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# Cooking Healthy, Eating Smart (CHES): Evaluating the Feasibility of Using Volunteers to Deliver Nutrition and Food Safety Education To Rural Older Adults

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COOKING HEALTHY, EATING SMART (CHES): EVALUATING THE  
FEASIBILITY OF USING VOLUNTEERS TO DELIVER  
NUTRITION AND FOOD SAFETY EDUCATION  
TO RURAL OLDER ADULTS

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A Thesis  
Presented to  
the Graduate School of  
Clemson University

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science  
Food, Nutrition, and Culinary Sciences

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by  
Morgan Getty  
August 2014

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Accepted by:  
Dr. Angela Fraser, Committee Chair  
Mrs. Rita Haliena  
Dr. Elliot Jesch

## ABSTRACT

Due to their limited resources, rural, older adults in the United States are at risk for poor diet-related health outcomes. Nutrition education is a key component in improving health outcomes in older adults. Cooking Healthy, Eating Smart (CHES) is a nine-lesson curriculum designed to teach rural, older adults culturally appropriate nutrition and food safety information. Funding to hire health professionals to deliver such a curriculum is limited, presenting the need to explore a less expensive mode of dissemination. In this community-based, participatory research study, a formative evaluation and feasibility study were conducted to examine the use of volunteers to deliver a nutrition and food safety curriculum to rural, older adults in South Carolina. Seven focus groups were conducted with members of the South Carolina Family and Community Leaders (SCFCL) and members of the American Association of Retired Persons (AARP) in the four regions of South Carolina to explore barriers and facilitators of volunteers delivering CHES (N=65 participants). The focus group findings informed the development of the volunteer training manual. A comparative case study method was used to examine the feasibility of a volunteer-based approach by observing and describing the delivery of CHES by two groups of volunteers in SC. The case study findings, including volunteer knowledge change, self-efficacy change, curriculum experience, program experience, and project team observations of volunteers indicated that using volunteers to deliver CHES is a plausible approach with the assistance of paid staff or project team members.

## DEDICATION

I would like to dedicate this manuscript and the work it represents to my parents, Mark and Linda Getty, who have faithfully supported me and given me guidance in my pursuit of higher education. They always remind me that my hope and purpose is found in the Lord Jesus Christ, to whom I owe my whole life. I also wish to dedicate this work to my dear grandparents, Russell E. Getty, Naomi S. Getty, Robert V. Griffith, and Shirley H. Griffith.

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## CHAPTER ONE

### INTRODUCTION

Most older adults want to age in place, so it is important to help them live independently for their own sense of well-being (Quine & Morrell, 2007; Wiles, Leibing, Guberman, Reeve, & Allen, 2012). Unfortunately, nearly all older adults (90.7%) in the U.S. were reported to have at least one chronic condition (Anderson, 2010). The proportion of healthcare spending attributed to people with chronic conditions has increased from 78% to 84% since 1998 (Anderson, 2010). Because more money is spent on health care to manage chronic conditions, older adults are left with less money for food, potentially leading to poor nutrition (Evans, 2005). Poor nutrition can exacerbate many of the chronic conditions that older adults face (WHO, 2003), thus allowing the cycle of poor health and elevated costs associated with managing chronic conditions to continue.

Although many factors play a role in improving or maintaining health, the literature clearly links eating a quality diet as a way to improve or maintain good health (Kennedy, 2006; Samieri et al., 2013; Wheeler Ford, Jensen, Hartman, Wray, & Smiciklas-Wright, 2013). Good nutrition, therefore, is the foundation for healthy aging and being able to age in place (Bernstein & Munoz, 2012). Helping older adults age in place could significantly decrease healthcare costs, particularly related to Medicare expenditures. In 2012, Medicare spent \$30.4 billion on skilled nursing facilities and \$18.6 billion on home health care (MPAC, 2013).

In South Carolina, between 2000 and 2010, the number of adults age 65 years or older increased by 30.2% (U.S. Census Bureau, 2000; U.S. Census Bureau, 2010). Many older adults in SC have one or more chronic diseases, are poor, and/or live in a rural area (AoA, 2011a; SCLGOA, 2012; U.S. Census Bureau, 2012). These conditions alone or in combination can have a significant impact on the overall health of these elders and their ability to age in place. One way to help older South Carolinians improve or maintain their health so they can age in place in the midst of less privileged circumstances is to teach them about good nutrition.

At present, hundreds of health promotion programs target older adults. In South Carolina there are six evidence-based programs currently being offered to older adults through the ten Area Agencies on Aging: Living Well South Carolina (Stanford University's Chronic Disease Self-Management Program); three programs from the Arthritis Foundation—Self-Help Program, Exercise Program, and Aquatic Program; a Matter of Balance (a fall prevention program); Enhance Fitness; and Enhance Wellness. Despite the important role of nutrition in a healthy lifestyle, none of these existing programs address how to make safe and healthy food choices, illustrating the need for an effective nutrition education intervention for older adults in South Carolina.

Researchers at Clemson University and the Medical University of South Carolina developed a nine-lesson curriculum titled Cooking Healthy, Eating Smart (CHES). Most nutrition education curricula are designed using one or more behavior change theories and do not always consider sound educational theory. While the content of the CHES curriculum centers on nutrition and food safety concepts pertinent to older adults, the

curriculum format is based on Revised Bloom's Taxonomy (RBT). RBT is an educational taxonomy that focuses on the process of learning, a prerequisite to behavior change, rather than just on the behavior change (Anderson et al., 2001).

To maintain the fidelity of this carefully designed curriculum, hired nutrition professionals would be the ideal way to deliver it, however, limited funding creates a need for a less expensive dissemination approach. If volunteers can be trained to deliver CHES, costs could be drastically decreased, allowing for widespread delivery. The purpose of this Master's thesis project was to examine the feasibility of using volunteers to deliver a nutrition and food safety curriculum to rural, older adults in South Carolina. The following chapters describe a systematic literature review, a formative evaluation of the curriculum delivery strategy, and a feasibility study conducted to determine if a volunteer-based approach can be used to deliver CHES.

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## CHAPTER TWO

### THE FEASIBILITY OF VOLUNTEERS DELIVERING HEALTH INTERVENTIONS TO OLDER ADULTS: A SYTEMATIC LITERATURE REVIEW

#### INTRODUCTION

Most (90.7%) older adults in the U.S. have one or more chronic conditions (Anderson, 2010). All of the top nine chronic diseases/conditions reported for people age 50 years and older (hypertension, cholesterol, heart disease, mental illness, diabetes, arthritis, cancer, back problems, and COPD), can have direct or indirect (due to medication) diet-related implications (Lind & Noel-Miller, 2011; Niedert & Dorner, 2004; Whitney & Rolfes, 2011). Living with a chronic disease is costly. Fortunately, many of these conditions can be partially managed through changes in lifestyle, particularly diet (Thorpe, Ogden, & Galactionova, 2010).

For community-dwelling older adults seeking to prevent or manage existing chronic diseases, health interventions promoting good nutrition, healthy food choices, and safe food preparation practices could be an effective solution. A systematic review by Bandayrel and Wong (2011) of randomized control trials involving nutrition interventions for older adults living in the community, found three out of four nutrition education interventions to have positive nutrition-related outcomes. Ideally, nutrition education programs for community-dwelling, older adults should be delivered by nutrition or health professionals; however, the costs associated with paid professionals limit the potential for widespread dissemination. Particularly in rural communities, where older adults' access to resources may be limited, low-cost delivery strategies are

needed. The purpose of this systematic literature review was to explore the feasibility of using volunteers to deliver health interventions to older adults in the community. The framework for the review was guided by the following research questions:

- 1) Is it feasible to recruit volunteers to deliver a health-related curriculum to older adults?
- 2) Is it feasible for older adults to deliver a health-related curriculum to their peers?
- 3) What are the roles volunteers have successfully performed in the delivery of health-related information to older adults in previous studies?
- 4) What have previous studies concluded about the feasibility of using volunteers to deliver a health-related curriculum to older adults?

## METHODS

A search of the literature was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement. A computer-assisted search of English-language peer-reviewed literature published between 1980 and 2013 was conducted to identify relevant studies. Keywords included combinations of the terms outlined in Table 1.1.

**Table 1.1 Literature search terms**

Terms	Terms	Terms
Volunteer* OR unpaid	AND Educat* OR train* OR teach* OR instruct*	AND Nutrition* OR diet OR nutrient* OR cooking* OR “healthy meals” OR “eating habits” OR “healthy eating”

PubMed and the databases hosted by EBSCO (including Academic Search Complete) were searched. Relevant articles were identified through an existing team RefWorks library. Duplicates were removed and titles and abstracts were screened for relevance. Articles were further screened based on specific exclusion criteria. The reference lists of all articles that met the inclusion criteria were reviewed to locate additional published studies.

Only peer-reviewed articles reporting studies involving volunteers in the delivery of health-related information/education to older adults conducted in North America were included. Articles were excluded if the study design included hired or trained staff alone administering or carrying out the program, did not target older adults, did not deliver health-related information/education, or did not use volunteers to deliver the program.

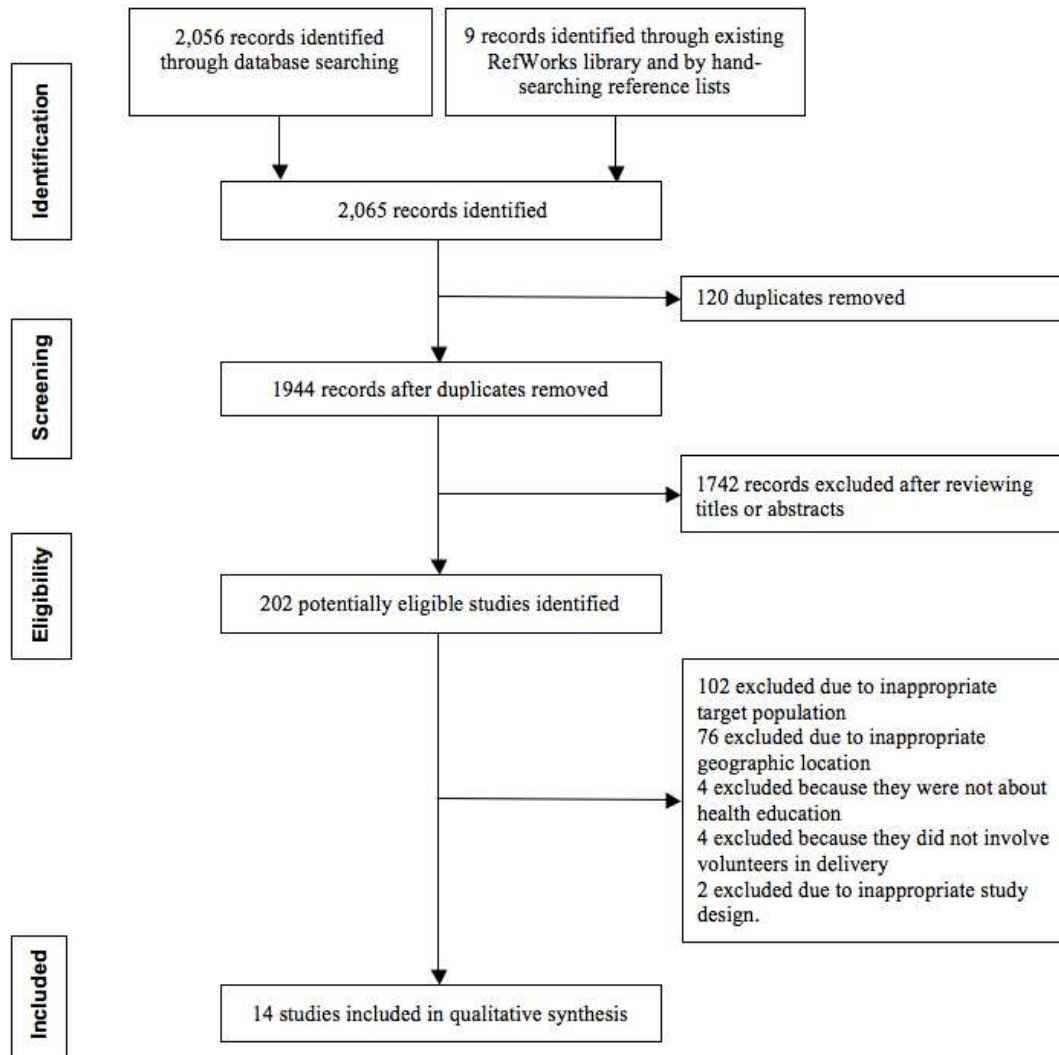
## **RESULTS**

### *Search Strategy*

The electronic database search yielded 2,056 results (Figure 1.1). Two articles were obtained by searching through an existing RefWorks library. After removing duplicates and screening titles and abstracts for relevance, 202 articles were identified. Seven additional articles were located because they were referenced in articles identified through the computer-assisted search. After further screening, 188 studies were excluded due to the following: inappropriate target population (n=102), inappropriate geographic location (n=76), not health education-related (n=4), did not involve volunteers in delivery (n=4), and inappropriate study design (n=2). Thus, 14 articles were identified as relevant to the search.



**Figure 1.1 PRISMA flow chart describing the literature search procedure**



### *Study Characteristics*

A summary of eligible articles is in Table 1.2. All articles were published between 1983 and 2011. Of the 14 studies, 10 were conducted in the United States and 4 in Canada. The number of participants in each study ranged from 14 to 1246. Three study design types were represented: observational (n=6), quasi-experiment (n=6), and randomized control (n=2). Studies involved interventions focused on physical activity education or training (n=5), vision education and outreach (n=1), nutrition education (n=6), immunization education (n=1), and general health education (n=1). All but two studies collected data to evaluate the volunteer process; those two studies reported participant outcomes only (Batik, Phelan, Walwick, Wang, & LoGerfo, 2008; Sutherland, Cowart, & Heck, 1987).

**Table 1.2 Summary of articles reviewed**

First Author, Year	Sample Size	Location and Duration of Study	Roles of volunteers	Volunteer training	Curriculum/ Program Focus	Volunteers description	Data Collected	Evaluation Method	Findings
Batik, 2008	14	Southeast Seattle  March 2005 - July 2006	Support	By staff and senior center program coordinator	Physical activity	Older adults	Level of physical activity; HbA1c	Rapid Assessment of Physical Activity questionnaire	Increased activity levels (NS). NS difference in HbA1c change between immediate and delayed intervention groups.
Buonocore, 2002	560	New York City  Nine months	Delivery	Seven two-hour sessions	Vision education and outreach	Older adults	Demographics, program effectiveness, satisfaction, suggestions	Phone interviews and evaluation forms	Program attendees (90%) learned “something new that could help them or someone they know who has a vision problem.” Volunteers (98%) would recommend; “Project InSights was viewed as a valuable community resource.”
Castro, 2011	181	San Francisco Bay  Twelve months	Support	Eight hours of training; practice sessions (all identical to what staff received)	Physical activity	Older adults	Physical activity at baseline, six, twelve months; treatment fidelity	Questionnaire, accelerometry validation; audio tapes, supervision; information sheets to document contacts	Increase in physical activity in intervention arms; peers more versatile/comprehensive.
Dorgo, 2009	131	University of Texas  Feb 2006- Dec 2007	Delivery	30-week program	Physical activity	Older adults	Perceived physical, mental, and social functioning; fitness performance; descriptive characteristics	SF-36vr2 health survey instrument; (measure of fitness performance not described)	Improvements in “perceived physical, mental, and social functioning” in peer mentor group, not in student mentor group. Fitness measures improved in both groups.

First Author, Year	Sample Size	Location and Duration of Study	Roles of volunteers	Volunteer training	Curriculum/ Program Focus	Volunteers description	Data Collected	Evaluation Method	Findings
Etkin, 2006	105	Ten sites in FL, WV, OR, CA, NJ, WI, TX, MA  One year	Delivery	Two-day workshop by three physical therapists; lectures, discussion and video	Physical activity	Lay adults and physical therapy graduate students	Program satisfaction; reported exercise; reported health, pain, functioning, demographics	Survey instruments; phone follow-up with site coordinators	Volunteers (100%) and participants (98.6%) "rated program positively;" exercise reported at 2.2 times/week, 53% 2-4 times/week. Social functioning improved (p = 0.003).
Hedley, 2002	247 for survey, 95 at session s; 35 received counsel	Guelph, Ontario  First eighteen months	Administration	None described	Nutrition	Adults, older adults, and students	Participation rates, number of pamphlets and publications picked up, evaluation form data	Questionnaires, evaluation forms, questions for committee, researchers, staff	High participation & satisfaction; "seniors taking increasing responsibility in planning and delivery."
Ho, 1987	46	Arizona  Summer 1986	Administration	Two sessions; first by professional health educator, second by peer delivering to other participants	Nutrition	Older adults	Change in knowledge, behavioral change	Nutrition/fiber knowledge tests, food frequency, dietary recall, questionnaires, meal plans, personal interviews	"Model was feasible showing an average increase in specific nutrition knowledge of 52.3%" (n=15); "no appreciable difference in the quality of learning" when taught by professional or HEALTH-PEER.

First Author, Year	Sample Size	Location and Duration of Study	Roles of volunteers	Volunteer training	Curriculum/ Program Focus	Volunteers description	Data Collected	Evaluation Method	Findings
Hooker, 2005	447	California, in seven regions  One year	Support	Four to eight hours of training on benefits, guidelines, barriers to physical activity, phone follow-up, behavior change	Physical activity	Older adults and students	Estimated calories expended/week, number of hours, frequency; stage of readiness to change; program components implemented, number of volunteers, challenges, solutions, accomplishments, satisfaction	Surveys, interviews, CHAMPS Physical Activity Questionnaire for Older Adults	Increases in “total weekly caloric expenditure” and in “weekly physical activity duration and frequency.” Staff difficulty with recruiting, Volunteer difficulty contacting participants and participants meeting goals, participants said volunteers were supportive, would participate again.
Krieger, 2000	1246	Seattle  Sept 1996 - March 1997	Support	Four hours; including role-play	Immunization	Older adults	Reported receipt of influenza and pneumococcal immunization; “changes in knowledge, attitudes, and perceived barrier... and participant appraisal of the intervention” cost analysis	Baseline, follow-up surveys	Rates of influenza and pneumococcal immunization increased as result of intervention; Marginal cost of providing intervention to 600 seniors with paid coordinator estimated \$9339, with two volunteer coordinators estimated \$2893.

First Author, Year	Sample Size	Location and Duration of Study	Roles of volunteers	Volunteer training	Curriculum/ Program Focus	Volunteers description	Data Collected	Evaluation Method	Findings
Laforest, 2007	29	Montreal, Quebec Six weeks	Delivery	Two three-hour group-training sessions developed, delivered by dietitian	Nutrition	Older adults	Descriptive data; risk factors of inadequate intake; reliability; perceived feasibility of intervention; participant satisfaction; adequacy of volunteer intervention plans; recommendations for additional services	Elderly Nutrition Screening tool; questionnaires; phone interview; dietitian meeting with volunteers.	Dietitian and volunteer agreement on nutrition risk category of ENS for 60% of participants; 86% of participants indicated information useful; 89% of volunteers did not have difficulty using or explaining ENS or intervention plans, 73% said would have felt uncomfortable without dietitian; 91% of case managers stated older adult volunteers well suited to carry out nutrition education, only 1/3 of case managers believed volunteers should develop intervention plans.
Lynde, 1992	32 total	Canada Not given (sessions were on two consecutive days)	Delivery	Two seminars	Nutrition	Older adults	Attendance, demographics, comments, observations of volunteers and participant activities, choices of format	Demographics questionnaire; observation	Peer education process considered "highly acceptable" by 88% of participants.
Ness, 1992	130 (36 visited)	Canada Initial five months	Delivery	Ten two-hour sessions to increase nutrition knowledge, teaching skills; training resources developed by nutritionist	Nutrition	Older adults	Educator knowledge change; educator and participant feedback, satisfaction, acceptability of training for volunteers	Focus group interviews with peer educators; pre-/post-test for knowledge during training; personal interview with peer educators; phone interviews with seniors receiving visits	> 95% of peer educators increased knowledge scores by 10-15% after training; 90% said training adequately prepared; Seniors reported using materials/information, preferred in-person, enjoyed learning from peer educators.

First Author, Year	Sample Size	Location and Duration of Study	Roles of volunteers	Volunteer training	Curriculum/ Program Focus	Volunteers description	Data Collected	Evaluation Method	Findings
Shannon, 1983	933	Pennsylvania Five months	Delivery	Two two-day training workshops	Nutrition	Older adults	Nutrition knowledge and attitude of volunteers; volunteer opinions of preparation in workshops, materials, support, their experiences as peer educators	Pre-/post-questionnaires for peer educators; educator logs; evaluation questionnaires for participants; follow-up group interviews with peer educators	Recruiters found "a large pool of willing and qualified peer educators did not exist." NS increase in peer educators' nutrition knowledge post-training; session well organized, provided beneficial information; 17 peer educators said experience good, 16 said peer education approach should continue for elderly; training workshops very effective in preparing for role as educators.
Sutherland, 1987	17	Florida Seven months	Delivery	In-service training	General health	Older adults and two exercise specialists	Cholesterol, weight, blood pressure, pulse	Physical measurement	14 participants: mean weight loss 6.35 lb, 15 participants mean systolic blood pressure reduction 25.2 mmHg, 13 mean diastolic blood pressure reduction 14.92 mmHg.

### *Key Findings*

**Feasibility of Recruiting Volunteers.** Each of the 14 articles reported that investigators recruited and used volunteers in intervention delivery. Three articles clearly stated the researchers' recruitment objective—the number of volunteers desired for proper delivery of the intervention (Dorgo, Robinson, & Bader, 2009; Etkin, Prohaska, Harris, Latham, & Jette, 2006; Shannon, Lewis, Davis, & Smiciklas-Wright, 1983). In the study by Dorgo et al. (2009), researchers sought to recruit 30 volunteers and that was the number they trained. Etkin et al. (2006) sought 100 volunteers for their study and had 103 enroll. However, they also reported that only 82 volunteers began the program and only 63 provided follow-up information. In the study by Shannon et al. (1983), the objective was to recruit 20 volunteers and although many who were asked were unwilling to participate, 20 were recruited, with two more added later.

**Feasibility of Peer Educators as Volunteers.** All but three studies focused on a peer educator approach to health education; those three that did not focus primarily on peer educators incorporated students as volunteers (Etkin et al., 2006; Hedley, Keller, Vanderkooy, and Kirkpatrick, 2002; Hooker et al., 2005). Indicators of feasibility for a peer educator approach include ability to recruit enough older adult volunteers for program delivery, older adults' ability to properly deliver a program, older adult volunteers' satisfaction with the program they delivered, older adult participants' satisfaction with the program as delivered by their peers, and the cost associated with a peer-facilitated approach. Of the 11 studies that specifically used a peer educator approach, only two reported their recruitment objective (Dorgo et al., 2009; Shannon et



al., 1983). Both, as mentioned earlier, recruited a desired number of volunteers. Four studies described monitoring peer volunteers for proper program delivery (Castro, Pruitt, Buman, & King, 2011; Dorgo et al., 2009; Laforest, Goldin, Nour, Roy, & Payette, 2007; Ness, Wilbur, & Elliott, 1992). Eight studies reported that older adult volunteers were satisfied with the programs they delivered (Buonocore & Sussman-Skalka, 2002; Etkin et al., 2006; Hedley et al., 2002; Hooker et al., 2005; Laforest et al., 2007; Lynde, 1992; Ness et al., 1992; Shannon et al., 1983). Nine studies reported that older adult participants were satisfied with the peer educator programs (Buonocore & Sussman-Skalka, 2002; Etkin et al., 2006; Hedley et al., 2002; Ho et al., 1987; Hooker et al., 2005; Laforest et al., 2007; Lynde, 1992; Ness et al., 1992; Shannon et al., 1983). One study performed a cost analysis and found the marginal cost of the intervention if coordinated by two volunteers would be less than one-third the price of a paid coordinator (Krieger, Castorina, Walls, Weaver, & Ciske, 2000).

**Roles of Volunteers.** The roles fulfilled by volunteers in the studies found can be divided into three main categories: administration (n=2), delivery (n=8), and support (n=4). Administrative tasks performed by volunteers in Hedley et al.'s (2002) study included identifying risk factors for older adults living in the community, setting goals for a nutrition program, planning outcomes, helping to implement activities, and determining the role of a hired nutrition educator. In the study by Ho et al. (1987) volunteers had the administrative tasks of recruiting and training additional volunteers.

Curriculum or program delivery roles performed by volunteers in the various studies included giving presentations (Buonocore & Sussman-Skalka, 2002; Lynde,

1992; Shannon et al., 1983; Sutherland et al., 1987), delivering prescribed exercise programs (Dorgo et al., 2009), and visiting older adults in their homes to convey information (Etkin et al., 2006; Laforest et al., 2007; Ness et al., 1992).

In three studies, volunteers contacted participants via telephone to provide motivation and physical activity support (Batik et al., 2008; Castro et al., 2011; Hooker et al., 2005). One study used volunteers to call participants and encourage them to receive immunizations (Krieger et al., 2000). Volunteers in the study also addressed specific barriers to immunization faced by the participants.

**Conclusions about Feasibility of Volunteers.** Beyond reporting program results pertaining to participants, five studies specifically concluded that health information programs that incorporate volunteers are feasible or suitable (Etkin et al., 2006; Ho et al., 1987; Hooker et al., 2005; Laforest et al., 2007; Lynde, 1992). Volunteers were considered assets to program delivery (Buonocore & Sussman-Skalka, 2002); they were also deemed useful, appreciated, and capable of taking responsibility for delivery (Hedley et al., 2002; Lynde, 1992; Ness et al., 1992; Shannon et al., 1983). Dorgo et al. (2009) considered their program delivered by peer volunteers to be superior to the same program delivered by young professionals/students. Nine articles concluded that to involve volunteers successfully, proper supervision, training, and/or support from staff or a professional is necessary (Buonocore & Sussman-Skalka, 2002; Castro et al., 2011; Etkin et al., 2006; Ho et al., 1987; Hooker et al., 2005; Laforest et al., 2007; Lynde, 1992; Ness et al., 1992; Shannon et al., 1983). The success of the study by Dorgo et al. (2009) may have partially been due to the extensive, 30-week training program that peer exercise

mentors completed. Four studies went beyond feasibility and determined that programs involving volunteers were successful (Castro et al., 2011; Dorgo et al., 2009; Krieger et al., 2000; Sutherland, 1987).

## **DISCUSSION**

### *Feasibility of Recruiting Volunteers*

The number of volunteers needed for delivery compared to the number recruited can serve as an indicator of the feasibility of recruiting volunteers for the proper delivery of health-related information to older adults. Because only 3 out of 14 studies stated the number of volunteers needed or desired for the delivery of the intervention or treatment, we were limited in our ability to judge whether enough volunteers are commonly recruited to properly administer interventions, treatments, or evaluations. Based on the ability of Dorgo et al. (2009), Etkin et al. (2006), and Shannon et al. (1983) to recruit the desired numbers of volunteers for their studies, it is feasible to recruit enough. However, in the study by Hooker et al. (2005), one of the “most often mentioned challenges by local lead agency staff representing each site” was volunteer recruitment (p. 159). Etkin et al. (2006) noted that site coordinators in their study reported “difficulties with volunteer trainers,” and further described the difficulties as “hard to get enough volunteers, volunteers dropped out” (p.288). Shannon et al. (1983) stated that, “a large pool of willing and qualified peer educators did not exist” (p. 124). The fact that volunteers were recruited and used, despite difficulties, for all 14 studies indicates that it is feasible to recruit volunteers for the delivery of health-related information to older adults.

### *Feasibility of Peer Educators as Volunteers*

Peer education is favored because it is assumed that people will more likely listen to someone to whom they can relate, whether in age, social status, or culture (Buonocore & Sussman-Skalka, 2002; Shannon et al., 1983; Weinrich, Weinrich, Stromborg, Boyd, & Weiss, 1993). The goal in using volunteers for program delivery is often to decrease program costs as public health professionals are usually constrained by costs (Lynde, 1992). By combining these two concepts and using peers as volunteers, educational programs and their participants can benefit two-fold. The studies found supported this concept; not only is it feasible but also preferable to use a peer educator approach.

### *Roles of Volunteers*

The level of responsibility given to volunteers in the study by Hedley et al. (2002) is considered here to be higher than in the other studies because these volunteers were involved in the very formation of the program. Having the authority to make decisions for the direction of a program as well as help implement it allowed the volunteers to shape the program to meet what they perceived, as community members, to be the greatest needs. The unique responsibility given to volunteers in the study by Ho et al. (1987) of recruiting and training participants in the same way they themselves had been trained elevated them to a position similar to that of a professional health educator in the same study. These studies demonstrated that it is feasible for volunteers to assume high levels of responsibility in the delivery of a health program for older adults.

In eight studies, volunteers primarily engaged in the hands-on portions of the various programs. With greater supervision from researchers or paid staff, and fewer administrative tasks involved, the level of responsibility required of volunteers in these studies might be considered as slightly less. However, we cannot conclude that they had smaller workloads because the tasks they performed varied widely. The fact that volunteers performed such a wide variety of tasks indicates that volunteers can be a valuable resource for program implementation for older adults. Each volunteer brings a unique perspective and experience set to the delivery of a program. However, for any new program, a feasibility study must be conducted to determine if a certain population of volunteers is capable of delivering that particular program.

In the remaining four studies, the primary role of volunteers was to interact with participants via the telephone, instead of in person (Batik et al., 2008; Castro et al., 2011; Hooker et al., 2005; Krieger et al., 2000). As such, the workload of these volunteers might be considered as less, however, the number of participants the volunteers called varied. For example, the study by Batik et al. (2008) only involved 14 total participants, but in the study by Krieger et al. (2000), each volunteer was responsible for calling 20-25 participants. In both cases, the intervention influenced positive results among participants—increased self-reported physical activity (though non-significant) (Batik et al., 2008) and increased self-reported rates of influenza and pneumococcal immunizations (Krieger et al., 2000). Those positive results indicate that volunteers are capable of delivering support via telephone. However, their findings cannot be generalized to other types of programs or populations. There is still a need to assess the feasibility of using

volunteers for any particular program. The amount of work volunteers are expected to do, as well as the population from which they are drawn, will influence their ability to carry out the program.

### *Conclusions about Feasibility of Volunteers*

Volunteers were consistently found to be valuable resources, however, due to their limited training, it was recommended that a staff person or professional should be on hand to offer support or supervision and ensure proper intervention delivery. Not only did authors find this to be a feasible approach, in certain cases, they concluded it was successful. Due to the uniqueness of each study, feasibility of a volunteer-based delivery cannot be generalized to other curricula, programs, or audiences. It is necessary to conduct a feasibility study for any unique program in the future seeking to use volunteers in delivery.

## **CONCLUSION**

Based upon the studies found, it is feasible to use volunteers, particularly older adult, peer volunteers, in a variety of roles to deliver a health-related intervention to older adults. Because many of the studies produced qualitative data, the findings give researchers a better understanding of what is required for volunteers to deliver health information to older adults. Time and money are often not readily available for the education of older adults; thus, volunteers are of utmost importance in health-related education delivery. Specific feasibility studies are needed to show the willingness and capability of volunteers to deliver particular interventions to older adults. In order to

firmly establish efficacy, effectiveness, and efficiency of volunteers in this capacity, it is necessary to conduct studies under randomized controlled trial (RCT) conditions. Only under those conditions can results be generalized to conclude that volunteers are just as, if not more, effective and efficient as professionals in delivering health education to older adults.

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## CHAPTER THREE

### COOKING HEALTHY, EATING SMART (CHES): EVALUATING THE FEASIBILITY OF USING A VOLUNTEER-BASED APPROACH TO DELIVER NUTRITION AND FOOD SAFETY EDUCATION TO RURAL, OLDER ADULTS

#### INTRODUCTION

Poor nutrition can exacerbate many of the chronic conditions that older adults face (WHO, 2003), resulting in a cycle of poor health and high healthcare costs, and potentially limiting their ability to age in place. Studies have shown that many rural, older adults do not meet the recommendations for a healthy diet, demonstrating a need for interventions tailored to meet the needs of that demographic (Johnson et al., 2008; Marshall, Stumbo, Warren, & Xian-Jin, 2001; Savoca et al., 2009; Vitolins et al., 2007). However, creating nutrition interventions for rural, older adults can be challenging due to their limited access to resources, such as grocery stores. Thus, appropriate interventions must consider the context in which older adults live.

Culturally appropriate nutrition education is one way to improve health outcomes of rural, older adults. A review by Bandayrel and Wong (2011) showed that nutrition education interventions could affect positive change in older adults, such as improved nutrition knowledge or dietary intake. Sahyoun, Pratt, and Anderson (2004) developed a framework that researchers can follow in designing a nutrition education intervention for older adults. They recommended that a successful intervention should include “nutrition messages that are limited in number, simple, targeted, practical, and reinforced; the use of incentives; regular contact with health professionals; and hands-on activities” (p. 66). Nutrition education for rural, older adults must also be tailored to their environmental

surroundings, as their access to food stores and cooking equipment may be limited.

Researchers from Clemson University and the Medical University of South Carolina (MUSC) developed a nine-lesson curriculum with such principles in mind, to provide rural, limited-resource, older adults with culturally appropriate nutrition and food safety information. Each of the nine lessons included an objective, learning questions, a lesson content summary, an activities chart, activity guides, a supply list, and recipe handouts. Take-home items that supported the concepts from each lesson incentivized participant attendance. The curriculum designers used Revised Bloom's Taxonomy, an educational framework, to classify expectations of student learning post-instruction (Anderson et al., 2001). Using a sound educational model increases the likelihood of achieving specified learning objectives. CHES was developed, formatively evaluated, and piloted in separate studies, for which the data is presented elsewhere.

Ideally nutrition or healthcare professionals would deliver the curriculum: Cooking Healthy, Eating Smart (CHES). However, community-based programs can rarely afford to hire a professional so alternative delivery strategies are needed. Volunteers, provided with adequate training and management have been reported to have made considerable contributions to community programs in place of professionals (Konstant, Hughes, & Dowdy, 1991; Adams et al., 2003; Hillers, Jennings, & Penaranda et al., 1989) at considerably less cost (Krieger, Castorina, Walls, Weaver, & Ciske, 2000). A review of the literature has shown that, in general, using volunteers to deliver health information to older adults is a feasible method. However, it is necessary to specifically determine the feasibility of using volunteers to deliver the CHES curriculum

to rural, older adults in South Carolina. This community-based participatory research (CBPR) study consisted of a formative evaluation using focus group methodology and a feasibility study using a case study methodology to examine the feasibility of using volunteers to deliver CHES to rural, older adults in South Carolina.

The following six research questions guided the investigation of the feasibility of this volunteer-based approach: 1) Is it feasible to deliver a food safety and nutrition education intervention solely through volunteers as the educators? 2) How are volunteers affected by and how do they respond to the planning and delivery of nutrition and food safety information to rural older adults? 3) What are the motivators/incentives necessary for volunteers to properly and effectively deliver a nutrition and food safety education intervention? 4) To what extent should paid staff be involved in working with the trained volunteer groups in the delivery of a nutrition and food safety curriculum? 5) Would recruiting young people along with older community members work as well as or better than recruiting from a service-based organization of older adult volunteers in the implementation of a nutrition and food safety intervention? 6) What are the advantages and disadvantages when volunteers deliver a nutrition and food safety intervention to older adults? Indicators of feasibility included: 1) the project team's ability to recruit enough volunteers, 2) the volunteers' willingness to deliver a nutrition and food safety curriculum, 3) the volunteers' ability to deliver all nine lessons without help from the project team, and 4) the volunteers' ability to commit the amount of time necessary to deliver the curriculum. The aim of this study was to help sustain or improve the health of older South Carolinians so they can age in place. The two objectives to achieve this aim

were: 1) to formatively evaluate the *incentives* and *barriers* for volunteers to deliver a nutrition and food safety curriculum to older adults, and 2) to evaluate the *feasibility* of using volunteers to deliver a nutrition and food safety curriculum to rural older adults.

## **METHODS**

Approval was received from the Clemson University Institutional Review Board (IRB) to conduct this study. A comparative case study method was used to assess the feasibility of using volunteers to deliver of Cooking Healthy, Eating Smart (CHES) to rural, older adults in SC.

### *Formative Evaluation*

Between September and October 2011, members from the SC chapter of the American Association of Retired Persons (AARP) and the South Carolina Family and Community Leaders (SCFCL) participated in seven focus groups to identify the incentives and barriers for volunteers, such as themselves, to deliver CHES (N=65 participants). A trained moderator used scripted questions and protocol based on recommended methodologies (Morgan, Krueger, & King, 1998). Participant responses suggested it would be feasible to use volunteers to deliver the CHES program, as many referred to the good feelings associated with volunteering, and some described CHES as “*a fantastic program*” and “*a great idea.*” Participants indicated the most common barriers to volunteering were overwhelming workloads and responsibilities, social conflicts, bad attitudes demonstrated by other volunteers, and lack of time (due to doctor’s appointments, and other volunteering or family commitments). They also

pointed out that age and disabilities were real limitations. These findings led to the development of the CHES volunteer training manual, which was used to train our volunteers.

### *Volunteer Recruitment and Training*

During Summer 2012, one project team member attempted to contact 61 individuals associated with senior organizations (e.g. AARP, SCFCL) throughout the state (email/phone; 26 individuals did not respond). During Fall 2012, a project team member contacted representatives of Eat Smart, Move More Richland County, who sent a recruitment email to University of SC graduate students in the School of Public Health (listserv). A project team member also contacted members of a church in Chapin, SC (phone).

Eleven volunteers were recruited to deliver CHES in two locations in SC—Case 1 (n=6) was based in Laurens, SC at an apartment complex for retired older adults, hereafter referred to as Apartment Group and Case 2 (n=5) was based in Chapin, SC at a church, hereafter referred to as Church Group. Four SCFCL members and two apartment residents comprised the Apartment Group and three graduate students and two local residents comprised the Church Group. Two members of the project team trained each group using the CHES volunteer training manual between November and December 2012. Time available for training was limited by volunteers' schedules, so the Apartment Group was trained in two four-hour sessions and the Church Group was trained in one five-hour session. The project team demonstrated how to present a lesson, explained research protocols, and helped volunteers establish roles within each volunteer group.

One volunteer in the Apartment Group joined after initial training so did not serve as an educator. All eleven volunteers completed a modified Collaborative Institutional Training Initiative (CITI) training prior to curriculum delivery.

### *Curriculum Delivery*

Each group was provided necessary supplies and a \$250 Visa<sup>®</sup> gift card to purchase perishables. The two groups delivered CHES at their respective locations between January and April 2013. Both groups delivered one lesson per week for eight weeks, except the sixth and seventh lessons were combined into one session due to a one-week break. One project team member assisted the Church Group in lesson delivery on three occasions.

### *Data Collection*

Data were collected at three points in time: before, during, and after CHES delivery. To gather baseline data before delivery, a nutrition and food safety knowledge test (32 items) and a self-efficacy scale (20 items) were administered to volunteers (n=10). Each of the 32 multiple-choice knowledge test questions coincided with a specific learning question from the curriculum. The self-efficacy scale, based on a scale developed by Sherer et al. (1982) and modified by Bosscher and Smit (1998), allowed volunteers to rate their confidence in their ability to accomplish tasks in general and specifically related to CHES.

During the eight weeks of CHES delivery, information concerning the volunteers' experience with the curriculum was collected. Following each lesson and depending on



the roles they performed, volunteers completed Educator Feedback forms (8 total completed by Apartment Group; 11 completed by Church Group) and/or Volunteer Feedback forms (36 total completed by Apartment Group; 14 completed by Church Group). Three project team members recorded their reflections after their interactions with volunteers at trainings, participant data collections, and lesson delivery for the three sessions requiring project team assistance at the Church.

After CHES delivery, volunteers' nutrition and food safety knowledge and self-efficacy were measured using the same instruments used at baseline. Also, one project team member who did not assist in training the volunteers used a semi-structured format to conduct and audio-record interviews with all but one volunteer (who could not be reached) by way of individual Internet phone calls (Skype™, VOIP). The interview script was comprised of 11 questions pertaining to volunteers' overall program experience, including their background experiences, incentives for volunteering, views of the CHES program and volunteering, and perceived impact of CHES.

### *Data Analysis*

Changes in individual volunteers' nutrition and food safety knowledge and self-efficacy were calculated using SAS® 9.2. Educator and Volunteer Feedback form responses were organized by case (Case 1: Apartment, Case 2: Church) and lesson (1-9) and one project team member identified themes. Interview recordings were organized by case and transcribed by a research assistant. Transcriptions were reviewed for accuracy by another research assistant, and manually, independently coded by two project team members who used constant comparison to identify themes (Strauss, 1987). Project team

reflections were also organized by case and manually, independently coded by two project team members, who used constant comparison to identify themes (Strauss, 1987).

## **RESULTS**

### *Volunteer Knowledge and Self-Efficacy*

Positive and negative changes in volunteer knowledge and self-efficacy were evident in both groups. The proportions of volunteers who increased their knowledge scores were similar between groups. In the Apartment Group, three volunteers (out of five who took the test at baseline and follow-up) increased their knowledge scores, while two decreased. In the Church Group, two volunteers (out of three who took the test at baseline and follow-up) increased their knowledge scores, while one decreased.

The proportion of volunteers who increased in self-efficacy from the Apartment Group was greater than the proportion of volunteers who increased from the Church Group. In the Apartment Group, four volunteers (out of five who completed the instrument at baseline and follow-up) increased in self-efficacy and one decreased. Whereas in the Church Group, only one volunteer (out of three who completed the instrument at baseline and follow-up) increased in self-efficacy, while two decreased.

### *Volunteer Curriculum Experience*

Educator and Volunteer Feedback form responses from the Apartment Group indicated that the lesson organizer and activity guides were clear and participants enjoyed the lessons. Their critiques in regards to the curriculum were primarily supply-related— noting difficulty with the black light (to show “germs” on hands) and requests for

additional supplies, such as a can opener and strainer. The amount of time the Apartment Group reported spending on project responsibilities ranged from 0 to 13 hours. The amount of time spent in lesson preparation reported on their Educator Feedback forms ranged from 0.5 to 3 hours.

The Church Group was more critical of the curriculum. Responses on both types of forms indicated that the volunteers desired more information, such as information about the pasteurization process or ways to convert ounces (the units used in the curriculum) to grams (the units used on Nutrition Facts labels). They also indicated that they would have liked the supply boxes organized differently. However, in response to the Volunteer Feedback form question, “How do you feel the lesson went?” all of the respondents indicated that the lessons went well. Similar to the Apartment Group, the Church Group also offered several suggestions for different supplies to include (such as a ruler and additional handouts) as well as ways to improve the curriculum (such as adding guidance for eating out). Some responses included extensive lists of the questions that participants asked during the lessons. The amount of time spent on project responsibilities ranged from 0 to 3 hours. The amount of time spent in lesson preparation was similar to that reported by the Apartment Group, ranging from 0.5 to 3 hours.

### *Volunteer Program Experience*

**Background.** According to their interview responses, volunteers in the Apartment Group had varied levels of experience but no formal training in education, nutrition, or food safety. This was similar to the Church Group, who also reported only having informal training or work experience in nutrition or food safety (some of the

students had taken a nutrition class). However, three volunteers in the Church Group had formal training in education.

**Motivation.** The Apartment Group was motivated to volunteer for CHES by social connections (i.e. helping a friend, interacting with people), personal interest in nutrition, the opportunity to provide a service and help seniors, and a desire for a program like CHES to be delivered at the apartment complex. The Church Group also reported that they were motivated by social connections, as well as the opportunity to gain experience in community nutrition education, the potential to benefit the community, their interest in volunteering, nutrition, and older adults, and positive experiences with volunteering in the past.

**CHES Program.** The Apartment Group reported experiencing difficulties during CHES delivery: the time commitment was more than expected, the repetition in the curriculum caused some confusion, logistics—supply storage and money for fresh ingredients—were reportedly challenging, and one volunteer desired that demonstration recipes include doubled measurements. The Church Group also reported that the time commitment was difficult. Other reported difficulties for the Church Group included a rushed training, an insufficient number of volunteers, experiencing frustration over the content of the curriculum, and difficulty with participant recruitment.

**Personal Impact.** The Apartment Group perceived that CHES influenced them personally through new and strengthened friendships, new nutrition knowledge, and the acquisition of healthier cooking habits. They also reported that their impact on the CHES participants was evidenced by new friendships that developed, participants' awareness of

nutrition's impact on the body, participants' desire for CHES to continue, and participants' desire to try new recipes. The Church Group perceived that CHES had an impact on them personally through learning new nutrition knowledge and knowledge about older adults, how to facilitate classroom teaching, and the inherent differences in teaching older adults versus children. Some reported that they had influenced each other and the project team through giving feedback to improve presentation skills, building and strengthening friendships, and discussing a popular diet. The volunteers said their impact on the CHES participants was evidenced by participants' clothing choices—one volunteer reported hoping that wearing gym clothes would influence participants to wear gym clothes and be more physically active—participants' enjoyment, interaction, and engagement, new friendships, and the impressed importance of nutrition for older adults.

**Volunteering.** All volunteers maintained positive views of volunteering after helping with CHES. Some in the Apartment Group reported viewing volunteering as a rewarding experience that provides a service, gives people knowledge, and promotes feelings of enjoyment and satisfaction, but that volunteering again in the future would depend on the type of program and the labor involved. One volunteer from the Apartment Group also informed the interviewer that CHES was a cost effective alternative to a similar program offered at the local hospital. Volunteers in the Church Group viewed volunteering as a rewarding, worthwhile experience, allowing them to give and be helpful to others.

### *Project Team Reflections*

The project team noted that the Apartment Group showed initiative by taking time

to plan for Lesson 1 after the first data collection session and spending their Visa<sup>®</sup> gift card funds carefully. After working with the Apartment Group, the project team noted that volunteers should be given a quiet space to complete the knowledge and self-efficacy instruments (one volunteer had difficulty concentrating as other volunteers had already completed their instruments). Also, the project team found that the Apartment Group volunteers should be assigned specific tasks prior to assisting with data collection. One project team member observed an Apartment Group volunteer relating to a participant on the basis that both had recently experienced the loss of a loved one.

Additionally, the project team noted that the Church Group volunteers were motivated and interested in the project, the graduate students particularly appreciated the research process, all were eager to educate older adults, there was an intergenerational dynamic within the group, they demonstrated timely communication skills, and they had connections to the community through the church members/local residents who were volunteers. One issue the project team observed was that the student volunteers did not seem familiar with the training manual at data collection, indicating that they had not studied it. The project team noted that, just as with the Apartment Group, volunteers' roles in data collection should be more firmly established before beginning and that participant privacy during data collection should be emphasized.

## **DISCUSSION**

The main objective of CHES II was to assess the *feasibility* of delivering a nutrition and food safety curriculum to older adults with volunteers serving as the sole educators. Feasibility depends on the project team's ability to recruit enough volunteers,

volunteers' willingness, and their ability to properly deliver CHES and commit the amount of time necessary. The various sources and types of descriptive and qualitative data collected helped answer our research questions through the triangulation of data, or "the development of converging lines of inquiry" (Yin, 2014, p. 120).

### *Feasibility of Volunteers Delivering a Nutrition Curriculum*

**Volunteer Recruitment.** When the project team tried to recruit volunteers, there was a vast lack of response, indicating that the good intentions and support that the leadership of the SCFCL and AARP expressed for CHES did not equate to individual members' commitments to volunteer. This was similar to what Shannon, Lewis, Davis, and Smiciklas-Wright (1983) found, that "a large pool of willing and qualified peer educators did not exist" (p.124).

**Volunteer Willingness.** The focus group findings indicated that many older adults would be willing to volunteer for CHES, as many of the participants referred to the good feelings that they associate with volunteering, and some described CHES as "*a fantastic program*" and "*a great idea.*" By being trained and delivering CHES, the two groups of volunteers proved that they were willing to volunteer.

**Lesson Delivery.** The Apartment Group was able to deliver all nine CHES lessons without assistance from the project team, as expected. The Church Group required assistance from a project team member on several occasions. The Apartment Group may have had an advantage due to their group dynamic—many of them had worked together in the past, they had a strong, experienced volunteer leader, and they all lived nearby—whereas the Church Group was a mixture of local community members

and students (with other school-related responsibilities) who had to commute to their delivery location.

**Time Commitment.** The amount of time necessary to be trained and deliver CHES was a barrier to volunteering. Focus group participants and the volunteers, in their interviews, mentioned that the time commitment would be or was a source of difficulty. This issue was also evident in a study by Laforest, Goldin, Nour, Roy, and Payette (2007) who reported that some potential volunteers did not participate in their study due to a lack of time. The time of year during which our case study took place likely influenced the amount of time volunteers could commit to CHES. Conducting training in November and December presented an advantage for the students, as they had breaks from school, but made scheduling more difficult due to holiday plans. Delivering CHES in January through April allowed for completion before Easter and the summer months when volunteers and participants might be expected to travel.

#### *Effect of a Nutrition and Food Safety Program on Volunteers*

Based on their interview responses, the volunteers from both groups enjoyed volunteering for CHES, learned from the experience, and many would volunteer for something like it again if given the opportunity. This is similar to the findings of Buonocore and Sussman-Skalka (2002), who reported that volunteers would recommend others to volunteer for that specific program, Etkin et al. (2006), who reported positive program ratings from all volunteers, and Shannon et al. (1983), who reported positive program ratings from 17 out of 22 volunteers. More than half of the volunteers increased their nutrition and food safety knowledge score and more than half increased in self-



efficacy, indicating that the volunteers benefited from this experience. Ness, Wilbur, and Elliott (1992) and Shannon et al. (1983) also found that volunteers improved their nutrition knowledge scores post training.

### *Motivators and Incentives Needed*

Based on the phrasing of the research question which asked what motivators and incentives are necessary for volunteers to properly and effectively deliver an intervention, it should be noted that due to the nature of this feasibility study, conclusions cannot be drawn regarding the effectiveness of delivery. The discussion here is in reference to volunteers' motivation to devote the time and energy necessary to deliver CHES. Given that the volunteers were expected to (and many did) devote a considerable amount time and travel to CHES, any volunteers in the future need to be convinced of its importance in their community. Community-building is in accordance with one focus group participant's comment: *"I think that you need to inspire us that this is important and that we need it because we all do so much already."* These volunteer teams had good reason to be involved because they were working with their peers and/or gaining experience in the area of nutrition education. For example, the graduate students in the Church Group were excited to work on the CHES project because of the volunteer, leadership, and public speaking experience it gave them. Also, all volunteers who provided a record of their travel mileage spent on CHES were reimbursed for their travel. Guaranteed reimbursement is a good incentive for volunteers to participate in the future. The incentives that were the most apparent in the volunteer interviews were the opportunities to help people and work in the interesting area of nutrition. The benefits of volunteering

for a nutrition education intervention were also described by Hedley, Keller, Vanderkooy, and Kirkpatrick (2002), who noted that volunteers “had become more informed about nutrition and resources, and believed that they were eating better as a result of participating in the planning process and the educational activities” (p. 68).

#### *Paid Staff Involvement*

The Church Group required a great deal of assistance from the project team in implementing CHES. The independence of the Apartment Group, in contrast, demonstrates the variability between the two volunteer groups. To account for the possible variability among volunteer groups in the future, and to maintain the fidelity of the curriculum, paid staff should be highly involved in working with the volunteer groups. This is in keeping with other studies in which volunteers were monitored by staff to maintain the fidelity or safety of the intervention (Castro, Pruitt, Buman, & King, 2011; Dorgo, Robinson, & Bader, 2009; Laforest et al., 2007).

#### *Young People and Community Members vs. Service-Based Group*

The intergenerational aspect of the Church Group allowed for contributions from various perspectives. It was evident that the graduate students were familiar with research processes and the local residents were invested and tied to the local community and thus the participants. Various perspectives are a valuable resource when delivering an intervention, as collaboration among people from various disciplines has been demonstrated or recommended for use in community-based research studies (Higgins & Barkley, 2004; Ness et al., 1992; Laforest et al., 2007; Sutherland, Cowart, & Heck,

1987). The volunteers in the Apartment Group, however, were closer in age and disclosed in their interviews that some had worked together in the past and were a part of an established volunteer organization. Their experience with volunteering likely contributed to the amount of frugality, initiative, and organization that they exhibited.

### *Advantages and Disadvantages of Volunteer Delivery*

An advantage of having volunteers deliver CHES in their own communities is the potential for preexisting rapport between community members to enhance participants' receptivity to CHES. People tend to trust those that they already know and so it might take less time for a community member to build a good, trusting relationship with the participants than it would if a professional came into their community from outside to teach CHES. The building of friendships and social connections were common themes in interviews with the Apartment Group and the Church Group.

It was difficult, however, to recruit enough volunteers and coordinate with their schedules to hold comprehensive trainings. Due to the time constraints of the volunteers' schedules, the trainings could not be comprehensive, and it was up to the individual volunteers to read sections of the training manual on their own time. The lengths of trainings were brief, similar to volunteer trainings in the studies described by Hooker et al. (2005)—four- to eight-hour trainings, Laforest et al. (2007)—two three-hour trainings, and Krieger et al. (2000)—a four hour training. Time spent shopping for food supplies and traveling was an additional burden on some of the volunteers. If those burdens can be somewhat relieved and the volunteers devote enough time for training, there is great potential for them to disseminate CHES to far more people than if it were delivered by

staff alone. The danger, however, then becomes the high variability between volunteers, in teaching ability, in nutrition knowledge, and in personal beliefs about the way things should be done. Two volunteers in this study distinctly stated that they wanted the curriculum to change or that they disagreed with some of its contents. If volunteers are sent into the community without the proper understanding that they must follow protocol, they may be inclined to present the content differently than intended. To control for this, it is necessary for a paid staff person to closely supervise and evaluate volunteer delivery of the curriculum, just as program fidelity was monitored by staff supervision in studies by Castro et al. (2011) and Dorgo et al. (2009).

### *Study Limitations*

Despite the collection of different forms of data, this study has limitations. Due to its pre-experimental, case study design, our findings cannot be generalized to other curricula or populations. The findings relate specifically to the feasibility of using volunteers to deliver CHES, a nutrition and food safety education curriculum designed for low-income, rural, older adults in South Carolina. We used a convenience sample and there was no control group. There was a potential for social bias in volunteer feedback during interviews and researcher bias in the qualitative data analysis methods used. However, in the growing field of community-based participatory research, such qualitative methods are common. Researchers seeking to assess the feasibility of a curriculum for a particular audience would benefit by considering this methodology for the collection and analysis of various forms of qualitative evidence.

## CONCLUSION

Based on these findings, we believe it is feasible to use volunteers to deliver a nutrition and food safety curriculum to rural, older adults. We recommend that volunteer groups be highly trained, guided, and supervised by paid staff to maintain curriculum fidelity. A paid staff person with experience in food safety and nutrition education should be the lead coordinator at each site. He or she would work very closely with volunteers, so they do not feel overwhelmed or confused about their responsibilities. The paid employee can guide volunteers, assign them specific tasks to provide clarity, and ensure that protocols are followed.

For a nutrition and food safety curriculum to be implemented throughout South Carolina or the United States, many people would be required to help. Since funds are limited for such a project, it is logical to involve unpaid volunteers, both for efficiency and for the innate connection and grounding that they provide to their local community. In this study, one volunteer group was composed mostly of SCFCL members. Recruiting volunteers from such an organization as SCFCL is an option for the spread of the CHES program, as they are peers of the target audience of older adults, living and working in the same communities. To maximize the potential effectiveness of interventions, we believe members of the target community should be involved in their development and implementation. More community-based, participatory research studies are needed to tailor nutrition education interventions to older adults in different locations.

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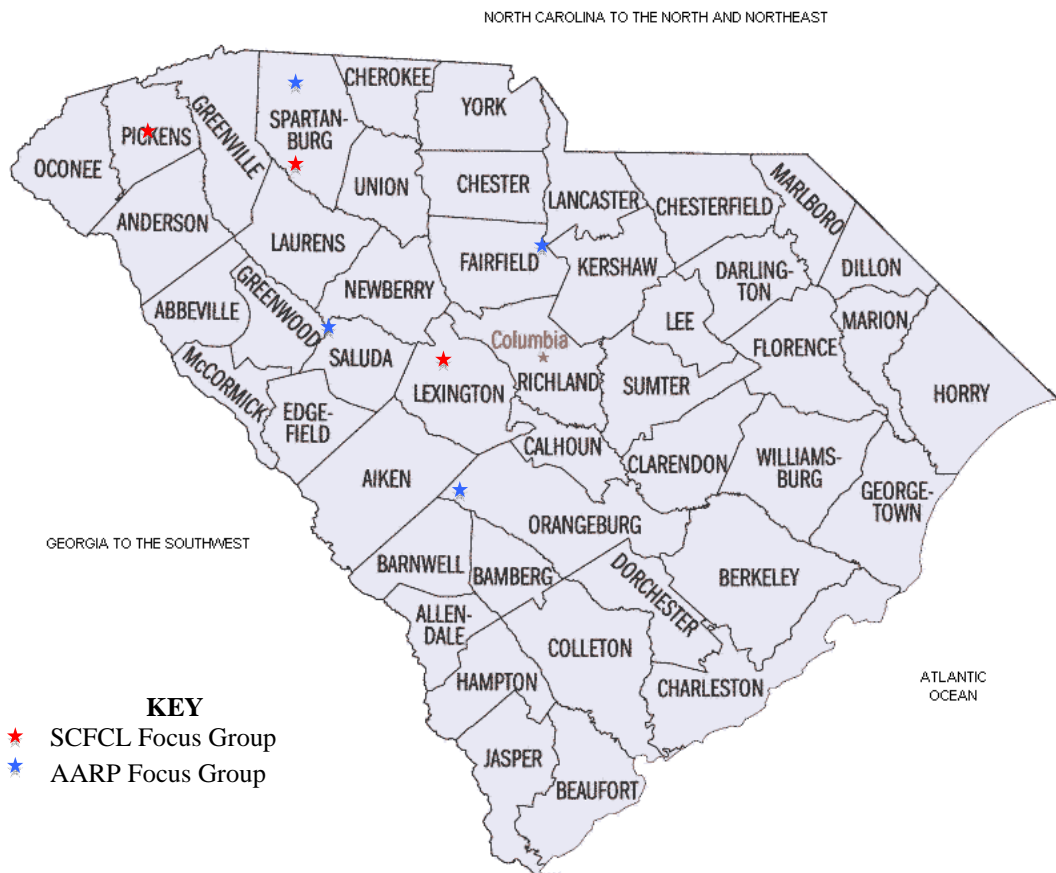
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## APPENDICES

## Locations of Focus Groups



## Appendix B

### Focus Group Questions

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#### Focus Group Questions

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##### Volunteer Experiences

1. Have you ever been a volunteer?  
If yes, please tell us the name of the organization for which you were a volunteer.
2. What did you do as a volunteer?

##### Reasons to Volunteer

3. In general what would make you want to volunteer?
4. In general, what would make you not want to volunteer?

##### Challenges to Forming a Team

5. What difficulties do you see in trying to recruit individuals from FCL or AARP to be a member of the team?
6. What challenges do you think there might be in these teams planning and delivering the program?
7. How do you think we can overcome the challenges?

##### Additional Comments

8. Is there anything that we've left out that you'd like to add or discuss? Other concerns?
-

## Appendix C

### Cooking Healthy, Eating Smart – Curriculum Overview

<b>LESSON</b>	<b>OBJECTIVE</b>	<b>LEARNING QUESTIONS</b>	<b>ACTIVITIES</b>	<b>DEMO RECIPE</b>	<b>TAKE-HOME RECIPE</b>	<b>TAKE-HOME ITEM</b>
1: Food Safety	Participants will understand how to handle food safely.	<ol style="list-style-type: none"><li>1. Why is it important to control the growth of bacteria?</li><li>2. How do I wash my hands to prevent foodborne illness?</li><li>3. How do I clean surfaces in my kitchen?</li><li>4. How do I properly store leftovers?</li><li>5. What foods should I <u>not</u> eat because I am at an increased risk for foodborne illness?</li></ol>	<ol style="list-style-type: none"><li>1. Growth of Bacteria</li><li>2. Hand Washing</li><li>3. Food Safety Tools</li><li>4. Foods to Avoid</li><li>5. Cooking Demonstration—Basic Fried Rice</li><li>6. Take-Home Recipe—Chicken Fruit Salad</li></ol>	Basic Fried Rice	Chicken Fruit Salad	Refrigerator thermometer

LESSON	OBJECTIVE	LEARNING QUESTIONS	ACTIVITIES	DEMO RECIPE	TAKE-HOME RECIPE	TAKE-HOME ITEM
2: Less Fat	Participants will understand how to improve their diets with healthy, flavorful, and safe foods that contain less fat.	<ol style="list-style-type: none"> <li>1. What are the recommendations for eating fat?</li> <li>2. How do I get foods that contain less fat?</li> </ol>	<ol style="list-style-type: none"> <li>1. Fats in Food</li> <li>2. Low Fat Label Activity</li> <li>3. Ways to Lower Fat in Food Preparation</li> <li>4. Cooking Demonstration – Low-Fat Southern Style Green Beans</li> <li>5. Take-Home Recipe – Herbed Oven-Fried Chicken</li> </ol>	Low-Fat Southern Style Green Beans	Herbed Oven-Fried Chicken	Cooking spray
3: Protein	Participants will understand how to improve their diets with healthy, safe, and flavorful foods that contain protein.	<ol style="list-style-type: none"> <li>1. Why do we need to eat protein?</li> <li>2. How much protein should I eat each day?</li> <li>3. How do I choose and prepare healthy foods that contain protein?</li> </ol>	<ol style="list-style-type: none"> <li>1. Dietary Recommendations</li> <li>2. Comparing Protein Foods</li> <li>3. Protein in Food Preparation</li> <li>4. Cooking Demonstration—Burger Beans</li> <li>5. Take-Home Recipe—Egg Salad</li> </ol>	Burger Beans	Egg Salad	Freezer container, tape, and Sharpie®

<b>LESSON</b>	<b>OBJECTIVE</b>	<b>LEARNING QUESTIONS</b>	<b>ACTIVITIES</b>	<b>DEMO RECIPE</b>	<b>TAKE-HOME RECIPE</b>	<b>TAKE-HOME ITEM</b>
4: Less Salt	Participants will understand how to improve their diets with healthy, safe, and flavorful foods that contain less salt.	<ol style="list-style-type: none"> <li>1. Why should I control my salt intake?</li> <li>2. How much salt should I eat each day?</li> <li>3. Where does the sodium in my diet come from?</li> <li>4. Should I use a salt substitute?</li> <li>5. How do I select foods with less salt?</li> </ol>	<ol style="list-style-type: none"> <li>1. Nutrition, Hypertension, and Sodium</li> <li>2. Dietary Recommendations for Sodium</li> <li>3. Sources of Sodium</li> <li>4. Food Label Information</li> <li>5. Salt Substitutes</li> <li>6. Ways to Lower Sodium</li> <li>7. Cooking Demonstration—All-Purpose Seasoning Blend</li> <li>8. Take-Home Recipes—Spiced-Up Chicken; Skillet Potatoes</li> </ol>	All-Purpose Seasoning Blend	Spiced-Up Chicken Skillet Potatoes	All-Purpose Seasoning Blend

LESSON	OBJECTIVE	LEARNING QUESTIONS	ACTIVITIES	DEMO RECIPE	TAKE-HOME RECIPE	TAKE-HOME ITEM
5: More Fiber	Participants will understand how to eat healthy, safe, and flavorful foods that contain more fiber.	<ol style="list-style-type: none"> <li>1. What are the health benefits of eating fiber?</li> <li>2. How much fiber should I eat each day?</li> <li>3. Where can I get fiber?</li> <li>4. Should I take a fiber supplement?</li> <li>5. How can I increase my fiber intake?</li> </ol>	<ol style="list-style-type: none"> <li>1. Fiber Recommendations</li> <li>2. Sources of Fiber</li> <li>3. Food Label Information</li> <li>4. Fiber Supplements</li> <li>5. Ways to Increase Fiber</li> <li>6. What about White Whole Wheat?</li> <li>7. Cooking Demonstration—Vegetable Bean Soup</li> </ol>	<p>White Whole Wheat Bread</p> <p>Vegetable Bean Soup</p>	Vegetable Bean Soup	Mixing spoons
6: Adding More Water	Participants will understand how to improve their diets by getting more water.	<ol style="list-style-type: none"> <li>1. Why do we need water?</li> <li>2. How much water do I need each day?</li> <li>3. What are the different sources of drinking water?</li> <li>4. How can I get more water each day?</li> </ol>	<ol style="list-style-type: none"> <li>1. I'm Thirsty!</li> <li>2. Water, Water, Everywhere</li> <li>3. Getting More Water</li> <li>4. Demonstration—Flavored Water</li> <li>5. Demonstration—Mandarin Orange Jell-O Salad</li> </ol>	<p>Flavored Water</p> <p>Mandarin Orange Jell-O<sup>®</sup> Salad</p>	Mandarin Orange Jell-O <sup>®</sup> Salad	One-liter water bottle

<b>LESSON</b>	<b>OBJECTIVE</b>	<b>LEARNING QUESTIONS</b>	<b>ACTIVITIES</b>	<b>DEMO RECIPE</b>	<b>TAKE-HOME RECIPE</b>	<b>TAKE-HOME ITEM</b>
7: More Calcium	Participants will understand how to improve their diets with healthy, safe, and flavorful foods that contain more calcium.	<ol style="list-style-type: none"> <li>1. Why do I need calcium?</li> <li>2. How much calcium should I eat each day?</li> <li>3. How do I get enough calcium if I cannot eat dairy products?</li> <li>4. Should I take a calcium supplement?</li> <li>5. How do I choose and prepare foods that contain more calcium?</li> </ol>	<ol style="list-style-type: none"> <li>1. Dietary Recommendations</li> <li>2. Lactose Intolerance</li> <li>3. Calcium Supplements</li> <li>4. Food Label</li> <li>5. Ways to Increase Calcium in Food Preparation</li> <li>6. Cooking Demonstration—Banana Pudding</li> <li>7. Take-Home Recipe—Creamy Banana Oatmeal</li> </ol>	Banana Pudding	Creamy Banana Oatmeal	Measuring cups



<b>LESSON</b>	<b>OBJECTIVE</b>	<b>LEARNING QUESTIONS</b>	<b>ACTIVITIES</b>	<b>DEMO RECIPE</b>	<b>TAKE-HOME RECIPE</b>	<b>TAKE-HOME ITEM</b>
8: More Fruits and Vegetables	Participants will understand how to improve their diets by eating more fruits and vegetables.	1. What types of fruits and vegetables should I eat? 2. How many fruits and vegetables should I eat each day? 3. How do I get foods with more fruits and vegetables? 4. How do I handle fruits and vegetables safely?	1. Time to Pick Vegetables 2. Demonstration—Fruit Trifle 3. Take-Home Recipe—Broccoli Cornbread	Fruit Trifle	Broccoli Cornbread	Produce brush
9. Summary	Participants will review information presented in Cooking Healthy, Eating Smart lessons.		1. Healthy Snack Tasting 2. CHES Bingo Game	Flavored Popcorn  Sunrise Spritzer	Flavored Popcorn  Sunrise Spritzer	Bingo prizes

## Appendix D

### CHES Lesson 1: Food Safety

<b>TITLE</b>	Cooking Healthy, Eating Smart and Safe
<b>OBJECTIVE</b>	Participants will understand how to handle food safely. By the end of the lesson, the participants will be able to answer the following questions:
<b>LEARNING QUESTIONS</b> <ul style="list-style-type: none"><li>• Why is it important to control the growth of bacteria?</li><li>• How do I wash my hands to prevent foodborne illness?</li><li>• How do I clean surfaces in my kitchen?</li><li>• How do I properly store leftovers?</li><li>• What foods should I <u>not</u> eat because I am at an increased risk for foodborne illness?</li></ul>	
<b>LESSON CONTENT</b>	
<b>FOODBORNE ILLNESS</b> <ul style="list-style-type: none"><li>• Eating even a small portion of an unsafe food can make a person sick. Signs and symptoms of foodborne illnesses can appear almost instantly or might not develop for up to two weeks.</li><li>• Most foodborne illnesses last a few hours or days. Some have effects that can last for weeks, months, or even years.</li><li>• The number of reported cases of foodborne illness among older adults is high. The elderly are ten times more likely to develop complications or die from foodborne illness than are others in the general population. Immune systems weaken as we age. In addition, stomach acid decreases as we get older. Stomach acid plays an important role in reducing the number of bacteria in our intestinal tracts as well as the risk of illness.</li><li>• Underlying illnesses such as diabetes, some cancer treatments, and kidney disease may increase a person's risk of foodborne illness.</li></ul>	
<b>CLEAN</b>	
<b>Personal Cleanliness</b> <ul style="list-style-type: none"><li>• Wash hands with soap and warm (not hot) water for 10–15 seconds. Hot water can make skin become dry and cracked, so it is best to use warm water. Dry, cracked skin can be an easy place for bacteria that can cause foodborne illness to grow.</li><li>• Antibacterial soaps are no more effective than regular soaps <u>and</u> can be expensive. Therefore, any soap can be used for handwashing.</li></ul>	

### **Kitchen Cleanliness**

- Wash cutting boards, dishes, and countertops with warm, soapy water after preparing each food item and before moving on to the next food. One does not need to use antibacterial soaps and products to properly clean a surface.
- Sanitize all surfaces that have been in contact with raw meat, poultry or seafood with a solution of 1 tablespoon (or 1 cap) of liquid, unscented chlorine bleach per gallon of warm, not hot, water. The sanitizing solution does not need to be wiped off. Keeping the solution in a spray bottle can make it easy and convenient to use.
- Anti-bacterial wipes are good for quickly sanitizing surfaces, but they can be expensive.
- Use paper towels to clean up kitchen surfaces. If using cloth towels, wash them often in the hot cycle of the washing machine.
- Keep the inside of your refrigerator clean. Clean up spills inside your refrigerator using soapy water, then rinse, and sanitize with a solution of one cap of liquid, unscented bleach per gallon of warm (not hot) water. The sanitizing solution does not need to be wiped off.
- Sanitize a non-metal kitchen sponge by heating it while still wet in a microwave oven for one minute. Avoid burns by allowing the sponge to cool before using it.

### **CHILL**

- Refrigerate foods quickly. It is best to not keep perishable food at room temperature for more than two hours.
- Do not leave food out for more than one hour if the room or outside temperature is 90°F or hotter. This rule also applies to take-out foods and leftovers from home, a restaurant, or a Meals-on-Wheels delivery.

### **STORE**

- Set your refrigerator at 41°F or below to keep food safe. Use a refrigerator thermometer to check the temperature of the refrigerator. Place it in the warmest location of the refrigerator, which is usually towards the front of the unit.
- Keep your freezer at 0°F or colder. Defrost your freezer when the ice builds up. Foods do not last indefinitely in a refrigerator or freezer. Use up foods quickly.
- Be sure that you have enough refrigerator or freezer space for your foods. Cool air needs to circulate to keep food safe.
- It is best not to store perishable foods in the refrigerator door. Put them on the shelves in the main part of the refrigerator. The temperature of foods stored in the door can increase when the refrigerator is opened.

## STORE LEFTOVERS SAFELY

- Cover and put leftovers in the refrigerator as soon as a meal is finished. Put a piece of tape on the container and write the date on the tape as a reminder to use those leftovers in the next three or four days. If the leftovers will not be eaten in that time, they must be put in the freezer, where they will keep safely.
- Never put a big pot of hot food in the refrigerator because it will take too long to cool down to safe temperatures. Instead, put foods like hot soup in shallow containers, no more than 2 inches deep, and then refrigerate or freeze quickly.
- If reheating leftovers, it is best to heat them until the food is hot and steamy. If reheating in a microwave oven, turn the dish and stir the food to make sure it is hot all the way through. Use microwavable containers. To find out if a container is microwavable, look on the bottom of the dish or on the package.
- At least once per month, go through your refrigerator and throw out past-dated foods. Past-dated foods can sometimes be unsafe to eat.

## FOODS TO NOT EAT

Older adults should not eat:

- Unpasteurized juice. These juices carry a warning label.
- Raw sprouts, such as alfalfa, clover, and radish, even if grown at home, because bacteria can get into the sprout seeds before they are grown and are almost impossible to wash off.
- Ground meat and ground meat products, fish, and shellfish (clams, oysters, scallops, and mussels) that are not fully cooked.
- Raw meat.
- Raw fish and shellfish, such as raw oysters, sushi, and sashimi.
- Soft cheese, such as feta, Brie, Camembert, blue-veined, and Mexican-style cheese, unless the label says "Made with Pasteurized Milk". They have been known to be associated with *Listeria*, a bacteria that can cause foodborne illness. Soft cheeses can be eaten if they are made with pasteurized milk, are part of a cooked dish, or part of a commercially processed food, such as blue cheese dressing. Older adults can eat hard cheeses, cottage cheese, cream cheese, and yogurt.
- Unpasteurized milk or cheese from cows and goats.
- Raw or lightly cooked eggs, including foods that contain them, such as salad dressings, cookie or cake batter, sauces, eggnog, homemade ice cream, and eggs over easy. Foods made with commercially pasteurized eggs are safe to eat.



	INSTRUCTIONAL ACTIVITIES	INSTRUCTOR NOTES	RELEVANCY TO OBJECTIVE
1.	<p>Read disclaimer statement to participants.</p> <p>Conduct activity to illustrate how bacteria grow.</p> <p><b>ACTIVITY GUIDE 1: Growth of Bacteria</b></p>	<p>Supplies needed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 1½ cups of dry rice.</li> <li>Other items, such as jelly beans, M&amp;M'S®, or dry peas may be used in appropriate amounts for illustration.</li> <li><input type="checkbox"/> 6 zip-top bags</li> <li><input type="checkbox"/> 6 stick-on labels for bags</li> </ul>	<p>Participants will be able to understand how bacteria grow to unsafe levels. (Question 1)</p>
2.	<p>Demonstrate proper hand washing and discuss its importance.</p> <p><b>ACTIVITY GUIDE 2: Handwashing</b></p>	<p>Supplies needed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Glo Germ™ lotion</li> <li><input type="checkbox"/> Black light</li> <li><input type="checkbox"/> Extension cord</li> </ul>	<p>Participants will understand the importance of proper hand washing. (Question 2)</p>
3.	<p>Conduct activity to discuss concepts of food safety.</p> <p><b>ACTIVITY GUIDE 3: Food Safety Tools</b></p>	<p>Supplies needed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Large bag or basket</li> <li><input type="checkbox"/> Bar of regular soap</li> <li><input type="checkbox"/> Anti-bacterial soap</li> <li><input type="checkbox"/> Cutting board</li> <li><input type="checkbox"/> Small bleach bottle</li> <li><input type="checkbox"/> Spray bottle</li> <li><input type="checkbox"/> Anti-bacterial wipes</li> <li><input type="checkbox"/> Paper towel</li> <li><input type="checkbox"/> Cloth towel</li> <li><input type="checkbox"/> Non-metal kitchen sponge</li> <li><input type="checkbox"/> Refrigerator thermometer</li> <li><input type="checkbox"/> Plastic container with lid</li> <li><input type="checkbox"/> Labeling tape</li> <li><input type="checkbox"/> Shallow container</li> <li><input type="checkbox"/> Microwavable container</li> </ul>	<p>Participants will be able to understand practices important to home food safety. (Question 3 and 4)</p>

	INSTRUCTIONAL ACTIVITIES	INSTRUCTOR NOTES	RELEVANCY TO OBJECTIVE
4.	<p>Conduct activity to identify foods that older adults should avoid.</p> <p><b>ACTIVITY GUIDE 4: Foods to Avoid</b></p>	<p>Supplies needed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Cards or flipchart</li> <li><input type="checkbox"/> Marker</li> </ul>	<p>Participants will be able to identify foods that older adults should avoid. (Question 5)</p>
5.	<p>Demonstrate how to prepare a recipe using proper food safety techniques and let participants taste.</p> <p><b>ACTIVITY GUIDE 5: Cooking Demonstration—Basic Fried Rice</b></p>	<p>Supplies needed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> See <b>ACTIVITY GUIDE 5: Cooking Demonstration—Basic Fried Rice</b> for list of ingredients and equipment needed to make recipe.</li> <li><input type="checkbox"/> Copies of recipe for participants.</li> </ul>	<p>Participants will taste a recipe that emphasizes proper food safety techniques.</p>
6.	<p>Distribute and discuss a recipe that emphasizes proper food safety techniques.</p> <p><b>ACTIVITY GUIDE: 6: Take-Home Recipe—Chicken Fruit Salad</b></p>	<p>Supplies needed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> One copy of the Chicken Fruit Salad recipe for each participant.</li> </ul>	<p>Participants will be able to understand how to prepare a recipe following safe food safety practices.</p>
7.	<p>Distribute take-home items and explain use.</p>	<p>Supplies needed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/></li> </ul>	<p>Participants will use a refrigerator thermometer to ensure that cold food is kept at a safe temperature at home.</p>

	<b>INSTRUCTIONAL ACTIVITIES</b>	<b>INSTRUCTOR NOTES</b>	<b>RELEVANCY TO OBJECTIVE</b>
8.	Ask participants to write down one or two things they learned from this lesson on the cards provided. Tell them that for participating they have the chance to win a prize. Have them turn in the cards. Take up the index cards and draw one.	Supplies needed: <input type="checkbox"/> Index cards <input type="checkbox"/> Pencils <input type="checkbox"/> Gift item for drawing	Participants will be able to share information learned from this lesson.

## ACTIVITY GUIDE 1: Growth of Bacteria

### Preparation

Put grains of dry rice in zip-lock bags as follows:

- 1st bag - 1 grain
- 2nd bag (representing 20 minutes)—2 grains
- 3rd bag (representing 40 minutes)—4 grains
- 4th bag (representing 1 hour)—8 grains
- 5th bag (representing 2 hours)—64 grains
- 6th bag (representing 4 hours)—4096 (about a cup)

Label each bag with the number of minutes and amount of bacteria.

Other items, such as jelly beans, M&M'S®, or dry peas may be used, adjusting the amounts to be appropriate for illustration.

### Read the following disclaimer statement to participants:

Cooking Healthy, Eating Smart is designed to teach older adults how to select and prepare safe and healthy foods each day. It is not intended as a substitute for medical advice. If you have a condition that requires medical attention or have symptoms that concern you, talk to a qualified health care professional before making any changes to your diet.

### Explain

Eating even a small portion of an unsafe food can make a person sick. Signs and symptoms of foodborne illness can appear almost instantly, or might not develop for up to two weeks. Most foodborne illnesses last a few hours or days. Some have effects that can last for weeks, months, or even years. The number of reported cases of foodborne illness among older adults is high. The elderly are ten times more likely to develop complications or die from foodborne illness than are others in the general population.

Why are older adults more susceptible to foodborne illness? Everyone's health is different, including his or her ability to fight off disease. But immune systems weaken as we age. In addition, stomach acid decreases as we get older. Stomach acid plays an important role in reducing the number of bacteria in our intestinal tracts as well as the risk of illness. Plus, underlying illnesses such as diabetes, some cancer treatments, and kidney disease may increase a person's risk of foodborne illness.

### Procedure

In order to prevent foodborne illness, it's important to control the growth of bacteria. Food can become unsafe if bacteria in it are given the temperature (41°F to 135°F) and amount of time they need to grow. Bacteria multiply by dividing. They can double in 20 minutes. Food kept at room temperature for more than 4 hours can contain enough bacteria to make people sick. However, it is best to refrigerate foods immediately, or within two hours.

Show prepared bags of items that illustrate how bacteria can multiply to dangerous levels.



## ACTIVITY GUIDE 2: Handwashing

### Supplies needed

- Glo Germ™ lotion
- Black light
- Extension cord

### Explain

Bacteria are everywhere. They can get from place to place by hitchhiking on people. They can be found in the folds of skin, in our noses and throats, on our hair, and under our fingernails. We can also pick up bacteria from things we touch. One of the most important things that we can do to prevent foodborne illness is to wash our hands properly. Of course, everybody knows how to wash their hands, right?

### Procedure

- Place a small amount of Glo Germ™ lotion, about the size of a nickel, on each volunteer's hands.
- Ask them to spread it over both hands completely, as if applying hand lotion.
- Have one person not wash their hands, one person rinse hands quickly with only water and towel dry, and one person wash, rinse, and dry their hands thoroughly.
- Have each person put their hands under the black light. Make the room as dark as possible so that the Glo Germ™ lotion will show up. The Glo Germ™ lotion simulates bacteria that are left on the hands.
- Discuss the differences in the amount of bacteria present when hands are not washed, are only rinsed, and are washed thoroughly.

### Discuss the proper hand washing technique.

- Wet hands with warm water that is at least 110°F. Hot water can make skin become dry and cracked, so it is best to use warm water. Dry, cracked skin can be an easy place for bacteria to grow.
- Apply soap. It does not need to be antibacterial.
- Scrub for 10–15 seconds. Clean under fingernails and between fingers.
- Rinse completely under warm, running water.
- Dry hands with a paper towel or warm-air hand dryer.

## ACTIVITY GUIDE 3: Food Safety Tools

### Supplies

- ☐ Large bag or basket
- ☐ Bar of regular soap
- ☐ Anti-bacterial soap
- ☐ Cutting board
- ☐ Small bleach bottle
- ☐ Spray bottle
- ☐ Anti-bacterial wipes
- ☐ Paper towel
- ☐ Cloth towel
- ☐ Non-metal kitchen sponge
- ☐ Refrigerator thermometer
- ☐ Plastic container with lid
- ☐ Labeling tape
- ☐ Shallow container
- ☐ Microwavable container

### Preparation

- Place all items in a large bag or basket.

### Procedure

- Ask a participant to take one item out of the bag, hold it up and tell the others what it is.
- Ask them to tell what that item has to do with food safety.
- Use their comments as lead-ins to discussion of points in the **LESSON CONTENT**.
- Continue having items removed from the bag one at a time.

## ACTIVITY GUIDE 4: Foods to Avoid

### Preparation

On cards or a flipchart, write the following scrambled words in large letters.

- Mtea
- Sllhefshi
- Egsg
- Jiecu
- Fshi
- Mlki
- Sourstp

### Explain

Senior adults should take special care to guard against foodborne illnesses caused by bacteria since their bodies generally have reduced abilities to fight off these kinds of infections. Some foods may contain bacteria that can be especially harmful to older adults and cause serious illness. Let's discuss some foods that older adults are advised not to eat.

### Procedure

- Show the scrambled words to the group
- Let them try to unscramble the letters.
- Write the correct word beside each scrambled one and discuss each.

Mtea	Meat	All meats should be cooked to recommended internal temperatures measured with a food thermometer.
Fshi	Fish	Avoid raw fish, such as in sushi and sashimi.
Sllhefshi	Shellfish	Do not eat raw shellfish, such as oysters.
Mlki	Milk	Drink only pasteurized milk. All dairy products, including cheeses must be made from pasteurized milk to be safe.
Egsg	Eggs	Avoid raw or lightly cooked eggs, such as fried eggs over-easy. Do not eat foods made with raw eggs such as some homemade ice creams, sauces, salad dressings, eggnog, and raw cookie dough and cake batter.
Sourstp	Sprouts	Avoid all fresh sprouts, such as alfalfa, clover, and radish, even those grown at home. Bacteria can get into seeds before they are grown and are almost impossible to wash off.
Jiecu	Juice	Do not drink unpasteurized juices. These juices carry a warning label.

## ACTIVITY GUIDE 5: Cooking Demonstration—Basic Fried Rice

### Purpose

This recipe demonstrates a good way to use small amounts of leftover vegetables and meats.

### Shopping List

- ☐ Non-stick cooking spray
- ☐ 4 cups chopped vegetables
- ☐ 2 tablespoons lite soy sauce
- ☐ 1 tablespoon garlic powder
- ☐ 1 tablespoon onion powder
- ☐ 4 cups cold cooked rice
- ☐ 2 eggs, beaten

**NOTE:** These amounts are calculated for approximately ¼ cup servings for each of 16 participants (assuming you double the recipe on p. 12). If you have more or less people, you may need to double or half the ingredients accordingly.

### Equipment needed

- ☐ Hot plate
- ☐ Extension cord
- ☐ Large skillet
- ☐ Stirring spoon
- ☐ Measuring cup
- ☐ Measuring spoons
- ☐ Small bowl
- ☐ Fork
- ☐ Pot holder
- ☐ Small paper plates
- ☐ Plastic forks
- ☐ Disposable plastic gloves
- ☐ Cleaning wipes and/or paper towels
- ☐ Garbage bags

### Preparation

- Make copies of recipe handout.
- Cook rice and refrigerate.

### Procedure

- Distribute recipe handout to each participant.
- Prepare recipe.
- Serve samples to participants.
- Discuss participants' reactions to recipe.





## Cooking Healthy, Eating Smart Basic Fried Rice

Makes 4 (½ cup) servings.

### Ingredients:

- Non-stick cooking spray
- 2 cups chopped vegetables  
(may use leftover vegetables)
- 1 tablespoon lite soy sauce
- 1½ teaspoon garlic powder
- 1½ teaspoon onion powder
- 2 cups cold cooked rice
- 1 egg, beaten

### Directions:

1. Spray pan with non-stick cooking spray.
2. Stir-fry vegetables in pan.
3. Add soy sauce, onion powder, and garlic powder. Stir.
4. Stir in cooked rice. Push to sides of pan, making a hole in the center.
5. Drop beaten egg into the center of pan and scramble.
6. Stir into rice and vegetable mixture.

**Food Preparation Tips:** The rice will work better if it is cold. Cook the day before and refrigerate until ready to use. Any combination of vegetables will work. This recipe is a great way to use small amounts of leftover vegetables or meats.

**Source:** Adapted from *Cooking With EFNEP* recipe book, NC Cooperative Extension

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### Nutrition Facts

Serving Size ½ cup (132g)

#### Amount per Serving

**Calories 144    Calories from Fat 15**

#### % Daily Value\*

**Total Fat** 1.7 g **3%**

Saturated Fat 0.5 g **2%**

Trans Fat 0.0 g

**Cholesterol** 46.5 mg **16%**

**Sodium** 185.7 mg **8%**

**Total Carbohydrate** 26.5 g **9%**

Dietary Fiber 2.1 g **8%**

Sugars 0.7 g

**Protein** 5.6 g

Vitamin A 68%    Calcium 4%

Vitamin C 7%    Iron 12%

\*Percent daily values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

## **ACTIVITY GUIDE 6: Take-Home Recipe—Chicken Fruit Salad**

### **Explain**

This recipe calls for chopped, cooked chicken and several choices of chopped fruit. It is very important to make sure that surfaces, equipment, and especially your hands, are clean in order to avoid cross-contamination when chopping and mixing different types of foods. Always wash raw fruits and vegetables under slightly warm, briskly running water just before cutting. Once cut, fruits and vegetables should be stored in the refrigerator.

### **Procedure**

- Distribute recipe handout.
- Read through recipe and discuss procedure.



## Cooking Healthy, Eating Smart Chicken Fruit Salad

Makes 4 ( $\frac{2}{3}$  cup) servings.

### Ingredients:

- 1½ cups cooked skinless chicken, chopped
- 2 of the following fruits:
  - 1 (10 oz.) can pineapple tidbits in juice, drained
  - 1 small can mandarin oranges, drained
  - ½ cup halved seedless grapes
  - 1 apple, chopped
- ¼ cup chopped celery
- ½ cup mayonnaise
- ½ tsp. salt
- ½ tsp. pepper
- ½ cup pecans, chopped (optional)

### Directions:

1. In a large bowl, toss chicken, fruits, celery, and pecans.
2. In a separate small bowl, mix mayonnaise, salt and pepper.
3. Gently stir mayonnaise mixture into chicken mixture.
4. Cover and chill in refrigerator.

**Substitutions:** For a lower fat version of this recipe, use low-fat or fat free mayonnaise.

**Do not let leftovers make you sick!** As soon as you are done eating, refrigerate your leftovers. Put a piece of tape on the container and write the day's date on the tape to remind you to eat the leftovers within four days. If you cannot eat leftovers within four days, freeze them.

### Nutrition Facts

Serving Size  $\frac{2}{3}$  cup (159g)

#### Amount per Serving

**Calories 205    Calories from Fat 82**

**% Daily Value\***

**Total Fat** 9.1 g **14%**

Saturated Fat 1.4 g **7%**

Trans Fat 0.0 g

**Cholesterol** 42.9 mg **14%**

**Sodium** 156.9 mg **7%**

**Total Carbohydrate** 15.2 g **5%**

Dietary Fiber 1.2 g **5%**

Sugars 13.4 g

**Protein** 16.0 g

Vitamin A 2% Calcium 2%

Vitamin C 15% Iron 5%

\*Percent daily values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

**Source:** Adapted from *Cooking With EFNEP* recipe book, NC Cooperative Extension

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## Food Safety Lesson Checklist

### Lesson Supplies

- ☐ Attendance sheet
- ☐ Marker
- ☐ Cards or flip chart
- ☐ Easel

### Activity Supplies

- ☐ Dry rice
- ☐ Zip-top bags
- ☐ Stick-on labels
- ☐ Glo Germ™ Lotion
- ☐ Black light
- ☐ Extension cord
- ☐ Large bag or basket
- ☐ Bar of regular soap
- ☐ Anti-bacterial soap
- ☐ Cutting board
- ☐ Small bleach bottle
- ☐ Spray bottle
- ☐ Anti-bacterial wipes
- ☐ Paper towels
- ☐ Cloth towels
- ☐ Non-metal kitchen sponge
- ☐ Refrigerator thermometer
- ☐ Plastic container with lid
- ☐ Labeling tape
- ☐ Shallow container
- ☐ Microwavable container



**Recipe Food Supplies**

- ☐ Non-stick cooking spray
- ☐ 4 cups of chopped vegetables
- ☐ 2 tablespoons of lite soy sauce
- ☐ 1 tablespoon of garlic powder
- ☐ 1 tablespoon of onion powder
- ☐ 1½ cups of uncooked rice
- ☐ 2 eggs

**NOTE:** These amounts are calculated for approximately ¼ cup servings for each of 16 participants (assuming you double the recipe on p. 12). If you have more or less people, you may need to double or half the ingredients accordingly.

**Recipe Equipment Supplies**

- ☐ Hot plate
- ☐ Extension cord
- ☐ Large skillet
- ☐ Stirring spoon
- ☐ Measuring cup
- ☐ Measuring spoons
- ☐ Small bowl
- ☐ Fork
- ☐ Pot holder
- ☐ Serving spoon
- ☐ Small paper plates
- ☐ Napkins
- ☐ Cleaning wipes or paper towels
- ☐ Garbage bags
- ☐ Disposable gloves

**Take-Home Items**

- ☐ Basic Fried Rice Recipe
- ☐ Chicken and Fruit Salad Recipe
- ☐ Refrigerator thermometer

**Participant Supplies**

- ☐ Index cards
- ☐ Pencils

**Index Card Drawing Suggestions**

- ☐ Grocery gift card
- ☐ Anti-bacterial wipes
- ☐ Small cooler

## Appendix E

### “Test Your Nutrition and Food Safety Knowledge” Test

Please circle one answer for each question.

1. Why is it important to control the growth of bacteria?
  - a. To prevent foodborne illness
  - b. To keep the immune system healthy
  - c. So food will not taste badly
  - d. So food will be cooked properly
  - e. I do not know.
  
2. What is the best way to wash your hands?
  - a. With antibacterial soap and hot water for at least 15 seconds
  - b. With antibacterial soap and hot water and then apply a hand sanitizer
  - c. With regular soap and warm water for at least 15 seconds
  - d. Use hand sanitizer and you won't need to wash
  - e. I do not know.
  
3. What is the best way to clean kitchen surfaces?
  - a. Use paper towels or a clean kitchen cloth to wash counters with a solution of hot water and antibacterial soap.
  - b. Use paper towels or a clean kitchen cloth to wash counters with warm, soapy water.
  - c. Use chlorine bleach full strength and your counters will be clean and sanitized.
  - d. Use a strong disinfectant spray to clean your counters.
  - e. I do not know.

4. If you have a big pot of soup leftover, what is the best way to store it?
  - a. Let it cool down on the counter until it reaches room temperature and then refrigerate.
  - b. Put the covered pot immediately in the refrigerator to cool.
  - c. Leave the cover off and put the pot immediately in the refrigerator to cool.
  - d. Divide into shallow containers, no more than 2 inches deep, then refrigerate or freeze.
  - e. I do not know.
5. Which of these foods are recommended for an older adult to eat?
  - a. Raw sprouts such as alfalfa, clover, and radish
  - b. Sushi
  - c. Pinto beans and collard greens
  - d. Raw milk or cheese made from raw milk
  - e. I do not know.
6. What foods are the best sources of fat?
  - a. It is best to eliminate all fat from your diet.
  - b. Meats provide the best source of fat in your diet.
  - c. Plants and fish provide the best source of fat in your diet.
  - d. Butter and shortening provide the best source of fat in your diet.
  - e. I do not know.
7. What are the best ways to reduce the fat in the foods you eat?
  - a. Grill, broil, or roast meats instead of frying them.
  - b. Use stick margarine instead of butter.
  - c. Eat soups and stews while they are still hot before the fat can harden.
  - d. Use vegetable oils to fry foods instead of shortening or lard.
  - e. I do not know.

8. How many ounces of protein-rich foods does the average person need to eat each day?
- a. 1
  - b. 3
  - c. 5
  - d. 7
  - e. I do not know.
9. Which foods are the best sources of protein?
- a. Fruits
  - b. Collard greens
  - c. Dry beans and peas
  - d. Beets
  - e. I do not know.
10. What health problem is directly related to salt intake in some people?
- a. Cancer
  - b. Infections
  - c. High blood pressure
  - d. Gout
  - e. I do not know.
11. How many teaspoons of salt should healthy adults limit themselves to each day?
- a. 1 teaspoon
  - b. 2 teaspoons
  - c. 3 teaspoons
  - d. 4 teaspoons
  - e. I do not know.

12. Which of these foods has the highest sodium content?
- a. Fresh beans
  - b. Frozen beans
  - c. No salt added canned beans
  - d. Regular canned beans
  - e. I do not know.
13. What substance replaces sodium in most salt substitutes?
- a. Potassium
  - b. Fiber
  - c. Fat
  - d. Calcium
  - e. I do not know.
14. Soaking canned beans for 30 minutes and then rinsing them can reduce their salt content by:
- a. 1%
  - b. 10%
  - c. 45 %
  - d. 75%
  - e. I do not know.
15. How much fiber must a food contain for it to be considered an excellent source of fiber?
- a. 5 grams
  - b. 15 grams
  - c. 20 grams
  - d. 50 grams
  - e. I don't know.

16. How much fiber do adults need to eat each day?
- a. 5 grams
  - b. 10 grams
  - c. 25 grams
  - d. 40 grams
  - e. I do not know.
17. What kind of flour must be listed on the nutrition label for a bread to be considered a good source of fiber?
- a. Enriched flour
  - b. Whole wheat flour
  - c. All-purpose flour
  - d. Bread flour
  - e. I do not know.
18. When should you take a fiber supplement?
- a. If you feel bloated most of the time.
  - b. If you are often constipated.
  - c. If you do not like whole grain foods.
  - d. If your health provider recommends a fiber supplement.
  - e. I do not know.
19. What type of grain contains the most fiber?
- a. Whole
  - b. Refined
  - c. Reconstituted
  - d. Brown
  - e. I do not know.

20. What condition can occur if you do not replace the fluid your body loses through perspiration and elimination?
- a. Obesity
  - b. Dehydration
  - c. Constipation
  - d. Hypothermia
  - e. I do not know.
21. How much fluid do adults need to consume each day?
- a. 2–3 cups
  - b. 5–6 cups
  - c. 8–12 cups
  - d. 15–20 cups
  - e. I do not know.
22. How many ounces of fluid are in a half cup of Jell-O<sup>®</sup>?
- a. 2 ounces
  - b. 4 ounces
  - c. 6 ounces
  - d. 10 ounces
  - e. I do not know.
23. In order to establish a good habit of drinking more fluids throughout the day, when is a good time to have a glass of water?
- a. At bedtime
  - b. At each meal
  - c. Before a trip
  - d. After bathing
  - e. I do not know.

24. Where does your body get calcium if the foods you eat do not provide enough?
- a. From your liver where the extra calcium is stored.
  - b. From your teeth and bones, where 99% of the calcium in your body is stored.
  - c. From the calcium that your body manufactures as needed.
  - d. From the unwanted calcium deposits your body has stored.
  - e. I do not know.
25. How many servings of low-fat dairy foods should you eat each day to get enough calcium?
- a. 1 serving
  - b. 2–3 servings
  - c. 3 or more servings
  - d. None, our bodies make enough calcium.
  - e. I do not know.
26. If you cannot drink milk, what other foods can you eat that are good sources of calcium?
- a. Peanut butter
  - b. Collard greens, turnip greens, and spinach
  - c. Grapes, peaches, and strawberries
  - d. Popcorn, rice, and spaghetti
  - e. I do not know.
27. Who should take a calcium supplement?
- a. Everyone should take a supplement to meet their body's needs.
  - b. Anyone who is lactose intolerant should take a calcium supplement.
  - c. Someone whose health care provider has recommended that they take a supplement and told them how much they need.
  - d. All women should take a calcium supplement.
  - e. I do not know.



28. Which sort of vegetable provides the most calcium in your diet?
- a. Dark leafy green
  - b. Orange
  - c. Red
  - d. Yellow
  - e. I do not know.
29. What % Daily Value of sodium must be listed on the Nutrition Facts label of a can of vegetables for it to be considered a low sodium food?
- a. Less than 1%
  - b. Less than 5%
  - c. Less than 10%
  - d. Less than 15%
  - e. I do not know.
30. How many cups of fruits and vegetables should you eat each day?
- a. 1½–2 cups of fruits and 2–3 cups of vegetables
  - b. 1½–2 cups of vegetables and 2–3 cups of fruits
  - c. A total of 5 cups of either fruits or vegetables
  - d. 1 cup of fruit and 1 cup of vegetables
  - e. I do not know.
31. What is the best way to cook vegetables to retain the most nutrients?
- a. Cook vegetables uncovered in boiling water.
  - b. Steam vegetables in a covered pot.
  - c. Cook vegetables using baking soda.
  - d. Cook vegetables using salt.
  - e. I do not know.

32. What is the best way to wash fruits and vegetables?
- a. With soap and warm water
  - b. Soak in a solution of 1 tablespoon of chlorine bleach in a gallon of water and rinse
  - c. Under slightly warm, running water without soap or bleach
  - d. Soak in fresh water in a clean sink for at least 30 minutes
  - e. I do not know.

Appendix F

Change in Items Answered Correctly on Volunteer Knowledge Tests

<b>Group</b>	<b>Volunteer</b>	<b>Items Answered Correctly (Baseline)</b>	<b>Items Answered Correctly (Follow-up)</b>	<b>Test Difference</b>
<b>Apartment</b>	1	19	21	2
	2	20	23	3
	3	20	23	3
	4	25	19	-6
	5	28	24	-4
<b>Church</b>	6	20		
	7	24	23	-1
	8	23	26	3
	9	28		
	10	19	28	9

## Appendix G

### Volunteer Self-Efficacy Scale

#### CHES Team Member Efficacy Scale

**Please indicate how confident you feel about the following areas by circling your response:**

	Strongly Disagree	Moderately Disagree	Neutral	Moderately Agree	Strongly Agree
1. I am confident that I can work well with other team members.	1	2	3	4	5
2. I have the knowledge that I need to teach others to choose and prepare healthy foods.	1	2	3	4	5
3. I know how to prepare and store foods safely, and can explain it to others.	1	2	3	4	5
4. I know how to read a nutrition label on foods.	1	2	3	4	5
5. I know ways to increase fiber in my diet.	1	2	3	4	5
6. I know ways to decrease salt in my cooking.	1	2	3	4	5
7. I know strategies for teaching an audience of older adults.	1	2	3	4	5
8. I understand why it is important to get enough water during the day.	1	2	3	4	5
9. If something looks too complicated, I will not even bother to try it.	1	2	3	4	5
10. When I set important goals for myself, I rarely achieve them.	1	2	3	4	5
11. I feel insecure about my ability to do things	1	2	3	4	5
12. If I can't do a job the first time, I keep trying until I can.	1	2	3	4	5
13. When I decide to do something, I go right to work on it.	1	2	3	4	5
14. When trying to learn something new, I soon give up if I'm not initially successful.	1	2	3	4	5
15. When unexpected problems occur, I don't handle them very well.	1	2	3	4	5
16. Failure just makes me try harder.	1	2	3	4	5
17. I avoid trying to learn new things when they look too difficult.	1	2	3	4	5
18. When I make plans, I am certain I can make them work.	1	2	3	4	5
19. When I have something unpleasant to do, I stick to it until I finish.	1	2	3	4	5
20. I do not seem capable of dealing with most problems that come up in my life.	1	2	3	4	5

## Appendix H

Change in Volunteer Self-Efficacy Scale Scores  
(0-5; score of 5 indicates high self-efficacy)

<b>Group</b>	<b>Volunteer</b>	<b>Baseline Self-Efficacy</b>	<b>Repeat Self-Efficacy</b>	<b>Self-Efficacy Difference</b>
<b>Apartment</b>	1	4.35	4.2	-0.15
	2	4.55	4.95	0.4
	3	4.6	4.95	0.35
	4	4.05	4.8	0.75
	5	4.6	4.65	0.05
<b>Church</b>	6	4.47368		
	7	4.75	4.579	-0.171
	8	4.45	4.35	-0.1
	9	3.65		
	10	4.55	4.6	0.05

Appendix I

Educator Feedback Form

**Educator Feedback Form**

Group Name: \_\_\_\_\_

Site Name: \_\_\_\_\_

Lesson Name: \_\_\_\_\_

Date of Lesson: \_\_\_\_\_

**CONTENT**

1. Was the lesson organizer clear to you? \_\_\_\_ Yes \_\_\_\_ No

If no, what can we do to improve it?

2. Is there information we need to include in the content organizer to help you better prepare to teach the lesson? \_\_\_\_ Yes \_\_\_\_ No

If yes, what additional information do we need to provide?

## **DELIVERY**

1. How much time did you spend preparing for the lesson? \_\_\_\_\_ hours
2. Were the activity guides clear? \_\_\_\_ Yes \_\_\_\_ No

If no, what can we do to improve them?

3. Do you believe the participants liked the activities? \_\_\_\_ Yes \_\_\_\_  
No

If no, which activities did they not like?

4. Were the participants actively engaged in the activities? \_\_\_\_ Yes \_\_\_\_  
No

If no, what were some of the problems?

## **RECIPE**

1. Did the audience like the recipe? \_\_\_\_ Yes \_\_\_\_ No  
a. If no, why not?
2. Do you believe that they liked the take-home item? \_\_\_\_ Yes \_\_\_\_  
No  
a. If no, why not?
3. What questions did they ask during the session?



4. What changes do you think we need to make to this lesson?

5. Additional comments

Appendix J

Volunteer Feedback Form

**Volunteer Feedback Form**

Group: \_\_\_\_\_

Role: \_\_\_\_\_

Lesson: \_\_\_\_\_

How much time did you spend on your project responsibilities? \_\_\_\_\_ Hours

Did you understand your responsibilities? \_\_\_\_\_ Yes \_\_\_\_\_ No

Was there any additional information that you wish you were provided with?

How do you feel the lesson went?

Additional Comments:

## Appendix K

### Volunteer Interview Script

Hello (name),

I'm calling to ask you some follow-up questions about your experience as a CHES volunteer. We appreciate your help with the program. Do you have about 20 minutes to discuss further with me your involvement with the program? I want to let you know that I am recording this conversation so that we can have a complete record of all the volunteer interviews.

#### **Background**

1. Prior to participating in CHES, have you had any experience or training in teaching?
2. Do you have any formal training in nutrition or food safety (degrees, certificates, work experience)?

#### **Motivation**

3. Why did you agree to be a volunteer for CHES?

#### **CHES program**

4. What types of difficulties did you experience during the planning of the program?
5. What difficulties did you experience when delivering the program?
6. Would you want to do something like this again? Why?

#### **Personal impact**

7. Did you learn anything new while volunteering for CHES? Please give an example. [*Interviewer prompt: Did you learn any new food safety or nutrition information? Did you learn about your community? What did you learn?*]
8. Do you believe you had an impact on the CHES participants or the other volunteers? How so? <sup>2</sup>
9. "Has any aspect of your thinking changed as a result" of this experience, helping with CHES? <sup>3</sup>

#### **Volunteering**

10. How does this experience influence your view of volunteering in general?
11. Would you volunteer again?

<sup>1</sup> Forsyth N, Elmslie J, Ross M. Supporting healthy eating practices in a forensic psychiatry rehabilitation setting. *Nutrition and Dietetics*. 2012;69(1):39-45.

<sup>2</sup> Kenney EL, Henderson KE, Humphries D, Schwartz MB. Practice-based research to engage teachers and improve nutrition in the preschool setting. *Childhood Obesity*. 2011;7(6):475-479.

<sup>3</sup> Roskell C, White D, Bonner C, Fairchild R. [Commentary on] developing patient-centred care in health professionals: Reflections on introducing service-learning into the curriculum. *International Journal of Therapy & Rehabilitation*. 2012;19(8):448-457.