

BEHAVIORS AND BELIEFS ABOUT FOOD SAFETY  
AND INSTRUCTIONAL DELIVERY STRATEGIES  
AMONG LIMITED INCOME ELDERLY ENROLLED  
IN COMMUNITY NUTRITION EDUCATION  
PROGRAMS

By

LAURA POWELL

Bachelor of Science in Nutritional Sciences

Oklahoma State University

Stillwater, Oklahoma

2007

Submitted to the Faculty of the  
Graduate College of the  
Oklahoma State University  
in partial fulfillment of  
the requirements for  
the Degree of  
MASTER OF SCIENCE  
July, 2007

BEHAVIORS AND BELIEFS ABOUT FOOD SAFETY  
AND INSTRUCTIONAL DELIVERY STRATEGIES  
AMONG LIMITED INCOME ELDERLY ENROLLED  
IN COMMUNITY NUTRITION EDUCATION  
PROGRAMS

Thesis Approved:

Dr. Stephany Parker

---

Thesis Adviser

---

Dr. Barbara Brown

---

Dr. Gail Gates

---

Dr. Janice Hermann

---

Dr. A. Gordon Emslie

---

Dean of the Graduate College

## ACKNOWLEDGEMENTS

I am grateful and truly blessed to have Dr. Stephany Parker as my graduate advisor. Without her none of this would have been made possible, she not only is a wonderful advisor to have she is also a mentor and valuable role model to have in my life. Special thanks go to my committee members Dr. Gail Gates, Dr. Barbara Brown, and Dr. Janice Hermann for their efforts and expertise.

I would like to give thanks to the Oklahoma Cooperative Extension service and the Community Nutrition Education Program (CNEP) for its cooperation with this project. Specifically, I would like to thank the Nutrition Education Assistants (NEA) and Area Coordinators for recruiting the participants and for providing the space needed to conduct focus group sessions.

My heartfelt thanks goes to God for providing me with many blessings and to my family, especially my parents Danette and Ledlie Powell. Nothing in life would have been made possible without either one of them. My parents have strived to show me how hard work and dedication can truly pay off when goals are achieved. You have provided with me with the love and support I need to make this achievement possible.

## TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION.....	1
Objectives .....	3
Assumptions.....	4
Limitations .....	4
II. REVIEW OF LITERATURE.....	5
Introduction and Demographics.....	5
Social Isolation and Depression.....	7
Poverty Rates .....	9
Food Stamp Participation.....	10
Food Insecurity .....	12
Nutritional Status and Well Being of Elderly .....	13
Food borne-Induced Gastroenteritis and Increased Incidence Among Elderly .....	16
Food Safety Knowledge and Practice .....	17
Instructional Method Considerations.....	20
Elderly Program and Implications .....	24
Elderly and Focus Group Research.....	28
III. METHODOLOGY.....	30
Objectives .....	30
Subjects.....	30
Research Design.....	31
Data Collection .....	32
Survey Information .....	32
Educational Method Delivery.....	32
Focus Groups .....	33
Pre-testing of Procedures .....	34

Chapter	Page
IV. Behaviors and Beliefs About Food Safety and Instructional Delivery Strategies Among Limited Income Elderly Enrolled in Community Nutrition Education Programs .....	35
Abstract .....	35
Introduction .....	36
Description of Procedures and Analysis .....	39
Sample Population .....	39
Order of Procedures .....	40
Food Safety Survey Description .....	40
Instructional Delivery Methods .....	40
Focus Group Description .....	41
Pre-testing of Procedures .....	42
Information Learned .....	42
Food Safety Survey Findings .....	43
Focus Group Findings .....	43
Perceptions of Food Safety .....	44
Instructional Delivery Preference .....	45
Discussion of Findings .....	49
Application of Findings .....	53
References .....	59
V. CONCLUSIONS .....	61
Limitations .....	62
Implications for Practice .....	63
Implications for Future Research .....	64
REFERENCES .....	66
APPENDICES .....	71
APPENDIX A – RECRUITMENT FLYER .....	71
APPENDIX B – CONSENT FORM .....	74
APPENDIX C – INSTITUTIONAL REVIEW BOARD FORM .....	77
APPENDIX D – ORIGINAL FOOD SAFETY SURVEY .....	79
APPENDIX E – MODIFIED FOOD SAFETY SURVEY .....	86
APPENDIX F- FOCUS GROUP QUESTIONS .....	89

APPENDIX G – FOCUS GROUP ANALYSIS FORMS.....91

## LIST OF TABLES

Table	Page
1. Focus Group Questions for the Determination of Instructional Delivery Preference.....	54
2. Demographic Characteristics of Elderly Community Nutrition Education Program Participants.....	55
3. Food Safety Practices of Elderly CNEP Participants.....	56
4. Elderly Participants Instructional Delivery Preference.....	58

## CHAPTER I

### INTRODUCTION

It is estimated that the number of people aged 50 and over will reach 127 million by the year 2030 (Morris & Ballard, 2003). Life expectancy in the United States has dramatically increased as well. For men life expectancy is 74 years and for women it is 79 years (US Census Bureau, 2000a). This is a striking difference from the beginning of the 20<sup>th</sup> century when life expectancy for a child at birth was 47 years. In Oklahoma approximately 17.4% of the population is 60 years of age and older (US Census Bureau, 2000b). In addition, approximately 11% of the elderly population in Oklahoma live in households considered at or below the federal poverty guidelines (Oklahoma Department of Human Services, 2003) as compared to the national poverty rate of approximately 9.9% for elderly (US Census Bureau, 2005).

Food safety is an important nutrition issue for elderly. With aging there is an increased chance of food borne illness due to changes in the gastrointestinal tract, excessive use of antibiotics, malnutrition, lack of exercise, and declines in humoral and cellular immunity (Kendall et al., 2003). All of these factors contribute to increased morbidity and mortality from food borne-induced gastroenteritis. Food safety education for elderly can be an important mechanism to prevent or decrease illness among the elderly (Kendall et al., 2003).



Many key food safety behaviors affect elderly populations. One issue reported among the elderly related to food safety is delayed consumption of meals (Fey-Yensan et al., 2001). Additional food safety behaviors important for elderly include storage of food at the correct temperatures, comprehension of “use by” and “sell by” dates, and use of cooking thermometers (Johnson et al., 1998). It is important to identify perceptions and beliefs that limited income elderly have about food safety issues such as these in order to meaningfully educate this population about food safety issues for improved health.

Understanding limited resource elderly’s perceptions related to receiving information is important. Special challenges elderly face when it comes to learning are related to cognitive and physiological changes that occur with the aging process. Cognitive changes that occur with older adults that may affect learning include: psychomotor speed, memory functioning such as the time it takes for information retrieval, motivation, anxiety, and expected learning pace (Morris & Ballard, 2003). Physiological changes that influence learning include changes in muscle mass, declines in flexibility, fatigue, bone loss, cardiovascular weakening, and lung tissue changes that can decrease the availability of oxygen to the cardiovascular system (Glass, 1996). Other changes which may impact learning include visual and hearing loss, memory loss, increased distractibility, and slowed behavior. With older adults the central nervous system is much slower than younger adults and consequently older adults have a tendency to be slow with responses and actions (Glass, 1996). In addition, environmental challenges such as lighting of the room, font size of the material presented, comfortable seating, and time of day must be taken into consideration to enhance older adults in learning (Morris & Ballard, 2003).

Not only is identifying appropriate delivery methods important, but determining perceptions and beliefs about food safety issues among limited income elderly is also critical. With growing numbers of an aging population in the U.S. it is imperative that food safety issues are addressed.

A substantial amount of health information is available for the elderly, however, it is not being utilized by them (Barrett & Kirk, 2000). There is an increasing demand to attend to issues affecting the overall long term health and quality of life for elderly populations. Such areas that demand attention include: health, independently living, financial resources, and social issues (Barrett & Kirk, 2000). As such, it is important for community nutrition programs to provide information that limited income elderly will perceive as beneficial and appropriate given their life situations.

### Objectives

The aim of this study is to determine optimal delivery methods for nutrition education among limited resource elderly. More specifically, this study sample will consist of elderly individuals who are 60 years of age and older, Oklahoma residents with limited income, and enrolled in Community Nutrition Education Programs. The objectives of this study include: (1) to determine which educational method limited income elderly populations enrolled in Community Nutrition Education Programs prefer and (2) to determine behaviors and beliefs about food safety in limited income elderly populations enrolled in Community Nutrition Education Programs. Information learned from this study can be used as a foundation to guide changes in program planning and

educational strategies for community nutrition programs that target limited resource elderly.

Assumptions:

1. Reality is socially constructed and value driven. That is, elderly's views about food safety and delivery methods can only be understood using their insight.
2. Participants provided honest responses to focus group and survey questions.

Limitations

1. Use of a convenience sample limits the generalizability of results.
2. Reported perceptions of food safety may not be actual.

## CHAPTER II

### REVIEW OF LITERATURE

#### Introduction and Demographics

America's elderly population is growing at a steady pace and is expected to do so in forthcoming years. The population of those 65 years of age and older is expected to more than double by 2050 (Rogers, 2002). In 2000 there were a total of 35 million elderly 65 years of age and older, representing a 12 percent increase since the year 1990 (US Census Bureau, 2001). As for Oklahoma, 17.4 percent of the total population is 60 years and older (U.S. Census Bureau, 2000b). Most recent data from Oklahoma indicates that individuals 65 years of age and older represent 13.2% of the population, a 6.1% increase since 1992 (Department of Health & Human Services, 2003).

The fastest growing elderly population is among those who are 85 years and over (US Census Bureau, 2001). In addition, the population of elderly females is increasing more dramatically when compared to their male counterparts (US Census Bureau, 2000a). Although the current elderly population in the U.S. is predominately white, an overall increase in ethnic diversity is expected to contribute to a more diverse elderly population in years to come (Rogers, 2002).

The aging of the baby boomer generation is one reason for the increase in the population size of the elderly (Morris & Ballard, 2003). According to Maples and Abney (2006), the baby boomer generation consists of individuals born between 1946-1964 when many people in America got married and started a family as American soldiers returned from World War II (2006). During this time, 76 million infants were born who are now between the ages of 40 and 58 (Maples & Abney, 2006). Since the end of 1964 the fertility and birth rates in America have declined and returned to pre-World War II levels (Maples & Abney, 2006).

Increased life expectancy is another factor contributing to the growing elderly population. In 1960 life expectancy was 70 years and by the year 2000 it reached 77 years of age (Rogers, 2002). According to the Centers for Disease Control (CDC), not all Americans are experiencing increased longevity (Centers for Disease Control, 2006a). Improved health care is one factor contributing to increased longevity but it is not accessible by all elderly populations and often depends upon an individual's economic status, race, and gender (Centers for Disease Control, 2006a).

In 1999 the average life expectancy for a Caucasian American was 76.9 years, whereas the average African American could only expect to live approximately 71.4 years (Centers for Disease Control, 2006b). Minority groups experiencing poorer health status are expected to continue to grow as a proportion of the U.S. population, indicating a deleterious impact on the future health status of the country. Attention to understanding ways to improve health status among minority populations is necessary (Centers for Disease Control, 2006a)

## Social Isolation and Depression

Living alone is one factor related to a decline in quality of life and adverse health outcomes. Social isolation is a critical issue among the elderly, impacting overall health status. Approximately 31 million are projected to live alone by the year 2010 (Cacioppo & Hawkley, 2003). This represents a 40 percent increase since the year 1980 (Cacioppo & Hawkley, 2003). Scharf et al. (2005) reported that those 60 years of age and older, who have lost a spouse or close friend experience social isolation leading to negative health outcomes such as the onset of chronic illness or disease.

Among elderly reported to live alone, most are women who have been widowed (Gustavson & Lee, 2004). These women living alone are generally 75 years of age or older and at a higher risk of hospitalization and institutionalization (Gustavson & Lee, 2004). Such reasons as increasing income levels which allow for the privacy of living alone and the rise of the American cultural value of individualism account for the increase in the number of elderly living alone (Gustavson & Lee, 2004). In many cases older adults live far from close relatives due to an American society heavily dependent on mobility (Jorgensen, 1993). A notable trend is that over half of unmarried older adults live alone which suggests that elderly are maintaining a higher level of independence as they continue to get older than in previous years (Congressional Caucus for Women's Issues, 1990).

Depression is another major health problem impacting older adults. Schulman et al. (2002) compared depressed elderly to those who were not depressed. Of the elderly people in the study, 31.6 % (n= 37) participants were found to be depressed as measured

by the Geriatric Depression Scale (GDS). Those who were depressed were significantly more likely ( $p = 0.001-0.042$ ) to need assistance with instrumental activities of daily living such as cooking, taking medication, shopping and heavy or light housework (Schulman et al. 2002). The need for assistance with activities of daily living were increased and those who lived alone were less likely to meet these needs satisfactorily (Shulman et al. 2002).

Findings from Loughlin (2004) support those of Shulman et al. (2002) who used a cross-sectional convenience sample of 25 home health patients who were 75 years of age and older and homebound. Study participants completed the long form of the GDS to determine degree of depression (Loughlin, 2004). Depression was measured as having a score of ten or higher on the long form of the GDS (Loughlin, 2004). Loughlin (2004) found that participants were more likely to be depressed if they were Caucasian rather than African-American and male as opposed to female. Depression was not significantly related to support networks such as Meals on Wheels or home health nursing (Loughlin, 2004). Loughlin (2004) indicated that chronic medical conditions limiting functional capabilities were the most influential factors leading to depression in older adults.

Gustavson & Lee (2004) conducted a cross-sectional survey to determine differences in depression among elderly who live alone and those who live with others. Total participants included 5,265 people with 43% living alone (Gustavson & Lee, 2004). Results from this study indicated that elderly who lived with others were more likely to be depressed, have a higher percentage of needing or receiving assistance with activities of daily living, and more likely to be an ethnic minority. These findings are in contrast to

that reported in other studies and support a need for future research on factors influencing depression in elderly.

### Poverty Rates

Among elderly Americans approximately 3.4 million or 10.1% were below the poverty level in 2001 (Department of Health & Human Services, 2002). In Oklahoma 11% live in households with incomes at or below the federal poverty guidelines (Oklahoma Department of Human Services, 2003). In general, poverty rates for the elderly have declined over the past decade nationwide (Rogers, 2002). In 2000, 10% of those 65 years of age or older were considered poor in America as compared to 12% living in poverty in 1990 (Rogers, 2002). Despite lower poverty rates nationwide, 11.2% of those who are 65 years of age and older live below the poverty level in Oklahoma, as compared to the national rate of 9.9% (U.S. Census Bureau, 2005).

Poverty rates vary considerably among older adults. Older women, those who live alone, and the oldest old (those who are 85 years and older) have the highest poverty rates in America (Rogers, 2002). Advancing age increases the likelihood of poverty, with poverty rates for women age 85 and older being among the highest (Rogers, 2002).

As married-couple households reach the age of 65 years and older they are more likely to have an income below \$20,000 than those who are between the ages of 55 to 64 (US Census Bureau, 2003). More specifically in 2002 the Current Population Survey reported that 19.9% of those 65 years and older had a household income of less than



\$20,000 a year while 10.1% of those 55 to 64 years of age had an annual income of less than \$20,000 (US Census Bureau, 2003).

Educational attainment is an important factor impacting poverty status among the elderly. Higher levels of educational attainment positively correlate with higher incomes, higher standards of living, and above average health status among older adults (Rogers, 2002). In 2001 the younger old, those between the ages of 75-84, were better educated than the oldest old (85 years of age and older) thus reflecting gains in educational attainment over the past years (Rogers, 2002). The current generation of older adults is more educated than past generations illustrating a trend that is expected to continue in future years (Rogers, 2002).

### Food Stamp Participation

Current trends indicate that many elderly Americans do not participate in the food stamp program. In 2001 there were 1.7 million elderly people who utilized the food stamp program (Food Security Institute Center on Hunger & Poverty, 2003). This represents only 9.6% of food stamp program participants. Reported reasons for low food stamp participation among elderly include: pride, stigma, confusion of eligibility criteria, likelihood of receiving fewer benefits than those younger, and difficulty with Electronic Benefit Transfer technology (Wilde & Dagata, 2002).

Gabor and associates (2002) examined views elderly have about the Food Stamp Program (FSP) to determine why participation is low among older adults. Participants were elderly who spoke Korean, Spanish, or English. Participants included those who

received FSP benefits and those who were eligible, but did not receive FSP benefits. Focus groups were used to explore opinions about benefits that the program offers. Content analysis revealed five broad categories relating to the benefits of the Food Stamp Program. These benefits included the following: food stamps are an important and positive source of food assistance, the program allows for seniors to buy healthy foods they like, the program promotes independence, the program provides economic assistance needed, and the program is viewed as a health promotion entity (Gabor et al., 2002). Non native Korean and Spanish speaking elder participants viewed the program in a positive manner indicating that they were grateful for such programs as food stamps and Medicare in America (Gabor et al., 2002). Furthermore, focus group participants felt that with the use of food stamps, more healthful foods such as fruits and vegetables were able to be purchased (Gabor et al., 2002). Gabor and colleagues (2002) found negative beliefs about the program including: expectation of low benefits compared to difficulties in applying, complexity of eligibility rules and misinformation about who the program currently serves, beliefs among working older adults that the program's rules unfairly penalized them, and beliefs that seniors were not getting their fair share of food assistance (Gabor et al., 2002). Gabor and colleagues (2002) concluded that senior participants of all three ethnic backgrounds held similar negative and positive views of the Food Stamp Program whether they received food assistance or not.

## Food Insecurity

Food insecurity has been defined as the inability to obtain or eat foods or have an adequate supply of foods to maintain nutritional needs in a socially acceptable manner (Lokken & Hope, 2000). As compared with previous literature, Nord (2002) claims that food security rates are relatively high for elderly households. The Economic Research Service found that 94% of households with older adults were food secure, with 6% who are defined as food insecure with assistance from food pantries and federally funded programs (Nord, 2002). Nord (2002) implies that the reason for a lesser occurrence of food insecurity rate among elderly is due to a lower poverty rate when compared to non-elderly households. In addition many elderly households own their own homes (when compared to non-elderly households) and have other assets gained throughout their lives to support their needs (Nord, 2002). Nord (2002) also suggests that food insecurity is more common among African Americans and Hispanic elders in comparison to white elderly. Approximately 15.4% of Hispanic and 18.9% of African American elderly experience some level of food insecurity, while only 3.7% of White non-Hispanic elderly experience food insecurity (Nord, 2002). Nord (2002) indicates that elderly households in the U.S. may experience a higher rate of food security as a result of assistance from pension plans and Social Security benefits. Despite reported lesser occurrence of food insecurity, more solutions and developments should be made in order to ensure access to food at all times for elderly.

## Nutritional Status and Well Being of Elderly

Individuals age differently. “Successful” aging is a term used to refer to being the best that a person can hope for in terms of health while “usual” aging refers to effects of lifestyle habits such as smoking, poor eating habits, and inactivity that have taken effect (Gray-Donald, 1995). The frail elderly are those who have defined needs for support of activities of daily living (Gray-Donald, 1995). The frail elderly have very different nutrition problems than those with “successful” aging (Gray-Donald, 1995). Malnutrition is a major risk for elderly in hospital and nursing home settings while community-residing elderly are at 10% to 51% risk for malnutrition (Morrisson, 1997). Several factors affect the nutritional status and well being of the elderly population. Morrisson (1997) explained that changes in the oral cavity such as lack of good dentition, poorly fitting dentures, and mouth dryness can interfere with chewing and swallowing thus impacting nutritional well being. Other changes that can lead to poor nutritional intake and affect overall nutritional status include: gastrointestinal motility, anorexia, dementia, decline in number of taste buds, and depression due to social isolation (Morrisson, 1997).

Poor nutritional intake poses a serious health threat to the older population as a whole but is greater among women, African Americans, those with limited income and education and community-living older adults (Coulston et al., 1996). Sharkey and Schoenberg (2002) conducted a cross-sectional study among black and white women who received home-delivered meals to determine variations in nutritional risk. The study included 729 black and white women 60 years of age and older who participated in home-delivered meal services in 1999. Nutritional risk was assessed by administration of

the Nutrition Screening Initiative which included the 10 item DETERMINE Checklist. Demographic and socioeconomic characteristics were collected and included age, race, living arrangement, income in relation to poverty line, and length of continuous participation in the home-delivered meals program. Continuous home-delivered meal service ranged from one month to 283 months, with an average of 27 months for those who participated in the study (Sharkey & Schoenberg, 2002). Sharkey and Schoenberg (2002) found that 83.3% of black women had an income of less than or equal to 125% of the poverty line, whereas 52.3% of white women had an income of less than or equal to 125% of the poverty line. From the study 93.7% reported being physically unable to shop or cook, 76.9% stated they were taking at least three medications daily, and 25.8% reported unintended weight change (Sharkey & Schoenberg, 2002). According to Sharkey and Schoenberg (2002) the most significant finding was that black women participants reported financial hardship which further limited their ability to purchase food as compared to white women. Overall almost 70% of all participants were considered at high nutritional risk (Nutritional Health Index Scores greater than or equal to 6) for poor nutritional intake and the prevalence was higher among black women (n= 335), those with an income less than or equal to 125%, women who lived alone at the time of the study, and the younger old which made up those who were between 60 to 74 years of age (Sharkey & Schoenberg, 2002). In order to maintain a healthy and satisfactory life of older adults who live alone, keeping a healthy life style and functional capacity is vital (Huang & Lin, 2002).

In an effort to determine if expansion of the Meals on Wheels program with the addition of a breakfast meal would improve nutritional intake and quality of life among

frail homebound older adults, Gollub and Weddle (2004) conducted a cross-sectional study with elderly individuals who ranged in age from 60 to 100 and who were functionally limited, at high nutritional risk, and most who were low income and lived alone. Participants were divided into a breakfast group (n= 167) who received a breakfast and a lunch meal five days a week or a comparison group (n= 214) who received a lunch meal five days a week. Differences in nutritional intake and specific nutrition components were assessed using 24-hour food recalls from participants. The breakfast group consumed approximately 300 calories, 14 grams of protein, and 4 grams of fiber more than the comparison group (Gollub & Weddle, 2004). In addition the breakfast group consumed significantly greater proportions ( $p \text{ value} \leq 0.001$ ) of potassium, folate, calcium, iron, and vitamins A, B-6, B-12, and D (Gollub & Weddle, 2004). As for measurement of quality of life six surveys were utilized and included issues surrounding health, loneliness, food enjoyment, food security, and depression. The breakfast group had significantly ( $p = 0.002-0.003$ ) greater levels of food security and fewer depressive symptoms than the comparison group (Gollub & Weddle, 2004). Both groups reported loneliness at moderate or average levels and results showed there were no differences among the groups for quality of health or enjoyment of food (Gollub & Weddle, 2004). Furthermore, Gollub and Weddle (2004) found that the breakfast group had fewer financial costs related to food and overall cooking problems which was related to a reduced need to purchase or prepare food.

Oklahoma has some of the highest rates for chronic diseases such as cancer, stroke, and heart disease which can be related to poverty, nutrition, obesity, sedentary life style, and limited access to health care (Hermann et al., 2000). As a result of these issues

the Oklahoma Cooperative Extension Service developed a nutrition program “Healthy Living” for those 55 of years or older. Eight week sessions were held with seventy-six participants in ten counties across the state of Oklahoma. Each participant completed pre- and post program evaluations including 24-hour recalls, food behavior surveys, and overall health measures which included height, weight, body mass index, and fasting total cholesterol.

Upon completion of the program, Hermann et al.(2000) found significant increases in food behavior scores, nutritional intake, and health measures. After program completion vegetable consumption significantly increased from 2.7 to 3.4 servings and milk consumption increased from 1.4 to 2.3 servings (Hermann et al., 2000). Fasting serum total cholesterol decreased from 225 to 214 mg/dl with implementation of the “Healthy Living” program (Hermann et al., 2000). As for specific food and nutrition behavior assessments there were significant increases observed for post test questionnaires on the following topics: “Food Selection and Preparation,” “Food Intake,” and “Food Safety” (Hermann et al., 2000).

#### Food borne-Induced Gastroenteritis and Increased Incidence Among Elderly

Adults who are 65 years of age and older are more susceptible to morbidity and mortality from foodborne-induced gastroenteritis than younger individuals (Smith, 1998). Many of the protective immune responses are impaired in older age resulting in increased risk of infection and nutritional deficiencies (Chandra, 1995). Older adults are more at risk for malnutrition which ultimately increases risk for infection (Kendall et al., 2006).

Major surgery can often leave patients with a short period of decreased immune function as well. Because older adults already have a decreased immune function due to aging, surgery can put older adults at a relatively greater risk of foodborne illness and other infections (Buzby, 2002). Several factors contribute to increased susceptibility to foodborne illness for elderly. One factor that contributes to increased risk of foodborne illness is the age associated decline within an individual's immune system. As a person ages T-cell function begins to decline further suggesting that the mucosal immune system may be impaired (Smith, 1998).

Other factors that play a role in increased susceptibility to foodborne illness are related to changes in the gastrointestinal tract due to aging. Inflammation of the gastric mucosa and atrophy occur in approximately 50% of the population over the age of 50 (Smith, 1998). Stomach acid plays a major role in limiting the number of bacteria that enter the small intestine and is viewed as a protective factor against potentially dangerous bacteria (Smith, 1998). Other factors reported to play a role in increased risk for foodborne illness relate to decreased food consumption and poor nutrition, age-induced decrease in peristalsis which does not allow for speedy transit of pathogens, nursing home environment, intense use of antibiotics, and being of low income and unable to obtain adequate nutrition and medical care (Smith, 1998).

### Food Safety Knowledge and Practice

Foodborne illness among elderly individuals is widely documented. With the growing number of elderly and the fact that most eat a high proportion of their meals at



home, attention to food storage practices is necessary (Johnson et al., 1998). Johnson and associates (1998) examined food storage knowledge and practices of elderly people living at home. Three different phases of the study included face to face interviews, completion of self administered four-day food diaries and food frequency questionnaires, and follow up interviews respectively. Refrigerator temperatures were measured during phase 1 of the research and results indicated that 70% of subjects had refrigerators that measured too warm ( $\geq 6$  degrees Celsius) for safe food storage (Johnson et al., 1998). In phase 3 approximately 45% of the respondents reported difficulty reading food labels including the “use by” and “sell by” labels on food packaging (Johnson et al., 1998). Reported reasons for having trouble reading the food labels included the print that was too small and poor eyesight uncorrected by eyeglasses (Johnson et al., 1998). The researchers concluded that an improved understanding of appropriate storage temperatures, widespread use of refrigerator thermometers, and larger font food labels could reduce risk of foodborne illness among elderly living at home (Johnson, et al, 1998).

Similarly, Gettings and Kiernan (2001) conducted 6 focus groups with 74 seniors who prepared meals at home to determine food preparation practices. With cooking, three inappropriate practices were reported by participants: relying on a specific amount of time, using touch and utensils to determine doneness, and using sight alone (Gettings & Kiernan, 2001). Other inappropriate food behavior practices included placing frozen food in water that is never changed when thawing a food item and thawing frozen food on the counter for longer than 2 hours (Gettings & Kiernan, 2001). Barriers to changing inappropriate food handling practices included: resistance to change, perceived notion

that the change is inconvenient, lack of resources, such as not being able to purchase a thermometer, or cost of throwing food out (Gettings & Kiernan, 2001).

Foote and associates (2000) found that with development of an educational packet called “Safe on Your Plate” food safety awareness and behavior was enhanced among homebound elderly who received home delivered meals (Foote et al., 2000). The resource packet included labels for food, a handout for clients, a driver information sheet, and evaluation materials (Foote et al., 2000). The labels for food were color coded and suggested tips on how to handle foods, reheat, and store leftovers. The client handout was a meal handling guide and the driver information sheet contained details on potential food safety risks in clients’ homes. The program was conducted with 50 participants in rural locations. To determine behavior change among the participants a pre-test and post-test were administered by the meal delivery person. In addition, the driver assessed the impact of the program. Results indicated that driver orientation about food safety goals and implementation of the project prior to meal delivery improved the impact of the project with the clients (Foote et al., 2000). Moreover, results indicated that 83% (pre-test) of the clients ate or refrigerated their meals within 1 to 2 hours after delivery; this increased to 90% (post-test) as a result of receiving food safety education materials with meals (Foote et al., 2000). Frozen foods were eaten within one month by 18% of homebound elderly at pre-test and 70% post-test (Foote et al., 2000). Furthermore, 87% of the clients indicated that the food safety information on the label was a positive reinforcement to keep foods safe (Foote et al., 2000).

Another important food safety risk factor common among elderly people living at home is food storage practices of home delivered meals from programs such as Meals on

Wheels. Fey-Yensan and colleagues (2001) examined nutritional risk and food safety practices of 230 Meals on Wheels participants. Each participant was interviewed and evaluated for nutritional risk based on the Nutrition Screening Initiative Checklist. Approximately 82% of the participants scored a 6 or more on the Nutrition Screening Initiative Checklist which signaled high nutritional risk (Fey-Yensan et al., 2001). Almost half of the subjects did not eat their entire lunch meal when it was delivered (Fey-Yensan et al., 2001). Of those who stored their delivered meals as leftovers, 38% (n = 40) stored it in the refrigerator and 30% (n = 31) stored it on the counter (Fey-Yensan et al., 2001).

### Instructional Method Considerations

Geragogical learning focuses on guiding learning in older adults taking individual learning needs and special needs into consideration (Schuetz, 1981). The geragogical theory emphasizes instructor-directed learning, person-centered activities, and supervised decision making to meet the needs of the elderly (Schuetz, 1981). Schuetz (1981) reported that most of the elderly population is female, has a lower level of formal education than the rest of the population, and suffers from a number of health problems. Taking a geragogical approach to learning can meet such needs for elderly learners in many ways (Schuetz, 1981). Such ways include taking a self paced approach where the elderly learner can go at his or her own pace and learn information the most effective way possible for that particular individual learner.

Physical environment conditions must be given careful attention when providing education to elderly. Suggestions for environmental conditions include: comfortable

seating with chairs that are easy to get in and out of, comfortable temperature levels, meeting rooms scheduled on the first floor of a building, parking should be available close for those who are able to drive or transportation provided to those who cannot, a room with plenty of light should be utilized and use of visuals to complement speaking as well (Glass, 1996). When selecting visuals and handouts, materials should be in larger font and in a simple layout with a lot of contrast, spacing should be used between lines and a room with proper illumination with no glare to make it simple to read (Glass, 1996). Glass (1996) also suggests avoiding long learning sessions and stressful circumstances that place elderly under timed conditions. Other considerations that must be given special attention include promotion of self-paced learning in order for older adults to adjust to their own physical capabilities and breaks should be given to help reduce fatigue (Glass, 1996).

Attention to attitudinal changes that occur as a person ages is necessary (Glass, 1996). Conservatism and cautiousness are common attributes among older adults (Glass, 1996). Glass (1996) suggests several factors that relate to cautiousness in later life and include discomfort for the uncertainty of the future, feelings of failure and inadequacy secondary to old age and declining abilities. A tendency to avoid responding to questions for fear of being wrong, and a tendency to hold onto old attitudes, interests, and values are also noteworthy characteristics of elderly learners (Glass, 1996).

Morris and Ballard (2003) conducted a study with 264 participants aged 50 years of age and older to determine instructional methods and environmental considerations for teaching elderly. The sample was mainly female (70%), 61% were married, and 52% well-educated (Morris & Ballard, 2003). Instructional methods and environmental

considerations were assessed by having each participant complete a questionnaire that listed 15 teaching techniques and nine environmental considerations that each participant rated using a Likert-type scale. Results showed that overall the nine environmental considerations received high ratings, indicating that environment is a significant consideration (Morris & Ballard, 2003). When results were separated by gender it was found that women more than men valued a learning environment near a bathroom, convenient time of day, and convenient parking (Morris & Ballard, 2003). Older (85 years of age and older) study participants viewed locations without stairs and reduced background noise as appealing for educational purposes (Morris & Ballard, 2003).

Results from the 15 item instructional method section indicated the highest preference for learning tools included those that older adults can use on their own such as handouts, newsletters, brochures, and self help books, which supports the importance of self paced and self directed learning (Morris & Ballard, 2003). Midlife adults (50-64 years of age) rated group learning more beneficial than did the old old (75 years of age and greater) and oldest old age groups (Morris & Ballard, 2003). Computers received low ratings for their usefulness as an instructional strategy; however midlife adults expressed an interest in computer learning more than the older age groups (Morris & Ballard, 2003). Furthermore, Morris and Ballard (2003) inferred from this study that more print material should be developed and made easily available for this age group and that additional comparisons among the different age groups are necessary to support learning diversity among older adults.

Austin-Wells and associated (2003) utilized focus groups to determine optimal delivery strategies when presenting material to community-dwelling elderly. Three focus

groups were held at a community center, assisted living center, and an independent apartment living center for low income elderly. Participants were over the age of 65 years, African-American, Caucasian, or Hispanic. Three delivery formats were investigated and included PowerPoint, flip charts, and overhead projections. The order of presentation varied with each site location and the material presented was the same for all three sites as well. Each presentation lasted ten minutes each with breaks between.

Results from each focus group showed that those at the independent living site preferred the PowerPoint presentation (Austin-Wells et al., 2003). As for the assisted living site, five individuals ranked the PowerPoint presentation as the favorite and four felt that the Flip Chart was their least favorite of the three formats (Austin-Wells et al., 2003). Although group size was limited to ten, elderly individuals continued to join the session throughout and group size concluded with eighteen individuals (Austin-Wells et al., 2003). Of the eighteen participants, twelve chose the PowerPoint presentation as the ideal delivery method, six viewed the Overhead projection as the favorite, and no participant selected the Flip Charts (Austin-Wells et al., 2003). It was apparent from the results that participants viewed the PowerPoint as the optimal delivery format and reasons for this included brighter colors, larger text, and simple format all of which reduced boredom and fatigue (Austin-Wells et al., 2003). It is also important to note that participants had great difficulty at times separating the best means of presenting material from the actual material presented (Austin-Wells et al., 2003). Overall, their results suggest that presentations for older adults need to include visual material for those with hearing difficulties, large and highly contrasting colors for those with visual losses, and

limited information per slide to reduce or eliminate confusion and cognitive complexity (Austin-Wells et al., 2003).

In an effort to identify common yet important characteristics of older adult learners, Heimstra (1981) utilized the grounded theory approach to collect data. Thirty older well educated adults ages 67-96 were the target of the study. Data methods included in-depth interviews and participant observations such as home visits, telephone conversations and observations in naturalistic settings such as the participant's home. Perceptions and views were gathered from individual participants on their thoughts regarding successful learning. Heimstra (1981) reported that study participants' whose parents (28 of 30) had stressed the importance of reading and active reading habits continued as part of individual learning processes later in life (Heimstra, 1981). Other emergent themes from the study included staying active, being curious, self-reliant, and parental influence contributed to successful learning as people age (Heimstra, 1981).

### Elderly Programs and Implications

Overall, national health promotion programs targeting American elderly population are scant (Sahyoun, 2002). In 2000 Congress reauthorized the Older Americans Act which included funding for congregate, group meals and the Meals on Wheels program (Sahyoun, 2002). The Older Americans Act is a federal statute that authorizes and funds the Administration on Aging, as well as all of the Administration on Aging's programs and services (Administration on Aging, 2007). The Area Agency on Aging (AAA) is funded by the Older Americans Act and aims to provide several services

to accommodate the elderly (Area Agencies on Aging, 2007). Some of these services that the AAA provides include: senior centers as a gathering place for social networking, congregate meals, adult day care services, volunteer opportunities, and other in-home services including chore services, homemakers, and personal care services (Area Agencies on Aging, 2007). The Meals on Wheels program, a service provided by the Area Agency of Aging offers mid-day and evening meals to elderly who cannot shop or prepare their own meals, often by a volunteer who also provides a sense of security and social contact to a homebound elder (Area Agencies on Aging, 2007 ). This single meal provided by the Meals on Wheels program provides recipients with half or more of their total food intake for the day (Wellman & Kamp, 2004).

Another service provided by the AAA is congregate meals to elderly in communities nationwide. Congregate meals are offered at community centers, churches, schools, and adult day care centers (Wellman & Kamp, 2004). Often this single meal provides most of their total food intake for the day and more elderly are apt to eat more food at a congregate site than they would at home (Wellman & Kamp, 2004). Congregate meal sites provide a strong sense of social networking and social opportunities (Wellman & Kamp, 2004). According to Bauer (2003), when holding a discussion with congregate meal participants about the program, almost all reported that they liked visiting with friends at the site and 60% indicated that their social opportunities and ties have increased since they began attending.

President Bush's 2003 budget request called for \$745 million for the Older Americans Act Nutrition Program, an increase of \$2 million for home-delivered meals (U.S. Department of Health and Human Services, 2002). In fiscal year 1999, the Older



American Act Nutrition Program provided 112.8 million meals to 1.8 million older adults in congregate meal site locations and 134.6 million meals were delivered to 884,000 homebound elderly (U.S. Department of Health and Human Services, 2002). The Older American Act Nutrition Program also provides services to elderly minority groups such as Native Americans (U.S. Department of Health and Human Services, 2002). In the 1999 fiscal year, 1.7 million meals were served to nearly 23,000 older American Indians, Alaska Natives, and Native Hawaiians in group settings and 1.3 million meals were delivered to 35,707 Native American homebound individuals (U.S. Department of Health and Human Services, 2002). In 2001, the number of home delivered meals increased to 143.4 million meals provided to 1 million people in the U.S. (Department of Health and Human Services, 2003). As for state allocated funding, for the year of 2002, Oklahoma was allocated \$5,086,798 for congregate meals and \$2,185,131 for home delivered meal services to support the Older American Act nutrition program (U.S. Department of Health and Human Services, 2002).

Through the Older Americans Act grants are provided to states to include disease prevention and health promotion services that include nutrition education (Sahyoun, 2002). Such grants provide good opportunities to reach limited income elderly (Sahyoun, 2002). Sahyoun (2002) suggests that in order to become more effective in teaching nutrition education one approach includes identifying nutritional needs by functional status and overall health of elderly and integrating the nutrition message within people's living context, their environment, and ethnic background. Nutrition education is an important link to improving dietary intake and behaviors of older adults and also allows

elderly to clearly understand the latest nutrition information so that it can be applied to their individual situations (Hermann et al., 2000; Sahyoun, 2002).

Another state program that offers nutritional services to elderly is the Community Nutrition Education Program (CNEP, 2007) in Oklahoma. The CNEP enrolls limited-resource families in a personalized, thorough, educational program. The CNEP encompasses two programs: Expanded Food and Nutrition Education Program (EFNEP) and the Oklahoma Nutrition Education (ONE) program. EFNEP has been teaching families for thirty years in Oklahoma and is funded through federal funds through Cooperative State Research, Education and Extension Service of the USDA (CNEP, 2007). The ONE program is a nutrition education program designed for Oklahoma food stamp participants and those who are eligible for food stamps (CNEP, 2007). Teaching paraprofessionals provide hands on learning, and encourage participants to practice skills learned each week, eventually resulting in a positive change towards food and nutrition (CNEP, 2007). Comparing entrance and exit interviews, 92% of program participants demonstrate positive changes towards a healthy diet as a result of their nutrition education training (CNEP, 2007).

Data from CNEP indicate that approximately 50% of families participated in food stamps and 12% participated in Temporary Emergency Food Assistance Programs (TEFAP) (CNEP, 2006). CNEP participants were predominately female with 620 females and 96 males and 60 years of age and older (CNEP, 2006). Other demographics showed that 457 ( 64%) were white, 125 (17%) were American Indian, 123 (17%) were African American, and 11 (2%) were Hispanic between October 2005-September 2006 (CNEP, 2006).

There are two types of primary instructional strategies available for CNEP, namely group and individual instruction. Type of instruction received was similar with 52% receiving group and 48% receiving individual instruction among those enrolled in the Oklahoma CNEP (CNEP, 2006). According to the CNEP Program Summary Report, a mean of 16.4 (S.D. = 6.86) lessons were taught to participants who completed the program between October 2005-September 2006 (CNEP, 2006). Food safety behavior was measured on a 5 point Likert scale among those enrolled in the Oklahoma CNEP during October 2005-September 2006. Upon entry into the program 81% (n = 359) reported that they do not let foods sit out and upon exit of the program 94% (n = 418) reported not letting foods sit out (CNEP, 2006). As for thawing foods, 42% (n = 186) reported not letting foods sit out to thaw when entering the program and 80% (n = 354) claimed not letting foods sit out to thaw upon exit of CNEP (CNEP, 2006). Overall 52% (n = 228) participants in Oklahoma CNEP showed improvement in one or more of the food safety practices (i.e., thawing and storing foods properly) and 14% (n = 59) participants showed improvement in both of the food safety practices (i.e., thawing and storing foods properly) (CNEP, 2006).

#### Elderly and Focus Group Research

According to Krueger (1994) focus groups are beneficial for identification of major themes and are an effective means for collecting information from special audiences. Krueger (1994) recommends that careful preparation must be completed prior to developing focus group strategies for elderly people. Krueger's (1994)

recommendations include simply worded questions using language the intended audience understands. Focus group research is a preferred strategy for older adults as it enables group interaction and greater insight into people's experiences and opinions (Barrett & Kirk, 2000). Furthermore focus group research captures the language of the audience and produces rich data (National Cancer Institute, 2002). Results from focus group data can be used for program planning including materials development based on insight gained from a better understanding of the audience's lifestyle, culture, motivations, behaviors, and most importantly preferences (National Cancer Institute, 2002).

A substantial amount of health information is available for the elderly, however, it is not being utilized by them (Barrett & Kirk, 2000). There is an increasing demand to attend to issues affecting the overall long term health and quality of life for elderly populations. Such areas that demand attention include: health, independent living, financial resources, and social issues (Barrett & Kirk, 2000). As such, it is important for community nutrition programs to provide information that limited income elderly will perceive as beneficial and appropriate given their life situations. The aim of this study is to determine optimal delivery methods for nutrition education among limited resource elderly.

## CHAPTER III

### METHODOLOGY

This research project examined the perceptions and beliefs that limited income elderly participants enrolled in Community Nutrition Education Programs (CNEP) have about instructional media and food safety. Recruited subjects included those who either received food stamps or were eligible.

#### Objectives of the study include:

1. To determine behaviors and beliefs about food safety in limited income elderly populations currently or previously enrolled in Community Nutrition Education Programs (CNEP).
2. To determine which educational method limited income elderly participants of CNEP prefer.

#### Subjects

The sample population consisted of limited income elderly who were 60 years of age and older and who were Oklahoma residents at the time of data collection or who were currently or previously enrolled in CNEP. Teaching paraprofessionals recruited

(Appendix A) a convenience sample of elderly participants and asked them to participate in a group discussion about food safety, a core component of nutrition education in the CNEP program.

Currently CNEP operates in over 40 counties. CNEP has 9 units and within each unit there are several counties. For the fall of 2005 through the fall of 2006 1,069 individuals over the age of 60 years participated in the Oklahoma CNEP (CNEP Program Summary Report, 2006). This study was conducted within each unit, specifically the county within each unit with the most heavily populated limited income elderly participants as determined through program demographic reports.

### Research Design

This study was a descriptive study utilizing mixed methods to achieve the objectives. Both qualitative and quantitative methods were employed. Participants in the study completed a consent form (Appendix B) followed by a survey about food safety behaviors (Partnership for Food Safety Education, 2001). Participants then viewed three instructional strategies targeting improved food storage behaviors. The order of the three instructional strategies was determined via random selection by drawing out of a hat. Finally, participants engaged in a focus group discussion about preferred instructional methods. Focus groups were used to elucidate general themes and patterns. This study was approved by the Institutional Review Board at Oklahoma State University (Appendix C).

## Data Collection

### Survey Information

To determine food safety behaviors participants completed a modified version of the BAC Buster Household Food Survey (Appendix D). The original survey was part of the 2001 Fight Bac! Campaign, developed in conjunction with the President's National Food Safety Initiative and was modified to address individual behaviors as opposed to household behaviors (Partnership for Food Safety Education, 2001). The goal of the campaign was to educate consumers on steps to fight foodborne bacteria and reduce risk of foodborne illness. The survey used in our study (Appendix E) was modified to address individual behaviors and revised following pilot testing of the survey. The survey was self-administered and the researchers were available to answer any questions. Descriptive statistics such as frequencies and percents were used to report survey findings.

### Educational Method Delivery

To determine which educational method elderly Community Nutrition Education Programs (CNEP) participants prefer, participants observed a series of three educational presentations. The topic of the educational presentations was how to store leftover foods properly. The topic was part of a four part educational series *Food Safety for Seniors* created by OSU Oklahoma Cooperative Extension Service Food Specialist and developed to address critical food safety behaviors among elderly populations. The educational

formats included a PowerPoint presentation on the topic of storing foods safely, a video that discussed the same topic of storing foods safe and the third format was a handout that outlined pertinent material discussed on the topic of storing foods safely. The handout was distributed to each participant to read individually. Each educational method lasted approximately 15 minutes. A single researcher administered all instructional strategies to minimize procedural bias.

### Focus Groups

Following the educational presentations, participants were asked a series of questions modified from Austin-Wells and associates (2003). A second researcher not involved in the instructional process asked the questions (Appendix F) in a focus group format in order for instructional delivery preferences to be determined. Each focus group lasted approximately one hour and consisted of 5-10 participants and was audio taped. Before closing the focus group, the researcher confirmed her impressions of preferences with participants. If her impressions were not correct, she then corrected these by asking additional questions of the focus group participants. The focus group did not end until the researcher and participants were in agreement. Following each focus group, the researcher prepared written notes. Verbatim transcripts were also analyzed by means of content analysis (Appendix G). All transcripts were prepared by the Social Bureau of Research at Oklahoma State University. Major themes, patterns and frequencies were reported to determine instructional strategy preferences.



### Pre-testing of procedures

Two pilot groups were held to gather feedback from elderly participants related to the focus group script and food safety survey. Following the pilot testing of procedures, two questions from the food safety survey were identified by participants as being unclear. Questions about proper cooking of eggs and consumption of raw cookie dough were changed. The question related to proper cooking of eggs was changed to ask if the participant ate runny eggs. The question related to cookie dough used a double negative and asked the participant “*do you not eat cookie dough or cake batter that was made with raw egg*” and this question was modified to ask whether participants “*ate cookie dough or cake batter made with raw eggs*”.

## CHAPTER IV

# **Behaviors and Beliefs about Food Safety and Instructional Delivery Strategies among Limited Income Elderly Enrolled in Community Nutrition Education Programs**

Laura Powell, RD/LD

Manuscript formatted for consideration as a research brief in the Journal of Nutrition Education and Behavior

### **Abstract**

---

**Objective:** To determine preferred instructional delivery methods for receiving nutrition education and identify food safety behaviors and concerns in a limited resource elderly population.

**Design:** A descriptive study utilizing mixed methods to achieve the objectives. Focus groups and a food safety survey were used.

**Setting:** Food Stamp Nutrition Education Program site locations in rural counties in the state of Oklahoma.

**Participants:** Fifty-nine limited income elderly participants 59 years of age or older enrolled in Community Nutrition Education Programs in Oklahoma.

**Main Outcome Measure(s):** Food safety behaviors and beliefs; and perceptions of preferred instructional strategies

**Analysis:** Descriptive statistics of demographics and food safety behaviors. Content analysis of focus groups whereby researchers independently coded focus group transcripts and came to an agreement for the identification of common themes and patterns.

**Results:** Participants were concerned about food safety as a means of maintaining health and avoiding illness. Instructional delivery preference was rooted in the inclusion of experiential and relational aspects of the presentations. The video was preferred most, followed by PowerPoint and handouts.

**Conclusions and Implications:** Our findings suggest that it is important to determine learning topics that are of interest to older adults so instructional materials can be developed, made available, accessible, and tailored to the expressed needs of elderly populations.

**Key Words:** food safety, elderly, perceptions of learning, focus groups, survey

## **INTRODUCTION**

Current trends indicate that effective instructional strategies are important to meet the needs of a growing elderly population. It is estimated that the number of people aged

50 and over will reach 127 million by the year 2030 (Morris & Ballard, 2003). Not only is the number of elderly expected to increase but also the years lived. Life expectancy in the United States has dramatically increased over the past few decades. For men life expectancy is 74 years and for women it is 79 years (US Census Bureau, 2000a). With such drastic changes in the demographics of the elderly population, it is necessary for nutrition educators to be equipped to meet the educational needs of a continually increasing elderly population.

Food safety is of particular concern for the elderly population because they are more susceptible to morbidity and mortality from foodborne-induced gastroenteritis than younger individuals (Smith, 1998). Several factors contribute to the increased susceptibility to foodborne illness for elderly including an age-associated decline in the immune system. As a person ages T-cell function begins to decline and the mucosal immune system may be impaired (Smith, 1998). Other factors that play a role in increased susceptibility to foodborne illness are related to changes in the gastrointestinal tract due to aging. Inflammation of the gastric mucosa and atrophy occur in approximately 50% of the population over the age of 50 (Smith, 1998). Additional factors reported to play a role in increased risk for foodborne illness relate to decreased food consumption and poor nutrition, age-induced decrease in peristalsis which does not allow for speedy transit of pathogens, nursing home environment, intense use of antibiotics, being of low income and unable to obtain adequate nutrition and medical care (Smith, 1998).

Food safety education for elderly can be an important mechanism to prevent or decrease illness among the elderly and improve overall quality of life (Kendall et al.,

2006). Key food safety behaviors important for the elderly include unsafe refrigerator temperatures for proper food storage and difficulty reading food labels including the “use by” and “sell by” labels on food packaging due to visual impairment (Johnson et al., 1998). A food safety concern of importance for limited income elderly people living at home is improper storage of home delivered meals. In some instances elderly who receive home delivered meals do not consume the entire meal when delivered and choose to store leftovers on the counter posing a risk for contraction of food borne illnesses (Fey-Yensan et al., 2001).

In order to address food safety concerns common among elderly, it is necessary to identify risk behaviors and understand their needs and concerns related to receiving information. With a better understanding of these needs and concerns, educators can develop educational programs tailored to unique learning challenges experienced by elderly. Some special challenges elderly face when learning are related to cognitive and physiological changes that occur with the aging process. Cognitive changes that occur with older adults that may affect learning include: psychomotor speed, memory functioning such as the time it takes for information retrieval, motivation, anxiety, and expected learning pace (Morris & Ballard, 2003). Physiological changes that influence learning consist of changes in muscle mass, declines in flexibility, fatigue, bone loss, cardiovascular weakening, and lung tissue changes that can decrease the availability of oxygen to the cardiovascular system (Glass, 1996).

Despite the fact that a substantial amount of health information is available for the elderly, it is not being utilized efficiently by them (Barrett & Kirk, 2000). As such, there is an increasing demand to develop educational programs that attend to issues affecting

the overall long term health and quality of life for elderly populations while at the same time meeting their specific learning needs. There is a need for nutrition professionals to develop programs that address the values and concerns of limited income elderly so that they will perceive the information as beneficial and appropriate for life situations specific to their needs. The purposes of this study are to determine optimal delivery methods for receiving nutrition education and identify food safety behaviors and concerns among limited resource elderly populations. Funding for this study was provided by the Food Stamp Nutrition Education Program Grant through USDA.

## **DESCRIPTION OF PROCEDURES AND ANALYSIS**

### **Sample population**

The sample population consisted of limited income adults 60 years of age and older who were Oklahoma residents currently or previously enrolled in Community Nutrition Education Programs (CNEP) within the state of Oklahoma. Teaching paraprofessionals recruited a convenience sample of elderly participants and asked them to participate in a group discussion about food safety, a core component of nutrition education in the CNEP program. This study was conducted at locations where teaching paraprofessionals conduct educational sessions with elderly participants in each of the nine units across the state of Oklahoma. The research counties were identified as those that had the largest number of elderly participants by a demographic report provided by CNEP and one county where piloting of procedures was conducted.

## **Order of procedures**

Upon arrival at the data collection site, participants first completed a consent form and then a survey of demographic information and food safety practices. Participants then viewed three instructional strategies targeting improved food storage behaviors. The delivery order of the three instructional strategies was determined via random selection prior to arrival at the study site. Once participants viewed all three instructional strategies, they were asked to engage in a focus group discussion about preferred instructional methods. This study was approved by the Institutional Review Board at Oklahoma State University

## **Food safety survey description**

The BAC Buster Household Food Survey (Partnership for Food Safety Education, 2001) was modified to address individual behaviors as opposed to household behaviors. The food safety survey was self-administered and completed prior to the educational presentations to minimize reactive effects in terms of reported food safety behaviors. The survey was printed in Times-Roman font size 18 to address potential visual challenges. Researchers were available to answer any questions about the survey. Descriptive statistics such as frequencies and percents were used to report survey results.

## **Instructional delivery methods**

The food storage segment of the educational series *Food Safety for Seniors* (Brown, 2001) created by OSU Oklahoma Cooperative Extension Service Food Specialist was used to determine instructional delivery preference. The instructional

delivery methods consisted of a PowerPoint presentation, a video, and a handout. Each delivery method took approximately 10 minutes to administer. A single researcher administered all instructional strategies to minimize procedural bias and the order of instructional delivery methods was determined randomly prior to arrival at each site to minimize selection effect.

### **Focus group description**

Following the educational presentation, participants were asked open-ended questions in a focus group format by a research assistant not involved in the instructional delivery process. Participants were asked a series of questions (Table 1) to identify concerns about food safety and instructional method preference. Questions were modified from Austin-Wells and associates (2003) after pilot testing 2 focus groups with the targeted population. Each focus group lasted approximately thirty minutes and consisted of 5-10 participants. Before closing the focus group, the researcher confirmed her impressions of preferences with participants. The focus group did not end until the researcher and participants were in agreement.

Following each focus group the researcher debriefed in the form of written notes. Verbatim transcripts were created by the Bureau of Social Research at the study institution. Transcripts were analyzed by three researchers using content analysis (Krueger, 1994). Each of the researchers identified major themes, patterns and frequencies which were reported to determine instructional strategy preferences. Based



on the analysis of the three researchers, the two principal researchers came to a consensus of final themes included in this report.

### **Pre-testing of procedures**

Two pilot groups were held to gather feedback from elderly participants related to the focus group script and food safety survey. Following the pilot testing of procedures, two questions from the food safety survey were identified by participants as being unclear. Specific questions that were changed included a question about proper cooking of eggs and consumption of raw cookie dough. The question related to proper cooking of eggs was changed to ask if the participant ate “runny” eggs. The question related to cookie dough used a double negative and asked the participant “*do you not eat cookie dough or cake batter that was made with raw egg*” and this question was modified to ask whether participants “*ate cookie dough or cake batter made with raw eggs*”. After data collection procedures were modified, eight focus groups were held in counties with the most heavily populated limited income elderly as determined through program demographic reports. Focus group questions did not change from pilot to final sample.

### **INFORMATION LEARNED**

The sample population consisted of 60 limited income adults who were 60 years of age and older and Oklahoma residents currently or previously enrolled in CNEP. Participants also included elderly who participated in the 2 pilot sites. Demographic findings (Table 2) from focus group participants indicated that the majority of sample

participants were female (91.7%) and older than 70 (43.3%) Most participants lived alone (48.3%) and ate the majority of their meals at home (81.7%).

### **Food Safety Survey Findings**

Results from the food safety survey (Table 3) indicate that many of the focus group participants followed healthy food safety behaviors when handling, preparing, and storing foods. Although many participants reported participating in key food safety behaviors a small proportion did not. For example, 43.3% (26) participants reported not using a cold pack for foods when going on a picnic. Improper refrigeration was reported by 13.3% (8) of the participants and improper preparation by 32% (19) of participants who reported consuming runny eggs. Additional noteworthy concerns surrounded cleaning and cooking behaviors. When asked if participants washed their hands with warm water and soap for twenty seconds prior to eating, 16.7% (10) reported “no.” As for cooking practices 18.3% (11) reported not bringing sauces, soups, and gravy to a boil when reheating.

### **Focus group findings**

A total of ten focus group sessions were held. Two of the total ten were pilot groups and the information gained from the pilot group sessions is included in this report. Results are reported based on common themes agreed upon by the researchers.

## Perceptions of food safety

The majority of participants indicated that it is important to learn about food safety primarily for maintenance of good health. Comments related to learning how to store foods safely include:

- *“Listen, if you ever have food poisoning one time then you really, really realize how important it is and you can get it so easily.”*
- *“Well between going to the hospital, getting’ sick going to the hospital or keepin’ your food prepared right and not lettin’ it get old, uh, most food, if you let it sit too long, gets uh, turns toxic. And I, I know about that ‘cause I’ve had that happen to me.”(laughing)*
- *“It (foodborne illness) makes you sick and cause death. It’s important. It’s your life.”*
- *“Basic understanding that as people get older the risk of getting sick is greater from unsafe food.”*
- *“Well, to me, I just don’t like to feel bad. I mean, because if you fell bad you don’t want to do nothing. You can’t go nowhere. I mean, you know, it just restricts you.”*

Some participants indicated that individual food safety behaviors were rooted in traditional practices and habit. However, perceptions of the importance of practicing safe food storage procedures were reportedly changed after learning about the possibility of illness as revealed by comments such as:

- *“It’s very important, cause I’m a creature of habit. I let my food set out, you know at like Thanksgiving and if I can.... I use it. I’m a morning person and I usually cook in the morning for my girls when they come home in the evening and I let my food set out. I never stop. I never thought about it after I cooked it that bacteria would grow on in it that fast once it was cooked.”*

### **Instructional delivery preference**

As for preference for particular delivery strategies when it comes to receiving and learning the tally of preference (Table 4) indicated that the video learning strategy, followed by PowerPoint presentation were most preferred. Participants preferred the video as the best instructional medium because of the depiction of real life situations and their ability to relate to the elderly person in the video.

- *“I liked the video, I mean the man when he was, it brings it to your attention, it brings it right to the attention of what they’re trying to tell you as far as, you know, and this direct straight to the point because when he opened that refrigerator and he saw all the food, and the first thing I said, oh man he ain’t got the time of day because I know that, he ain’t had no stickers, no time, no dating, no nothing on anything, he still piling it up ...”*
- *“It shows you what not to do. Probably a lot of people do that (store foods improperly) more times than you think”*

Additional participants indicated a preference for the video format because it allows for the use of multiple senses, namely seeing and hearing through comments such as:

- *“Yeah, because when you see something, it’s better than just hearing it. You see it in action. One picture is worth a thousand words”*

Although participants liked the video, they indicated a need for improvement in delivery by attending to the volume level through comments like:

- *“Well I thought it was good, except that it wasn’t loud enough.”*

Participants indicated additional improvements to the video. Simplicity and depiction of few individuals were also suggested as means to improve the video as indicated by one individual who had a difficult time focusing on the video as indicated through her comment that:

- *“The videos are alright, but kind of like (name) said, if there are too many people in that video, if it had just stayed on one person, then you’ll focus, but by it being up on the wall your attention is on what’s up there and you’re focused. If you’re trying to watch a video sometimes you are trying to focus on too many things.”*

The PowerPoint was the second most favored medium for similar reasons as those who preferred the video presentation. Participants commonly referred to the PowerPoint presentation as the “one on the wall” as they were not familiar with the terminology. The simplicity of the slide design, the use of multiple senses and the need to focus only on one person were stated as reasons for PowerPoint preference as indicated through comments such as:

- *“Personally, I really think I got more out of the one you showed on the wall. My concentration was there more, it was continuous and with two or three people like in the video, sometimes I have to get reoriented to another persons voice and to me I just got more out of the one on the wall.”*

- *“See and hear it is the thing because you saw the words up there and then she said it, so two of your senses were involved in that lesson.”*

Participants who did not like the power point presentation indicated that it was boring or it was easy to lose their attention because of multiple concepts as indicated by comments such as

- *“I thought that (PowerPoint) was kind of uninteresting.”*
- *“Well, I was probably a bit more apt to watch the video. Somebody talking and they go from one thing to another and I’m sittin’ here thinking, Yeah, that’d be good idea, and she starts on something else and then I lose my....”*

The handout used as a learning strategy was viewed by participants as more of a supplemental piece to refer to at a later time if the information was forgotten. The handout was also preferred by elderly who had a hard time hearing educational materials presented with comments such as the following:

- *“Learned a lot from it if we didn’t know it and it reminded us.”*
- *“Because I can’t hear that good and you don’t always see everything up there because you’re behind someone and I can read it much better than I can see it.”*
- *“Well we just read it and stick it on the refrigerator or something other and remind us. I collect them.”*
- *“But I like to go and get things and read over to see what I need to do and if I forgotten how something, I’ll go read it.”*
- *“Cause I can go home and re-read over it, you know. You can’t take the slide with ya, but you can take the handout.”*

On the other hand some participants felt that the handout would not be of value at a later time because they may forget about it once they leave the presentation. It was also not preferred by some because they already receive so many pieces of information that they find themselves throwing away materials because they are overwhelmed by the amount they receive.

- *“Some people don’t read. They get a handout and they get home and it goes into the trash.”*
- *“What you see is what you get. You take it home with you and you think I’ll pick it up later and look at it and you don’t.”*

Other participants felt that when it comes to learning educational material the preference is for visual and demonstrative learning rather than with a handout as suggested by the following comments:

- *“Well, some things you may not understand. You may need to see it presented with a video.”*
- *“You can’t see it. Some people are visual. Even though it is written down, it’s nice to see the picture. And people even are more apt to watch the cartoons than they are on this.”*
- *“No, it’s got to be demonstrated.”*

An additional comment provided by a participant relates to the importance of distributing handouts and is perceived as significant and relevant to current needs as indicated by the following:

- *“Oh when you wanna learn, yeah I would take it, but if it’s something I’m not interested in I probably wouldn’t. I mean I probably would take it, but I wouldn’t take it seriously.”*

Visual impairment was also indicated as a reason for not utilizing handouts and is specified by the following comment:

- *“Well because of my eyesight, uh literature doesn’t mean that much to me because I, uh I have to get a magnifying glass or something. So most, and to me it becomes a collecting thing that is just in my way and so I won’t. I won’t continue to pick it up and look at it again.”*

Interestingly, two participants provided comments for integration of all three learning strategies for an educational session to be complete which was met with good favor on the part of other participants through nods of agreement as well as verbal confirmation. The following comments relate to the integration of all methods presented:

- *“Not one piece of information by itself seem adequate.”*
- *“There three very important things that you have shown and they tie together. If you take one apart then it loses, you lose some of the others, but if you put the three together you got a strong story.”*

## **Discussion of findings**

Food safety behavior concerns were expressed by all participants and there responses to the food safety survey indicated that most followed recommended food safety strategies. The participants viewed food safety as important in order to maintain



health and avoid illness. When developing materials about food safety for older adults, health maintenance factors may be important to integrate when developing instructional materials. Fey-Yensan et al. (2001) also found that for many homebound elderly health and nutritional risk are major concerns. Professional, in home assessments revealed food safety practice concerns for more than one quarter of home delivered meal participants (Fey-Yensan et al., 2001). Results from the food safety survey indicate that many of the focus group participants followed healthful food safety behaviors when handling, preparing, and storing foods. This could perhaps be because participants have already received previous nutrition education and not a true representation of elderly's food safety practices. Additional research is recommended to explore food safety practices with elderly who have not received nutrition education.

Insofar as delivery method preference is concerned, our findings indicate that the video medium was the most preferred educational strategy. The video we used included generational music and an elderly individual faced with food safety concerns which appealed to seniors in this study because they could "relate" to the individual. We suggest that the information being conveyed in a story-like manner may be a reason for this preference as elderly individuals tend to be familiar with television and the use of multiple senses when viewing this form of media. Our findings support popular cultural trends in that Americans aged 45 and older are the largest television audience and elderly as a group more frequently view television than any other age segments (Thomas & Wolfe, 1995; Rahtz & Sirgy, 1989).

The PowerPoint presentation was the next most preferred medium and was favored due to the simplicity of one person presenting the information and more

importantly it was viewed as a learning tool to use more commonly among future older generations. In previous literature preference for PowerPoint presentations was overwhelmingly preferred by elderly as indicated in a study conducted by Austin-Wells et al. (2003) who evaluated instructional delivery preference using flip charts, an overhead projector, and a PowerPoint presentation. The participants' in their study emphasized preference for the PowerPoint presentation due to the brighter colors, larger text, simplicity of text, and high novelty which all reduced boredom and fatigue (Austin-Wells et al., 2003). Our study was different from that of Austin Wells et al. (2003) in that the video was more commonly preferred however, their study did not include a video medium. We were unable to find studies with elderly adults using video medium. Previous literature supports that experiential learning strategies are effective with older adults. Participants in programs based on a peer learning approach where older adult learners were actively involved with planning and presenting information in a learning setting experienced more enjoyment, mental stimulation, and satisfaction with the program (Clark et al., 1997; Strom et al., 1997). We suggest that participants in our study found the video more enjoyable and found the educational material in the video more stimulating because an elderly individual with whom they could relate was depicted in the video.

The handout was the least preferred delivery method due to a lack of interaction and senses involved when simply using a handout to read as a learning strategy. Although the handout was least preferred some participants indicated a preference for the handout because it prompted their memory of concepts learned at a later time. Our findings concerning the handout are in contrast to that of Morris and Ballard (2003) who found

that older adults preferred independent-use instructional strategies such as newsletters or brochures so one could learn at one's leisure. Our findings suggest that elderly value printed materials only when they value or are concerned about the information contained within them. We suggest that topics of interest should be identified first and then materials developed and made accessible to older adults as a supplemental resource with an activity included to remind elderly to use the handout as memory, as forgetting the resource, was stated as a reason for not using handouts.

Nutrition education is an important link to improving dietary intake and behaviors of older adults and also allows the elderly to clearly understand the latest nutrition information so that it can be applied to their individual situations (Hermann et al., 2000; Sahyoun, 2002). Although elderly participants in our study preferred the video medium, some elderly also preferred other mediums or the combination of multiple strategies. For this reason, we suggest that the geragogical theory may be important to consider when developing and delivering education for older adults. Geragogical learning focuses on guiding learning in a manner such that individual learning needs and special needs are taken into consideration (Schuetz, 1981). The geragogical theory emphasizes person-centered activities and supervised decision making to meet the needs of the elderly (Schuetz, 1981).

Elderly participants in our study indicated that it is important to consider functional status when developing materials for them as attention may be lost due to inability to hear or see information delivered. Sahyoun (2002) suggests that in order to become more effective in teaching nutrition, educators should consider nutritional needs by functional status and overall health of elderly such that nutrition messages are

developed considering people's living context, their environment, and ethnic background (Sahyoun, 2002). When providing and developing nutrition education tools for elderly, the needs of the learner should be addressed and the learning should be learner driven.

### **Application of findings**

The findings from our study suggest that much can be done to enhance the quality of educational delivery strategies for elderly populations. Recommendations for quality enhancement of learning strategies include using methods involving multiple senses such as hearing, vision, creativity through the use of interaction, and reading for reinforcement of material presented. Recommendations for future educational strategies include developing and using videos/DVDs depicting elderly individuals and development of PowerPoint presentations presented by one instructor as participants mentioned challenges reorienting from one instructor or speaker to the next. Additionally, because not all elderly in the study favored only one medium, it is important to attend to individual learning needs whenever possible. Finally, we suggest that more research is necessary to determine learning topics that are of interest to older adults and specific to their individual health concerns so educational materials can be developed, made available, accessible, and tailored to the expressed needs of elderly populations.

**Table 1. Focus group questions for the determination of instructional delivery preference**

1. How important is learning about how to store foods safely to you?
2. What are your thoughts about the *slide presentation*?
3. What are your thoughts about the video presentation?
4. What are your thoughts about the handout?
5. Which presentational method held your interest the longest? Why?
6. Is this because of your own personal interest in the subject or because of the delivery method of the presentation?
7. Which presentation held your interest the least? Why?
8. If you were to attend an elderly nutrition education class for 1 hour for four weeks, which method of presentation of the material would you prefer? Why?
9. Which method of presentation would you least enjoy for the nutrition education classes? Why?
10. Are there other ways that you would like to receive information that we have not talked about today?

<b>Table 2. Demographic Characteristics of Elderly Community Nutrition Education Program Participants</b>		
Characteristic	Frequency	Percentage of Sample (N= 60)
<b>Gender</b>		
Male	4	6.7
Female	55	91.7
<b>Age Group</b>		
60-69	22	36.7
70-79	26	43.3
80-89	9	15.0
90 +	0	0
<b>Racial/Ethnic Group</b>		
African American	13	21.7
Asian American	0	0
White	28	46.7
Hispanic or Latino	0	0
Native American	19	31.7
Other	0	0
<b>Cook most meals at home</b>		
Yes	49	81.7
No	10	16.7
<b>Live Alone</b>		
Yes	29	48.3
No	13	21.7

<b>Table 3. Food Safety Practices of Elderly CNEP Participants</b>		
<b>Food Safety Behavior</b>	<b>Participant Response</b>	<b>Food Safety Behavior</b>
<b>Chill</b>	<b>Yes (# ,%)</b>	<b>No (# ,%)</b>
1. Use a cold pack for packed lunches or picnic foods?	22 (36.7)	26 (43.3)
2. Refrigerate leftovers right away?	51 (85.0)	8 (13.3)
3. Defrost foods in the refrigerator, in cold water or in the microwave?	45 (75.0)	8 (13.3)
<b>Clean</b>		
4. Wash hands with warm water and soap for 20 seconds before preparing food?	56 (93.3)	4 (6.7)
5. Wash hands with warm water and soap for 20 seconds before eating?	47 (78.3)	10 (16.7)
6. Clean countertops before preparing food?	58 (96.7)	2 (3.3)
7. Rinse fruits and vegetables with cold running water before preparing them?	57 (95.0)	3 (5.0)
8. Rinse fruits and vegetables with cold running water before eating them?	56 (93.3)	3 (5.0)

<b>Table 3. Food Safety Practices of Elderly CNEP Participants (Continued)</b>		
<b>Food Safety Behavior</b>	<b>Participant Response</b>	<b>Food Safety Behavior</b>
<b>Separate</b>		
9. Clean cutting boards used for raw meat, fish and poultry before using for any other foods?	53 (88.3)	4 (6.7)
10. Keep raw meat, fish, and poultry wrapped in the refrigerator so juices do not drip on other foods?	58 (96.7)	2 (3.3)
11. Put cooked meat, fish or poultry on a different plate than the one with the raw juices?	55 (91.7)	3 (5.0)
<b>Cook</b>		
12. Rotate food in the microwave to avoid “cold spots?”	49 (81.7)	8 (13.3)
13. Bring sauces, soups, and gravy to a boil When reheating?	47 (78.3)	11 (18.3)
14. Eat runny eggs?	19 (31.7)	38 (63.3)
15. Eat cookie dough or cake batter made with raw eggs?	13 (21.7)	42 (70.0)



<b>Table 4. Elderly Participants Instructional Delivery Preference</b>			
<b>Discussion Group</b>	<b>Preference for Video</b>	<b>Preference for PowerPoint Presentation</b>	<b>Preference for Handout</b>
Pilot site A	XXX*		
Pilot site B		XXX	
Location 1	X		XXX
Location 2	X	X	
Location 3	XXXX	XX	
Location 4	X		X
Location 5	XXX	X	
Location 6	XX	X	XX
Location 7	X		XX
Location 8	XXXX	XX	X
*Each x represents one individual.			

## References

- Austin-Wells V, Zimmerman T, McDougall GJ. An optimal delivery format for presentations targeting older adults. *Educational Gerontology*. 2003; 29: 493-501.
- Barrett J, Kirk S. Running focus groups with elderly and disabled elderly participants. *Applied Ergonomics*. 2000; 31: 621-629.
- Brown, B. 2001. OSU Oklahoma Cooperative Extension Service. Available at: <http://fcs.okstate.edu/food/food/lessons/Video.htm> Accessed October 5, 2005.
- Clark, F, Heller, AF, Rafman C, Walker J. Peer learning: A popular model for seniors education. *Educational Gerontology*. 1997; 23: 751-762.
- Fey-Yensan N, English C, Ash S, Wallace C, Museler H. Food safety risk identified in a population of elderly home-delivered meal participants. *Journal of the American Dietetic Association*. 2001; 101:1055-1057.
- Glass JC. Factors affecting learning in older adults. *Educational Gerontology*. 1996; 22 (4): 359-372.
- Hermann J, Brown B, Heintz, S. Impact of a nutrition promotion program on dietary behaviors, dietary intake, and health measures in adults over fifty-five years of age. *Journal of Nutrition for the Elderly*. 2000; 19: 1-14.
- Johnson AE, Donkin AJM, Morgan K, Lilley JM, Neale RJ, Page RM, Silburn R. Food safety knowledge and practice among elderly people living at home. *Journal of Epidemiology Community Health*. 1998; 52: 745-748.
- Kendall PA, Hillers VV, Medeiros LC. Food safety guidance for older adults. *Aging and Infectious Diseases*. 2006; 42: 1298-1304.
- Krueger RA. *Focus Groups: A Practical Guide for Applied Research*. Newbury Park, CA: Sage Publications;1994.
- Morris ML, Ballard SM. Instructional techniques and environmental considerations in family life education programming for midlife and older adults. *Family Relations*. 2003; 52: 167-173.
- Partnership for Food Safety Education. 2001. BAC Buster Household Food Survey. Available at: <http://www.foodsafety.gov/~fsg/fs-mon01.html>. Accessed on: October 3, 2005.
- Rahtz, DR, Sirgy JM. The elderly audience: Correlates of television orientation. *Journal of Advertising*. 1989; 18: 9-20.

Sahyoun NR. Nutrition education for the healthy elderly population: Isn't it time? *Journal of Nutrition Education Behavior*. 2002; 34: S42-S47.

Schuetz, J. Geragogy: Instructional programs for elders. Speech communication association summer conference on communication and gerontology; 1981. ERIC Document.

Smith JL. Foodborne illness in the elderly. *Journal of Food Protection*. 1998; 61: 1229-1239.

Strom, R., Strom, S., Fournet, L., Strom, P. Cooperative learning in old age: Instruction and assessment. *Educational Gerontology*. 1997; 23: 581-599.

Thomas V, Wolfe DB. Why won't television grow up? *American Demographics*. 1995; 17: 24-29.

US Census Bureau. Keeping up with older adults. Available at: <http://www.census.gov/population/pop-profile/2000/Ch18.pdf> Accessed June 10, 2005.

## CHAPTER V

### CONCLUSIONS

The purpose of this study was to determine optimal delivery methods for nutrition education among limited resource elderly. The first objective of this study was to determine which educational method limited income elderly populations enrolled in Community Nutrition Education Programs prefer. Based on the results of this study we surmise that participants prefer video as the optimal instructional delivery method. Video preference was selected as the most preferred due to the use of multiple senses, namely seeing and hearing, the depiction of real life situations, and their ability to relate to the elderly person in the video. Video preference suggests that the participants may relate more to the video because of their familiarity with television and also because watching a video requires the use of multiple senses when viewing this form of media. Although the video medium was most preferred other participants showed interest in the PowerPoint presentation due to its simplicity of one person presenting the information and more importantly was viewed by participants as a new learning tool that they were not previously familiar with but would recommend for future generations. Handouts used as an instructional tool were viewed by some participants as the least preferred delivery method due to a lack of interaction and senses involved when simply using a handout to read as a learning strategy. Although the handout was least preferred, some participants

indicated a preference for the handout due to its use as a piece of information that can be referred to at a later time. Elderly participants in our study valued printed materials only when they value or are concerned about the information contained within them.

The second objective of the study was to determine behaviors and beliefs about food safety in limited income elderly populations enrolled in Community Nutrition Education Programs (CNEP). The majority of participants indicated that it is important to learn about food safety primarily for maintenance of good health. Some participants indicated that individual food safety behaviors were rooted in traditional practices and habit. However, perceptions of the importance of practicing safe food storage procedures were reportedly changed after learning about the possibility of illness. Results from the food safety survey indicate that many of the focus group participants reported using healthful food safety behaviors when handling, preparing, and storing foods. Although many participants reported using in key food safety behaviors, a small proportion did not.

### Limitations

The results of this study cannot be generalized with all elderly people as a convenience sample was used. Data for this study is geographically restricted to Oklahoma and limited income elderly who have been enrolled in a nutrition program. A second limitation is that reported perceptions of food safety may not be actual. An effort was made to restrict any bias and preconceived notions about any participants when analyzing and reporting the data.

## Implications for Practice

It is critically important to educate elderly on the risks involved with food safety and to educate this population on proper food safety behaviors in an effort to reduce the risk of foodborne illness. Health care providers, those who specialize in older adult education, and caregivers who provide support for elderly need to consider several factors when developing and instructing the elderly. Environmental factors such as comfortable seating, lighting of room, and time duration are of particular concern for an education session. If materials are distributed to the elderly, font size must be considered and more importantly, determining what elderly would like to receive literature about is important. As mentioned earlier, determining what learning topics elderly are interested in is key.

Another way to enhance the learning process for elderly individuals includes involving multiple senses within the learning process in order to enhance the learning experience. Even though the use of multiple senses is vital for instructing elderly, an adherence to simplicity must be kept in careful consideration in order to decrease anxiety and confusion. Our study findings support the need for CNEP to reinforce the participatory methods of education, such as determining what elderly want to learn. We also suggest that videos be identified or developed which depict elderly in situations common to their lifestyle. However, because there was a mix of preferences for educational delivery strategies, we recommend determining individual preference whenever possible. We also recommend the use of multiple strategies for group education as educational delivery preference was not unanimous.

## Implications for Further Research

More research needs to be done to determine learning topics that are of interest to older adults and to their specific health concerns so educational materials can be developed, made available, accessible, and tailored to the expressed needs of elderly populations. In addition, future research should be conducted to determine preferences for alternate forms of instructional media including technology and computer usage because more programs are using this type of instructional medium. Perceptions of computer and various technology media should be collected in order to determine needs and preferences for learning.

Future research should also continue to assess perceptions of food safety and further food safety behaviors of elderly individuals in order to identify specific risks associated with foodborne illness. If further research is conducted addressing these issues, more information can be made available to the elderly that is specific to their life situations. Because our sample of participants had received nutrition education, we suggest that future studies exploring food safety behaviors and values be conducted with those who have not been educated as our findings may be subject to reactive and history bias.

Based on our findings, we also suggest that future research be conducted to explore behavior change based on instructional medium. Use of a pre and post questionnaire to determine food safety behavior change based on type of instruction received is necessary. Using a pre and post test design could most effectively determine the instructional method which maximizes behavior change and increased knowledge.

Finally, we suggest that future studies should examine the amount of time that is needed for educational delivery while also maintaining interest on the part of elderly. Our observations suggest that 30 minutes is an adequate amount of time to deliver information to elderly individuals while maintaining interest and avoiding fatigue however, additional research is necessary to explore this as this was not an objective of this study but rather a factor realized during the research process.



## REFERENCES

- Administration on Aging. Administration on Aging and older Americans fact sheet. Available at: <http://www.frac.org/pdf/AoAOAAfactsheet.PDF> Accessed January 5, 2007.
- Austin-Wells V, Zimmerman T, McDougall GJ. An optimal delivery format for presentations targeting older adults. *Educational Gerontology*. 2003; 29: 493-501.
- Barrett J, Kirk S. Running focus groups with elderly and disabled elderly participants. *Applied Ergonomics*. 2000; 31: 621-629.
- Bauer C. Highlights from the pilot study: First national survey of older Americans Act Title III service recipients-Paper No. 2. 2003. Available at: <http://www.gpra.net/surveys/2ndhighlights.pdf> Accessed January 3, 2007.
- Brown, B. 2001. OSU Oklahoma Cooperative Extension Service. Available at: <http://fcs.okstate.edu/food/food/lessons/Video.htm> Accessed October 5, 2005.
- Buzby JC. Older adults at risk of complications from microbial foodborne illness. *Food Review*. 2002; 25: 30-35.
- Cacioppo JT, Hawkley LC. Social isolation and health, with an emphasis on underlying mechanisms. *Perspectives in Biology and Medicine*. 2003; 46:S39-S52.
- Centers for Disease Control. About minority health. Available at: <http://www.cdc.gov.argo.library.okstate.edu/omh/AMH/AMH.htm>. Accessed October 19, 2006a.
- Centers for Disease Control. Black or African American populations. Available at: <http://www.cdc.gov.argo.okstate.edu/omh/Populations/BAA/BAA.htm> Accessed October 19, 2006b.
- Clark, F, Heller, AF, Rafman C, Walker J. Peer learning: A popular model for seniors education. *Educational Gerontology*. 1997; 23: 751-762.
- Community Nutrition Education Program. (CNEP). Program Summary Report. Provided by Program Evaluation Specialist. November 2006.

Community Nutrition Education Program. About CNEP. CNEP Website. Available at: <http://www.fcs.okstate.edu/cnep/about/overview.htm>. Accessed January 5, 2007.

Congressional Caucus for Women's Issues. Women excluded from federally-funded research, study findings. *Update*. 1990; 10: 1-13.

Coulston AM, Craig L, Voss AC. Meals-on-Wheels applicants are a population at risk for poor nutritional status. *Journal of the American Dietetic Association*. 1996; 96: 570-573.

Department of Health & Human Services. A profile of older Americans: 2003. Available at: [http://www.aoa.gov/prof/statistics/profile/2003/8\\_pf.asp](http://www.aoa.gov/prof/statistics/profile/2003/8_pf.asp). Accessed June 6, 2005.

Department of Health & Human Services. A profile of older Americans: 2002. Available at: [http://www.aoa.gov/prof/Statistics/profile/8\\_pdf.asp](http://www.aoa.gov/prof/Statistics/profile/8_pdf.asp) Accessed on July 7, 2005.

Fey-Yensan N, English C, Ash S, Wallace C, Museler H. Food safety risk identified in a population of elderly home-delivered meal participants. *Journal of the American Dietetic Association*. 2001; 101:1055-1057.

Food Security Institute Center on Hunger and Poverty. Hunger and food insecurity among the elderly. Hunger Issue Brief. 2003. Available at: <http://www.centeronhunger.org/pdf/Elderly.pdf>. Accessed November 29, 2005.

Foote RA, Clark L, Clutter A, Crusey S; et al. "Safe on Your Plate": Keeping home-delivered meals safe. *Journal of Nutrition Education*. 2000; 32; 233E.

Gabor V, Schreiber S, Williams H, Bellamy B, Hardison L. Seniors' views of the Food Stamp Program and ways to improve participation-focus group findings in Washington State. In: *Seniors' Overall Perception of the Food Stamp Program*. Washington, DC: Economic Research Service, USDA; 2002.

Gettings MA, Kiernan NE. Practices and perceptions of food safety among seniors who prepare meals at home. *Journal of Nutrition Education*. 2001; 33: 148-154.  
Glass, J.C. Jr. Factors affecting learning in older adults. *Educational Gerontology*. 1996; 22 (4): 359-372.

Glass JC. Factors affecting learning in older adults. *Educational Gerontology*. 1996; 22 (4): 359-372.

Gollub EA, Weddle DO. Improvements in nutritional intake and quality of life among frail homebound older adults receiving home-delivered breakfast and lunch. *Journal of the American Dietetic Association*. 2004; 104: 1227-1235.

- Gray-Donald K. The frail elderly: Meeting the nutritional challenges. *Journal of the American Dietetic Association*. 1995; 95: 538.
- Gustavson K, Lee CD. Alone and content: frail seniors living in their own home compared to those who live with others. *Journal of Women & Aging*. 2004; 16:3-18.
- Heimstra R. The elderly learner.1981. Available at: <http://www-distance.syr.edu/elderly.html> Accessed January 24, 2007.
- Hermann J, Brown B, Heintz S. Impact of a nutrition promotion program on dietary behaviors, dietary intake, and health measures in adults over fifty-five years of age. *Journal of Nutrition for the Elderly*. 2000; 19: 1-14.
- Huang LH, Lin YC. The health status and needs of community elderly living alone. *Journal of Nursing Research*. 2002; 10: 227-235.
- Johnson AE, Donkin AJM, Morgan K, Lilley JM, Neale RJ, Page RM, Silburn R. Food safety knowledge and practice among elderly people living at home. *Journal of Epidemiology Community Health*. 1998; 52: 745-748.
- Jorgensen LA. Public policy, health care and older women. *Journal of Women & Aging*. 1993; 5:201-220.
- Kendall P, Medeiros LC, Hillers V, Chen G, DiMascola S. Food handling behaviors of special importance for pregnant women, infants and young children, the elderly, and immune-compromised people. *Journal of The American Dietetic Association*. 2003; 103:1646-1649.
- Kendall PA, Hillers VV, Medeiros LC. Food safety guidance for older adults. *Aging and Infectious Diseases*. 2006; 42: 1298-1304.
- Krueger RA. *Focus Groups: A Practical Guide for Applied Research*. Newbury Park, CA: Sage Publications; 1994.
- Lokken SL, Hope KJ. Food assistance needs of low-income elderly: A qualitative investigation. *Journal of Family and Consumer Sciences*. 2000; 92: 46-50.
- Loughlin A. Depression and social support. Effective treatments for homebound elderly adults. *Journal of Gerontological Nursing*. 2004; 11-15.
- Maples MF, Abney PC. Baby boomers mature and gerontological counseling comes of age. *Journal of Counseling & Development*. 2006; 84: 3-9.
- Morris ML, Ballard SM. Instructional techniques and environmental considerations in family life education programming for midlife and older adults. *Family Relations*. 2003; 52:167-173.

- Morrisson SG. Feeding the elderly population. *Clinical Nutrition: Oral Diet Therapies*. 1997; 32: 791-813.
- National Cancer Institute. Making health communications programs work. *NIH Publication No. 02-5145*. US Department of Health and Human Services; 2002. Available at: [www.cancer.gov/pinkbook](http://www.cancer.gov/pinkbook). Accessed on: December 6, 2006.
- Nord M. Food security rates are high for elderly households. *Food Review*. 2002; 25: 19-24.
- Oklahoma Department of Human Services. Aging Services Division. 2003. Oklahoma state plan on aging under titles III and VII of the older Americans act. Available at: <http://www.okdhs.org/aging/Documents/ExecSummary.pdf>. Accessed on July, 7, 2005.
- Partnership for Food Safety Education. 2001. BAC Buster Household Food Survey. Available at: <http://www.foodsafety.gov/~fsg/fs-mon01.html>. Accessed on: October 3, 2005
- Rahtz, DR, Sirgy JM. The elderly audience: Correlates of television orientation. *Journal of Advertising*. 1989; 18: 9-20.
- Rogers C. America's older population. *Food Review*. 2002;25:2-5.
- Sahyoun NR. Nutrition education for the healthy elderly population: Isn't it time? *Journal of Nutrition Education Behavior*. 2002; 34: S42-S47.
- Scharf T, Phillipson C, Smith AE. Social exclusion and quality of life of excluded older people. *Working with Older People*. 2005; 9:32-35.
- Schuetz J. Geragogy: Instructional programs for elders. Speech communication association summer conference on communication and gerontology; 1981. ERIC Document.
- Schulman E, Gariola G, Kuder L, McCulloch J. Depression and associated characteristics among community-based elderly people. *Journal of Allied Health*. 2002; 31:140-146.
- Sharkey JR, Schoenberg NE. Variations in nutritional risk among black and white women who receive home-delivered meals. *Journal of Women & Aging*. 2002; 14: 99-119.
- Smith JL. Foodborne illness in the elderly. *Journal of Food Protection*. 1998; 61: 1229-1239.

Strom, R., Strom, S., Fournet, L., Strom, P. Cooperative learning in old age: Instruction and assessment. *Educational Gerontology*. 1997; 23: 581-599.

Thomas V, Wolfe DB. Why won't television grow up? *American Demographics*. 1995; 17: 24-29.

U.S. Census Bureau. American Community Survey. 2005. Available at: <http://factfinder.census.gov/servlet> Accessed on December 27 2006.

US Census Bureau. Census 2000 Summary File 1. 2000b. Available at: <http://factfinder.census.gov>. Accessed July 7, 2005.

US Census Bureau. Keeping up with older adults. 2000a. Available at: <http://www.census.gov/population/pop-profile/2000/Ch18.pdf> Accessed June 10, 2005.

US Census Bureau. The 65 years and over population: 2000. *Census 2000 Brief*. 2001:1-8.

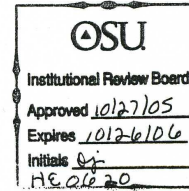
U.S. Department of Health and Human Services. HHS News. 2002. Available at: [http://www.aoa.gov/press/medadv/2002/03\\_mar/tommynutrition030102.pdf](http://www.aoa.gov/press/medadv/2002/03_mar/tommynutrition030102.pdf) Accessed January 5, 2007.

Wellman NS, Kamp B. Federal food and nutrition assistance programs for older people. *Generations*. 2004; 28 (3): 78-85.

Wilde P, Dagata E. Food stamp participation by eligible older Americans remains low. *Food Review*. 2002; 25: 25-29.

APPENDIX A

RECRUITMENT FLYER



**Men and women needed to talk about foods and their opinions about how to store them.**

**For your participation in this study you will receive a food thermometer, refrigerator thermometer, or a refrigerator magnet.**

If you are at least 60 years of age or older and enrolled in an Oklahoma Community Nutrition Education Program you can participate in research about food safety. Your opinions are important to us. We want to know what you think about food safety. We also want to know what you think is the best way to learn about food safety. We would like for you to participate in a group discussion. In this group we ask that you give your honest opinions.

To receive the food thermometer, refrigerator thermometer, or a refrigerator magnet, you will participate in a group discussion that will last about 1 hour. Before the group discussion you will observe 3 different ways people learn.

During the discussion you will be asked about what you observed and your views of the best way for people like you to learn about how to store foods safely. These questions will be easy and you will only have to answer with your honest opinion.

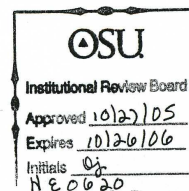
Thank you for your interest. For more information, please call:

*NEA card here with local contact information*

Stephany Parker, Ph.D.  
Department of Nutritional Sciences  
(405) 744-6821

Laura Powell  
Graduate Student  
(405) 744-5040

**Focus group date and time** \_\_\_\_\_





APPENDIX B

CONSENT FORM



### CONSENT FORM

Food safety and instructional media perceptions of CNEP Participants  
Community Nutrition Education Programs and Nutritional Sciences Department  
Oklahoma State University

"I, \_\_\_\_\_ hereby authorize or direct

Stephany Parker, Laura Powell, or assistants of their choosing, will administer a questionnaire, present instructional methods, and conduct a focus group.

1. Procedure: A two page questionnaire will be given on perceptions of food safety. Next, the subject will observe three different instructional media strategies. Lastly the focus group discussion will be held. Focus groups are composed of a small number of subjects who are asked an organized set of questions in a consistent manner.
2. The questionnaire, instructional media presentation, and focus group will take approximately 1-2 hours.
3. The focus group will be audio taped in order to make sure we have your correct responses to the questions. Typed transcripts will be made from these audio tapes. Only a subject number will be used in the transcript and your name will not appear in any reports. Only group information will be in the reports.
4. No information requested from the study will put any participant in any risk and information requested will not be sensitive or personal.
5. Subjects will either receive a food thermometer, refrigerator thermometer, or refrigerator magnet for full participation in the focus group.

This is part of an investigation entitled, "Behaviors and Beliefs about Food Safety and Instructional Delivery Strategies among Limited Income Elderly enrolled in Community Nutrition Education Programs."

The purpose of the focus groups is to learn from you what you think about food safety and certain instructional media so we can develop an educational program that will

provide affective food safety education and will be tailored to the elderly program participant's needs.

"I understand that participation is voluntary, that there is no penalty for refusal to participate, and that I am free to withdraw my consent and participation in this project at any time without penalty after notifying the project director."

I may contact Stephany Parker, in Stillwater, OK at telephone number 405-744-7186 or Laura Powell, in Stillwater, OK at telephone number 405-744-5040. I may also contact, Dr. Sue Jacobs, IRB Chair, 415 Whitehurst Hall, Oklahoma State University, Stillwater, OK 74078; at telephone number 405-744-1676.

I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date: \_\_\_\_\_ Time: \_\_\_\_\_ (a.m./p.m.)

Signed:

\_\_\_\_\_  
Signature of Subject

"I certify that I have personally explained all elements of this form to the subject or his/her representative before requesting the subject or his/her representative to sign it."

Signed:

\_\_\_\_\_  
Signature of Project Director or his/her authorized representative

Stephany Parker, PhD  
Nutritional Sciences

Laura Powell  
Graduate Student



APPENDIX C

INSTITUTIONAL REVIEW BOARD FORM

**Oklahoma State University Institutional Review Board**

Date Thursday, October 05, 2006 Protocol Expires: 10/4/2007  
IRB Application No: HE0620  
Proposal Title: Behaviors and Beliefs About Food Safety and Instructional Delivery  
Strategies Among Limited Income Elderly Enrolled in Community  
Nutrition Education Programs  
Reviewed and Processed as: Exempt  
**Continuation**

Status Recommended by Reviewer(s): **Approved**

Principal Investigator(s) :

Laura Powell  
1410 S. Lowry  
Stillwater, OK 74074

Stephany Parker ✓  
419 HES  
Stillwater, OK 74078

---

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modifications to the research project approved by the IRB must be submitted for approval with the advisor's signature. The IRB office MUST be notified in writing when a project is complete. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

- The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

Signature :

  
Sue C. Jacobs, Chair, Institutional Review Board

Thursday, October 05, 2006  
Date

APPENDIX D

ORIGINAL FOOD SAFETY SURVEY

# Food Safety Education

FDA Center for Food  
Safety and Applied Nutrition

September  
2001\*

USDA Food Safety  
and Inspection Service

## Be a BAC Buster HOME FOOD SAFETY SURVEY

Date Started: \_\_\_\_\_

Answer questions 1-15:

**Y** = Yes

**N** = No

Add the initials of family members in each column head

### CHILL

Did You ...	A ME	B _____	C _____	D _____
1. Use a cold pack for packed lunches or picnic foods?				
2. Refrigerate leftovers right away?				
3. Defrost foods in: — the refrigerator or — cold water or — the microwave?				
Total	Y= N=	Y= N=	Y= N=	Y= N=

## FRIDGE EXAM

The refrigerator is set at \_\_\_\_\_ degrees.

Food storage containers found:

\_\_\_\_\_ tall containers

\_\_\_\_\_ shallow containers



# CLEAN

Did You ...	A ME	B _____	C _____	D _____
4. Wash hands with warm water and soap for 20 seconds before preparing food?				
5. Wash hands with warm water and soap for 20 seconds before eating?				
6. Clean countertops before preparing food?				
7. Rinse fruits and vegetables with cold running water before preparing them?				
8. Rinse fruits and vegetables with cold running water before eating them?				
Total	Y= N=	Y= N=	Y= N=	Y= N=

## Family Handwashing Scoreboard:

**Date:**

**Name:**

**When washed:**

_____	_____	_____
_____	_____	_____
_____	_____	_____

## SEPARATE

Did You ...	A ME	B _____	C _____	D _____
9. Clean the cutting boards used for raw meat, fish and poultry before using for any other foods?				
10. Keep raw meat, fish and poultry wrapped properly in the refrigerator so juices do not drip on other foods?				
11. Put cooked meat, fish or poultry on a different platter than the one with the raw juices?				
Total	Y= N=	Y= N=	Y= N=	Y= N=

### Cutting Board Critique

Number of cutting boards:

Type (plastic, wood, etc.):

# COOK

Did You ...	A ME	B _____	C _____	D _____
12. Rotate food in the microwave to avoid "cold spots?"				
13.. Bring sauces, soups and gravy to a boil when reheating?				
14. Make sure eggs were cooked properly?				
15.. Not eat cookie dough or cake batter that was made with raw eggs?				
Total	Y= N=	Y= N=	Y= N=	Y= N=

## Safe Temperature Summary

Kind of Meat: \_\_\_\_\_ Date Cooked: \_\_\_\_\_ Food thermometer temp: \_\_\_\_\_

Kind of Poultry: \_\_\_\_\_ Date Cooked: \_\_\_\_\_ Food thermometer temp: \_\_\_\_\_

Kind of Fish: \_\_\_\_\_ Date Cooked: \_\_\_\_\_ Food thermometer temp: \_\_\_\_\_

Date Completed:

Student signature:

Parent/Guardian signature:

Compliments of The Partnership for Food Safety Education  
[www.fightbac.org](http://www.fightbac.org)

---

<sup>SM</sup> International Food Safety Council

\* Distributed August 2001 for use in September 2001 as part of the International Food Safety Council's [\*National Food Safety Education Month\*](#).

---

[FDA Foods](#) | [USDA FSIS](#)

---

[www.FoodSafety.gov](http://www.FoodSafety.gov) | [Search/Subject Index](#) | [Disclaimers & Privacy Policy](#) | [Accessibility](#)

[Webmaster](#) | Hypertext updated by dav/ear 2001-NOV-05

APPENDIX E

REVISED FOOD SAFETY SURVEY

*Be a BAC Buster*

## FOOD SAFETY SURVEY

Date: \_\_\_\_\_

Please answer questions 1-20.

Leave it blank if a question does not apply to you.

### CHILL

Do you...	YES	NO
1. Use a cold pack for packed lunches or picnic foods?		
2. Refrigerate leftovers right away?		
3. Defrost foods in the refrigerator, in cold water or in the microwave?		

### CLEAN

Do you...	YES	NO
4. Wash hands with warm water and soap for 20 seconds before preparing food?		
5. Wash hands with warm water and soap for 20 seconds before eating?		
6. Clean countertops before preparing food?		
7. Rinse fruits and vegetables with cold running water before preparing them?		
8. Rinse fruits and vegetables with cold running water before eating them?		

## SEPARATE

Do you...	YES	NO
9. Clean cutting boards used for raw meat, fish and poultry before using for any other foods?		
10. Keep raw meat, fish and poultry wrapped in the refrigerator so juices do not drip on other foods?		
11. Put cooked meat, fish or poultry on a different plate than the one with the raw juices?		

## COOK

Do you...	YES	NO
12. Rotate food in the microwave to avoid "cold spots?"		
13. Bring sauces, soups and gravy to a boil when reheating?		
14. Eat runny eggs?		
15. Eat cookie dough or cake batter made with raw eggs?		

16. I would like to note some basic information about you.

Male     Female

17. What is your age group?

60-69     70-79     80-89     90 or older

18. With which group do you identify?

African American     Asian American     White  
 Hispanic or Latino     Native American     Other

19. Do you cook most of the meals in your home?     Yes     No

20. Do you live alone?     Yes     No

Compliments of the Partnership for Food Safety Education • [www.fightbac.org](http://www.fightbac.org)

APPENDIX F

FOCUS GROUP QUESTIONS



**Focus group questions for the determination of instructional delivery preference**

1. How important is learning about how to store foods safely to you?
2. What are your thoughts about the *slide presentation*?
3. What are your thoughts about the video presentation?
4. What are your thoughts about the handout?
5. Which presentational method held your interest the longest? Why?
6. Is this because of your own personal interest in the subject or because of the delivery method of the presentation?
7. Which presentation held your interest the least? Why?
8. If you were to attend an elderly nutrition education class for 1 hour for four weeks, which method of presentation of the material would you prefer? Why?
9. Which method of presentation would you least enjoy for the nutrition education classes? Why?
10. Are there other ways that you would like to receive information that we have not talked about today?

APPENDIX G

FOCUS GROUP ANALYSIS FORM

<b>Focus Group #</b>	
<b>Date of interview</b>	

**How important is learning about how to store foods safely to you?**

<b>Key Points and Themes</b>	<b>Quotes</b>

<b>Focus Group #</b>	
<b>Date of interview</b>	

**What are your thoughts about the slide presentation?**

<b>Key Points and Themes</b>	<b>Quotes</b>

<b>Focus Group #</b>	
<b>Date of interview</b>	

**What are your thoughts about the video presentation?**

Key Points and Themes	Quotes

<b>Focus Group #</b>	
<b>Date of interview</b>	

**What are your thoughts about the handout?**

Key Points and Themes	Quotes

<b>Focus Group #</b>	
<b>Date of interview</b>	

**Which presentational method held your interest the longest? Why?**

Key Points and Themes	Quotes

<b>Focus Group #</b>	
<b>Date of interview</b>	

**Is this because of your own personal interest in the subject or because of the delivery method of the presentation?**

Key Points and Themes	Quotes

Focus Group #	
Date of interview	

**Which presentation held your interest the least? Why?**

Key Points and Themes	Quotes

<b>Focus Group #</b>	
<b>Date of interview</b>	

**If you were to attend an elderly nutrition education class for 1 hour for four weeks, which method of presentation of the material would you prefer? Why?**

Key Points and Themes	Quotes

<b>Focus Group #</b>	
<b>Date of interview</b>	

**Which method of presentation would you least enjoy for the nutrition education classes? Why?**

Key Points and Themes	Quotes

<b>Focus Group #</b>	
<b>Date of interview</b>	

**Are there other ways that you would like to receive information that we have not talked about today?**

Key Points and Themes	Quotes

## VITA

Laura Elizabeth Powell

Candidate for the Degree of

Master of Science

Thesis: BEHAVIORS AND BELIEFS ABOUT FOOD SAFETY AND INSTRUCTIONAL DELIVERY STRATEGIES AMONG LIMITED INCOME ELDERLY ENROLLED IN COMMUNITY NUTRITION EDUCATION PROGRAMS

Major Field: Nutritional Sciences

Biographical:

Personal Data: Born and raised in Oklahoma City and currently employed at St. John Medical Center in Tulsa, Oklahoma as a clinical dietitian.

Education: Graduated from Putnam City North High School in Oklahoma City, OK in May 2000. Bachelor of Science Degree in Dietetics from Oklahoma State University in December 2004. Completed the requirements for the Master of Science in Nutritional Sciences at Oklahoma State University, Stillwater, Oklahoma in July, 2007.

Experience: Completed the Dietetic Internship at Oklahoma State University in June 2006; passed registration examination to become a registered dietitian in August 2006; employed by Oklahoma State University as a graduate research assistant and teaching assistant in November 2002 through December 2006 collectively.

Professional Memberships: American Dietetic Association; Oklahoma Dietetic Association.



Name: Laura Powell

Date of Degree: July, 2007

Institution: Oklahoma State University

Location: Stillwater, Oklahoma

Title of Study: BEHAVIORS AND BELIEFS ABOUT FOOD SAFETY AND  
INSTRUCTIONAL DELIVERY STRATEGIES AMONG LIMITED  
INCOME ELDERLY ENROLLED IN COMMUNITY NUTRITION  
EDUCATION PROGRAMS

Pages in Study: 96

Candidate for the Degree of Master of Science

Major Field: Nutritional Sciences

Scope and Method of Study: A descriptive study utilizing mixed methods to determine preferred instructional delivery methods for receiving nutrition education and to identify food safety behaviors and concerns in a limited resource elderly population.

Focus groups and a food safety survey were used with fifty-nine limited income elderly participants 59 years of age or older enrolled in Community Nutrition Education Programs in Oklahoma. Descriptive statistics of demographics and food safety behaviors were utilized.

Findings and Conclusions: Participants were concerned about food safety as a means of maintaining health and avoiding illness. Instructional delivery preference was rooted in the inclusion of experiential and relational aspects of the presentations. The video was preferred most, followed by PowerPoint and handouts. Findings suggest that it is important to determine learning topics that are of interest to older adults so instructional materials can be developed, made available, accessible, and tailored to the expressed needs of elderly populations.

ADVISER'S APPROVAL: Dr. Stephany Parker

---