accounted for variance in two dependent variables. Establishing the change score for the food security item on the Behavior Checklist as a dependent variable, we conducted a stepwise regression using the food resource management domain change score, age, gender, household income, education, ethnicity, race, and county as independent variables. The model with the best contributive capacity for explaining variance in the dependent variable was county (R^2 = .063, or 6.3%; $F(6, 1581) = 17.58$; $p < .0005$). Interestingly, conducting another stepwise regression including all the aforementioned variables except county resulted in a model showing food resource management domain change score, age, and race as having the best contributive capacity (R^2 = .023, or 2.3%; $F(3, 1584) = 12.28$; $p < .0005$). Establishing the change score for the nutrition practices item "When deciding what to feed your family, how often do you think about healthy food choices?" as a dependent variable, we conducted a stepwise regression using the change score for each of the other nutrition practices, age, gender, household income, education, ethnicity, race, and county as independent variables. The model with the best contributive capacity for explaining variance in the dependent variable included the three nutrition practices items "How often do you use the Nutrition Facts on the food label to make food choices?," "Do you eat more than one kind of fruit?," and "Do you eat more than one kind of vegetable?," and county (R^2 = .268, or 26.8%; $F(9, 1578) = 64.05$; $p < .0005$). Conducting a stepwise regression using the same variables mentioned above but excluding county resulted in a model showing the nutrition practices items "How often do you use the Nutrition Facts on the food label to make food choices?," "Do you eat more than one kind of fruit?," "Do you eat more than one kind of vegetable?," and "How often do you eat or prepare foods without adding salt?" as having the best contributive capacity (R^2 = .254, or 25.4%; $F(4, 1583) = 134.92$; $p < .0005$).

Discussion

As indicated previously, issues such as food insecurity and obesity are among the most prevalent societal challenges. Thus, given EFNEP's wide reach, the concepts of how food resource management skills taught through EFNEP modulate food security and how nutrition practices taught through EFNEP relate to one another are highly relevant research topics. We undertook the project described herein to investigate Arkansas EFNEP's effectiveness on participants' food-related behaviors (i.e., food resource management, food security, and nutrition practices), to identify associations among behavior outcomes in these domains, and to explore potential behaviors to target when delivering EFNEP programming.

Our results show that Arkansas adult EFNEP has a reliable tool for measuring change in the domains of food resource management and nutrition practices. The Cronbach's alphas at program entry and exit (food resource management entry $\alpha = 0.69$, exit $\alpha = 0.76$; nutrition practices entry $\alpha = 0.75$, exit $\alpha = 0.78$) indicated a high level of internal consistency and were similar to alpha values reported by Wardlaw & Baker (2012) for internal consistency of the Behavior Checklist (entry $\alpha = 0.78$, exit $\alpha = 0.80$).

Using Wilcoxon signed-rank tests, we measured the differences between participants' Behavior Checklist entry and exit responses for each item in Likert scale form. The resulting differences were used as an indicator for

behavior change (positive, negative, no change). Not surprisingly, positive change was observed for each behavior of interest—planning meals ahead of time, comparing food prices before purchasing, shopping with a grocery list, not running out of food, thinking about healthful food choices when deciding what to feed the family, preparing or eating foods without salt, using Nutrition Fact labels, eating more than one kind of fruit, and eating more than one kind of vegetable. Our results are consistent with data reported on the U.S. Department of Agriculture EFNEP website indicating positive behavior changes in national EFNEP participants' food resource management (85%) and nutrition practices (90%) (USDA-NIFA, n.d.). Our results are also similar to those reported by Auld et al. (2015) indicating improved food resource management and nutrition practice behaviors in reference to analysis of 2009–2010 Arkansas EFNEP data.

Our results are unique in that they show type of change (positive, negative, no change) while indicating whether there were significant differences between entry and exit responses. For example, responses from the 1,810 participants we studied indicated that 1,182 participants more often planned meals ahead of time after completing the program, 481 participants had no improvement in this area, and 147 participants less often planned meals ahead of time after completing the program. The Wilcoxon signed-rank test determined that there was a statistically significant median increase (1.0) (data are medians) in how often participants planned meals ahead of time at posttest (4.0) compared to pretest (3.0), $z = 27.37$, $p < .0005$. Additionally, this type of analysis may provide direction for program leaders in determining which programmatic areas need attention to improve program outcomes and in identifying best practices within a particular program area.

The stepwise regression analysis also revealed interesting results that may be used toward program improvement. When county was included in the regression analysis, it was found to be the strongest predictor of the dependent variable. The county variable is a potential indicator of educator and county-specific policy, systems, and environmental factors that may influence participant ability to engage in behavior change. These results may be used to direct areas for deeper examination and further investigation to potentiate program outcomes.

Study Limitations

The study reported here had several limitations. Data were self-reported, so overreporting of behavior change after intervention is possible (Archuleta, VanLeeuwen, Halderson, Wells, & Bock, 2012). The subjective nature of some of the Behavior Checklist items may have led to individual interpretation of meaning. EFNEP programming varies by location, including with respect to curricula and paraprofessional training; therefore, results are generalizable only to participants in Arkansas. Variation in factors affecting program implementation with Arkansas EFNEP, such as level of educator experience and lesson setting, also serves as a limitation. Investigation of the impact of these factors on program outcomes is needed. We also acknowledge limitations associated with use of mean imputation and stepwise regression when interpreting results.

Implications for Extension Practice and Research

Extension-supported nutrition education programs have been shown to positively influence the lives of participants and facilitators (Auld et al., 2013; Hoerr et al., 2011; Taylor, Serrano, Anderson, & Kendall, 2000). Additionally, behavior change resulting from Extension-based nutrition education programs has been shown to be positive and lasting (Dollahite et al., 2014; Koszewski et al., 2011; Wardlaw & Baker, 2012). Overall, the work reported here supports and extends Extension's role in delivering impactful programming.

In the future, researchers should consider using additional evaluative methods and tools to investigate other

variables or areas of interest that may influence programming outcomes, such as educator experience and policy, system, and environmental factors. Similarly, additional research into skills and behaviors relating to food security, which can be taught through Extension nutrition education programs, should be investigated. Although the project reported here was focused on nutrition, the analytic approach could be applied to many programs provided through Extension. Such efforts would be supportive of sentiments reported by Stup (2003): Evaluative efforts provide a means of remaining accountable and relevant to the communities served by Extension programming.

References

Alaimo, K., Briefel, R. R., Frongillo, E. A. Jr., & Olson, C. M. (1998). Food insufficiency exists in the United States: Results from the third National Health and Nutrition Examination Survey (NHANES III). *American Journal of Public Health*, *88*(3), 419–426.

Archuleta, M., VanLeeuwen, D., Halderson, K., Wells, L., & Bock, M. A. (2012). Diabetes cooking schools improve knowledge and skills in making healthful food choices. *Journal of Extension*, *50*(2), Article 2FEA6. Available at: https://www.joe.org/joe/2012april/a6.php

Auld, G., Baker, S., Bauer, L., Koszewski, W., Procter, S. B., & Steger, M. F. (2013). EFNEP's impact on the quality of life of its participants and educators. *Journal of Nutrition Education and Behavior*, *45*(6), 482–489.

Auld, G., Baker, S., Conway, L., Dollahite, J., Lambea, M. C., & McGirr, K. (2015). Outcome effectiveness of the widely adopted EFNEP curriculum Eating Smart • Being Active. *Journal of Nutrition Education and Behavior*, *47*(1), 19–26.

Chung, S. J., & Hoerr, S. L. (2007). Evaluation of a theory-based community intervention to increase fruit and vegetable intakes of women with limited incomes. *Nutrition Research and Practice*, *1*(1), 46–51.

Colorado State University Extension. (2015). *Eating Smart • Being Active*. Retrieved from http://www.ext.colostate.edu/esba/

Cullen, K. W., Lara-Smalling, A., Thompson, D., Watson, D. B., & Konzelmann, K. (2009). Creating healthful home food environments: Results of a study with participants in the Expanded Food and Nutrition Education Program. *Journal of Nutrition Education and Behavior*, *41*(6), 380–388.

Cullen, K. W., Thompson, D. I., Scott, A. R., Lara-Smalling, A., Watson, K. B., & Konzelmann, K. (2010). The impact of goal attainment on behavioral and mediating variables among low income women participating in an Expanded Food and Nutrition Education Program intervention study. *Appetite*, *55*(2), 305–310.

DeMartini, T. L., Beck, A. F., Kahn, R. S., & Klein, M. D. (2013). Food insecure families: Description of access and barriers to food from one pediatric primary care center. *Journal of Community Health*, *8*(6), 1182–1187.

Dollahite, J. S., Pijai, E. I., Scott-Pierce, M., Parker, C., & Trochim, W. (2014). A randomized controlled trial of a community-based nutrition education program for low-income parents. *Journal of Nutrition Education and Behavior*, *46*(2), 102–109.

Guenther, P. M., & Luick, B. R. (2015). Improved overall quality of diets reported by Expanded Food and Nutrition Education Program participants in the mountain region. *Journal of Nutrition Education and Behavior*, *47*, 421–

426.

Hoerr, S. L., Abdulkadri, A. O., Miller, S., Waltersdorf, C., LaShore, M., Martin, K., & Newkirk, C. (2011). Improving measurement of the EFNEP outcomes using factor analysis of the Behavior Checklist. *Journal of Extension*, *49*(4), Article 4FEA5. Available at: https://www.joe.org/joe/2011august/a5.php

Hoover, J. R., Martin, P. A., & Litchfield, R. E. (2009). Qualitative tools to examine EFNEP curriculum delivery. *Journal of Extension*, *47*(3), Article 3FEA3. Available at: https://www.joe.org/joe/2009june/a3.php

Kempson, K. M., Palmer Keenan, D., Sadani, P. S., Ridlen, S., & Scotto Rosato, N. (2002). Food management practices used by people with limited resources to maintain food sufficiency as reported by nutrition educators. *Journal of the American Dietetic Association*, *102*(12), 1795–1799.

Koszewski, W., Sehi, N., Behrends, D., & Tuttle, E. (2011). The impact of SNAP-Ed and EFNEP on program graduates 6 months after graduation. *Journal of Extension*, *49*(5), Article 5RIB6. Available at: https://www.joe.org/joe/2011october/rb6.php

Natker, E., Baker, S. S., Auld, G., McGirr, K., Sutherland, B., & Cason, K. (2015). Formative evaluation of EFNEP curriculum: Ensuring Eating Smart • Being Active is theory based. *Journal of Extension*, *53*(1), Article 1RIB1. Available at: https://www.joe.org/joe/2015february/rb1.php

Rajgopal, R., Cox, R. H., Lambur, M., & Lewis, E. C. (2002). Cost-benefit analysis indicates the positive economic benefits of the Expanded Food and Nutrition Education Program related to chronic disease prevention. *Journal of Nutrition Education and Behavior*, *34*(1), 26–37.

Rees, D. (2010). Eating Smart • Being Active [New resources for nutrition educators]. *Journal of Nutrition Education and Behavior*, *42*(5), 357.e5.

Stup, R. (2003). Program evaluation: Use it to demonstrate value to potential clients. *Journal of Extension*, *41*(4), Article 4COM1. Available at: https://www.joe.org/joe/2003august/comm1.php

Taylor, T., Serrano, E., Anderson, J., & Kendall, P. (2000). Knowledge, skills, and behavior improvements on peer educators and low-income Hispanic participants after a stage of change-based bilingual nutrition education program. *Journal of Community Health*, *25*(3), 241–262.

University of Arkansas Division of Agriculture Research and Extension. (2015). *Cooperative Extension Service: Arkansas EFNEP program*. Retrieved from http://www.uaex.edu/health-living/food-nutrition/eating-well/expanded-education.aspx

U.S. Department of Agriculture National Institute of Food and Agriculture. (n.d.). *Expanded Food and Nutrition Education Program (EFNEP)*. Retrieved from http://nifa.usda.gov/program/expanded-food-and-nutrition-education-program-efnep

U.S. Department of Agriculture National Institute of Food and Agriculture. (2012). *2012 impacts: The Expanded Food and Nutrition Education Program (EFNEP)*. Retrieved from http://nifa.usda.gov/sites/default/files/resource/2012 Impact Report_0.pd

Vanstone, M., Giacomini, M., Smith, A., Brundisini, F., DeJean, D., & Winsor, S. (2013). How diet modification challenges are magnified in vulnerable or marginalized people with diabetes and heart disease: A systematic

review and qualitative meta-synthesis. *Ontario Health Technology Assessment Series*, *13*(14), 1–40.

Vozoris, N. T., & Tarasuk, V. S. (2003). Household food insufficiency is associated with poorer health. *The Journal of Nutrition*, *133*(1), 120–126.

Wardlaw, M. K., & Baker, S. (2012). Long-term evaluation of EFNEP and SNAP-Ed. *The Forum for Family and Consumer Issues*, *17*(2). Retrieved from http://ncsu.edu/ffci/publications/2012/v17-n2-2012-summer-fall/wardlaw-baker.php

Wardlaw, M. K., Hanula, G., Burney, J., Snider, S., Jones, L., Adler, A., . . . Zoumenou, V. (2012). EFNEP Behavior Checklist review. Retrieved from http://nifa.usda.gov/sites/default/files/resource/Behavior Checklist Review.pdf

---