

POINTING THE WAY
TO GOOD
NUTRITION



RNEECE

Regional Nutrition Education and
Obesity Prevention Centers of Excellence

National Coordination Center at the University of Kentucky

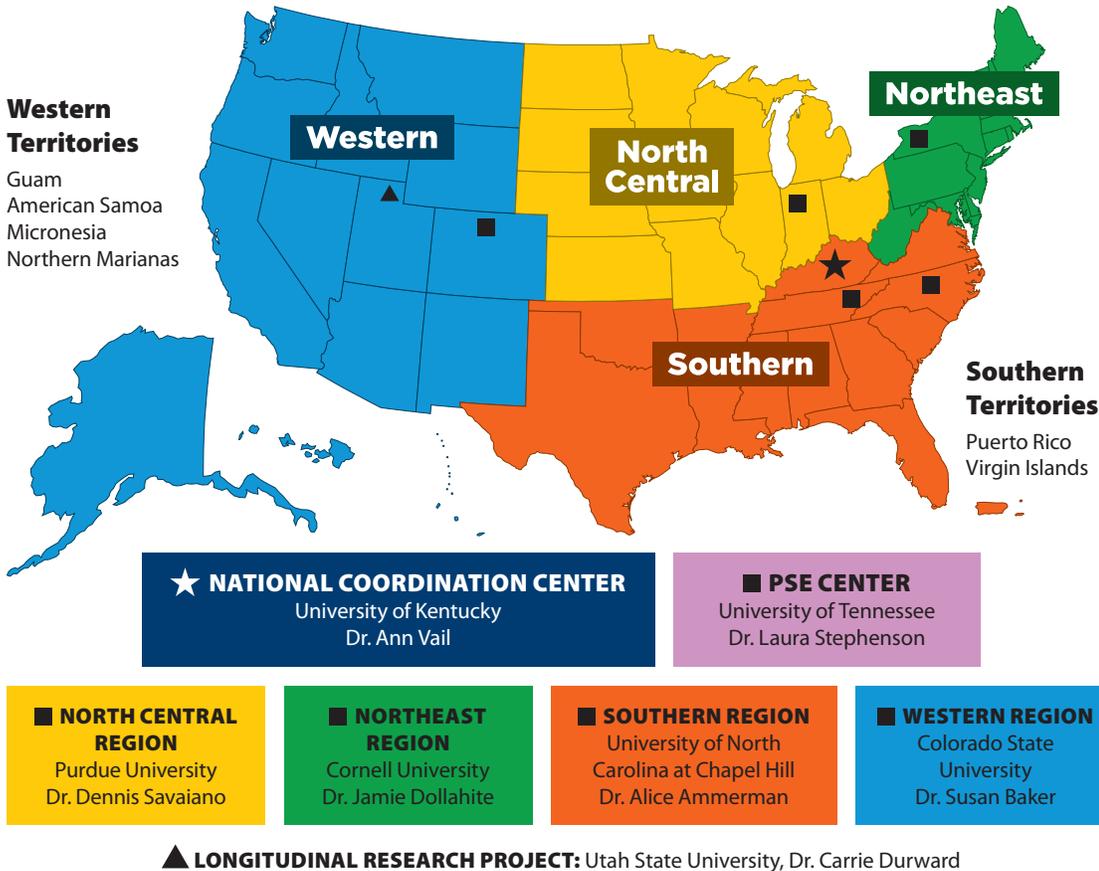
2014-2017 FINAL REPORT



University of Kentucky
College of Agriculture,
Food and Environment
Cooperative Extension Service

Regional Nutrition Education and Obesity Prevention Centers of Excellence (RNECE)

The overarching goal of RNECE is to improve the health of low-income Americans by fostering a culture of health through multiple strategies, including nutrition education and complementary public health approaches implemented at each level of the socio-ecological framework through policy, systems, and environmental (PSE) changes.



TIMELINE

2014

USDA NIFA and FNS RFP
Four RNECEs and NCC funded
Websites established
Washington D.C. face-to-face meeting with NIFA, FNS, and White House officials

2015

Call for sub-award proposals
SNEB face-to-face meeting with all RNECEs and NIFA
Sub-awards funded
Research Project Inventory completed
Washington D.C. face-to-face meeting with NIFA and FNS
NCC, NIFA and FNS site visits to each RNECE
PSE Center funded
Longitudinal Research Project funded

2016

ASNNA presentation
EFNEP conference presentation
First research projects completed
2016 Executive Summary

2017

Interim report
Final report
17 out of 28 projects completed.
Remaining projects to be completed during no-cost extensions.

OUR OBJECTIVES

- 1 Strengthen the evidence-base on effective nutrition education and obesity prevention programs** for diverse population groups.
- 2 Evaluate the long-term effectiveness of nutrition education and obesity prevention interventions** for disadvantaged and underserved populations and opportunities for new research.
- 3 Identify and create research collaborations and synergistic relationships** among researchers and EFNEP/SNAP-Ed program directors, universities and other implementers, and state and federal agencies.
- 4 Enhance the impact of state and community nutrition education and obesity prevention efforts** by providing the public health-related training and evidence that practitioners need for improving nutrition and health behaviors, environments, and policies in ways that are equitable, efficient, and sustained over time.
- 5 PSE Center will determine needs and provide support** to the regional centers and SNAP-Ed and EFNEP networks on PSE strategies.

OUR CHALLENGE

STATE OF OBESITY AND THE NATION'S DIET



Obesity is one of the biggest drivers of preventable chronic diseases and healthcare costs in the United States. Current estimates for these costs range from \$147 billion to nearly \$210 billion per year. In addition, obesity is associated with job absenteeism, costing approximately \$4.3 billion annually and with lower productivity while at work, costing employers \$506 per obese worker per year.



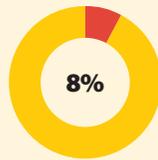
25 states have an adult obesity rate of 30 percent or higher, 43 states have rates above 25 percent and every state is above 20 percent



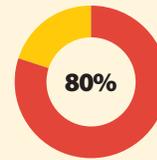
Overweight and obesity in childhood is associated with \$14.1 billion in additional prescription drug, emergency room and outpatient visit healthcare costs annually. An obese 10-year-old child who continues to gain weight throughout adulthood has lifetime medical costs that are \$19,000 higher compared to a healthy-weight 10-year-old who maintains a normal weight throughout life.



36.5% of adults are obese.



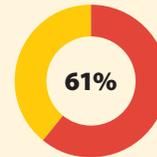
8% of adults are extremely obese.



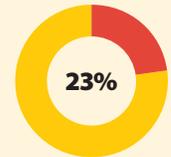
80% of high school students do not eat recommended fruit or vegetable servings.



20% of high school girls do not consume enough calcium.



61% of children age 2-17 do not meet the recommended amount of fiber.



23% of students age 12-19 do not eat breakfast.



82% or more of adults do not eat the recommended amount of fruit and **86% or more** of adults do not eat the recommended amount of vegetables.

OUR SOLUTION

APPROACH

Our approach is to strengthen the evidence-base of using PSE and direct education methods to improve food resource management and diet quality for low-income families. In addition to supporting regional research to address our four objectives, each regional center is tasked with planning, developing, and administering at least one signature research program that targets an identified need in the region.



RESULTS

As a result of the RNECE Initiative, there is a stronger nationwide network of Supplemental Nutrition Assistance Program — Education (SNAP-Education) and Expanded Food and Nutrition Education Program (EFNEP) implementers and administrators collaborating to facilitate the development, testing, and implementation of evidence-based programming within both nationwide programs. In addition, there are a greater number of researchers working to further strengthen the evidence for nutrition education and obesity prevention interventions. Through collaboration across the RNECE Initiative, resources to assist SNAP-Education program staff to implement policy, systems, and environmental (PSE) change activities have proliferated and many more agencies are participating in such activities. SNAP-Education and EFNEP practitioners have developed new skills and capacity in the implementation of PSE changes integrated with direct education.

RNECE RECOMMENDATIONS

From 2014 to 2017, a collaboration of researchers and nutrition educators worked to strengthen two of the nation's most important nutrition education programs through the Regional Nutrition Education Centers of Excellence (RNECE) Initiative. Two USDA agencies, the National Institute of Food and Agriculture and the Food and Nutrition Service, led the effort in six centers. As the RNECE Initiative concludes, the following recommendations are offered for future work in nutrition programs for limited resource families in the United States.

1. Funding mechanisms designed to support meetings, conferences, and proposal development working groups of researchers and nutrition education program implementers are needed to foster existing and newly established relationships.
2. Land-grant universities can serve the role of a backbone organization to assess the collective impact of federally sponsored nutrition education programs. Dividing the responsibilities of program delivery from the evaluation process would add rigor while fostering researcher-implementer relationships.
3. As federal guidance for EFNEP and SNAP-Ed programs is updated to incorporate current research findings, support should be allocated to provide training and to evaluate new approaches to improve program quality.
4. A funding mechanism to continue development of a robust, user-friendly national training system for nutrition educators working in SNAP-Ed and EFNEP is needed.
5. Funding mechanisms flexible enough to allow and encourage numerous longitudinal research studies.



TABLE OF CONTENTS

Background	6
The RNECE Centers	7-26
National Coordination Center	7
North Central Region	9
Northeast Region	12
South Region	16
West Region	21
Policy, Systems, and Environmental Change Center	25
Appendices	27-49
A: RNECE Research Project Inventory	27
B: RNECE Project Abstracts	30
C: RNECE Participants	45



Background

A common misconception is that limited resource families and youth purchase unhealthy and expensive foods. United States Department of Agriculture programs are working to help families make better choices. Although SNAP-Education and EFNEP have different clientele, approaches, and funding, they both are making a difference. SNAP-Education uses efforts to change the environment and direct education to teach people using or eligible for SNAP about good nutrition and how to make their food dollars stretch further. SNAP-Education participants also learn to be physically active. EFNEP uses paraprofessionals from the community to teach limited resource families with young children and youth how to use seasonal produce, plan meals, shop for food, and budget food resources. EFNEP leads to personal savings by improving participant's food resource management skills. Both of these programs lead to public savings. Research shows that better health is associated with reduced health care costs, less absenteeism from work, and less dependence on emergency food assistance. RNECE has made contributions to strengthen the evidence base for both SNAP-Education and EFNEP.

Nutrition education programs for less advantaged groups have been a priority within the USDA for the last half-century. USDA administers nutrition education programs that target low-income populations through the Food and Nutrition Service (FNS) and the National Institute of Food and Agriculture (NIFA). The Supplemental Nutrition Assistance Program-Education (SNAP-ED), created in 1992, is the primary educational program administered through FNS. The Expanded Food and Nutrition Education Program (EFNEP), initiated in 1969, is the principal educational effort administered through NIFA. In 2014, USDA established the Regional Nutrition Education and Obesity Prevention Centers of Excellence (RNECE) to build the evidence-base regarding SNAP-Education and EFNEP programs, and to identify strategies to strengthen both programs. The collaboration between NIFA and FNS provided 4 million dollars to fund a national coordination center and four regional centers as shown on the map (see page 3). In 2015, a Policy, Systems, and Environmental (PSE) Change Center was created to work cooperatively with



the regional centers on integration of PSE approaches into SNAP-Education and EFNEP. In the same year, the RNECE Longitudinal Research Study: Multi-Disciplinary Methods for Effective, Sustainable, and Scalable Evaluations of Nutrition Education Programs was funded. This study was embedded into RNECE- West Center.

The work of RNECE from 2014-2017 established regional relationships among researchers and program implementation agencies throughout the nation, and contributed to the evidence-base on nutrition education and obesity prevention strategies. This final report from the National Coordination Center (NCC) at University of Kentucky summarizes progress toward the four RNECE objectives and makes recommendations for continued support for evaluation, research, and program improvement. The field of nutrition education has made remarkable changes over the last two decades, with a focus on improved program evaluation and improvement strategies, and integration of policy, systems, and environmental changes into our work. Supporting healthy eating behaviors for all citizens would reap significant benefits for the people of the United States. Reducing obesity prevalence and the associated disease burden would improve the quality of life for everyone.

THE RNECE CENTERS: National Coordination Center

The National Coordination Center (NCC) at the University of Kentucky advanced the work of the RNECE initiative by coordinating communications among regional centers and conducting regional center reviews. Communications were facilitated by monthly conference calls among centers, quarterly calls with USDA, and websites for each center. The NCC solicited progress reports from RNECE regional centers and prepared quarterly reports for USDA. Appendix A includes a research project inventory for the initiatives and Appendix B provides abstracts for projects completed by August 2017.

Progress on RNECE Objectives

1. Strengthen the evidence-base on effective nutrition education and obesity prevention programs for diverse population groups. Each regional center has implemented feasibility and strategy testing, and evidence-base effectiveness initiatives ranging from systematic reviews to sub awards. Systematic reviews are being conducted on PSE training in SNAP-Ed and EFNEP. Through sub-awards, partnering agencies in each region are working to research evidence-base effectiveness of the following educational programs and methods: *Eat Smart in Parks*; multi-modal community nutrition education model; summer weight and environment assessment trial; evaluation of SNAP-Ed impact on food safety and obesity prevention in urban counties; influence of PSE on dietary quality in childcare settings; *Faithful Families Eating Smart & Moving More*; innovation to test text-based direct education delivery; *Eating Smart Being Active*; youth participatory action research; low-cost scalable technology for evaluating EFNEP and SNAP-Ed; evaluation of sugar sweetened beverage intervention; and creating best practice professional development training modules. Feasibility and strategies are being studied, including competencies needed to implement PSE's in SNAP-Ed and EFNEP; *Baltimore Healthy Stores* intervention in rural south; social media strategies with EFNEP and SNAP-Ed

RNECE NATIONAL COORDINATION CENTER TEAM

Ann Vail, PhD

Director

Janet Kurzynske, PhD

Co-Director

Janet Mullins, PhD, RD

Evaluation Coordinator

Dawn Brewer, PhD, RD

Web and Database Coordinator

Jean Najor, M.S.

Senior Extension Specialist

Ruth Cremeans

Administrative Assistant

implementers; food pantry assessment tool; and multi-disciplinary methods for effective and scalable program evaluations. The NCC has facilitated agency meetings, developed a project inventory of the work of the regional centers, and identified and confirmed what works based on research findings.

2. Evaluate the long-term effectiveness of nutrition education and obesity prevention interventions for disadvantaged and underserved populations and identify opportunities for new research. Each regional center has implemented evaluation effectiveness initiatives which include PSE testing, sub awards, and feasibility and strategy testing among others. Through PSE testing the centers are evaluating readiness to change inventory resources, best practice strategies, and evaluation methods. This work also includes the implementation of an evaluation plan to assess local readiness to change progression; creation of a cultural

framework to guide implementation of PSE approaches; identification of practice-based PSE strategies for SNAP-Ed and EFNEP programs; development of best practice evaluation strategies; and identification of barriers among SNAP-Ed and EFNEP implementers. Sub awards have been granted to fund evaluation of SNAP-Ed impact on food safety and obesity prevention in urban counties. Grantees are collecting pre- and post-test data with limited-resource participants and evaluating programs and resources. Feasibility and strategies are being studied, including process evaluation strategies for *Baltimore Healthy Stores* in rural areas; social media strategies with EFNEP and SNAP-Ed implementers; and strategies to reach direct education participants long-term. The National Coordination Center has facilitated agency meetings, conducted site visits, and coordinated face-



to-face meetings to support the evaluation of long-term effectiveness.

3. Identify and create research collaborations and synergistic relationships among researchers and EFNEP/SNAP-Ed program directors, universities and other implementers, and state and federal agencies.

Each regional center has implemented collaboration initiatives ranging from the formation of committees and networks to the granting of research sub awards, and development of PSE resources. The centers have developed a wide range of committees and networks, including Steering Committees, Stakeholder Committees, Nutrition Education Advisory Committee, PSE Advisory Committee, Research Connection Network, and RNECE Nationwide Training Workgroup. Each region has built partnerships with a variety of organizations by granting sub awards and collaborating on research initiatives. PSE efforts are focused on partnership and best practice sharing, including investigation of a coordinated plan of communication and identification of multi-level partners. The National Coordination Center has served as a liaison with federal agencies, communicated on RNECE initiatives through presentations, facilitated evaluation and face-to-face meetings, and led the development of the RNECE websites in an effort to build collaboration.

4. Enhance the impact of state and community nutrition education and community nutrition education and obesity prevention efforts by providing the public health-related training and evidence that practitioners need for improving nutrition and health behaviors, environments, and policies in ways that are equitable, efficient, and sustained over time.

The regional centers have conducted and participated in a variety of trainings and communications around evidence-based research, through webinars, nationwide trainings, communications, and development of environmental support for indirect education. In the area of PSE, training plans, competency-based web trainings, collection of web-based resources, evaluation of a technical assistance plan, an eXtension forum, intercultural PSE trainings, webinars, workshops, and social media communications have all been developed and implemented. The National Coordination Center has facilitated evaluation and face-to-face meetings, and communicated on RNECE initiatives through various presentations to enhance the impact of RNECE.

THE RNECE CENTERS:

North Central Region

The primary focus of the North Central Regional Nutrition Education Center of Excellence (NC-RNECE) is to increase the evidence base of multi-level SNAP-Ed and EFNEP interventions, with a strong emphasis on policy, systems, and environmental (PSE) change research in rural areas. Through an affiliates' program, the center also seeks to increase partnerships between researchers and SNAP-Ed and EFNEP implementers.

Progress on RNECE Objectives

- 1. To increase the evidence base of multi-level SNAP-Ed and EFNEP interventions with a strong emphasis on policy, systems, and environmental (PSE) change research in rural areas.** To-date NC-RNECE has funded six research studies that are examining the effectiveness of SNAP-Ed and/or EFNEP interventions. All of the studies have research questions related to the effects of interventions on diverse environments of SNAP-Ed and EFNEP participants, i.e. low-income childcare venues and early childhood settings, food pantries, schools, parks, community recreation centers and summer feeding sites. Currently funded studies are also assessing the impact of SNAP-Ed and/or EFNEP interventions on key health variables such as food security, dietary quality, obesity, access to community resources, and/or social support networks. Furthermore, studies are examining differences in the efficacy of SNAP-Ed and/or EFNEP interventions on targeted outcomes among rural, urban and suburban participants.
- 2. Increase partnerships between researchers and SNAP-Ed and EFNEP implementers.** NC-RNECE used several strategies to increase partnerships between researchers and SNAP-Ed and EFNEP implementers. The first steps were to 1) set up an affiliates' program for the center, 2) convene our multi-state advisory team of faculty and SNAP-Ed/EFNEP implementers and 3) conduct focus groups with our affiliates, advisory team members and

RNECE NORTH CENTRAL REGION TEAM

Dennis Savaiano, PhD

Director
Purdue University, savaiano@purdue.edu

Jo Britt-Rankin, Ph.D.

Associate Director, Communications
University of Missouri, britt-rankinj@missouri.edu

Dawn Contreras, Ph.D.

Associate Director, Center Assessment
Michigan State University Extension, contrer7@msu.edu

Marci Scott, PhD

Associate Director, Implementation
Michigan Fitness Foundation, mscott@michiganfitness.org

Tracy Eaton

Center Coordinator
Purdue University, tkeaton@purdue.edu

Multi-State Advisory Committee (see appendix)

A multi-state advisory committee was formed during the proposal development process. The advisory committee includes SNAP-Ed and/or EFNEP implementers and stakeholders/researchers from every state in the North Central Region. This group provides guidance to NC-RNECE on funding priorities, communication strategies and additional affiliate connections/partnerships among faculty and SNAP-Ed and EFNEP implementers in the region.



their collaborators to prioritize research topics for the center. The focus groups found that high priority topics for the center included assessing the effectiveness of PSE interventions on SNAP-Ed and/or EFNEP participants and examining the impact of SNAP-Ed and EFNEP interventions on rural populations. Next, we issued several requests for proposals in areas related to the two highest priority needs expressed during the focus groups. NC-RNECE funded six proposals that aligned with the center's research priorities. All funded researchers joined the NC-RNECE affiliates' program and were invited to present webinars about their research to the other center affiliates. Two webinars were presented. In addition, the center's affiliates and advisory board members were invited to convene in Chicago to discuss their research, brainstorm additional collaborative opportunities, and increase their

partnerships with SNAP-Ed and/or EFNEP implementers. Over sixty individuals attended the Chicago meeting. During that meeting, the group discussed a collaborative research study that would further the NC-RNECE goals by looking at the food and physical activity environments of geographically diverse low-income individuals. That research study includes all states in the North Central region and is in progress. A second meeting for the NC-RNECE affiliates is planned for 2018.

3. Progress on NC-RNECE Key Initiatives

Funded Study #1: Summer Weight and Environmental Assessment Trial (SWEAT): PI: Gunther

This study has completed baseline and time one data collection for Ohio State University. Preliminary analysis has been run and the study is ongoing. A research

seminar was presented on the baseline and time one data. Manuscripts, and conference abstracts are in development. The estimated date of completion is August 2018.

Funded Study #2: A Longitudinal Randomized and Controlled Evaluation of the Integrated Impact of SNAP-Ed on Food Security and Obesity Prevention in Rural and Urban Counties: PI: Eicher-Miller

A mixed-modeling analysis and manuscript of the “Environmental Factor Influence on Food Security Improvement due to SNAP-Ed” have been completed. A path analysis is in progress that will investigate how factors (rural/urban status, community resources, and county characteristics) individually contribute to the impact on improvement in food security through integration of direct and PSE SNAP-Ed approaches. To-date, four research presentations have been made on this study and a manuscript has been submitted to the Public Health Nutrition. The estimated date of completion for this study is August 2018.

Funded Study #3: Eat Smart in Parks: PI: Wilhelm Stanis

Data collection and analysis for this study are complete and research results are being disseminated. Findings from this study demonstrate that photovoice projects examining park food environments not only help give voice to youth that may not typically be included in decision-making, but also increase perceived importance of healthy food environments in parks. Four poster presentations have been made on the results of the study and three to four publications are being developed.

Funded Study #4: Evaluating a Multi-Modal Community Nutrition Education Model within SNAP-Ed and EFNEP: PI: McCaffrey

The study showed that age, energy density, household size, and physical activity were not significantly related to level of food insecurity (all $P_s > 0.05$). However, receiving Supplemental Nutrition Assistance Program (SNAP)

benefits ($r = -0.23$, $P = 0.02$ [0=do not receive assistance, 1=receive assistance]) and BMI ($r = 0.23$, $P = 0.02$) were significantly associated with food insecurity. Subsequently, hierarchical linear regression analyses revealed that food insecurity was inversely related to receiving supplemental nutrition SNAP assistance benefits ($\beta = -0.21$, $P = 0.02$) and positively related to BMI ($\beta = 0.21$, $P = 0.02$). The study also found that promoting healthy eating and lifestyles among populations with limited resources warrants strong partnership across agencies in communities. Network analysis serves as a useful tool to evaluate community partnerships and facilitate coalition building. To-date, two manuscripts have been published, one manuscript is “in press” and one poster presentation has been made on this study. The estimated date of completion for this study is August 2018.

Funded Study #5: The Influence of Policy, System and Environmental Nutrition Education Intervention on Dietary Quality at Diverse Low-Income Childcare Provider Settings: PI: Earnesty

Fifty-two in-home childcare providers are involved in this study. Fifty pre-observations and 31 post observations of snack and lunch have occurred with trained research assistants. The data collected includes a written, detailed description of each food and beverage served as well as the portion size. Data analysis of the baseline data has been completed. Two poster presentations have been made on the results of the baseline data. Post-intervention data collection and post-intervention statistical analysis are ongoing. The estimated date of completion is August 2018.

Funded Study #6: Food and Activity Environment Perceptions among SNAP-Ed and EFNEP Participants in the North Central region: PI: Katare

All states in the North Central Region are involved in this study to assess the perceptions of low-income individuals on their food and physical activity environment. Approximately 600 surveys have been completed. Data collection and analysis will continue into 2018.

THE RNECE CENTERS: Northeast Region

The Northeast RNECE at Cornell University was in the Division of Nutritional Sciences. The *mission* is to promote a culture of health among low-income populations by bringing researchers and program implementers together to engage in sound intervention research congruent with implementation and dissemination science. *The primary goal* is to expand the evidence base that supports effective nutrition education of diverse low-income program participants delivered in conjunction with policy, systems, and environmental (PSE) approaches that make healthy choices easier in order to prevent obesity.

Progress on RNECE Objectives

1. Strengthen the evidence-base on effective nutrition education/obesity prevention programs for diverse population groups – i.e. identify and confirm what works. Two of the Center's three initiatives supported this objective by investigating the combined effects of direct nutrition education and PSE strategies. The signature research program consisted of the five interventions. Three of the interventions examined the *additive* effects of combining direct nutrition education and PSE strategies, as compared to direct nutrition education or PSE strategies alone. The other two interventions employed combined direct education and PSE approaches. The systematic review was designed to identify and evaluate empirical research designed to differentiate the additive effect of combined direct nutrition education and PSE strategies to prevent obesity from the effect of either approach delivered alone. Given the resource intensity of combined nutrition education and PSE efforts, it is important to understand if this combination has a value-added effect.

2. Evaluate the long-term effectiveness of nutrition education/obesity prevention interventions for disadvantaged and underserved populations and opportunities for new research. Four of the signature research projects were funded in June of 2015 for one

RNECE NORTHEAST REGION TEAM

Jamie Dollahite, PhD

Director
Cornell University

Karene Booker, MS

Program Manager
Cornell University

Tisa Fontaine Hill, MPH

PSE Specialist
Cornell University

Jeff Niederdeppe, PhD

Communications Specialist
Cornell University

Joan Doyle Paddock, PhD, RD

Program Specialist
Cornell University

Deborah Sellers, PhD

Evaluation Specialist
Cornell University

Christina Stark, MS, RD

Leader of Cornell NutritionWorks
Cornell University

Stakeholder Committee (see appendix)

Provided advice on proposal

Research Committee (see appendix)

year, with the plan of continuing funding for an additional year. The overall RNECE Initiative funding was terminated earlier than expected, thus these funded projects could not be renewed. Projects of this complexity take several months to recruit participants, so no longitudinal data could be collected in such a short time frame. *Adopting Healthy Habits*, received some internal funding that allowed it to continue for a second year. Final data were collected in June 2017 and are currently being analyzed.

3. Identify and create research collaborations and synergistic relationships among researchers and EFNEP/SNAP-Ed program directors, universities and other implementers, and state and federal agencies.

The NE-RNECE identified possible research collaborations between EFNEP/SNAP-Ed program directors and university researchers through the responses to the original request for applications (RFA) for the signature research program. Ten applications, representing eight states in the region, were submitted. While there is no evidence the unfunded proposals created sustainable program-research relationships, the five funded projects did. In addition, both the Center's Steering Committee and Stakeholder Committee provided the opportunity for relationship building among EFNEP and SNAP-Ed state-level staff, and between SNAP-Ed implementing agency staff and researchers. The Research Committee built awareness of EFNEP and SNAP-Ed programming and research being conducted on these programs.

4. Enhance the impact of state and community nutrition education and obesity prevention efforts by providing the public health-related training and evidence that practitioners need for improving nutrition and health behaviors, environments, and policies in ways that are equitable, efficient, and sustained over time.

The NE-RNECE has been the lead Center contributing to this objective, working in close collaboration with the RNECE PSE Change Center and the Nationwide Training Workgroup. The training modules developed will meet the needs of nutrition education practitioners new and seasoned to PSE approaches. They will be useful to supervisors of these educators and state leaders. Building the capacity of staff to use multiple integrated strategies will increase the reach and effectiveness of programs in meeting goals to improve population health. The training will be

available on eCornell, a professional development website maintained through Cornell University which will ensure its sustainability beyond the existence of the NE-RNECE. The EFNEP and SNAP-Ed practitioners will be charged a reduced rate of \$100 for the six-module course. Links to the course will be provided on all relevant websites including those for NIFA's RNECE and Snap-Ed Connection.

Progress on RNECE-NE Key Initiatives

Signature Research Program

The goal of the signature research program was to investigate whether the combination of direct nutrition education and PSE changes have greater impact on dietary intake and physical activity than either strategy alone. The five research projects included under this initiative encompassed variation in race, ethnicity, and cultural contexts of the target audience and locales where they live, as well as variation in methods of delivery of the intervention and the federal program through which they were delivered: two projects were implemented in SNAP-Ed, three projects were implemented in EFNEP; three projects were conducted in urban settings, one project was conducted in a suburban setting, and one project was conducted in a rural setting at two sites within micropolitan areas; one project was a randomized controlled trial (RCT) and four projects used quasi-experimental designs.

The projects are now complete, except for final data analyses for the one project that received a second year of funding: *Adopting Healthy Habits*. Presentations on all five projects have been done at the Association of SNAP Nutrition Education Administrators (ASNNA), the Tri-Regional SNAP-Ed Conference, EFNEP National Conference, National Health Outreach Conference, Society for Public Health Education, Society for Nutrition Education and Behavior, American Society for Nutrition, and Experimental Biology.

Continuation Activities and Timeline: Data analyses will be completed for the *Adopting Healthy Habits* project during the no-cost extension year, with at least one peer-reviewed manuscript submitted for publication. The projects plan to submit manuscripts in 2017-18



to journals. One project presented a poster at the International Nutrition Conference in October 2017.

Systematic Review

The research question for the systematic review is, *What is the evidence for the effectiveness of combining direct nutrition education (DNE) with PSE changes, compared to either of these strategies alone, on weight status and food and nutrition behaviors related to obesity prevention?*

The systematic review workgroup includes members of the NE-RNECE leadership staff, others at Cornell University, and representatives of the Steering Committee. The workgroup management team met weekly and

coordinated monthly meetings of the larger workgroup. The management team was responsible for planning, organizing, and guiding the review.

The criteria for including articles in the systematic review used the following PICO strategy:

- **Problem (Domain)** – Prevention of obesity and unhealthy weight gain
- **Population** – Non-clinical, community-dwelling adults and children 2+ years in middle and high-income countries, as defined by World Bank
- **Intervention** – In a RCT or quasi-experimental design, but incorporate both a 1) single PSE or DNE component and 2) a combined PSE and DNE approach

- Comparison – Allows for comparison of combined PSE-DNE approach to either PSE or DNE alone
- Outcomes – Weight status and/or food and nutrition behaviors

The review protocol was registered with International Prospective Intervention Comparison Outcomes (PROSPERO) and the search of 13 databases was completed. The overall search identified 12,948 articles for possible inclusion in the review. Title and abstract screening has been completed, full text screening is in progress, and data extraction of currently included articles has begun.

Following data extraction, a risk of bias assessment for each study will be conducted using modified Cochrane instruments. Finally, the body of evidence will be assessed using the Grading of Recommendations, Assessment, Development, and Evaluations (GRADE) approach and findings will be disseminated via a peer-reviewed manuscript and conference presentations. Screening, extraction, and assessment activities were completed in 2017. Conference presentations and submission of a peer-reviewed manuscript are expected summer 2018.

Nationwide Training Program: *Making the Healthy Choice the Easy Choice: An Introduction to Policy, Systems, and Environmental Approaches to Promote Healthy Eating and Physical Activity.* A nationwide assessment of PSE training needs was conducted by the

NE-RNECE in 2016. A total of 600 SNAP-Ed and EFNEP professionals representing 56 states and territories responded. Results from this assessment, along with the RNECE-PSE Change Center’s list of PSE Competencies for SNAP-Ed Coordinators based on their Developing a Curriculum (DACUM) results, are being used to inform the development of a six module training course. The competency-based training program will be delivered through the online eCornell platform, and a certificate of completion that can be used for continuing professional education credit will be offered through Cornell NutritionWorks. The asynchronous online training is designed to be interactive, providing activities and self-assessments of understanding after every 10-15 minutes of content, along with a graded online test at the end of each module. The PSE Change Center SNAP-Ed PSE Interactive Map, which includes videos of PSE case examples, will be linked as enhancements to the content.

Development of the training modules is led by the RNECE Nationwide Training Workgroup in collaboration with the PSE Change Center with members representing all RNECE centers. Content for each module is under development. Module 1 was piloted in September 2017. The full training will be completed and ready to be released by March 2018.

THE RNECE CENTERS:

South Region

RNECE South at the University of North Carolina (UNC) at Chapel Hill equipped SNAP-Ed and EFNEP implementing agencies in the creation a culture of wellness where program participants experience measurable improvements in their health, nutrition, and physical activity through multiple strategies including nutrition education and public health approaches. The RNECE-South has promoted nutrition education and PSE change through Faithful Families Signature Project and Innovation Sub-Awards; research in social media interventions for EFNEP and healthy retail interventions for SNAP-Ed; and online training opportunities and SNAP-Ed Obesity Prevention Toolkit website development.

Progress on RNECE Objectives

RNECE Initiative Objective 1. Strengthen the evidence-base on effective nutrition education/obesity prevention programs for diverse population groups. RNECE-South administered four pilot awards to strengthen the evidence-base for nutrition education and obesity presentation programs. All are complete. Technical expertise for the implementation of the three Signature sub-awards was provided and each sub-awardee was reviewed to ensure implementation as designed. The three Signature sub-awards all focus on implementation of the Faithful Families Intervention: University of Arkansas – Faithful Families: Implementation and Outcome Evaluation of Paraprofessional and Volunteer Delivery Methods; University of Florida – Building Faith through Health in the Community and Online; University of Tennessee-Knoxville – Faithful Families in Tennessee: Improving the Health of Low-Income Faith-Based Audiences. The innovation sub-award went to University of Georgia for evaluation of online nutrition education eLearning program tailored to SNAP-Ed eligible adult Georgians

RNECE-South is also conducting internal research. In 2016, the Center for Health Promotion and Disease Prevention (HPDP) team adapted a previously tested healthy retail

RNECE SOUTH REGION TEAM

Alice Ammerman, DrPH

Co-Director and Principal Investigator
UNC-Chapel Hill

Lorelei Jones, M.Ed.

Co-Director and EFNEP Specialist
North Carolina State University

Dr. Molly DeMarco, PhD, MPH

Co-Investigator and Evaluation Specialist
UNC-Chapel Hill

P. Carolyn Dunn, PhD, RD, LDN

Co-Investigator and EFNEP/SNAP-Ed Specialist
North Carolina State University

Daniella Uslan, MPH

SNAP-Ed Specialist
UNC-Chapel Hill

Annie Hardison-Moody, PhD

Signature Program Specialist (Faithful Families)
North Carolina State University

Emily Foley, MS

Social Media Implementation Specialist
North Carolina State University

intervention, Baltimore Healthy Stores, in three rural counties in North Carolina. Entitled “Eat Well Be Well” this five-phase environmental intervention aimed to address obesity by increasing access to and purchasing of healthy food items in convenience stores. Each phase was four weeks long and promoted one message and corresponding healthy food choices available in the store. The program also provided an opportunity to try a healthy recipe utilizing promoted foods. An intervention guide describing best practices and lessons learned from

Eat Well Be Well is currently under development, with a focus on tips for using SNAP-Ed funds to launch healthy retail interventions in rural settings. This guide will be disseminated on the SNAP-Ed Toolkit Website as well as other relevant websites.

RNECE-South has already provided guidance through webinars, briefs, and presentations on implementation of healthy retail interventions that incorporate behavioral economic nudges and use of funds within SNAP-Ed guidance. Technical assistance will continue to be provided as requested.

RNECE Initiative Objective 2. Evaluate the long-term effectiveness of nutrition education/obesity prevention interventions for disadvantaged and underserved populations and identify opportunities for new research. RNECE-South has developed and launched an interactive SNAP-Ed Toolkit Website informed by nearly 10 years of work in developing and implementing the Center for Training and Research Translation. The SNAP-Ed Toolkit incorporates a searchable directory of reviewed evidence-based interventions and the SNAP-Ed Evaluation Framework. The Evaluation and Toolkit portions are linked to ease use by SNAP-Ed Implementing Agencies. Outreach and education on how to navigate the site continues. RNECE-South has integrated training resources into the Toolkit from all centers within the RNECE Initiative. This will be an ongoing effort to add training resources from the RNECE Initiative as they are completed. RNECE-South is working with FNS staff to determine the most effective way to partner in terms of reviewing new interventions to determine those that are evidence-based and thus will be added to the Toolkit.

RNECE Initiative Objective 3. Identify and create research collaborations and synergistic relationships among researchers and EFNEP/SNAP-Ed program directors, universities and other implementers, and state and federal agencies. RNECE-South is an example of an EFNEP/SNAP-Ed collaboration as one of the Co-Directors leads EFNEP for North Carolina and the other is on the National SNAP-Ed Advisory Board. RNECE-South has collaborated with all RNECE Initiative Centers, Public Health Institute, Association of SNAP Nutrition Education Administrators, Nutrition and Obesity Policy Research Evaluation Network, and SNAP-Ed/SERO (our SNAP-

Ed Region) to create partnerships around training and development of tools to assist with the implementation of evidence-based interventions within SNAP-Ed and EFNEP. This includes participating in RNECE Initiative PSE and Training Working Groups and in the development of SNAP-Ed Toolkit including review of new interventions. RNECE-South also participates in the Southeastern Consortium for Research in Food Security, which is coordinated out of the University of South Carolina and includes involvement from Robin Bailey and other staff from SERO.

With RNECE and Center for Behavioral Economics and Healthy Food Choice Research (BECR) funding, RNECE-South has presented at conferences and on webinars information for how SNAP-Ed and EFNEP implementers and researchers may work together. A presentation was made at the 2017 Society for Nutrition Education and Behavior on this topic. A brief on this topic is in preparation through BECR and will be disseminated on the SNAP-Ed Interactive Toolkit Website and other outlets via the RNECE Initiative.

RNECE Initiative Objective 4. Enhance the impact of state and community nutrition education and obesity prevention efforts by providing the public health-related training and evidence that practitioners need for improving nutrition and health behaviors, environments, and policies in ways that are equitable, efficient, and sustained over time. RNECE-South has developed or co-developed and presented the following six webinars to train SNAP-Ed and EFNEP implementers. All of this content has been migrated to the Interactive SNAP-Ed Toolkit Website, which will be maintained past the life of the RNECE Initiative.

RNECE-South

- Behavioral Economics in the Healthy Retail Environment: Working Within the SNAP-Ed Context
- Strengthening Outcomes Through Collective Impact
- PSE Change Measurement & Reporting
- Policy, Systems, and Environmental (PSE) Change in SNAP-Ed and EFNEP Programs

Collaborating with Public Health Institute (PHI):

- PHI Southeast Learning Community: Incorporating Farmers Markets and Community Gardens (D. Uslan, presenter)

- PHI Southeast Learning Community: Best Practices Webinar - Childcare and School Wellness

The goal of the Social Media Communications Guidance project is to develop, implement, and evaluate a social media toolkit designed to provide guidance to SNAP-Ed and EFNEP implementers using social media campaigns to enhance program goals. Three research phases were planned to accomplish program goals: (1) content analysis of existing North Carolina EFNEP social media communications to identify promising social media strategies for engaging participants, (2) conduct a survey to better understand the social media use of EFNEP participants, (3) development and evaluation of a website, informed partially by phases one and two, to be used by EFNEP and SNAP-Ed staff to conduct effective social media campaigns to augment existing programming. Phase 1: Content analysis is completed. Findings were presented at the Annual Society of Behavioral Medicine Meeting (April 2016) and the final phases of manuscript development are underway (see details in abstract #1). Phase 2: 180 surveys were distributed to EFNEP participants in nine North Carolina counties and responses were collected from 51 (see details in abstract #2). Phase 3: A beta version of the website has been developed. Four EFNEP programs were recruited to create social media campaigns using the website. Structured interviews were conducted with administrators of programs to evaluate the usability and acceptability of the website. A website evaluation survey was distributed in late July 2017 to 75 EFNEP administrators and 23 responses were received. Preliminary data from this survey and the interviews are presented in abstract #3 but additional responses are expected to be collected prior to publication of the data.

Progress on RNECE-South Key Initiatives

As one cog in the RNECE Initiative wheel, the RNECE-South made contributions in the following areas *‘to improve the health of low-income Americans by fostering a culture of health through multiple strategies, including nutrition education and complementary public health approaches implemented at each level of the socio-ecological framework through policy, systems and environmental changes’*: Developed, launched, and promoted an interactive



SNAP-Ed Toolkit Website; adapted and tested a healthy corner store intervention (Baltimore Healthy Stores) for a rural setting and within SNAP-Ed guidance and currently assembling an implementation guide; administered three Signature and one Innovation sub-award; developed Social Media Communications Guidance Materials; developed/co-developed and conducted webinars; and collaborated with all centers within the RNECE Initiative.

Healthy Retail. RNECE-South has completed a full draft of the guidance for use of the rural-adapted Baltimore Healthy Stores intervention. RNECE-South is weaving in guidance for use specifically by SNAP-Ed Implementing Agencies. This includes a discussion of allowable and unallowable costs and how to adapt the intervention for rural settings. In addition, leveraging the SNAP-Ed and Duke-UNC USDA Center for Behavioral Economics and Healthy Food Choice Research (BECHR) funding to complement our RNECE funds, RNECE-South is currently testing three more behavioral economics strategy interventions within three convenience stores and one grocery store. Over the coming year, sales data and data from customer-intercept and store manager interviews will be analyzed and a report of findings will be compiled. There are plans to roll out those interventions shown to have some success in full-service grocery stores with a high proportion of SNAP recipients as customers over the next year.

SNAP-Ed Toolkit Website. RNECE-South is continuing to improve the features and offerings on this website. Over the No-Cost-Extension year, Google Analytics statistics will be reviewed monthly to learn more about visitor experience. A pop-up survey will be administered on the website to learn the following:

- What visitors are seeking;
- Whether visitors find what they are seeking;
- How to improve site navigation.

Further, so that RNECE-South may better collaborate with the RNECE-PSE Center on the SNAP-Ed Interactive Map, a feature will be added to the Toolkit Website to allow compilation of ‘Setting-specific’ interventions that correspond to those settings featured on the Map:

- Community gardens
- School gardens
- Farmers markets
- Corner stores
- Faith based organizations

RNECE-South will continue to work with Food and Nutrition Service (FNS) to identify and add training resources developed through the RNECE Initiative to this website. They will seek funding to continue to be a part of the process for review of new interventions, template of positively reviewed interventions, and addition to the website with appropriate tagging of search terms and links to the Evaluation Framework. RNECE-South will continue to serve on working committees regarding SNAP-Ed training, and Evaluation Framework updates and enhancements.

Webinars. RNECE-South will develop and conduct one additional webinar as needed over the course of the no cost extension year. This will likely relate to the continued behavioral economics in retail settings work.

Signature Research Sub-awards. Future plans are to convene each of the implementers to review the findings across three projects and develop a journal article for submission. The timeline has not yet been established, but anticipate paper submission in 2018.

Social Media. RNECE-South will collect additional website evaluation survey data and complete data analysis for

Phase 3. RNECE-South will present findings at the National EFNEP Conference in 2018. RNECE-South is in the final phases of manuscript development and expect to have a manuscript submitted in 2018.

Photo 1. SNAP-Ed Toolkit Website



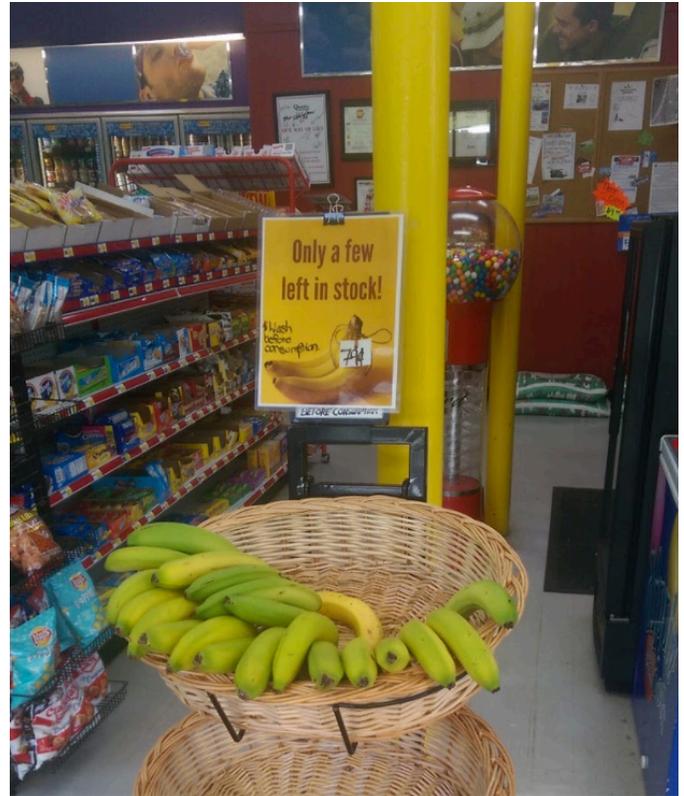
Photo 2. SNAP-Ed Toolkit RNECE Resources



Photo 3. Food demo and taste testing as part of the Eat Well Be Well Healthy Retail intervention



Photo 4. 'Scarcity' intervention to incorporate behavioral economics nudge testing into a retail setting



THE RNECE CENTERS:

West Region

RNECE West at Colorado State University has a focus on serving the Hispanic population, the largest and fastest growing population served by EFNEP and SNAP-Ed programs in the NIFA Western Region. The overall goals for the RNECE-West are to provide long-term evaluation of nutrition education programs, develop and promote novel approaches to nutrition education and environmental change, and support healthy behavior change for EFNEP and SNAP-Ed participants. RNECE-West is committed to disseminating research opportunities and findings to the professional nutrition network, including colleagues in the fields of nutrition education and public health.

Progress on RNECE Objectives

Objective #1: Strengthen the evidence-base on effective nutrition education/obesity prevention programs for diverse population groups. *EFNEP Adult Evaluation Tool Validation* has contributed to the reliability and validity testing of new evaluation questions for the EFNEP program nationally. *Sugar Sweetened Beverage Intake among EFNEP Participants: An Evaluation of the National EFNEP Database* has found that participation in EFNEP reduced the consumption of sugar-sweetened beverages among low-income adult participants. *Long-Term Follow-Up Evaluation of Eating Smart • Being Active* is researching the long-term impact (6 and 12 months post-graduation) of a nationally used direct education curriculum among adult EFNEP audiences on self-reported behaviors and biometric measurements including blood pressure, HbA1C, and BMI. *Food Pantry Environmental Scan* has developed a toolkit, including a validated healthy food pantry assessment tool (E-Scan), implementation guide, webinar and resource guide, for use by food pantries and their SNAP-Ed/EFNEP partners. *Testing of Mediums to Reach Program Graduates Long-Term* has discovered the most effective methods of following up with EFNEP and SNAP-Ed direct education graduates

RNECE WEST REGION TEAM

Susan Baker, EdD

Director
Colorado State University

Karen Barale, MS, RD, CD, FADA

Co-Director
Washington State University

Dr. Garry Auld, PhD

Evaluation Specialist
Colorado State University

Katie McGirr, MS, RD

Center Manager
Colorado State University

Carrie Durward, PhD

PI Longitudinal Research Study
Utah State University

for the purposes of long-term follow-up evaluation.

Secondary Analysis of EFNEP National Data team members have cleaned and formatted a national EFNEP data set covering 8 years with 500,000 matched pairs that is now available to other researchers. National data showed that pre to post gains on the Behavior Checklist and 24 hour recall were positive and consistent across year and state, suggesting that EFNEP continues to be an effective influence on participant's behaviors. Analysis also suggests the need for new evaluation tools that are more representative of current dietary and physical activity guidelines. *Youth Participatory Action Research (YPAR) Projects: Nutrition, Physical Activity, Empowerment* research team from Public Health Institute developed an Evaluation Toolkit and Data Collection Guide to explain the evaluation and data collection process, provide instructions for the completion of the forms, and

enable local project sites to document the activities and outcomes of a Y-PAR project in their community.

Objective #2: Evaluate the long-term effectiveness of nutrition education/obesity prevention interventions for disadvantaged and underserved populations and opportunities for new research. *Long-Term Follow-Up Evaluation of Eating Smart • Being Active* is researching the long-term impact (6 and 12 months post-graduation) of a direct education curriculum on self-reported behaviors and biometric measurements including blood pressure, HbA1C, and BMI among adult EFNEP participants.

Testing of Mediums to Reach Program Graduates Long-Term has discovered the most effective methods of long term following up with EFNEP and SNAP-Ed direct education adult graduates. *EFNEP Evaluation Tool Validation* has contributed to the testing of new evaluation for the EFNEP program nationally to determine validity and reliability. *Evaluation of a novel, low-cost, low-burden, scalable technology for evaluating EFNEP and SNAP-Ed Effectiveness* project pilot-tested an innovative technology for assessing grocery store purchases. *Multi-disciplinary methods for effective, sustainable, and scalable evaluations of nutrition education programs* (RNECE Longitudinal Research Study, Utah State University) goal is to develop two effective, rigorous, and sustainable tools that can be used in the future to evaluate the effectiveness of EFNEP and SNAP-Ed over the long-term. *Sugar Sweetened Beverage Intake among EFNEP Participants: An Evaluation of the National EFNEP Database* has found that participation in EFNEP reduced the consumption of sugar-sweetened beverages among adults, which are significant contributors to overweight and obesity. *Secondary Data Analysis* using national data showed that pre to post gains on the Behavior Checklist and 24 hour recall were positive and consistent across year and state, suggesting that EFNEP continues to be an effective influence on participant's behaviors.

Objective #3: Identify and create research collaborations and synergistic relationships among researchers and EFNEP/SNAP-Ed program directors, universities and other implementers, and state and federal agencies RNECE-West sub-awardees are Utah State University/University of Utah and University of Alaska Fairbanks. The Steering and Advisory Committees have 28 people from various NIFA Western Region states



including researchers and program implementers from universities, public health departments, federal nutrition programs, state SNAP-Ed directors, EFNEP Coordinators, and SNAP-Ed implementing agencies. They partnered through participation on 1 of 3 RNECE-West committees (steering committee, nutrition education advisory committee, PSE advisory committee). Validation testing of questions for the new evaluation tool for EFNEP involved collaborating with 34 states. Testing of Mediums to Reach Program Graduates Long-Term, EFNEP staff members from West Virginia, Kentucky, and Colorado were involved in this research project. The Food Pantry Environmental Scan project involved collaborators from EFNEP, SNAP-Ed, food pantries and food banks from many states, as well as government agencies and universities. Environmental Support Activities included EFNEP front-line educators from 10 states. Multi-disciplinary methods for effective, sustainable, and scalable evaluations of nutrition education programs (RNECE Longitudinal Research Study, Utah State University) involves researchers from 7 states. In addition, a presentation was made at the SNAP Directors Meeting.

Objective #4: Enhance the impact of state and community nutrition education and obesity prevention efforts by providing the public health-related training and evidence that practitioners

need for improving nutrition and health behaviors, environments, and policies in ways that are equitable, efficient, and sustained over time. A RNECE-West research team member participated in the RNECE Nationwide Training Work Group with the Northeast Center. This team member was the author of module 4, Creating PSE Action Plans. Training Webinar was developed for using the Healthy Food Pantry Assessment Tool, training protocols for collecting biometric data for the Long-Term Follow-Up Evaluation of *Eating Smart • Being Active*, and training modules for conducting cognitive interviews as part of the work with the EFNEP Evaluation Tool Validation project. The Public Health Institute developed an Evaluation Toolkit and Data Collection Guide to support Youth Participatory Research (YPAR) Projects.

Progress on RNECE-West Key Initiatives

The RNECE-West received a one-year, no-cost extension to complete specific projects. The following activities will be completed during that year:

Long-Term Follow-Up Evaluation of Eating Smart • Being Active. As proposed, RNECE-West planned to assess impacts on EFNEP participants at 6 and 12 months post-graduation. Objective biometric data (Body Mass Index, Blood Pressure, and Hemoglobin A1c) will be collected at pre, post, 6 and 12 months post. As of the date of this report, RNECE-West has collected the following on EFNEP participants in Colorado and Washington: pre-data on 127 people; post-data on 106 people; and 6-month post-data on 60 people. During the no-cost extension, center staff will complete both the 6-month and 12-month post-data collection including objective, biometric measures, analyze the data, and begin writing manuscripts for publication. Outcomes of this project will be used as pilot data to apply for grant funding that will allow scaling the study up for a larger sample size. Manuscripts will be submitted for publication once all data is collected and data analysis is complete.

Food Pantry Environmental Scan. As of the date of this report, RNECE-West has pilot tested, revised and field tested a Healthy Food Pantry Assessment Tool (environmental scan) in seven Western Region and three Northeast Region states; developed a webinar,

implementation guide and resource guide to support use of the Assessment Tool. During the no-cost extension, Center staff will complete data analysis from the field testing, finalize the assessment tool, complete graphic design of the resource guide, record the implementation webinar to reflect changes based on the data analysis, disseminate the Toolkit and draft and submit three journal articles, and present the resource guide validation process at the Academy of Nutrition and Dietetics Food and Nutrition Conference and Expo in October 2017 in Chicago.

Environmental Support Activities. All data is collected and analyzed. A manuscript is being prepared for publication submission.

EFNEP Adult Evaluation Tool Validation in Conjunction with NC2169 and the EFNEP Evaluation Tool Validation Committees: NC2169 is an Agricultural Experiment Station multi-state research project that is developing a new questionnaire for use nationally by EFNEP to assess behavior changes among adult program participants in five domains - nutrition, food security, food resource management, food safety, and physical activity. RNECE-West is collaborating on the validation of items assessing the nutrition, food security and food resource management domains. As of the date of this report, RNECE-West has completed data collection for nutrition and food security questions for the validation efforts. During the no-cost extension, Center staff will collect and analyze sensitivity data for the nutrition, food security, and food resource management questions; complete data analysis for validation for food security questions; and conduct in-depth interviews to confirm food resource management (FRM) behaviors of participants after they complete EFNEP lessons. Three manuscripts have been published. A food security and food resource management domains manuscript will be prepared.

Testing of Mediums to Reach Program Graduates Long-Term: All research activities are complete and data collected. Data will be analyzed during the no-cost extension. A manuscript will be drafted once data analysis is complete.

Sugar Sweetened Beverage Intake among EFNEP Participants: An Evaluation of the National EFNEP Database: A manuscript will be submitted for publication based on the outcomes of this project.

RNECE Longitudinal Research Study: *Multi-Disciplinary Methods for Effective, Sustainable, and Scalable Evaluations of Nutrition Education Programs*

Objective 1 QualMART: Continuation activities include: continuing to recruit participants, receiving data from grocery store partner, processing and analyzing the data, and disseminating results.

Objective 2 ASA24: During the no-cost extension, a field feasibility study will be conducted. Three states (CO, ME, TN) will collect feasibility data while using the ASA24 in the field with their EFNEP programs. Classes will be

randomly assigned to use either the paper and pencil recall or the ASA24 at baseline/pre and the opposite method at endpoint/post. Each state will recruit four educators to participate in this study with a minimum of 10 participants for each state. Qualitative and quantitative survey data from both participants and educators will be collected after each method of administration.

Also under the continuation, the FEAST II study, which looks at the validity of using ASA24 in SNAP-eligible participants, will be completed. Continuation activities include final data analysis steps, report preparation, and dissemination of results.



THE RNECE CENTERS: Policy, Systems, and Environmental Change Center

The PSE Change Center at University of Tennessee focused on training and empowering SNAP-Ed and EFNEP networks to effectively implement PSE approaches to support healthy lifestyles for limited resource audiences where they work, live, and play. Research shows targeting multiple levels of societal influence in conjunction with direct education to be a sustainable effort towards obesity prevention.

RNECE-PSE is finalizing a situational analysis of SNAP-Ed and EFNEP programs to identify facilitators, barriers, best practices, training and evaluation needs related to PSE adoption and implementation. Development of systematic competency-based PSE instruction, guidelines, and resources that are tailored to the needs of SNAP-Ed and EFNEP coordinators and community educators are underway. Included in these resources are tailored readiness to change resources to strengthen SNAP-Ed and EFNEP organizational, community, and neighborhood coalition efforts to implement PSE strategies and an intercultural framework to increase intercultural competence in SNAP-Ed and EFNEP PSE implementation.

Progress on RNECE-PSE Aims

Aim 1. Complete a situational analysis. RNECE-PSE completed all components of the situational analysis including 1. a Delphi study of SNAP-Ed and EFNEP PSE training needs, 2. an environmental scan of PSE free and accessible web-based trainings, and 3. Two Developing a Curriculum (DACUM) workshops for both SNAP-Ed and EFNEP coordinators to analyze duties and tasks needed to effectively implement PSE approaches in either program. These resources can be accessed at Snapedpse.org. A manuscript featuring the Delphi study is under review.

Aim 2. Adapt readiness to change resources to strengthen SNAP-Ed and EFNEP efforts to implement PSE strategies. RNECE-PSE worked with SNAP-Ed

RNECE POLICY, SYSTEMS, AND ENVIRONMENTAL CHANGE CENTER TEAM

Laura Stephenson, PhD
Director
University of Tennessee

Marsha Davis, PhD
Associate Director
University of Georgia

Karen Franck, PhD
Associate Director
University of Tennessee Extension

coordinators from Florida, Guam, Indiana, Oklahoma and South Carolina to adapt and validate the Collaboration Readiness survey, a tool that gauges a partner's readiness to collaborate and can be used with SNAP-Ed coordinators, educators and community partners to carry out PSE change activities with diverse groups. A web-based interactive version was piloted during the Society of Nutrition Education Behavior (SNEB) preconference. In addition, a short learning module was scripted and filmed to be housed on the website.

Aim 3. Create a framework and provide resources to increase intercultural competence in SNAP-Ed and EFNEP PSE implementation. An intercultural competence development continuum was presented at the SNEB preconference along with experiential learning using Intercultural Development Inventory (IDI) as an evaluation tool to gauge development toward intercultural mindset. A short learning module to increase effectiveness of working with diverse groups within SNAP-Ed and EFNEP programs has been scripted and filmed.



Aim 4. Develop, disseminate, and evaluate systematic competency-based PSE instruction, guidelines, and resources including readiness to change and intercultural competence development that are tailored to the needs of trainees. An interactive webpage has been built to include a SNAP-Ed interactive map with various community settings, an interactive survey to assess agency and partner readiness to collaborate on PSE change approaches, and supporting resources. The website was launched in 2017. These settings include PSE interventions for healthy corner stores, farmers' markets, school and community gardens, and working in faith-based settings. In addition, RNECE-PSE continues to work with the National PSE Training Workgroup to develop and implement a PSE 101 certificate program.

Results of the EFNEP DACUM process were shared with the ENFEP PSE National Committee to finalize and build an EFNEP website as it relates to PSE. A website storyboard has been drafted and web developers are designing a prototype. The website will soft launch in the fall of 2018 and provide a springboard for the national

committee's work to support EFNEP programming from a socioecological approach to teach the dietary guidelines.

The RNECE-PSE Change Center sponsored the Food and Nutrition Extension Education preconference workshop at the Society for Nutrition Education and Behavior annual meeting in Washington, DC in 2017. This preconference was entitled "Next Steps in PSE: Effective Evaluation Methods in Policies, Systems, and Environmental (PSE) Interventions". One hundred thirty-four nutrition education professionals participated in the preconference. Presentations included assessing partner readiness, assessing intercultural competence, and an interactive session where participants shared ideas and strategies for developing evaluation plans for PSE interventions.

During the no cost extension time period RNECE-PSE will complete the launch of the SNAP-Ed interactive map that features learning modules related to implementation of PSE approaches in multiple settings within communities. This work will include video modules for the settings, intercultural development, and readiness for PSE implementation.

APPENDIX A:

RNECE Research Project Inventory

Research Project Inventory

	Center	Implementing Organization	Project Title	Projected End Date
1	North Central	University of Illinois	Phase 1 Evaluating a Multi-Modal Community Nutrition Education Model within SNAP-Ed and EFNEP	8/1/2016
2	North Central	University of Missouri	Eat Smart In Parks (ESIP): Youth Mapping and Photovoice to Inform Healthy Food Environments	6/31/2017
3	North Central	University of Illinois	Phase 2 Evaluating a Multi-Modal Community Nutrition Education Model within SNAP-Ed and EFNEP in Illinois and Michigan	8/31/2018
4	North Central	Michigan State University Extension	Influence of PSE on Dietary Quality at Diverse Low Income Childcare Settings	1/31/2018
5	North Central	Purdue University	A Longitudinal Randomized and Controlled Evaluation of the Integrated Impact of SNAP-Ed on Food Security and Obesity Prevention in Rural and Urban Counties	8/31/2018
6	North Central	Purdue University	Food and Activity Environment Perceptions Among SNAP-Ed and EFNEP Participants in the North Central Region	8/31/2018
7	North Central	Ohio State University	Summer Weight and Environmental Assessment Trial (SWEAT)	8/31/2018
8	Northeast	Hispanic Health Council	Nutrition Ed, Access and Texting (NEAT): Combining the Hartford Mobile Market with e-Marketing	9/30/2016
9	Northeast	Johns Hopkins University School of Public Health	Successful Youth-Leader Program as part of a Multi-Level, Multi-Component Food Environment, Behavioral Intervention	9/30/2016
10	Northeast	University of Maryland Extension	Transforming Lifestyles: Integrating Direct Nutrition Education with Physical Activity Using the Health Care System Expansion Model	9/30/2016
11	Northeast	University of Rhode Island	Empowering Urban Schoolchildren to Increase Fruit and Vegetable Consumption through EFNEP-enhanced PSE Interventions	9/30/2016

Research Project Inventory (continued)

12	Northeast	Cornell Cooperative Extension in Orange and Jefferson Counties	Adopting Healthy Habits in Worksites: Increasing Adoption and Acceptability of Policy, Systems, and Environmental Changes within Agencies Serving Low-income Families	3/31/2018
13	South	University of Tennessee	Faithful Families in Tennessee: Improving the Health of Low Income Faith-Based Audiences	6/30/2016
14	South	UNC Center for Health Promotion Disease Prevention Healthy Retail	Healthy Retail	8/31/2017
15	South	University of Florida	Building Faith Through Health in the Community and Online	2/28/2017
16	South	University of Arkansas	Faithful Families: Implementation and Outcome Evaluation of Paraprofessionals and Volunteer Delivery Methods in Low-income Faith Communities	2/28/2017
17	South	University of Georgia	Evaluation of online nutrition education eLearning program tailored to SNAP-Ed eligible adult Georgians	2/28/2017
18	South	North Carolina State University	Social Media Guidance Materials	6/30/2017
19	West	Colorado State University	Secondary Data Analysis	8/1/2016
20	West	University of Alaska Fairbanks	Sugar Sweetened Beverage Intake among EFNEP Participants - An evaluation of the National EFNEP Database	11/1/2016
21	West	Colorado State University	Two-Year Assessment of Youth Participatory Action Research - A PSE Intervention	9/1/2016
22	West	Colorado State University	Behavior Checklist Validation (Nutrition Domain)	8/31/2018
23	West	Utah State University	Multi-disciplinary methods for effective, sustainable, and scalable evaluations of nutrition education programs (RNECE Longitudinal Research Study, Utah State University)	8/30/2018
24	West	Utah State University	RNECE-West Subaward Evaluation of a novel, low cost, low burden, scalable technology for evaluation EFNEP and SNAP-Ed effectiveness	7/31/2017

Research Project Inventory (continued)

25	West	Colorado State University	Testing of Strategies to Reach Direct Education Participants Long-Term	2/1/2018
26	West	Colorado State University	Food Bank Environmental Scan	3/31/2018
27	West	Colorado State University	Long Term Follow Up Evaluation of Eating Smart Being Active	8/30/2018
28	West	Colorado State University	Developing Environmental Support Activities for Use in Conjunction with Direct Education	8/1/2017

APPENDIX B:

RNECE Project Abstracts

North Central: Phase 1 Evaluating a Multi-Modal Community Nutrition Education Model within SNAP-Ed and EFNEP

An R, Khan N, Loehmer E, McCaffrey J. Assessing the network of agencies in local communities that promote healthy eating and lifestyles among populations with limited resources. *Amer J Health Behav.* 2017; 41(2):127-138.

Objectives: The network of agencies in local communities that promote healthy eating and lifestyles among populations with limited resources were assessed. Methods: Network surveys were administered among one hundred fifty nine Illinois agencies identified as serving limited-resource audiences categorized into eight types: K-12 schools, early childhood centers, emergency food providers, health-related agencies, social resource centers, low-income/subsidized housing complexes, continuing education organizations, and others. Network analysis was conducted to examine four network structures – communications, funding, cooperation, and collaboration networks between agencies within each county/county cluster.

Results: Agencies in a network were found to be loosely connected, indicated by low network density. Reporting accuracy might be of concern, indicated by low reciprocity. Agencies in a network are decentralized rather than centralized around a few influential agencies, indicated by low betweenness centrality. There is suggestive evidence regarding homophily in a network, indicated by some significant correlations within agencies of the same type. Agencies connected in one network are significantly more likely to be connected in all the other networks as well. Conclusions: Promoting healthy eating and lifestyles among populations with limited resources warrants strong partnership across agencies in communities. Network analysis serves as a useful tool to evaluate community partnerships and facilitate coalition building.

Covello AR, Nikolaus CJ, Curran MR, Edwards CG, Baumgartner NW, Liu RH, Loehmer EA, McCaffrey JH, An RA, Khan NA. Examining the role of habitual physical activity in the food insecurity-obesity paradox. *FASEB J.* 2017;31(1):S791.26.

Food insecurity is among the most severe and persistent nutrition-related public health concerns in the U.S. Defined as the state of being without reliable access to affordable nutritious food, it is estimated that approximately 50 million Americans live in food-insecure households. Previous work indicates that, relative to their food secure counterparts, low-resource food insecure females are at greater risk for obesity. However, the contributing factors to this relationship remains unclear. Although an abundance of literature has focused on understanding the dietary factors related to food insecurity, there is a paucity of data pertaining to the potential role of physical activity. Specifically, the role of habitual physical activity in moderating the influence of food security status warrants further study. This is concerning because both diet and physical activity are vital contributors to weight regulation. Obesity is impacted by health behaviors, and is an important component in weight regulation. The literature often focuses on diet when investigating food security, often failing to incorporate physical activity. Therefore, this study aimed to investigate patterns of habitual physical activity in relation to weight status among food secure and food insecure low-resource women. Adult women

(N=113, Mean age = 35y) were recruited from rural counties in East-Central and Southern Illinois. Food security was measured using the USDA's Six-Item Short Form of the Food Security Survey Module. Anthropometric measurements of height and weight were used to determine Body Mass Index (BMI) (kg/m²). Diet intake was assessed using a 24-hr dietary recall using an automated multiple pass phone interview. Physical activity was assessed using the Global Physical Activity Questionnaire, as measured by total metabolic equivalents (METs). According to initial bivariate correlations, age, energy density, household size, and METs were not significantly related to level of food insecurity (all $P_s > 0.05$). However, receiving Supplemental Nutrition Assistance Program (SNAP) benefits ($r = -0.23$, $P = 0.02$ [0=do not receive assistance, 1=receive assistance]) and BMI ($r = 0.23$, $P = 0.02$) were significantly associated with food insecurity. Subsequently, hierarchical linear regression analyses revealed that food insecurity was inversely related to receiving supplemental nutrition SNAP assistance benefits ($\beta = -0.21$, $P = 0.02$) and positively related to BMI ($\beta = 0.21$, $P = 0.02$). While SNAP and BMI were both independently associated with food insecurity, the addition of total METs did not significantly improve the model. These findings are consistent with previous work suggesting that obesity is associated with food insecurity. However, the mechanism underlying this relationship may be independent of habitual physical activity and energy density. Future research is needed to investigate other aspects of diet quality, physical activity, and environmental and psychological factors to further elucidate the links between food insecurity and obesity.

North Central: Eat Smart In Parks (ESIP): Youth Mapping and Photovoice to Inform Healthy Food Environments

Title: Eat Smart in Parks: Youth Mapping and Photovoice to Inform Healthy Food Environments

Authors: Sonja Wilhelm Stanis, Cindy DeBlauw, Kimberly Keller, Natalie Hampton

Organization: University of Missouri

Objective: Interest in healthy food and beverage options in parks, recreation centers and public spaces is growing. The objective of this project was to strengthen the SNAP-Ed *Eat Smart in Parks* (ESIP) initiative which focuses on improving the healthfulness of menu choices that children have available in parks, by adding youth voice and engagement to the ESIP activities.

Design: A youth photovoice project was launched in 2015 to examine the food and beverage environment in and around their local park or recreation center. Youth shared their findings at community gallery events. A goal of the photovoice project was to help empower youth to make changes in their community.

Setting and participants: Four photovoice projects (two urban and two rural Missouri communities) were conducted with youth ages 10-17 ($n = 48$) from recreation centers and afterschool programs. Community members (i.e., community residents, policy makers, teachers, parents/guardians, parks and recreation staff; $n = 40$) were also included to assess impacts of the photovoice project and community gallery event.

Intervention: In a series of three workshops, youth took photos of their park food and beverage environment, developed captions describing their photos, and later discussed photos as a group, identifying overall themes they wished to address with the community and decision makers. Photos and themes were shared with the wider community at gallery event exhibitions.

Main Outcome Measures: Youth generated photos and corresponding captions. Questionnaires administered to youth before and after the photovoice projects assessed youth's perceptions of parks and community centers, food and nutrition, factors that influence their choices, and perceived leadership and empowerment. Questionnaires administered to youth and community members after the gallery event assessed perceptions of the project helping youth inform and make changes in their community.

Analysis: Youth developed captions and themes for the pictures they took of their park food and beverage environment. A content analysis was also conducted on the youth pictures. Questionnaires were descriptively analyzed, and paired t-tests were used to examine changes in youth perceptions.

Results: Themes identified by youth fell into three categories: healthy and unhealthy options (e.g., what is offered that is healthy or unhealthy; missed opportunities), advertising and other influences (e.g., trash), and access (e.g., sidewalks, cost). A total of 1515 pictures were taken and content analyzed. The most frequently coded themes fell under the broader categories of “food and drinks” (40%), “unhealthy” (39%), “place or built environment” (35%), and “advertisements” (27%).

After participation in the photovoice project, youth perceived greater importance of parks/community centers for health; greater desire to choose healthy food and drinks at parks/community centers; less satisfaction with the current snack choices offered; and greater recognition of the influence of ads. Youth strongly agreed that participating in the project changed the way they think about healthy eating, their community, and parks and recreation centers. They agreed that the gallery event helped them influence community members, and indicated intention to do more to encourage healthy eating in their community. Furthermore, community members indicated that they learned something new by attending the event, want to improve the availability of healthy foods in their communities, and think that it is important for youth to be involved in policy decisions.

Conclusions and Implications: Through their photos, youth documented many ways the environment surrounding parks and community centers did not support healthy food choices. Findings from this study demonstrate that photovoice projects examining park food environments not only help give voice to youth that may not typically be included in decision-making, but also increase perceived importance of healthy food environments in parks.

North Central: Phase 2 Evaluating a Multi-Modal Community Nutrition Education Model within SNAP-Ed and EFNEP in Illinois and Michigan

In Press: An R, Loehmer E, Khan N, Scott M, Rindfleisch K, McCaffrey J. Community partnerships in healthy eating and lifestyle promotion: A network analysis. *Prev Med Rep.* 2017 <http://dx.doi.org/10.1016/j.pmedr.2017.03.007>

Promoting healthy eating and lifestyles among populations with limited resources is a complex undertaking that often requires strong partnerships between various agencies. In local communities, these agencies are typically located in different areas, serve diverse subgroups, and operate distinct programs, limiting their communication and interactions with each other. This study assessed the network of agencies in local communities that promote healthy eating and lifestyles among populations with limited resources. Network surveys were administered in 2016 among eighty nine agencies located in four rural counties in Michigan that served limited-resource audiences. The agencies were categorized into eight types: K-12 schools, early childhood centers, emergency food providers, health-related agencies, social resource centers, low-income/subsidized housing complexes, continuing education organizations, and others. Network analysis was conducted to examine four network structures—communication, funding, cooperation, and collaboration networks between agencies within each county. Agencies had a moderate level of cooperation, but were only loosely connected in the other three networks, indicated by low network density. Agencies in a network were decentralized rather than centralized around a few influential agencies, indicated by low centralization. There was evidence regarding homophily in a network, indicated by some significant correlations within agencies of the same type. Agencies connected in any one network were considerably more likely to be connected in all the other networks as well. In conclusion, promoting healthy eating and lifestyles among populations with limited resources warrants strong partnership

between agencies in communities. Network analysis serves as a useful tool to evaluate community partnerships and facilitate coalition building.

Northeast: Nutrition Ed, Access and Texting (NEAT): Combining the Hartford Mobile Market with e-Marketing

*Damio G, Pérez-Escamilla R, Segura-Pérez S
Hispanic Health Council, Hartford CT and Yale School of Public Health, New Haven CT*

Objective: To assess the effects of combining nutrition education with produce vouchers and a text messaging campaign promoting fresh produce purchases at the Hartford Mobile Market (HMM) on access, purchase, and intake of fruits and vegetables.

Participants: Parents with children age 5 years or younger.

Design: All participants received a MyPlate SNAP-Ed direct education lesson and were randomly assigned to the intervention group (n=100) or control group (n=93). The intervention group received daily text messages for thirty days promoting the use of the HMM, as well as \$20 in HMM coupons as incentives. The control group received daily text messages about free public events in the city. Surveys were conducted at baseline and six weeks after enrollment. Participants were mostly female (96%), Hispanics (79%), and SNAP beneficiaries (80%). There were no between-group differences at baseline.

Results: The participants in the intervention group spent more on fruit weekly (\$42 vs \$30, p=0.027), were more likely to purchase fruits and vegetables at the mobile market (46% vs 23%, p=0.002), and consumed 0.33 more daily servings of fruit compared to the participants of the control group. The intervention group participants redeemed 67% of coupons received. HMM users were very satisfied with price and quality of the produce and customer service.

Conclusion: NEAT is a culturally sensitive social marketing intervention that led to improved access to and purchase of produce and consumption of fruits in an urban low-income community.

Northeast: Successful Youth-Leader Program as part of a Multi-Level, Multi-Component Food Environment, Behavioral Intervention

*Gittelsohn J, Trude A, Lachenmayr L
Johns Hopkins Bloomberg School of Public Health, Baltimore MD and University of Maryland Extension, Columbia MD*

Objective: To test a model to train teen leaders to deliver nutrition education to younger youth and act as spokespersons in social media as part of a larger B'more Healthy Communities for Kids (BHCK) trial that includes environmental changes in food stores, carry-outs, wholesalers, and recreation centers to improve healthy food access.

Participants: Youth leaders ages 15-18; caregiver/child (ages 10-14) dyads. Intervention: leaders n=13; dyads: n=133. Controls: leaders n=11; dyads: n=103. The setting was low-income areas near Baltimore City recreation centers, populated predominately by African-Americans.

Design: BHCK employed a group-randomized controlled trial design and recruited caregiver/child dyads in 14 neighborhoods (intervention n=7, control n=7). The youth leader component used a quasi-experimental

design. They were recruited and assigned to intervention and comparison groups based on availability. A train-the-trainer approach was employed, using content on building nutrition knowledge, food preparation skills, skill-based teaching methods, presentation skills, teamwork, and leadership. Youth leader teams were formed to act as spokespersons in BHCK social media, and deliver the SNAP-Ed and BHCK nutrition education in recreation centers, community corner stores, and carry-outs.

Results: Youth leaders showed more improvement in nutrition outcome expectations (i.e. expected health outcome from eating and drinking specific foods and beverages) compared to controls ($p=0.02$). Youth leaders who were more engaged with the intervention had significantly higher mean change of outcome expectancy compared to youth who did not participate in the youth leader program. For the younger youth receiving the nutrition education, energy and fat intake decreased more in the intervention group than the control group, but the study was underpowered to see significant differences.

Conclusion: Having older youth acting as role models in the context of a PSE approach improved youth leader psychosocial factors and leadership skills for those most involved. The approach shows promise for positively influencing dietary behaviors of children receiving the program. The BHCK nutrition curriculum is being disseminated through SNAP-Ed to other community organizations.

Northeast: Transforming Lifestyles: Integrating Direct Nutrition Education with Physical Activity Using the Health Care System Expansion Model

*Mehta M, Sankavaram K, Benoit-Moctezuma D, Song H-J, Ashburn L
University of Maryland Extension, College Park MD*

Objective: To test the effectiveness of engaging primary health care providers in assessing children's physical activity levels and providing information and referrals to physical activity resources and EFNEP.

Participants: The study engaged medical providers at seven clinic sites: intervention $n=12$; control $n=8$. Latino parent-child dyads (children ages 5-18; BMI = overweight/obese) were recruited: intervention $n=23$ children and their 23 adults/parents, control ($n=26$ children and 23 parents).

Design: Quasi-experimental with a convenience sample of participants assigned at the clinic level. All clinic sites screened children for overweight/obesity and referred at-risk families to EFNEP nutrition education, Eating Smart Being Active and Cooking Matters for Kids (Health Care System Model). In the intervention clinics, two physical activity screening questions were added to the clinical protocol and electronic record. In addition to BMI, providers screened at-risk children for physical activity (PA), provided age-appropriate PA tip sheets and a free/low-cost community resource list for PA (Health Care System Expansion Model). Data were collected at the beginning and end of the 6-week (12-15 hour) interventions.

Results: Providers in the experimental clinic sites found the screening protocol easy to use (<3 min), helpful in communication, and recommended routine use. Compared to control sites, providers more frequently discussed BMI & PA with parents. Overall, providers mentioned that of community programs, only EFNEP provided lifestyle intervention. Parents in the experimental sites found the screener provided an opportunity to ask questions and receive guidance. Compared to control sites, parents in the experimental group increased PA, though not significantly ($p=0.11$). There were also improvements in the Healthy Eating Index (HEI) reflecting the impact of EFNEP (control group $p=0.06$, intervention group $p=0.02$). Children: When comparing the intervention group to the control group, there was an increase in physical activity in older children and a decrease in screen time in younger children, however the study was underpowered to see significant differences. Altogether, the two

groups of children (n=49) experienced improvements in dietary intake reflecting the impact of EFNEP: increased vegetables (p<0.001), fruits (p<0.04), low fat foods (p=0.05) and healthy snacks (p<0.006). Several measures also indicated that children significantly decreased intake of sugar-sweetened beverages.

Conclusion: Overall, this study suggests that incorporating screening questions about physical activity as part of routine vital signs in healthcare settings provides a promising strategy for encouraging physicians to engage children and their parents in discussions regarding weight and sustainable physical activity. Time for additional participant enrollment would have improved statistical power and the potential for finding significant changes in PA.

Northeast: Empowering Urban Schoolchildren to Increase Fruit and Vegetable Consumption through EFNEP-enhanced PSE Interventions

*Sebelia L, Greene G, Mulligan K
University of Rhode Island, Providence, RI*

Objective: To test the effectiveness of an intervention to engage 5th grade students in activities to change their school food environment.

Participants: 5th grade students in the urban Pawtucket School District which has an average of 74% free/reduced price lunch participation. Intervention: 2 schools, n=142 students; Control: 2 schools, n=178 students.

Design: Quasi-experimental in which students were assigned to groups at the school level. In both schools, students received the standard SNAP-Ed Fresh Fruit and Vegetable Curriculum. Intervention school students also received a new 10-week PSE curriculum, Students Take Charge!, in which students engaged with the school wellness committee and food service staff to change menus.

Results: Post intervention, the treatment group had a higher PSE knowledge score than the control group when adjusted for baseline score (p<0.001). Intervention students were more likely to have an opinion about fruit/vegetable choices, and to recognize their school's encouragement of eating fruits/vegetables, compared to controls. There were no significant changes in fruit/vegetable intake from pre to post in either treatment or control groups.

Conclusion: The new PSE curriculum represents a first step in efforts to engage students and school food service in PSE efforts and could result in more healthy changes introduced by students and implemented by food service and school administrations.

Northeast: Adopting Healthy Habits in Worksites: Increasing Adoption and Acceptability of Policy, Systems, and Environmental Changes within Agencies Serving Low-income Families

*Dollahite J, Fontaine Hill T, Sellers D
Cornell University and Cornell Cooperative Extension*

Objective: To assess the effects of adding direct education to PSE change efforts in three worksites (2 Head Start programs and 1 Community Action Planning Council). Specifically, the study assessed the effects of adoption and implementation of PSEs; assessed the effects of providing direct education and PSE changes; and compared the effect of PSE only to the effect of PSE and direct nutrition education.

Participants: Across all three worksites, there were 140 agency staff (46% low income) and 449 parents/clients (84% low income).

Design: Worksites implemented PSE changes to promote eating more fruits/vegetables, drinking water instead of sugar-sweetened beverages, and increasing physical activity. Some agency staff and clients are also participating in direct nutrition education (*Healthy Children, Healthy Parents Making a Difference!*) Data collection included participant surveys and environmental scans, both of which were completed two times in Year One and two times in Year Two. Participants reported behavior and BMI. Environmental scans assessed changes in the food and physical activity environments, including policy adoption.

Results: Environmental changes included increasing use of fresh fruits and vegetables during snack and meal times, creating healthy snack vending for staff use, encouraging walking before work and during breaks, and eliminating free high fat, high sugar snacks for staff. Policies were adopted to make healthy choices easier, e.g. healthy food guidelines, physical activity during meetings. Activities that supported environmental and policy changes included healthy food events, physical activity offerings onsite, and healthy celebrations; and promotion was done via newsletters, bulletin boards, and signage promoting walking. Dose and depth of changes varied across sites with more changes coinciding with higher administrator support and committed worksite wellness team. In all, 44 participants (staff and clients) participated in direct nutrition education.

Continuation Activities and Timeline: This final year of the project was internally funded allowing it to continue through the final year of the NE-RNECE. Participant data collection was completed June 2017, and the data are currently under analysis. Results will be written up for submission to a peer-reviewed journal.

South: Faithful Families in Tennessee: Improving the Health of Low Income Faith-Based Audiences

South: Building Faith Through Health in the Community and Online

South: Faithful Families: Implementation and Outcome Evaluation of Paraprofessionals and Volunteer Delivery Methods in Low-income Faith Communities

SNAP-Ed and EFNEP Regional Nutrition Education and Obesity Prevention Centers of Excellence – Southern Region Signature Project: Faithful Families Eating Smart and Moving More

Authors: Annie Hardison-Moody, PhD, Lorelei Jones, MEd, Carolyn Dunn, PhD, RDN, LDN, Alice Ammerman, DrPH, RD, Molly DeMarco, PhD, MPH

Objective: Evaluate implementation of Faithful Families Eating Smart and Moving More through SNAP-Ed and EFNEP across three states in order to strengthen the evidence-base.

Target audience: SNAP-Ed and EFNEP eligible adults in Arkansas, Florida, and Tennessee.

Theory/Prior Research/Rationale: Faith communities are apt locations for health promotion interventions, in that they offer significant social and cultural supports that can be leveraged to promote healthy behaviors. Additionally, faith communities can serve as sites for implementing PSE changes, like implementing community gardens, opening playgrounds for community use, or adopting policies to serve healthy foods or drinks. Faithful Families Eating Smart and Moving More (Faithful Families) is based on the socio-ecological model of behavior change, recognizing that changes to an individual's social, neighborhood, and community environment are necessary to make and sustain healthy behaviors. Faithful Families has been designated as a practice-tested

intervention by the UNC-Chapel Hill Center for Training and Research Translation and as such has been included in the SNAP-Ed Connection.

Description: Faithful Families was developed by the NC Division of Public Health and NC State University and has been implemented across North Carolina through health departments and cooperative extension offices. In addition to a nine-lesson educational series that helps participants connect their faith and health, the program emphasizes changes to the faith community environment that promote healthy eating and physical activity for all members. Through this signature project, three additional states (Arkansas, Florida, and Tennessee) implemented the program through a partnership between EFNEP and SNAP-Ed, to both 1) test the program's effectiveness beyond North Carolina's implementation and 2) determine whether and how this program provides opportunities for partnership between EFNEP and SNAP-Ed, particularly as they relate to combining direct education with PSE changes. Three universities (University of Tennessee, University of Arkansas, University of Florida) implemented Faithful Families as a partnership between EFNEP and SNAP-Ed, testing various methods of implementation including: lay leader directed classes (Arkansas), online platforms dedicated to recruitment and retention (Florida), and whether a non-faith based curriculum would be implemented with the same levels of success and retention (Tennessee).

Evaluation: Each university submitted progress reports, which included the results of PSE changes implemented in the faith communities where they worked. Each faith community was encouraged to complete a faith community assessment to measure PSE changes at the beginning and end of the project year. Additionally, all adult participants completed a 24-hour food recall and standard dietary and physical activity questions to measure behavior changes. Finally, the North Carolina team conducted site visits in each state to learn about challenges, successes, and future opportunities for partnership, particularly relating to the collaborations between EFNEP and SNAP-Ed.

Conclusions and Implications: The Faithful Families curriculum and program was successful both in terms of behavior change and PSE outcomes in each state, but also from a process perspective in terms of the collaborations between EFNEP and SNAP-Ed. Programs like Faithful Families allow these federally-funded nutrition education programs to effectively partner in ways that highlight each program's strengths. For example, in several states, the SNAP-Ed staff worked closely with the faith communities on PSE changes (a part of SNAP-Ed's guidance), while EFNEP staff delivered the nine-lesson curriculum (PSE changes are not a part of EFNEP's guidance). These findings will help to continue to build an evidence base for Faithful Families, and can help to design other programs in other locations that can help EFNEP and SNAP-Ed to more effectively partner and leverage resources.

South: Evaluation of online nutrition education eLearning program tailored to SNAP-Ed eligible adult Georgians

Authors: Jung Sun Lee, PhD, RD, Sarah Stotz, MS, RD, CDE, LD, Judy Hibbs, EdD

Organization: The University of Georgia

Objective: Formative evaluation of an innovative smartphone-based nutrition education eLearning program

Target audience: SNAP-Ed eligible adult Georgians

Theory/Prior Research/Rationale: Regular Internet access is essentially commonplace among SNAP-Ed eligible adults and eLearning theory suggests asynchronous, contextual-based eLearning nutrition education may decrease traditional barriers to attending face-to-face classes and increase nutrition education opportunities

in point-of-decision-making environments. Key informant interviews indicated eLearning is a feasible form of nutrition education for SNAP-Ed eligible Georgians and inclusion of interactive games, videos, recipes, and extrinsic incentives would enhance engagement. To inform eLearning program development and employ the Policy, Systems, Environment approach to nutrition education, understanding the food retail environment from the perspective of the priority audience is critical.

Description: Food eTalk is a six-lesson smartphone based eLearning program. Each lesson (~10 minutes) includes an accompanying cooking demonstration video. Lesson topics include DASH diet principles, food safety, and food resource management. Food eTalk includes mobile-first interface, intentionally simple navigation design, and a Cultural-Southern influence.

Evaluation: Formative evaluation operationalized by a longitudinal mixed-methods case study including: qualitative interviews, focus groups, photovoice methods, self-administered demographic, baseline Internet habits, and learning management system user tracking data.

Conclusions and Implications: Key findings include: typical use of smartphones is quick and specific, nutrition education content should highlight topics the priority audience considers relevant such as: recipes, diabetes, ways to feed 'picky' children and should focus on barriers to healthful eating. eLearning format should be short, interactive, include videos, and consider external incentives to help increase motivation for engagement. These findings will contribute to and guide evidence-based UGA SNAP-Ed eLearning nutrition education program development.

South: Social Media Guidance Materials

Abstract #1: Engaging EFNEP Audiences: An Analysis of Social Media Post Content and Participant Engagement

Authors: David N. Cavallo, PhD, MPH, RDN1, Emily Foley, MS2, Lorelei Jones, M.Ed.2, Valerie Yen1, Vanessa Y. Chen1, Alice S. Ammerman, DrPH, RD3 1. Case Western Reserve University School of Medicine, 2. North Carolina State University Department of Agricultural and Human Sciences, 3. University of North Carolina at Chapel Hill Center for Health Promotion and Disease Prevention

Background: The prevalence of social media use among low-income internet users in the US (56%) suggests that social media may be an appropriate platform for engaging and retaining participants in programs such as the USDA Expanded Food and Nutrition Education Program (EFNEP). Although a growing number of health promotion organizations such as EFNEP are using social media, little formal research has been done to determine best practices in social media message design around health topics. Identifying effective social media messaging strategies could improve program engagement resulting in improved behavioral and health outcomes. Objective: to describe EFNEP social media campaign message characteristics and identify those that are associated with greater levels of participant engagement.

Methods: Objective server log data on participant interactions was obtained from the Facebook Insights analytics platform for 406 moderator messages posted across 24 county and state EFNEP Facebook fan pages over a 26-month period. Codes representing key engagement strategies were developed through qualitative content analysis and from existing categories (e.g., message type). Multiple coders then applied the appropriate set of codes to each message. Using a Welch's adjusted ANOVA due to homogeneity of variance and unbalanced sample sizes between groups, the association was examined between message engagement strategies (e.g., messages including pictures, messages focusing on significant others) and a measure of engagement that summed participant message interactions (Comments + Shares + Likes + Link clicks + Photo views + Video plays + Other clicks).

Results: Categories of engagement strategies included message types [text only (3.9%), text with links (74.4%), text with pictures (75.1%), and text with videos (6.7%)], and message content [use of credible sources of information (21.2%), emphasizing significant others (48.0%), encouraging discussion of a topic (21.4%), and posing rhetorical questions (35.0%)]. The mean number of interactions was 14.84 (SD = 13.35). Engagement strategies positively associated with interactions included having a picture $F(1, 136.48) = 5.75, p < .05$ and posing a rhetorical question $F(1, 271.03) = 5.26, p < .05$. Negative associations were observed for emphasizing significant others $F(1, 400.42) = 4.54, p < .05$; being related to a holiday $F(1, 84.38) = 6.39, p < .05$; being text only $F(1, 15.52) = 15.87, p < .01$; and containing motivational language $F(1, 39.49) = 4.90, p < .05$.

Implications: Social media messages with a greater number of interactive elements can be employed by organizations to increase engagement. In some cases, message characteristics hypothesized to increase engagement produced the opposite effect, highlighting the importance of continued research that can guide practitioners in the design of social media campaigns that maximize engagement.

Abstract #2: Characteristics of the social media use of North Carolina Expanded Food and Nutrition Education Program (EFNEP) participants

Authors: Emily Foley, MS1, David N. Cavallo, PhD, MPH, RDN2, Lorelei Jones, M.Ed.2, Alice S. Ammerman, DrPH, RD3 1. North Carolina State University Department of Agricultural and Human Sciences, 2. Case Western Reserve University School of Medicine, 3. University of North Carolina at Chapel Hill Center for Health Promotion and Disease Prevention

Background: A growing number of health promotion organizations such as EFNEP are using social media. National surveys indicate the use of social media is prevalent among lower income individuals who use the internet. There is, however, little direct evidence supporting its appropriateness specifically for participants in nutrition support programs such as EFNEP. Understanding the prevalence and patterns of social media use among EFNEP participants may enhance the delivery of social media-based communications interventions associated with these programs.

Objective: To describe the use of and preferences for social media use among North Carolina EFNEP participants.

Methods: We conducted a cross-sectional survey of English and Spanish speaking EFNEP participants in 9 counties across the state of North Carolina representing urban and rural locations. The survey addressed the prevalence of social media use among participants, use of EFNEP specific social media websites, and participant attitudes about EFNEP social media communications campaigns. Descriptive statistics and analyses of the use of the EFNEP Facebook page by participant characteristics were calculated using binary logistic regression.

Results: Respondents (n=51) were predominantly female (88%), non-Hispanic (71%), and White (43%) or African American (43%) with a mean age of 42 years. Fourteen percent reported completing high school and 18% reported a college degree while almost half (43%) reported being employed. Most participants (76%) indicated having access to the internet always or most of the time and a majority of participants reported Facebook being their favorite social media platform (53%) and using it almost every day (51%). The device the greatest number of participants identified as using frequently to access social media was a smartphone (57%) and 22% of participants reported that they had a limited data cell phone plan. Only 38% of participants indicated that they were fans of an EFNEP Facebook page. The major barriers participants reported to using EFNEP Facebook pages were not having enough time (25%), not wanting to share personal information (20%), and not being aware of the Facebook page (16%). The only significant demographic predictor of EFNEP Facebook fan page use in the logistic regression model was age ($p=.044$), where increased age predicted a greater likelihood of being a fan of an EFNEP Facebook page.

Implications: Results support the use of Facebook and other social media platforms to augment existing EFNEP programs given the high levels of internet access and Facebook use among EFNEP participants and the ease of use of Facebook on mobile devices. Programs should consider using private Facebook groups to alleviate concerns about privacy. In addition, robust efforts should be made to promote Facebook programmatic components in face to face settings to increase awareness.

Abstract #3: Results from usability testing of a website designed to assist in the creation of social media campaigns for Expanded Food and Nutrition Education (EFNEP) Programs: preliminary findings

Authors: Emily Foley, MS¹, David N. Cavallo, PhD, MPH, RDN², Lorelei Jones, M.Ed.², Alice S. Ammerman, DrPH, RD³ 1. North Carolina State University Department of Agricultural and Human Sciences, 2. Case Western Reserve University School of Medicine, 3. University of North Carolina at Chapel Hill Center for Health Promotion and Disease Prevention

Background: Social media platforms (e.g., Facebook) are used by a large number of Americans across a wide range of demographic groups. These platforms provide organizations unique digital tools for sharing information that could facilitate the delivery of extension educational programs and increase client engagement. Tools are therefore needed to assist administrators of these programs in the development and execution of effective social media campaigns for their organizations.

Objective: To evaluate the acceptability and usability of a website designed to assist EFNEP program staff develop effective social media campaigns.

Methods: (1) Conducted structured interviews with EFNEP administrators across the Southeastern United States who were asked to use the website to conduct a one-month social media campaign for their organization. Recordings were transcribed and audited for accuracy. Administrators were also asked to fill out weekly journals describing their impressions of and experiences using the website. Transcripts and journals were then reviewed by two team members who summarized them narratively. Final summary of the narratives was produced. (2) A cross-sectional survey was conducted among EFNEP administrators recruited from the EFNEP Coordinators listserv. Participants were asked to review the website and answer a series of questions about their confidence to perform key tasks related to developing social media campaigns based on the information contained therein. Descriptive statistics were calculated for survey responses.

Results: Interview participants (n=4) found the website to be visually appealing and mostly used the website section that provided sample communications to execute their campaigns. Several improvements to the website were suggested including the ability to search content, better organization and less redundancy of information across website sections, and inclusion of a bank of demographically diverse images and videos that could be used to create social media content. Survey completers (n=23) were majority White (61%), female (96%), between the ages of 30-49 (52%) and had less than 5 years in their current position (83%), and already use social media for their EFNEP program (70%). Respondents reported higher levels of confidence in completing tasks related to setting up and running social media campaigns (e.g., creating a Facebook page, 39% completely confident) vs. tasks related to analyzing campaign performance (e.g., analyzing Facebook performance data, (8.7% completely confident) and management of social media efforts within their organization (e.g., choosing an optimal model for social media administration, 4.3% completely confident). Overall, 70% of respondents agreed or strongly agreed that they would recommend the website.

Implications: Although the current version of the website was well-received by users, several areas of improvement are needed. These include the addition of resources such as images and videos, improvement of some existing resources such as how to analyze Facebook campaigns, and streamlining and better organization

of website information. Most interview and survey participants were already familiar with Facebook, suggesting that further evaluation of the website should include a greater number of less experienced users to improve its generalizability.

West: Secondary Data Analysis

Auld, G., Baker, S. Colorado State University (RNECE-West)

Objective: To summarize national EFNEP data over multiple years and determine any trends in outcomes.

Design: Analysis of national WebNEERS data from years 2007-2014 including demographics of participants and outcome measures from the behavior checklist and dietary recalls.

Participants: All EFNEP participants (n = 512,899) from 2007-2014 who had complete pre/post test data (recalls and behavior checklist).

Main Outcome Measures: Race/ethnicity, education level and, from the dietary recalls, HEI, fruit and vegetable intake and, from the behavior checklist, 3 scales: food resource management, food safety, and nutrition.

Analysis: Descriptive statistics, dependent t test comparisons of pre/post data, and frequency patterns of outcomes by state across time.

Results: About 30% of EFNEP participants self-identified as White, Black, or Hispanic; the Northeast (22%) and West (5%) have fewer while the South has a higher percentage of Blacks (42%). The West is much higher in Hispanic participants (57%). About one-third of all participants have less than a high school education. Pre/post differences included a gain in HEI of 1-12 points (70% ranged from 3-7 pts); increases in fruit and vegetable intake ranged from a half to 1 serving. Consistent, modest increases were seen in BCL subscale scores – mostly a 0.5-1 point increase on a 5 point scale. Consistent pretest scores and difference scores (Post – pre) within states were seen over 8 years for both the BCL and the 24 HR recall (HEI total).

Conclusions and Implications: The varied demographics of EFNEP participants present challenges for educators but it appears that positive outcomes are consistent across programs. The consistency of pretest scores and difference scores (post-pre) over time suggest that the same outcomes would be seen even if EFNEP used a comparison group. However, these findings, while positive, support the ongoing efforts by several committees to develop a new behavior checklist with questions that are reflective of recent Dietary Guidelines and more sensitive to changes in participant behaviors. EFNEP's database, which includes a huge number of individuals, multiple years of data, and large numbers of variables, is an asset that has not been fully examined.

West: Sugar Sweetened Beverage Intake among EFNEP Participants — An evaluation of the National EFNEP Database

Author: Bret Luick, University of Alaska Fairbanks

Objective: To evaluate the impact of Expanded Food and Nutrition Education Program (EFNEP) class series on sugar-sweetened beverage (SSB) intake in the NIFA Western Region (WR). Analysis compared the quantity, quality, and cost of foods between recalls including SSBs.

Target Audience: EFNEP participants in 2014 from the NIFA Western Region.

Description: A secondary analysis of the EFNEP WR 24 hour recall data set from 2014. Specifically, a pre/post EFNEP class series comparison was made of the quantity and cost of sugar-sweetened beverages (SSB) consumed by EFNEP participants. The change in diet quality at the population level as estimated by the Healthy Eating Index 2010 (HEI-2010) is also reported.

Methods: Diet recall data for the 2014 EFNEP participants were imported into a SAS statistical program. The data included demographics of participants. Analysis was limited to adult female participants and cases that had matched pre- and post-class recalls.

Each diet recall included individual food items coded with an ARS Food and Nutrient Database for Dietary Studies (FNDDS) food code number. The HEI is a measure of diet quality summed from 12 sub-scores based on reported food consumption. The USDA Center for Nutrition Policy and Promotion has a food price database for the FNDDS food codes, based on 2003-2004 food prices. Prices were inflation-adjusted to 2016 and merged with the EFNEP database. All foods in the EFNEP database that received a What We Eat in America code beginning with 72 were assigned a 1 to indicate SSB. All other foods were assigned a 0.

Results: The sample included 9,987 cases. At pre, 68% of cases did not report SSB intake. Across all pre recalls, the SSB energy intake accounted for 5.9% of calories, however, among those that did report SSB intake, SSBs accounted for 15.1% of calories. Median energy intake was 13% higher among SSB consumers than non-consumers in the initial recall. At the post, 77% of cases did not report SSB intake. Across all post-training recalls, the SSB energy intake accounted for 2.4% of calories reported. Among those that did report SSB intake, SSBs accounted for 6.8% of calories. Median energy intake was 24% higher among SSB consumers than non-consumers.

57% of participants did not report SSB intake in either recall; 12% of participants reported SSB intake in both recalls. Mean SSB intakes were 259 vs. 241 kcal/d (initial/final), although the data was highly skewed.

Conclusions and Implications: In paired comparisons, caloric intake from SSBs dropped from initial to final recall, showing some effect of EFNEP. At the population level, there was little effect on SSB-based median caloric intake when comparing pre/post recalls. However, when making paired comparisons, there was a significant reduction in energy from SSBs following EFNEP. The effect of EFNEP, as estimated by initial to final score change, indicates improvements in both Total HEI and Solid Added Sugar scores.

West: Two-Year Assessment of Youth Participatory Action Research - A PSE Intervention

Authors: Sharon Sugerman, Public Health Institute; RNECE-West

Objective:

Original: Complete a two-year assessment of Youth Participatory Action Research (YPAR) in Hawaii and YPAR in Los Angeles, California, and a rural site in conjunction with California Cooperative Extension in FFY 2017 to establish the evidence-base of YPAR.

Revised due to funding limitation: Compile YPAR Evaluation Manual and set of evaluation instruments for use with YPAR. Develop protocol for end-of-year Youth Survey Reliability Study and draft IRB submission for Baseline End-of-Year Youth Survey Reliability Study.

Target Audience: EFNEP/SNAP-Ed eligible middle school students, adult mentors and EFNEP/SNAP-Ed implementers.

Theory/Prior Research/Rationale: The socio-ecological framework forms the basis for this work. The project was planned to strengthen the evidence base of an existing policy, system and environmental (PSE) change intervention - Youth Participatory Action Research. YPAR is a practice-based intervention according to the 2014 SNAP-Ed PSE Strategies and Intervention Toolkit. YPAR is currently used in some SNAP-Ed projects where it has resulted in meaningful youth-driven policy/systems/environmental change.

Description: An evaluation toolkit was compiled based on the Youth Engagement Intervention in California. The toolkit includes overview of the development of the evaluation tools, instructions for use of data collections tools and the suggested evaluation process for YPAR.

Evaluation: A protocol to assess reliability of specific evaluation tools was developed; the research is poised to be initiated if additional funding is secured in the future.

Conclusions and Implications: The evaluation toolkit compilation will benefit programs implementing YPAR by providing a systemic approach to program evaluation. Additional funding is needed to conduct the reliability research for specific tools.

West: RNECE-West Subaward Evaluation of a novel, low cost, low burden, scalable technology for evaluation EFNEP and SNAP-Ed effectiveness

The primary objective of this study was to evaluate a technology for assessing the long-term effectiveness of SNAP-Ed and EFNEP in a novel, inexpensive, and scalable way that does not burden program participants. This novel technology detects changes in grocery purchases using customer loyalty cards to identify households, and can quantify expenditures on food groups of interest. Twelve EFNEP and SNAP-Ed nutrition educators in Utah recruited a total of 60 program participants. Participants filled out a short survey, which included their grocery loyalty card number or other identifying information that could be used to identify their household's purchases. The researchers' plan had been to assess changes in fruit, vegetable, whole grain, and dairy grocery expenditures before and after participating in the nutrition education program. However, the difficulty encountered in working with the grocery store partner resulted in the grant ending before data were delivered by the grocery store partner. The process evaluation found that these study procedures are feasible, though more time than had been anticipated was needed for participant recruitment, that paperwork should be further simplified and minimized, and that dedicated data collection staff should be considered instead of having educators collect data.

West: Developing Environmental Support Activities for Use in Conjunction with Direct Education

Environmental Barriers to Healthful Dietary and Physical Activity Behaviors in the EFNEP Participant Population

Objectives: To develop an understanding of 1) environmental barriers that directly impact dietary and physical activity (PA) behaviors in the Expanded Food and Nutrition Education Program (EFNEP) and SNAP-Ed participant populations, and 2) environmental changes that may encourage more healthful behaviors in this population.

Design: The authors conducted telephone focus groups (n=10) with paraprofessional educators. Focus groups used a semi-structured script reviewed by an expert panel and pilot-tested with a group of Colorado EFNEP educators.

Participants: EFNEP and/or SNAP-Ed paraprofessional educators (n=50) from 10 different U.S. states representing all National Institute of Food and Agriculture regions.

Main Outcome Measures: Key themes and quotations relevant to environmental barriers experienced by this population and educator-generated ideas for solutions to target each barrier.

Analysis: Two reviewers independently coded each transcript then met to come to consensus on themes related to environmental themes and potential solutions.

Results: Concordant with existing literature, reduced availability, high costs, a lack of adequate transportation, and safety concerns emerged as key barriers to accessing and utilizing healthful dietary and physical activity resources within this population. The educators also provided valuable ideas for strategies to target each barrier. For example, potential solutions to the availability barrier include creating mobile farmers' markets, partnering with volunteer groups to provide free delivery of food from food banks or retailers to areas with limited access, working with alternative retailers (e.g. dollar stores) to offer produce in urban areas, providing free seeds to encourage home gardening, and facilitating development of or participation in community gardens.

Conclusions and Implications: Environmental barriers are complex, multifactorial, and often interrelated. Employing policy, systems, and environmental (PSE) change efforts in combination with direct nutrition and physical activity education is the most effective means of promoting healthful behavior change in the low-income population. Additional research is needed to understand how to best incorporate PSE into EFNEP/SNAP-ED programs with the potential for including PSE activities for participants in direct education lessons.

APPENDIX C:

Participants in the Regional Nutrition Education Centers of Excellence

RNECE North Central Multi-State Advisory Committee

- **Pat Aune**
Director
United Tribes Technical College
- **Trina Barno**
SNAP-Ed/EFNEP Program Leader
University of Minnesota Extension
- **Patricia Bebo**
State Leader
Ohio State University Extension
- **Linda Boeckner**
State Leader
University of Nebraska Extension
- **Amber Canto**
SNAP-Ed/EFNEP Coordinator
University of Wisconsin Extension
- **Christine Hradek**
SNAP-Ed/EFNEP Coordinator
Iowa State University Extension
- **Sarah Jones**
Project Manager
Michigan Fitness Foundation
- **Melissa Maulding**
SNAP-Ed/EFNEP Coordinator
Purdue University
- **Jennifer McCaffrey**
State Leader
University of Illinois Extension

- **Megan Ness**
SNAP-Ed/EFNEP Coordinator
North Dakota State University Extension
- **Paula Peters**
State Leader
Kansas State University Research and Extension
- **Sandra Proctor**
SNAP-Ed/EFNEP Coordinator
Kansas State University Research and Extension
- **Suzanne Stluka**
State Leader
South Dakota State University Extension

RNECE Northeast Steering Committee

- **Donna Brown, MA, RD, LDN**
Interim Associate Dean,
Program Leader
Family & Consumer Science
Delaware State University
Cooperative Extension
- **Grace Damio, MS**
Director of Research and Service
Initiatives
Hispanic Health Services,
Hartford, CN

- **Ann Ferris, PhD**
Professor Emerita, Executive
Committee Member
Center for Public Health and Health
Policy, University of Connecticut
- **Cindy Fitch, PhD, RD**
Associate Dean of Programming
and Research
West Virginia University of Extension
Service
- **Barbara Lohse, PhD, RD**
Director Wegmans School of Health
and Nutrition
Rochester Institute of Technology,
Rochester, NY
- **Kate Yerxa, MS, RD**
Associate Extension Professor,
EFNEP Coordinator
University of Maine
- **Kelli Batch, MA**
EFNEP Coordinator, Assistant
Program Director, 4-H Youth
Development
West Virginia State University
- **Sara Beckwith, MS, RDN**
DC SNAP-Ed Program Manager
DC DOH
- **Christine Brennan, MS**
SNAP-Ed Project Director
Pennsylvania State University
- **Marilyn Corbin, PhD**
Extension Program Leader and
Professor
Penn State University

- **Doris Chin, MPH, RDN**
Nutritionist & SNAP-Ed Coordinator
USDA FNS, Mid-Atlantic Regional
Office
- **Amy Davidson, MS**
EFNEP Coordinator Nutrition
Education Coordinator
University of Vermont
- **Linda Drake, MS**
EFNEP Director, CT SNAP-Ed Food
Security Project Director
University of Connecticut
- **Karen Ensle, EdD, RDN**
County Extension Dept. Head,
Family and Community Health
Sciences
Rutgers University
- **Muffin Friedman, MS**
Director, Eat.Right.Now Program
School District of Philadelphia
- **Pamela Griffin, RDN**
SNAP-Ed Coordinator
USDA FNS, Northeast Regional
Office
- **Elise Gurgevich, PhD, MPH, CHES**
Nutrition Links State Coordinator
Pennsylvania State University
- **Joan Ingram, MPH**
Former SNAP-Ed Program Manager,
School of Community/Population
Health
University of New England
- **Lisa Irving, MPH**
Statewide Coordinator, SNAP
Nutrition Education and Outreach
OTDA
- **Lisa A. Lachenmayr, MS**
SNAP-Ed Leader
University of Maryland
- **Debbie Luppold, MS, RD, LD**
EFNEP Coordinator, SNAP-Ed
Coordinator, Extension Professor/
Specialist, Youth and Family
University of New Hampshire
- **Alicia McCabe, BA**
Massachusetts State Director
Cooking Matters/No Kid Hungry
- **Kristin McCartney, MPH, RDN, LD**
SNAP-Ed Coordinator, Extension
Specialist, Extension Service
West Virginia University
- **Mira Mehta PhD**
EFNEP Leader
University of Maryland
- **Dora Anne Mills, MD, MPH, FAAP**
Vice President for Clinical Affairs
University of New England in Maine
- **Lillie Monroe-Lord, PhD, RD, LD**
Director, Center for Nutrition,
Diet and Health
EFNEP Leader
University of District of Columbia
- **Kathleen Morgan, PhD**
Professor/Department Chair, Family
& Community Health Science
Rutgers University
- **Katie Mulligan, MS, RD**
EFNEP Program Coordinator
University of Rhode Island
- **Joan Paddock, PhD, MPH, RD**
Sr. Extension Associate, Division of
Nutritional Sciences
Cornell University
- **Debra Palmer, PhD, MEd**
EFNEP Coordinator, SNAP-Ed
Director, Associate Professor
Rutgers University
- **Patricia Race, MPH, RD**
Associate Director for Nutrition
Policy and Outreach, Retired
NYSDOH - Division of Nutrition
- **Robin Rifkin, MS**
Consultant
SNAP-Ed Collaborator
- **Linda Sebelia, MS, MA, RD**
Adjunct Professor, Department of
Nutrition and Food Sciences
University of Rhode Island
- **Lindiwe Sibeko, PhD**
Assistant Professor
Nutrition Extension, School of
Public Health and Health Sciences
University of Massachusetts
- **Sue Snider, PhD**
EFNEP Coordinator, SNAP-Ed
Coordinator, Professor
University of Delaware
- **Laura Sugarwala, MBA, RD**
Nutrition Resource Manager
FoodLink, Rochester
- **Lisa Sullivan-Werner, MS**
EFNEP & SNAP-Ed Leader, Interim
NEP Director
University of Massachusetts
- **Gina Taylor, EdD**
Interim Director for Families &
Health programs, Extension Service
West Virginia University
- **Denise Wall, MPH, RD**
SNAP-Ed Assistant Project Director
Pennsylvania State University
- **Gina Wood, RD, MPH**
EFNEP Coordinator, Extension
Specialist and Dietitian, Extension
Service
West Virginia University

- **Virginie Zoumenou, PhD, LDN**
EFNEP Leader
University of Maryland Eastern Shore

RNECE Northeast Research Advisory Committee

- **Isobel Contento, PhD**
Professor, Health and Behavior Studies
Columbia University
- **Kirsten Davison, PhD**
Associate Professor, Nutrition & Social & Behavioral Sciences
Harvard University
- **Christine Economos, PhD**
Associate Professor and Associate Director, John Hancock Research Center on Physical Activity, Nutrition, & Obesity Prevention
Tufts University
- **Ann Ferris, PhD, RD**
Professor Emerita, Founding Director, Executive Committee member, Center for Public Health and Health Policy
University of Connecticut
- **Tisa Hill, MPH**
Extension Associate, Division of Nutritional Sciences
Cornell University
- **David Just, PhD**
Professor, Applied Economics & Management
Cornell University
- **Don Kenkel, PhD**
Professor, Policy, Analysis & Management
Cornell University

- **Barbara Lohse, PhD, RD**
Professor, Director, Wegmans School of Health and Nutrition
Rochester Institute of Technology

- **Jeff Niederdeppe, PhD**
Associate Professor
Department of Communications,
Cornell University

- **Debra Palmer, PhD, M.Ed**
Associate Professor, Nutritional Sciences
Rutgers University

- **Ian M. Paul, MD**
Professor of Pediatrics & Public Health Sciences
Penn State University

- **Rafael Perez-Escamilla, PhD**
Professor, Epidemiology and Public Health; Director Public Health Practice
Yale University

- **Marlene Schwartz, PhD**
Director
Yale Rudd Center for Food Policy and Obesity

- **Debbie Sellers, PhD**
Director of Research & Evaluation, BCTR
Cornell University

- **Rebecca Seguin, PhD**
Assistant Professor, Division of Nutritional Sciences
Cornell University

- **Jennifer Tiffany, PhD**
Director, Outreach & Community Engagement, Bronfenbrenner Center for Translational Research
Cornell University

- **Jennifer Wilkins, PhD, RD**
Professor of Practice Public Health, Food Studies, & Nutrition
Syracuse University

RNECE South

- **Carol Ball**
Steering Committee Member
Mississippi State University

- **Katherine Cason, PhD, RD, LD**
Steering Committee Member
Penn State Extension

- **David N. Cavallo, PhD, MPH, RDN**
Consultant
Case Western Reserve University

- **Sherman Charles**
Steering Committee Member
Louisiana State University

- **Nancy Correa-Matos, PhD, RD, LND**
Steering Committee Member
University of Puerto Rico

- **Karen Franck, PhD**
Principal Investigator, Signature Sub-award
University of Tennessee

- **Debra Garrard-Foster, MS**
Steering Committee Member
Oklahoma State University

- **Kristopher Grimes, PhD**
Steering Committee Member
Kentucky State University

- **Stephanie Jilcott Pitts, PhD**
Consultant
East Carolina University

- **Caryl Johnson, EdD**
Steering Committee Member
University of the Virgin Islands

- **Jovita Jones Lewis, MEd**
Steering Committee Member
Auburn University

- **Jung Sun Lee, PhD, RD**
Steering Committee Member and
Principal Investigator, Signature
Sub-award
University of Georgia

- **Sondra Parmer, PhD**
Steering Committee Member
Auburn University

- **Rosemary Rodibaugh, PhD, RD**
Steering Committee Member
University of Arkansas

- **Elena Serrano, PhD**
Steering Committee Member
Virginia Tech

- **Karla P. Shelnutt, PhD, RD**
Steering Committee Member and
Principal Investigator, Signature
Sub-award
University of Florida

- **Leslie Speller-Henderson, MS**
Steering Committee Member
Tennessee State University

- **Lisa Washburn, DrPH**
Principal Investigator, Signature
Sub-award
University of Arkansas

RNECE West

- **Catalina Aragon, MS, CN**
Long-Term Evaluation, Washington
Coordinator
Washington State University

- **Amanda Boostrom, MS, RDN,
CLEC**
Long-Term Evaluation Project Staff
Colorado State University

- **Alexandra Bush-Kaufman, MPH,
RDN**
Food Pantry Environmental Scan
(E-Scan) Project Coordinator
Washington State University

- **Mary Kay Erickson, RN, BSN**
Washington Long-Term Evaluation
Project Staff
Washington State University

- **Ben Gowman, MS**
Long-Term Evaluation Project and
Testing of Mediums Staff
Colorado State University

- **Brigid McDonnell, MPH**
Project Manager
Colorado State University

- **Chris Melby, DrPH**
Biometric Data Collection Trainer for
Long-Term Evaluation Project
Colorado State University

- **Lauren Rhoades, MS**
Long-term Evaluation Project and
Environmental Barriers Project Staff
Colorado State University

- **Mattie Sobotka, MS, RD**
Washington Long-Term Evaluation
Project Staff
Washington State University

- **Marie Walsh, MPH**
Food Pantry E-Scan Project Staff
Colorado State University

- **Dwayne Watson**
Budget and Technical Support
Colorado State University

- **Margaret Williams, ARNP, BSN**
Washington Long-Term Evaluation
Project Staff
Washington State University

RNECE West Steering Committee

- **Nancy Betts, PhD**
Oklahoma State University

- **Jan Carroll, PhD**
Colorado State University

- **Leslie Cunningham-Sabo, PhD, RD**
Utah State University

- **Carrie Durward, PhD**
Utah State University

- **Kathy Gunter, PhD**
Oregon State University

- **Marilyn Morrissey**
Colorado State University

- **Joanne Littlefield, PhD**
Colorado State University Extension

- **Rachel Novotny, PhD, RDN, LD**
University of Hawaii

- **Jill Shultz, PhD**
Washington State University

- **Mary Kay Wardlaw, PhD**
University of Wyoming

- **Ruth Willson, BS**
Colorado State University Extension

RNECE West Nutrition Education Advisory Committee

- **Cathy Franklin, MS, RD**
Washington State WIC Nutrition
Program

- **Heidi LeBlanc, MS**
Utah State University

- **Danita Martinez**
Wyoming Department of Family
Services

- **Mindy Meuli, MS, RD, LD**
University of Wyoming
- **Amy Pezzani, BS**
Food Bank of Larimer County
- **Marla Reicks, PhD**
University of Minnesota
- **Elena Serrano, PhD**
Virginia Tech
- **Mary Wilson, MS, RDN, LD**
University of Nevada

RNECE West PSE Advisory Committee

- **Alice Ammerman, DrPH**
University of North Carolina
- **Donna Johnson, PhD**
University of Washington
- **Catherine Lillehoj, PhD**
Iowa Department of Public Health
- **Aurora Buffington, PhD, RDN, LD**
Southern Nevada Health District
- **Natalie Tausin, MPH, RD**
Spokane Regional Health District
- **Amy Ellings, BS, MPH**
Washington State Department of Health

- **Cheryl Polasek, BS**
Puget Sound Educational Service District
- **Erin Ulric, MPH**
Colorado Department of Public Health and Environment
- **Stephanie Martinez, BS**
Arizona Department of Health Services

RNECE Policy, Systems and Environment

- **Loren Bell**
Senior Analyst
Altarum Institute
- **Dr. Sarah Colby**
Associate Professor
University of Tennessee
- **Dr. Maria (Lupita) Fabregas**
Assistant Director for 4-H Diversity and Expansion
University of Southern California
- **Dr. Kristopher Grimes**
Assistant Professor
Kentucky State University
- **Dr. Soghra Jarvandi**
Assistant Professor
University of Tennessee

- **Dr. Yoonsung Jung**
Research Scientist
Prairie View A & M University
- **Dr. Rachel Novotny**
Professor
University of Hawaii
- **Dr. Stephany Parker**
Associate Professor
Oklahoma State University
- **Elizabeth Payne, JD**
Director, Center for Sovereign Nations
Oklahoma State University
- **Dr. Karla Shelnett**
Associate Professor
University of Florida
- **Dr. Danielle Treadwell**
Associate Professor
University of Florida
- **Dr. Jacquelyn White**
Program Leader – Family and Consumer Sciences
Prairie View A & M University



SOURCES:

- Stateofobesity.org, accessed November 2016
- CDC, State Indicator Report on Fruits and Vegetables, 2013
- CDC, Social Ecological Model, accessed November 2016

For more information,
contact Dr. Ann Vail at
ann.vail@uky.edu

RNECE-NCC.org

