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The perception of the Louisiana Food Stamp Nutrition Education Program's ability to improve diet and other lifestyle measures of participants

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**THE PERCEPTION OF THE LOUISIANA FOOD STAMP NUTRITION
EDUCATION PROGRAM'S ABILITY TO IMPROVE DIET AND OTHER LIFESTYLE
MEASURES OF PARTICIPANTS**

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master of Science

in

The School of Human Ecology

by

Melly Suyapa Pérez Garay
MD Universidad Nacional Autónoma de Honduras, 1996
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ABSTRACT

The purpose of this study was to assess the perception of Louisiana Food Stamp Nutrition Education Program (FSNEP) participants' diet and other lifestyle measures and their consistency with the current Dietary Guidelines for Americans and MyPyramid compared to eligible non-participants in Louisiana. The study sample included adult FSNEP participants (Group 1; n=30) and adult non-FSNEP participants (Group 2; n=26) from 5 parishes in Louisiana. Nine focus group discussions (FGD) were conducted with Group 1 (n=5) and Group 2 (n=4) participants. The FGD assessed perceptions and practice in the last six months of: (a) increasing eating fruit and vegetables, whole grains, and fat-free or low-fat dairy products intake by one or more serving per day; (b) increasing 30-minute moderate activity by four or more days a week; and (c) balancing energy intake from food with calories expended.

Focus group discussions were conducted together with a survey to assess population characteristics. Anthropometric measures taken show no significant difference in body mass index (BMI) (32.5 ± 9.9 standard deviation and 35.8 ± 9.5 standard deviation) and percent body fat (41.9 ± 9.6 standard deviation and 44.1 ± 7.1 standard deviation) between participants and non-participants, respectively. Focus Group Discussion analysis suggested that Group 1 and Group 2 participants exhibited similar lifestyle behaviors mainly by increasing low/non-fat dairy, fruit and vegetable, and whole grain intake in the last six months. Group 1 participants received more nutrition education sessions than Group 2 participants. The latter group received nutrition sessions from non-FNP sources including hospitals, physicians and grocery stores through talks and taste testing. Conversely, Group 1 participants received more nutrition education sessions from the FNP funding. Different community agencies collaborated and a variety of delivery methods were used. Additionally, 4 healthy lifestyle behaviors were observed for Group 1.

This study provided the basis for future research to assess the participant's perception Louisiana FSNEP assistance to make healthy dietary choices and practice a healthy lifestyle.

CHAPTER I

INTRODUCTION

The Agricultural Adjustment Act of 1933 provided food assistance during a time of high unemployment rate and nationwide hunger. Ironically, this hunger was accompanied by a surplus of farm commodities due to minimum exports to Europe posterior to World War I and to farm commodities falling half its price in the 1920's. During the Great Depression of the 1930s³, the Federal Surplus Relief Corporation (FSRC) began distributing excess farm commodities to needy households and to school lunch programs. In 1935, the FSRC became the Federal Surplus Commodities Corporation providing food to state and relief agencies. The Food Stamp Program (FSP) initiated in 1939 distributing stamps to buy surplus foods. The United States Department of Agriculture (USDA) received authorization to operate the program in 1959; however, at that time the government did not implement the program. USDA initiated pilot food stamp programs in 1961 in 22 states and the Food Stamp Act of 1964 authorized federal government to provide funding; grocery stores to accept food stamps and states to issue stamps and regulate applications to the FSP. Distribution of food stamps in Indian reservations and eligibility requirement based on the poverty guidelines were established by the Food Stamp Act of 1977. Nutrition education materials were also included. An economic recession in the 1980's caused a severe domestic hunger, which originated the Hunger Prevention Act of 1988, and the Mickey Leland Memorial Domestic Hunger Relief Act of 1990 authorizing nutrition education grants. The 1996, Personal Responsibility and Work Opportunity (PRWORA) eliminated the Aid to Family with Dependent Children (AFDC) as an entitlement program. The AFDC was replaced with the Temporary Assistance for Needy Families (TANF) program. Additional changes were for FSP benefits to be available only 3 months every 36 months for non-disabled adults without dependents; unless

they work a minimum of 20 hours per week or are enrolled in a work-training program. In October 2008, the USDA Federal Food Stamp Program changed its name to the Supplemental Nutrition Assistance Program (SNAP). This name reflects changes made to emphasize its focus on nutrition and to increase the program's accessibility and benefit amount to make healthy food available to low-income households.³ States may use a different name,⁴ thus Louisiana will continue to refer to the program as the FSP.⁵

Currently, the program operates in the 50 states, the District of Columbia, and the U.S. Virgin Islands as the cornerstone of the United States Department of Agriculture (USDA) nutrition assistance programs.⁶ At the federal and state level, the goals of the FSP are to integrate food security policies that help low-income families access and dietary guidance to choose foods that promote good health.^{2,4} The FSP is an entitlement program that allows anyone who meets the eligibility criteria to receive benefits. The unit for FSP eligibility and benefit amount is the household rather than the individual. A household comprises all individuals living in a home and purchasing and preparing food as a unit. The Department of Health and Human Services (HHS) uses the household monthly income to issue the poverty guidelines, a version of the federal poverty measure, to determine financial eligibility for federal programs.⁷ Poverty guidelines are issued annually in the Federal Register⁷ by the HHS. A financial requirement for program participation is for FSP participants to have a gross monthly income of no more than 130% of the poverty guideline for the household size or a net monthly income of 100% of the poverty level.

In 2007, with a budget of more than \$33.2 billion, the FSP assisted 26.5 million individuals in nearly 11.8 million households. The average monthly benefit was \$215 per participant. Participant characteristics included 42% non-elder adult population and 63% single adult population. Eighty three percent of the households receiving food stamps included a child

(51%), an elder (18%), or a disabled adult (24%). The population served was 30.2% whites, 18.5% Blacks (B) , 9.1% Hispanics, 2.6% Asians, and 4.0% Native Americans.⁸

In 2006, although nationwide participation in the FSP was 28 million individuals; only two of three eligible individuals were enrolled.⁹ Food stamp participation rates are low among some groups; for example, less than one third of the elderly who qualify receive food stamps.^{3, 10} This may be due to enrollment barriers which include changing eligibility restrictions due to welfare reform policy changes,¹¹ preference for receiving food from charitable societies,¹² and the stigma associated with participation.¹⁰ The requirement for finger imaging, complex application process, and lack of knowledge about eligibility, homelessness, and poor English language skills precludes food stamp participation for some minority populations. Additional barriers for FSP clientele are time restrictions, transportation, and childcare issues.^{10, 13}

The goal of the Food Stamp Nutrition Education Program (FSNEP), the nutrition education component of the FSP, is to enable participants with a limited budget to make dietary and lifestyle changes consistent with the current Dietary Guidelines for Americans (DGA) and MyPyramid.^{14, 15} The DGA is a unified science-based set of recommendations for healthy dietary choices and physical activity intended to reduce the risk for major chronic diseases. MyPyramid is the food guidance system that incorporates the current DGA recommendations for the public.

A federal and state partnership, allows the state food stamp agencies to contract with university extension programs, state public health departments, food banks, tribal programs, or local health organizations to deliver nutrition education programs.³ In Louisiana, the FSNEP is delivered by the Family Nutrition Program (FNP) of the Louisiana State University's Agricultural Center (LSUAgCenter).¹⁶ The FNP uses the Logic Model¹⁷ to plan, implement, and evaluate extension programs. The model promotes result-based performance, which is

mandated by the Government Performance and Results Act for accountability in federal programs.

The FSNEP delivery methods including videos, food demonstrations, taste testing and brochures; are chosen by each state to meet local needs. Nutrition education is delivered to FSP audiences using existing educational curricula, such as *Loving Your Family Feeding Their Future*, *Nutrition Education Through the Food Stamp Program*; *Smart Choices*; *Eat Smart, Live Strong*; and the *Take Charge of Yourself Series (Organ Wise Guys® series)*. This flexibility generates a different array of state FSNEP that challenge program evaluation.¹⁴ Further, the decentralized delivery of nutrition education allows for variations in the national data. Thus, the Education and Administrative Reporting System (EARS) was created by USDA Food and Nutrition Service (FNS) as a data tool to collect basic information continually and systematically from state FSNEP.²

Justification

Low-income populations have low dietary quality and limited access to food.¹⁸ These populations may turn to federal food and nutrition assistance programs or emergency food providers in their communities when they are unable to obtain enough food.¹⁹ Some studies question if the Federal food and nutrition assistance programs, intended to provide food security and improve nutrition quality, are contributing to the high rates of overweight and obesity among low-income populations in the United States.²⁰⁻²³

As mentioned, program assessment is confounded by the different array of state FSNEP.¹⁴ Studies examining the effectiveness of the FSP in assisting participants to achieve a healthy lifestyle through nutrition education are limited²⁴; however, some studies^{16, 25} have shown an improvement in participants' abilities to make healthy food choices and improve

shopping skills, but they have also shown a need to reduce barriers to increase FSP participation. has shown to be effective in improving food security, however individuals still need improvement in making dietary changes.² Focused interventions have also shown an increased fruit and vegetable intake in the short term at the local level^{26, 27}, but long-term effectiveness of interventions at the state and national levels has not been determined.²⁸

The goal of this study was to evaluate the perception of Louisiana FSNEP participants' diet and other lifestyle measures and their consistency with the current DGA and My Pyramid recommendations, compared to eligible non-participants in Louisiana. Focus group discussions (FGD) were conducted to determine these questions.

Research Question

Are diet and other lifestyle measures of LSU AgCenter/ FSNEP participants in select Louisiana parishes more consistent with the current DGA and My Pyramid recommendations than those of eligible non-participants?

Objectives

1. Determine the socioeconomic characteristics of FGD participants that do or do not participate in the FSNEP (*e.g.*, household income, employment, education, and family structure).
2. Identify barriers FSNEP participants experience to attending nutrition education sessions and to applying the information provided.
3. Determine and compare FSNEP participant's proficiency in making healthy food choices and choosing physically active lifestyles to eligible non-participants.
4. Determine and compare FSNEP participant's and non-participants' stated consumption of fruit, vegetables, whole grains, and non-fat or low-fat dairy in the last six months.

5. Determine and compare FSNEP participants' and non-participants' stated moderate physical activity in the last six months.
6. Determine and compare FSNEP participants' and non-participants' stated adherence to the current DGA to balance energy intake with energy output to maintain a healthy weight in the last six months.
7. Determine and compare FSNEP participants' and non-participants' understanding of nutrition recommendations.

Assumptions

1. All FGD participants will be honest in their responses and will answer questions to the best of their ability.
2. Responses of participants are not influenced by the group dynamics.
3. Participants are representative of the target population.

Limitations

1. A convenience sample of FSNEP participants (Group 1) and non-FSNEP participants (Group 2) was used in the study.
2. There was intra-group homogeneity FGD²⁹; however, inter-group homogeneity could not be attained since the two groups of participants were not matched by age and race.
3. Enrollment time and the type and number of nutrition education sessions that Group 1 participants had attended varied from one to ten sessions.
4. Weight, BMI and percent body fat measures were not taken twice and averaged to ensure accuracy.
5. The moderator was not indigenous to the population.
6. Dominant participants in FGD may have prevented hesitant participants from responding.

7. The moderator could have introduced bias if she “led” the questions instead of being neutral.

Definitions

1. Food Stamp Program (FSP): a federal and state program that helps low-income families to buy food needed for good health. Food Stamp Nutrition Education Program (FSNEP): component of the FSP that assists participants through educational programs and social marketing campaigns to make healthy food choices and choose physically active lifestyles consistent with the current DGA and MyPyramid.
2. Household: includes all individuals living in a home and purchasing and preparing food as a unit.
3. Benefit: the value of supplemental nutrition assistance provided to a household by an electronic benefit transfer (EBT) card.
4. Elderly: a member of a household aged 60 or older.
5. Food: considered by the FSP as any food or food product to be consumed at home except alcoholic beverages, tobacco, and hot foods or hot food products ready for immediate consumption.
6. Dietary Guidelines for Americans (DGA): unified science-based recommendations for dietary choices and physical activity to promote health and reduce the risk for major chronic diseases.
7. Logic Model: a planning and evaluation tool that describes the effectiveness of a program through a) program resources (input), b) activities and audience reached (outputs), and c) short, intermediate and long-term effects (outcomes).
8. Behavioral Intervention: behavior modification through education.

9. Focus Group Discussion: a group usually composed of 6 to 10 participants with a homogeneous background related to the topic under discussion. Participants provide their perceptions and points of view in a safe environment.
10. Body Mass Index (BMI): is the practical measure of body fat and is calculated as weight in kilograms divided by square of height in meters ³⁰. The BMI is classified in categories (a) <18.5 underweight, (b) 18.5-24.9 normal, (c) 25.0-29.9 overweight, and (d) ≥ 30 obese³¹.
11. Percent Body Fat: the amount of body fat expressed as a percentage of body weight³². It is classified as acceptable (25-31% and 18-25%) or obese ($\geq 32\%$ and $\geq 26\%$) for women and men, respectively.³³

CHAPTER 2

REVIEW OF LITERATURE

US Dietary Guidelines for Americans

To reflect current scientific and medical knowledge at the time of publication, the HHS and the USDA jointly publish the DGA every five years since 1980. On January 12, 2005, the sixth edition of the DGA 2005 was released. The DGA provide science-based recommendations, for healthy Americans 2 years of age and older, that promote healthy food choices, healthy weight maintenance, and physical activity levels intended to reduce the risk for major chronic diseases.³⁴ Poor diet and sedentary lifestyle are related to major morbidity and mortality.^{22, 35} Energy imbalance produced by consuming more energy than the expended is the principal contributing factor to the obesity epidemic in the United States (US).^{22, 36} Overweight and obesity are major risk factors for chronic diseases, such as hypertension;²³ coronary artery disease;^{37, 38} stroke;^{37, 38} dyslipidemia;²³ type 2 diabetes;^{38, 39} gallbladder disease;⁴⁰ osteoarthritis;⁴¹⁻⁴³ and endometrial, breast, prostate and colon cancers.⁴⁴

The DGA focus on health promotion and risk reduction serve as the basis for policy makers, health care providers, nutritionists, and nutrition educators to develop federal nutrition assistance programs, such as the FSP, the National Child Nutrition Programs (NCNP) or the Elderly Nutrition Program (ENP); and to develop educational materials to implement the DGA, including MyPyramid and food labels. For instance, the FSNEP, assists food stamp participants to make dietary and lifestyle changes within a limited budget, consistent with the current DGA and MyPyramid.¹⁵

Current recommendations for healthy food choices for most adults include four and a half cups of fruits and vegetables per day, 3 cups of fat-free or low-fat milk or milk equivalents per

day, and six servings of grains per day, with three of them as whole grains. Concomitant recommendations are for 30 minutes of moderate physical activity for adults on most days of the week, and to achieve energy balance between kilocalorie (kcal) intake and kcal expenditure to maintain a healthy weight.^{1, 45-47} Recommendations differ based on age, gender, and activity level.³⁴ Nutrient needs should be met primarily through food consumption.⁴⁶ Consuming nutrient-dense foods allows individuals to meet food recommendations without consuming more than the total energy allowance. Nutrient dense foods provide substantial amounts of micronutrients with little energy, as opposed to energy dense foods that often provide energy with few or no micronutrients. Added fats, added sugars, and alcohol are permitted through the discretionary kcal allowance that comprises the remaining number of recommended kcal. For adults, based on age, gender, and physical activity level, the recommendation for discretionary kcal is no more than 13 to 17 %⁴⁸ of total kcal or within a range of 100 to 300 kcal.^{45, 49}

The current DGA key recommendations³⁴ are provided in nine inter-related focus areas: adequate nutrients within kcal needs, weight management, physical activity, food groups to encourage, fats, carbohydrates, sodium and potassium, alcoholic beverages and food safety (Appendix A). However, putting these recommendations into practice may be difficult due to availability of food options,³⁴ time and effort to prepare food,⁵⁰ lack of time,⁵¹ personal preferences,⁵¹ and misunderstanding of what counts as physical activity.⁵¹

Based on the Dietary Reference Intakes (DRI) and current DGA, MyPyramid provides eating patterns with the types, amounts, and combinations of foods choices that provide a healthful diet.⁵² MyPyramid includes recommendation for six specific food groups: grains, vegetables, fruits, low-fat dairy and meat and beans, and oils. Six health messages are promoted through MyPyramid: activity, moderation, personalization, proportionality, variety, and gradual

improvement. MyPyramid also promulgates adequate intake of vitamins, minerals, dietary fiber, and other essential nutrients; low intake of saturated fatty acids, trans fats, and cholesterol; high intake of fruit, vegetables and whole grain; and energy intake that is balanced with energy expenditure to maintain a healthy weight.⁵² The MyPyramid website is an interactive tool that can be used as a personalized guide to assess current diet, physical activity, and to plan appropriate lifestyle changes.

In spite of these recommendations, a survey of the Nutrient Rich Food Coalition (NRFC) showed that Americans are confused about what constitutes healthy eating.⁵³ An understanding of portion sizes is important to following MyPyramid. Thus, some of the recommendations use household items⁵¹ to help estimate serving sizes. For instance, a deck of cards equals 3 ounces of meat and a standard ice cream scoop is half a cup. No national standard definition for a serving size for food is available and a serving size in MyPyramid may not be equal to the serving size provided on a food label.⁵⁴ The lack of standardization is confusing to the public and is a barrier to meeting the DGA 2005.⁵⁴

The original Food Guide Pyramid did not include recommendations for physical activity.⁴⁹ Physical activity is defined as any body movement which results in energy expenditure.⁵⁵ For adequate health benefits, physical activity should be moderate or vigorous and add up to at least 30 minutes a day.⁵⁶ During moderate activity, an activity that burns 3.5 to 7 kcal/min, the individual feels some exertion but is able to carry on a conversation comfortably during the activity including walking briskly, mowing the lawn, dancing, swimming, or bicycling on level terrain, and gardening.^{55, 56} Vigorous physical activity includes running/jogging (5 miles per hour), bicycling (more than 10 miles per hour), swimming (freestyle laps), aerobics, walking very fast (4.5 miles per hour), heavy yard work, such as chopping wood, weight lifting, or

playing basketball.^{52, 55} Some physical activities are not intense enough to help meet the recommendations. These activities include walking at a casual pace, such as while grocery shopping, and doing light household chores.

Poverty in the United States

Low-income individuals are those with an income insufficient to purchase basic needs of food, shelter, clothing, and other essential goods and services.⁵⁷ The US Census Bureau issues an annual report describing national poverty rates. The poverty thresholds,⁵⁸ the original version of the federal poverty measure, are used mainly for statistical purposes. The poverty guidelines,⁵⁹ a version of the federal poverty measure, are issued every year by the HHS for administrative purposes such as determining financial eligibility for certain federal programs. For instance, the USDA uses the poverty guidelines to determine eligibility for participation in the FSP, Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and the National School Lunch and School Breakfast programs.

The nation's official poverty rate was 12.5% or 37.3 million low-income people in 2007. Twenty-one percent of Hispanic Americans (HA) and 24.5% of Blacks (B) lived below the poverty level, compared with 8.2 % of Whites (W) and 10.2 % of Asians (A). In 2007, the B, W, and A groups remained statistically unchanged. However, low-income HA increased from 20.6% (9.2 million) in 2006 to 21.5 % (9.9 million) in 2007. The poverty rate for people 65 years of age and older remained statistically unchanged from 2006 (9.4%) to 2007 (9.7%), with an increase of the number in poverty to 3.6 million in 2007 from 3.4 million in 2006.

There are also geographic differences in poverty levels. In 2007, the poverty rate in the South was 14.2%; however, it was lower in the Northeast (11.4%), the Midwest (11.1%), and the West (12.0%). Poverty measures also vary by residence. Nationwide, the poverty rate and the

number of people living inside metropolitan areas was 11.9% (29.9 million). In principal cities, the number in poverty was 16.0 million (16.5%). For people not living in principal cities, there was a poverty rate of 9.0% (13.9 million). For those living outside metropolitan areas, the poverty rate and the number in poverty was 15.4% and 7.4 million people, respectively.

Individuals living in poverty face an increased risk of adverse outcomes, such as low access to food, poor health, criminal activity, limited access to health care, exposure to environmental hazards, and risk behaviors (*e.g.*, smoking, alcohol use, sedentary lifestyle, a poor diet).⁶⁰ For instance, elders living with fixed incomes under the poverty level may be isolated or sick, and lack social networks and transportation. In 2006, Hunger in America surveyed 52,878 client households who used food pantries, soup kitchens, or shelters. Twenty-eight percent of client households with elderly had made a choice between fulfilling food needs or health care and 31% had had to decide whether to pay for food or for utilities.⁶¹

The term *households with low food security* formerly known as “Food Insecurity without Hunger,” is used to describe those households that have had to make changes in the quality or the quantity of food in order to deal with a limited budget. Similarly, the term *households with very low food security* replacing “Food Insecurity with Hunger” pertains to lack of access to enough food for the household, including having to cut back or skip meals on a frequent basis for both adults and children.⁶² *Households with high food security* are those families who do not affirm any of the insecurity questions. A new category for the previous “Food secure Households”⁶³ is the *households with marginal food security* for those families who affirm one or two of the food security questions in the U.S. Household Food Security Survey Module.⁶⁴

High-risk populations for food insecurity are unemployed or underemployed individuals, single parents, elders, individuals with an illness lacking or with inadequate insurance, and

substance abusers.⁶⁵ The U.S. Census Bureau adds to these high-risk populations households headed by a single woman; Hispanics or Blacks; or individuals with incomes below the poverty level. Households with children experience food insecurity at almost double the rate for households without children.⁶²

Poverty in Louisiana

In 2007, the population living in poverty in the South was 15.5 million.^{66, 67} Louisiana, with an estimated population of 4.4 million (1.1 million rural and 3.3 million urban population)⁶⁸ has the second highest poverty rate in the country (18.8%)^{26, 63, 69}, after Mississippi (20.7%).⁶⁹ The state ranks 22nd for food insecurity with 17.1% of the households with low or very low food security.⁶⁴ Figure 1 illustrates the parish level poverty rate in Louisiana and the poverty rates of the selected parishes in this study.⁶⁹

Households living in poverty turn to federal food and nutrition assistance programs or emergency food providers in their communities when they are unable to obtain enough food.¹⁹ Some studies raise the question if the federal food and nutrition assistance programs, intended to provide food security and ameliorate nutrition quality, are contributing to the high rates of overweight and obesity among low-income populations in the United States.²⁰⁻²² Due to economic constraints, low-income populations may purchase nutrient dense foods. In Louisiana, 34.7 % of the adult population is overweight and 28.9% is obese.⁷⁰ A dietary quality assessment in the Lower Mississippi Delta (LMD) population showed that low dietary quality was associated with food insecurity.¹⁸ The LMD population also showed a lower quality diet with respect to grains, vegetables, fruit, dairy products, and meats compared to the National Health and Nutrition Examination Survey (NHANES) 1999-2000 respondents. The difference between the LMD population and the national sample was due to a lower quality diet of the LMD white

population.⁷¹ In 2007, the Behavioral Risk Surveillance System found that only 20.9% of the Louisiana general population consumed five or more servings of fruit and vegetables per day. That study also found that women (23%) were more likely than men (15.8 %) to consume more than five servings of fruit and vegetables per day.^{72, 73}

Adults living in the South (28.0%) were the least likely to engage in any moderate physical activity compared with adults living in other geographic regions.⁷⁴ For instance, only 38.6 % of the Louisiana population engaged in regular physical activity five or more days a week.⁷² No significant difference for physical activity was found between men (40.2%) and women (37.2%).^{70, 72}

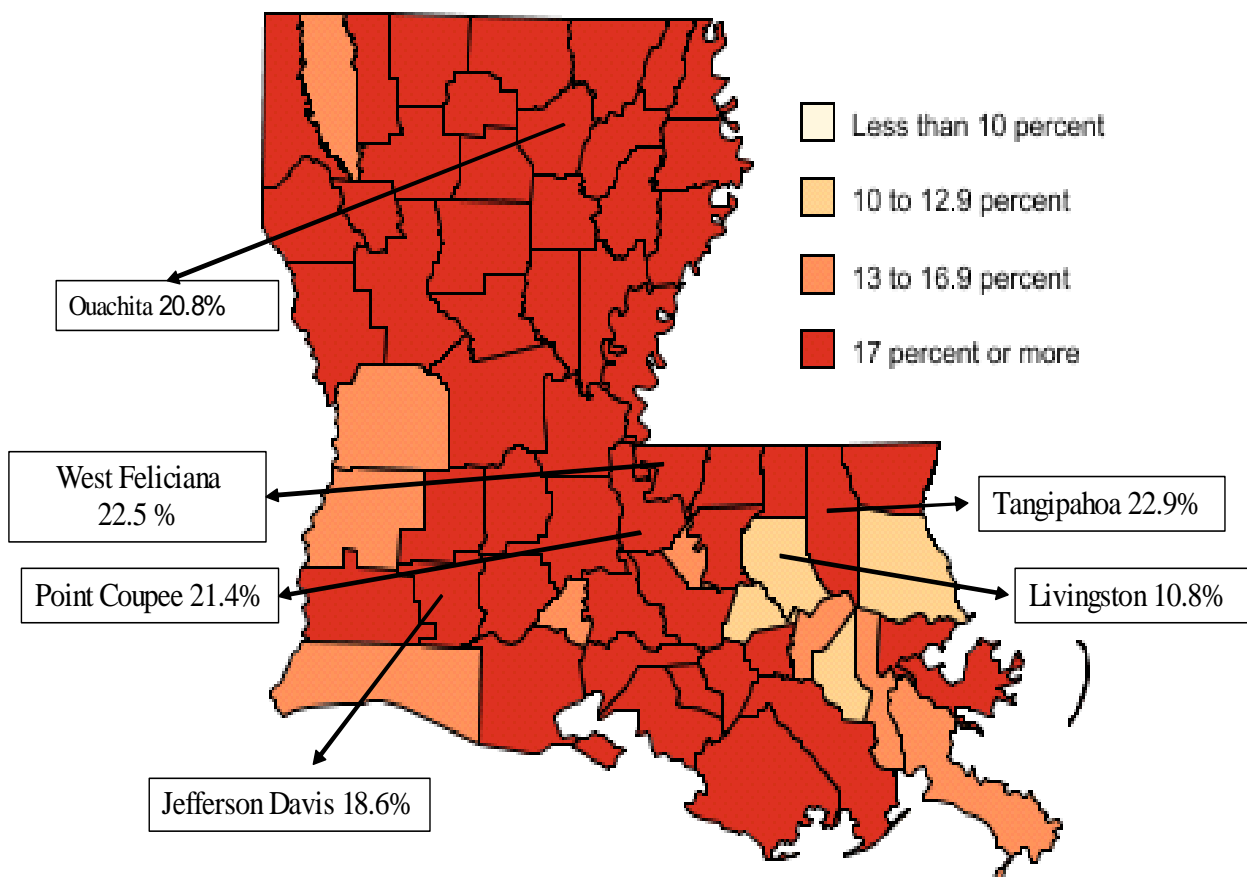


Figure 1. Louisiana parish-level poverty rates 2007. References to specific parishes illustrate the parishes included in this thesis study.⁷⁵

Food and Diet in Louisiana

Louisiana's history reflects a multicultural blending⁷⁶ that is also reflected in its cuisine. Spanish explorers claimed Louisiana for Spain in 1517; however, the first settlers were the French who established Nouvelle Orleans in 1718.⁷⁷ Political refugees from Canada, the French Acadians, and from Haiti, the French Creoles, followed.⁷⁷ African slaves were brought to work the fields. In 1762, Louisiana was ceded to Spain after the French and Indian War.⁷⁸ English settlers were encouraged to come during the Spanish rule. Englishmen were attracted by business opportunities in New Orleans or by a more fertile soil than in the northeastern coast where they originally had settled.⁷⁹ In 1800, Spain returned Louisiana to France, who in turn sold it to the United States under the Louisiana Purchase Treaty in 1803.⁷⁸

The numerous cultural groups shared and borrowed among their cultural foods. Native Americans introduced Europeans and Africans to corn bread, grits, sweet potatoes, squash, beans, file powder, deer, turkey, fish, and shellfish. Immigrants added their own foods. Europeans introduced carrots, cabbage, lettuce, turnips, and beets. Africans brought okra, watermelon, collards, hot peppers, and pepper sauce and deep-fat frying and barbecuing. The French prepared sauces (*e.g.*, sauce piquante, étouffée, stews, bisque), pralines, and breads (*e.g.*, French bread, beignets with powdered sugar), and bouillabaisse--a thick soup-like dish with two or more types of seafood and rice; this was the origin of gumbo. The Spanish cooked paella using local, rather than traditional, ingredients; this became jambalaya. Germans prepared sausages, such as andouille and boudin and brown mustard. Bean and rice dishes had Caribbean influence. Corn bread was the cornerstone of every meal.⁸⁰

In late 1700s, Louisiana had an agricultural economy with a plantation system owned by aristocratic English or French immigrants. This system relied, in part, on slavery. West African

slaves worked growing cotton, tobacco, wheat, corn, and rice. The plantations were self-sufficient. Plantation owners provided food for slave field workers depending on availability and surplus. West African cooking methods were adapted by the slaves to these locally available foods.⁷⁷ Boiling and frying were popular ways to prepare meats, vegetables, and legumes. Corn was used for cornmeal pudding or grits. Pork fat was used instead of palm oil and hot peppers were used for seasoning instead of fresh peppers. Bean stews were main dishes. Children caught catfish and some slaves were encouraged to raise pigs and chicken. Salt pork and corn were common, followed by salted fish and molasses. Chicken was reserved for special occasions. Occasionally, slaves would have greens, milk, and sweet potatoes. Field workers carried portable food such as one-dish vegetable stews, fried cakes known as hushpuppies and hoe cakes or cornmeal cakes.⁷⁷ Slaves who served at their owner's house had a more varied diet than field slaves did.

Slave cooks added their West African preparation methods to British, French, Spanish, and Native American techniques giving rise to the American southern cuisine. Fried, boiled and roasted pork, pork fat, corn, sweet potatoes and green leafy vegetables mainly characterize this cuisine. Fried chicken and fried fish were popular. Vegetables were used in sticky vegetable-based stews similar to the southern specialty gumbo and green leafy vegetables were cooked and flavored with meat as a separate dish instead of being added to stews. Nuts and squash were used as pie fillings.⁷⁷

After the Civil War traditions became important to preserve the Southern identity, and this was done in part through regional cuisine.⁷⁷ After the abolition of slavery, Black food differed little from that of white farmers of similar socioeconomic status (SES), except that pork and salt pork that remained the main meat for Blacks as opposed to beef that was preferred by

the Whites. Barbecued pork was common and ribs were roasted over the fire. Pig's feet were roasted or pickled, pig's ears were slowly cooked and served with gravy and pork skin was fried to make cracklings. Chitterlings were fried or boiled. Small pork pieces were used for sausage and head cheese was popular. Poultry was also favored, as well as catfish, crab, or crawfish. Gumbo was eaten with rice. Squash and sweet potatoes were eaten as a stuffed vegetable or a pie. In the 1960s, the traditional southern Black cuisine was named "soul food." This cuisine is a symbol of Black history. Due to time restraints of modern life, the traditional southern meal pattern of a large breakfast with fried food, a large lunch with boiled food, and a heavy dinner has changed. Blacks might now eat a light breakfast, as well as whites.

Cuisines of northern and southern Louisiana differ. The "crawfish curtain" divides the region. In the South crawfish is well liked, but in the North it is less appreciated. In the South, crawfish are boiled in water seasoned with cayenne pepper, salt, and herbs. Potatoes and corn are cooked along with the crawfish and served as side dishes. Rice is used as the foundation of fish and seafood stews like gumbo and jambalaya.⁷⁷ Game meat from duck, venison, or squirrel is also used for gumbo. Baked oyster dishes are internationally recognized and baked goods like beignets, pralines, and banana foster are sweet specialties. Po'boy sandwiches and mufleta are popular. In the Delta Mississippi region and in the Southwest region, wheat flour is preferred to corn flour for bread.

North Louisiana, originally populated by Americans of English, Scotch Irish, and German ancestry, with little French influence has more of a traditional southern cuisine than South Louisiana. North Louisiana gatherings feature a Protestant heritage tradition with pork as the preferred meat, which is usually barbecued for Sunday dinner or with fish fries. North Louisiana food includes less spicy food with varied vegetables, mainly beans and peas, with

added homemade green tomato or red tomato relish, tomato sauce, cucumber or peach pickles. Gumbo with potato salad reflects some German influence.⁸⁰ Corn bread may be plain or with cracklings (crackling bread), fried to make hushpuppies, boiled to make hot water bread or mixed with eggs to make egg bread.⁸⁰

Dietary Patterns in Low Socioeconomic Status Population

Socioeconomic status is defined as a measure of economic status involving three indicators: income, education and occupation.⁸¹ Diet quality is correlated to the amount of money that a household spends on food.⁸² Low-income populations, use a range of grocery shopping practices that involve quantity, price, quality, and nutritional differences as opposed to taste, preference, and quality that may be more common in higher income groups.⁸³ Consumers who prioritize food price are less likely to read nutrition labels.⁸⁴ Economic constraints encourage the selection of energy dense food at low cost and contribute to the high obesity rates in low SES population.⁸² Moreover, low SES populations may have poor nutrient intake due to consuming fewer meals.⁸⁵

Low-income populations tend to pay high food prices due to living mainly in urban and rural areas. However, low-income households buy less than high-income households in food stores by using shopping strategies to reduce expenses. These strategies include buying discounted products in bulk, buying store brand products as opposed to the brand products that high income shoppers purchase, buying larger package sizes to take advantage of volume discounts, and buying less expensive food products within a product class (i.e. lower grade cuts of meat).⁸³ Using data from the 1996 National Food Stamp Program Survey a study found that food-shopping practices were significantly associated with the availability of nutrients in the food the households used during a week. Food shopping practices are an essential nutrition

education topic that allows building food shopping and resource management skills by low-income individuals.⁸⁶

The Expanded Food and Nutrition Education Program (EFNEP) and FSNEP nutrition educators in New Jersey⁸⁷ determined that low-income people had several practices to obtain food which included using community resources, interaction with informal support systems, supplement financial resources, and shopping strategies to lower food cost. Strategies to use community resources to maintain food sufficiency included participating in federal nutrition programs, attending events to obtain food, and participating in locally sponsored food programs. Interaction with informal support systems was achieved through networking to exchange or sell surplus foods (*e.g.*, rice, cereal, canned and packaged goods, and holiday turkeys) to purchase other kind of foods. Additionally, trading public assistance benefits (*e.g.*, WIC vouchers for infant formula traded for food stamps), using informal credit systems at nearby stores, and using a support system by visiting friends at meal times or overhearing conversations about food sources provided access to food.

Supplement Financial Resources were accessed by increasing the income through activities (*e.g.*, foster care or selling or pawning nonfood items), panhandling, babysitting, day working, sharing households not stated in applications for public assistance, and preparing/selling homemade food. Illegal activities were also pursued including stealing food products like crops; manufacturing, distributing, and selling drugs illegally; or illegal gambling. Additionally, moving to suburbs or into cities to be closer to public assistance programs and public transportation; transferring to less populated areas for job availability; and living in inexpensive housing were practical ways to decrease expenses. Shopping strategies used to lower food cost were mostly legal but were associated with food safety risks. These included

purchasing food from discount stores such as wholesale bread outlets, meat and poultry stores, and produce outlets; or avoiding expensive foods, such as fresh fruits⁸⁷ in comparison to the lowered priced canned or frozen fruits. Coupon use was used occasionally and purchasing foods near the expiration date was also practiced.

Health in Low Income Populations

Socioeconomic differences affect mortality and morbidity rates of chronic diseases.⁸¹ Low-income populations may have poor diets with nutrient dense foods and fewer number of meals, lack access to good quality food and lack of physical activity.⁶⁰ Thus, energy imbalance prevails in these populations and contributes to the obesity epidemic in US.^{22, 36} Overweight and obesity are risk factors for chronic diseases.^{37-40, 42}

Studies not using nationally representative data found a significant positive association between FSP participation and weight in women. Sporadic over consumption of food has been associated to food stamp benefits delivered once a month.⁸⁸ During the first three weeks food is available and participants respond by increasing consumption of energy dense foods and tend to binge eat.⁸⁹⁻⁹¹ Mean food spending increases the first three days after food stamp benefit issue and mean energy intake decrease significantly by the end of the month.⁹² Over time, this food stamp benefit cycle may result in weight gain. These studies did not control for food security at enrollment, a confounding factor that may misrepresent the relationship.⁸⁹⁻⁹¹

Cardiovascular disease (CVD) is the leading cause of death in the United States.⁹³ Low SES individuals have a higher risk of CVD than those of higher SES.⁹⁴ A 10 year longitudinal study found that subjects (n=17,530) age-adjusted prevalence of angina pectoris was 53% higher for men in lower level jobs than those in administrative jobs. At a 10 year follow-up the low level workers mortality rate was 3.6 times higher than in the counterpart in high level jobs.⁹⁵

The Charleston Heart Study followed Black men who at 14 year follow-up showed that half of the low SES Black men had suffered an acute myocardial infarction and coronary heart disease rates whereas none of the high SES Black men had experienced any cardiovascular event.

Although using the same data, an 18 year follow-up study found an age adjusted mortality rate for coronary disease was 4.0 in low SES blacks compared to 2.4 in high SES blacks.⁹⁶

Some aspects of occupational status, such as stress, may be an important mediator of SES and disease.⁹³ Other psychosocial occupational characteristics relevant to cardiovascular risk are skill discretion (work variety and opportunity to use skills),⁹⁷ authority over decisions (control over work),⁹⁷ and social support at work. Low SES populations have fewer resources for coping with psychosocial stressors.⁹⁸ Research has shown that differences in mortality rates by SES decrease after retirement.⁹⁹ Cardiovascular disease events such as stroke and heart attack decreased with increasing levels of education and income. Women that were more educated had a lower prevalence of smoking, hypertension, diabetes, and obesity and were more likely to participate in vigorous physical activity than were less educated women.¹⁰⁰ Income, race, insurance coverage, inadequate physical activity,^{101, 102} elevated blood pressure, and elevated C reactive protein were independently associated with mortality due to chronic diseases.¹⁰¹

Type 2 diabetes is another chronic disease associated with low SES.^{103, 104} Diabetes is one of the leading causes of death among Black women.¹⁰³ Low SES, low education, and restricted access to health care is common among low-income Blacks.^{105, 106} Low income was independently associated with risk factors of diabetes including higher 2-hour glucose tolerance test results, hemoglobin A1C levels, waist-to-hip ratio, urinary albumin concentrations, 5-year CVD risk, current cigarette smoking,^{101, 105} lower high density lipoprotein-cholesterol levels, and less time spent exercising compared to the highest SES group.¹⁰⁷

Low SES is a strong predictor of mortality in elderly with breast, colon, or prostate cancer as well as in racial/ethnic minority groups.¹⁰⁸ A study that assessed whether SES, race/ethnicity, and rural residence was correlated to a low rate of cervical cancer survival by stage at diagnosis found that women in areas with lower SES had significantly shorter survival rates even when diagnosed at an early stage.¹⁰⁹ The correlation between low SES and low survival rate was consistent across all racial/ethnic groups, suggesting SES was more important than race.¹⁰⁹

Health Disparities

Poverty often results in health disparities or inequalities.⁶⁶ A health disparity or inequality is defined as a particular type of health difference in which disadvantaged social groups (low SES, racial/ethnic minorities or women) systematically experience greater health risks than more advantaged social groups.¹¹⁰ Socioeconomic status affects three major determinants of health care, environmental exposure, and health behavior.¹¹¹ For instance, low SES neighborhoods tend to be located near industrial areas and toxic waste sites. Therefore, low SES populations are more likely to suffer exposure to toxic agents in the environment such as lead, asbestos, and industrial waste.¹¹¹

Clinical preventive services help in disease prevention and health promotion, thus reducing morbidity and mortality¹¹². Preventive services include immunizations, patient counseling, and screening for common diseases.¹¹² Many low SES populations cannot access preventive services since they have inadequate insurance. In 2006, the US Census Bureau reported 47 million people (15.8%) were uninsured. Among minorities, 20% of Blacks and 34% of Hispanics were uninsured.⁶⁶ In 2007, the percentage of people without health insurance decreased to 15.3%. The uninsured rate of Whites decreased in 2007 to 10.4%, for Blacks the

rate decreased to 19.5% in 2007 from 20.5% in 2006. Uninsured Hispanics were 32.1% (14.8 million) in 2007, lower than 34.1% (15.3 million) in the previous year. In 2007, those in the South (18.4%) and in the West (16.9%) were more likely to be uninsured than those in the Northeast (11.4 %) and Midwest (11.4%).⁶⁶ Low SES women were less likely to use or to have had recent preventive care, except for blood pressure testing among older women, than those with higher SES.^{113, 114} High rates of never having heard of Pap smears have been reported for women with low SES and in women with less than a high school education. Compared to those with a high SES, those with a low SES were less likely to have a pap smear in the last three years. Additionally, low income was a strong predictor of underuse of screening mammography or lack of a relationship with a customary medical professional.^{115 116} Low SES individuals with cancer are often diagnosed at an advanced stage, receive less aggressive treatment, and have a higher risk of dying in the five years following diagnosis than high SES individuals.¹⁰⁹ Black colorectal cancer patients had disparities in treatment and decreased survival that was linked to SES.¹¹⁷

Federal Nutrition Assistance Programs

The food assistance programs developed from the government's concern during the nationwide food deprivation in the 1930s and 1960s. The USDA has implemented different nutrition assistance programs to meet the needs of different target populations by providing access to a more nutritious diet, improving children eating habits and helping farmers have an outlet for food distribution. Low-income population may participate in one or more federal food assistance programs to meet their needs.¹¹

The Food Stamp Program (FSP): It is considered the cornerstone of the nutrition assistance programs. Program eligibility includes financial requirements such as a gross monthly

income of 130% of the poverty guideline for the household size or a net monthly income of 100% of the poverty level and countable assets less than \$2,000. Households with elderly and disabled members have a countable assets limit of \$3,000 and no need to meet the gross income limit.¹¹⁸ Program benefits are delivered in the form an electronic benefit transfer card that can be used at the participating grocery stores as a commercial debit card.¹¹⁸ Benefit levels are determined by the Thrifty Food Plan, a federal estimate of the cost to purchase a nutritious diet per household size.^{118, 119} Households with income are expected to spend some of their own income on food to increase cash resources near the Thrifty Food Plan level.¹²⁰

Nationwide, many eligible non-participants go without the FSP for a food pantry.⁶¹ In 2007, two of three eligible individuals did not enroll. USDA estimated 33% of eligible participants did not enroll in the program.⁹ Approximately 23.3 million Americans use the community-based emergency food system. These independent food emergency systems are limited in the nutritional value for protein, and vitamins and minerals they can provide; the foods also tend to be high in sodium and unsaturated fatty acids.¹⁰ Thus, it is important to increase awareness of the FSP and decrease barriers for eligible non-participants so that they can access nutrient-dense foods by participating in the federal nutrition assistance programs.¹²¹

Stigma of program participation is among the principal barriers in achieving the FSP's goal to provide access to healthy food choices for participants. Although the FSP increases a household's ability to purchase nourishing foods, Seeds and plants can be purchased to grow a vegetable garden. The program does not regulate the type of food to purchase, with the exception that no ready-to-eat hot foods are allowed. Therefore, a great responsibility lies on the FSNEP to improve the likelihood that the program participants will make healthful food choices. Moreover, FSP benefits may be insufficient to meet the household needs. Many households receiving food

stamps still turn to emergency food sources by the end of the month because their benefits do not last for the entire month.⁸⁸ At the time participants receive their monthly benefit, they tend to purchase food that lasts the first three weeks. By the end of the month, they lack enough food to feed their family. Participants perceive this as a cycle during which they binge eat the first three weeks of the month after a period of not having enough food to eat. FSP participants or other members in the household may also receive benefits from the NSLP/SBP and WIC.¹¹

National School Lunch Program (NSLP): The NSLP is the second largest food assistance program in the US after the FSP. In 1946, NSLP began providing schools with nutritious lunches for children. Participating schools are public or nonprofit private schools of high school grade or under and public or nonprofit private residential childcare institutions. Participating schools receive cash subsidies for the meals served and food commodities through the NSLP. Participating schools must serve meals that meet the recommendations of the 1995 DGA¹²² and must offer free or reduced-price meals to eligible students¹²². School lunches must provide one-third of the Recommended Dietary Allowance (RDA) for energy, protein, calcium, iron, and vitamins A and C for the applicable age or grade groups. Income eligibility guidelines are published annually in the Federal Register. All children from households that receive food stamps are eligible for free school lunch.

School Breakfast program (SBP): Authorized by the Child Nutrition Act of 1966, which was made permanent in 1975, the SBP provides nutritious breakfasts to school children. Participating schools and institutions receive cash subsidies for each meal served. Program schools must serve meals that meet specified nutritional guidelines and must offer free or reduced-price meals to eligible students. Breakfast can be either hot or cold; fluid milk, fruit or juice, and either two servings of bread, two meats, or a meat and bread must be included in the

meal and must meet current DGA requirements for 30% calories from fat and less 10% saturated.

After-School Snack Program: This program was begun in 1998 to assist school-based after-school education or enrichment programs by providing healthful snacks to children through 18 years of age as an expansion of the NSLP. Snacks must contain a variety of at least two of the following: a serving of fluid milk; a serving of meat or meat alternative; a serving of vegetable(s) or fruit(s) or full-strength vegetable or fruit juice; or a serving of whole grain or enriched bread or cereal.

Special Milk Program (SMP): This program was begun in 1955 to provide and encourage fluid milk consumption by children through cash reimbursement for each half-pint of milk served to children in schools and childcare institutions that do not participate in the NSLP. The SMP serves pasteurized fluid unflavored or flavored whole milk, low fat milk, skim milk, and cultured buttermilk. All milk must be fortified with vitamins A and D at levels specified by the Food and Drug Administration (FDA).

Summer Food Service Program for Children (SFSP): This program is the largest federal resource for local sponsors to combine a feeding program with a summer activity. The SFSP provides meals for children when school is not in session. Sponsors receive reimbursement for serving meals that meet federal nutritional guidelines; and payments are received through state agencies based on the number of meals served and documented costs of running the program.

Child and Adult Care Food Program (CACFP): Intended to improve the quality and affordability of day care with nutritious meals and snacks to children, provide meals and snacks to adults who receive care in nonresidential adult day care centers, provide meals to children residing in homeless shelters, and provide snacks and suppers to youths participating in eligible after-school care programs. Eligible participants from households with incomes at or below

130% of the poverty level receive free meals. Participants in centers with household incomes between 130% and 185% of the poverty level are eligible for meals at a reduced price. Adults receiving food stamps, Food Distribution Program on Indian Reservations, Social Security Income, or Medicaid benefits are categorically eligible for free meals.

Team Nutrition: The program goal is to improve children's eating and physical activity habits by following the DGA and My Pyramid recommendations. Team Nutrition promotes the nutritional health of children in school by providing training and technical assistance for food service professionals to help them serve meals that look and taste good while meeting nutrition standards. Nutrition education is provided for children and their parents to build skills and motivate children to make appropriate food and physical activity choices as part of a healthy lifestyle. Additionally, the program provides support for healthy eating and physical activity by involving school administrators and other school and community partners.

Fresh Fruit and Vegetable Program: The program provides free fresh and dried fruits and vegetables to children in elementary and secondary schools and in Indian reservations in Indiana, Iowa, Michigan, Ohio, New Mexico, Pennsylvania, North Carolina, Washington, Arizona, and South Dakota. Schools that serve free and half price meals including those that serve Native American children participate in the program. The program aims to fight childhood obesity by teaching children healthy eating habits. Following recommendations of the Institutes of Medicine (IOM), school children benefit by being introduced to fresh fruits and vegetables that they would be unlikely to sample otherwise. Schools are given latitude to decide what fruits and vegetables they want to provide to the children. Team nutrition collaborates with private and non-profit organizations such as entertainment and industry companies.

Special Supplemental Nutrition Program for Women, Infant, and Children (WIC): One

of the most efficient federal programs, WIC provides a safeguard to the health of low-income women, infant, and children up to 5 years of age who are at nutritional risk. The program provides vouchers for participants to purchase nutritious food to supplement diets; nutrition education and counseling; and screening/referrals to other health, welfare, and social services to infants, children up to age five, and pregnant, breastfeeding, and non-breastfeeding postpartum women who qualify financially and are at nutritional risk. Individuals are eligible to participate in other state-administered programs, including the FSP.

WIC Farmers' Market Nutrition Program (FMNP): The FMNP provides fresh, nutritious unprepared fruits and vegetables from farmer's markets to low-income, at risk women, infant, and children. It promotes awareness and use of farmers' markets and increase sales at such markets. Each state agency develops a list of the fresh fruits, vegetables, and herbs eligible for purchase through coupons.

Head Start/ Early Head Start (HS/EHS): These are child focused development programs designed to increase the school readiness of young children in low-income households and promote healthy prenatal care for healthy development of the infant, respectively. The HS program provides health, education, nutrition, and social services to children from birth up to 5 years of age, pregnant women, and their families. Parents of children in HS and the HS staff receive nutrition education from the FSNEP.

Elderly Nutrition Program (ENP): This program is intended to improve the nutritional status of the elderly and enable them to reduce their risk of medical problems, continue living in communities of their own choice, and stay out of institutions. The ENP provides free or low cost nutritious meals, opportunities for social interaction, nutrition education and shopping assistance, counseling and referral to other social services, and transportation services. It also offers home-

delivered meals and other nutrition services. Congregate meals are delivered to eligible elderly in community centers, senior centers, faith-based facilities, schools, and adult's day care facilities. Two of the study FGD comprised these populations. The Home-Delivered meals program delivers meals to those who are homebound and to their spouses. These individuals are also provided with nutrition assessment, screening, and education; homemaker or health aide services; transportation; fitness programs; and home repair and home modification programs. Elderly receiving ENP benefits are considered a household eligible for food stamp benefits¹²².

Seniors Farmers' Market Nutrition Program (SFMNP): This federal program was created in 2001 to provide fresh, nutritious, unprepared, locally grown fruits, vegetables, and herbs from farmers' markets, roadside stands, and community-supported agriculture programs to low-income seniors. The SFMNP promotes domestic consumption of agricultural commodities by expanding or aiding the expansion of these domestic agriculture programs. Certain foods, such as dried fruits or vegetables, are not eligible for purchase with SFMNP benefits.

Commodity Supplemental Food Program (CSFP): The CSFP is intended to improve the health and nutritional status of low-income pregnant and breastfeeding women, other new mothers up to one year postpartum, infants, children up to age six, and elderly people at least 60 years of age by supplementing their diets with nutritious USDA commodity foods. Food packages may include canned fruit juice; canned fruits and vegetables; canned meat, poultry or tuna; dehydrated potatoes; pasta; rice; cheese; butter; honey; and infant cereal and formula.

The Emergency Food Assistance Program (TEFAP): The TEFAP was first authorized as the Temporary Emergency Food Assistance Program in 1981 to distribute surplus commodities to households. The 1990 Farm Bill changed its name to The Emergency Food Assistance Program. TEFAP provides commodity foods to state distributing agencies, such as food banks,

which in turn distribute foods to the public through soup kitchens and food pantries.

Nutrition Services Incentive Program (NSIP): The NSIP is the new name for the USDA's cash or commodity program, formerly known as the Nutrition Program for the Elderly (NPE). The purpose of NSIP is to reward states and tribal organizations for the efficient delivery of nutritious meals to older individuals through cash or commodities. Eligible persons include people 60 years of age or over and their spouses; disabled people under 60 years of age who live in elderly housing facilities where congregate meals are served; and disabled persons who reside at home and accompany elderly participants to meals. Volunteers who assist in the meal service may also receive meals through NSIP.

Food Distribution Disaster Assistance (FDDA): The FDDA is administered by the Federal Emergency Management Agency in the Department of Homeland Security to provide commodity foods for shelters and other mass feeding sites, distribute commodity food packages directly to household in need, and to issue emergency food stamp benefits. The FDDA provides food to state relief agencies and organizations such as the Red Cross and the Salvation Army in times of emergency including civil disturbances hurricanes, earthquakes, floods, and winter storms.

Food Stamp Nutrition Education Program

The USDA defines nutrition education as a set of learning experiences that help individuals to adopt healthy eating and other nutrition-related behaviors.¹²³ Nutrition education uses three approaches,⁴⁹ disseminating information when nutrition information is provided to individuals to help them make appropriate food choices; facilitating healthy behaviors when the nutrition information is complemented by focusing on personal motivations, interpersonal interactions and environmental factors; and focusing on environmental change, environmental

factors influence food choices and nutrition related practices.⁴⁹

Figure 2 shows the relationship between what individuals want, what professionals recommend, and what the food system supplies. Although nutrition educators deliver the DGA recommendations individuals place high importance to familiarity, price, taste and ease of preparation to shop and make food choices.¹²⁴ The food environment provides basic foods in abundance, large portions, low prices and fast foods high in fats, sodium and sugar, thus, it is a challenge to assist individuals in adopting a healthy lifestyle.

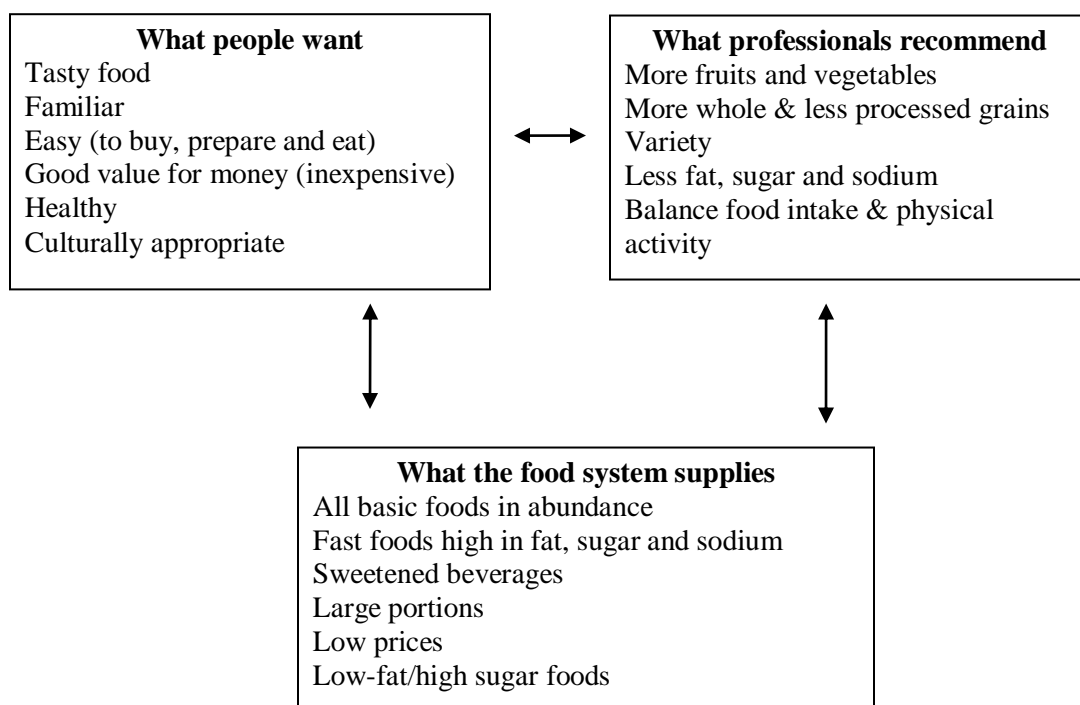


Figure 2. Relationships to be considered for nutrition education approaches⁴⁹

Outreach and education are important processes to overcome barriers to food stamp participation. Outreach identifies eligible potential participants and provides information to help them make an informed decision about whether to apply for the program. The FSNEP is a benefit for FSP eligible participants; however, while providing nutrition education to the latter it is possible that other eligible low-income individuals will attend. The Food Stamp Nutrition

Education Program supports nutrition education to FSP participants through a state/federal partnership with university extension programs, state public health departments, food banks, tribal programs and local health organizations. Figure 3 depicts the organizational structure of the FNP of the LSUAgCenter.²⁴ The FNP objectives.¹²⁵ include 4 core educational elements: diet quality, shopping behavior/food resource management, thrifty shopping for healthy food, and food safety practices.

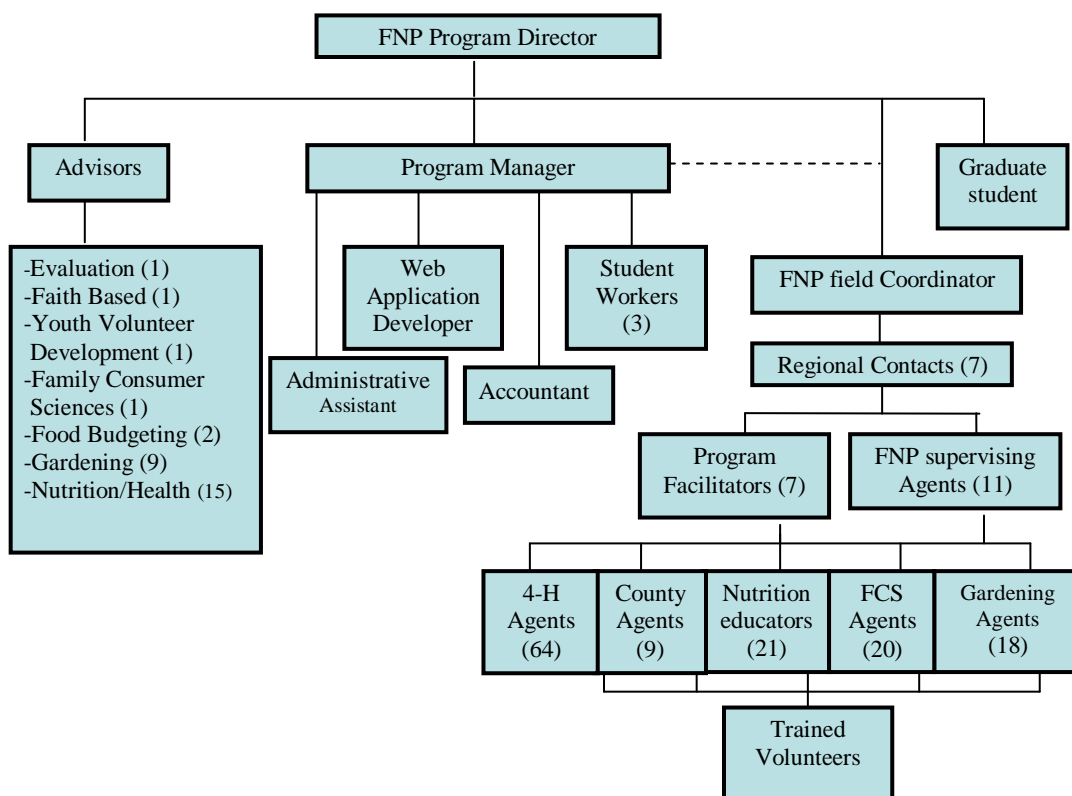


Figure 3. Organizational chart of the Family Nutrition Program at LSU AgCenter.

Exclusivity waivers need to be completed when FSNEP session inadvertently reaches persons that may not be eligible for the FSP (Table 1).¹²⁶ In these cases, a public education outreach message with information on application process, benefits and contact information is provided.¹²⁶

Employees of FNP include paraprofessionals or Nutrition Educators I. These are laypersons indigenous to the community who receive training by the FNP supervising agents. In Louisiana, a Nutrition Educator I can become a Certified Nutrition Educator after completing a Nutrition Certification Program and one year of related experience. The FNP supervising agents deliver nutrition training to the nutrition educators who will in turn educate the FSP audience. Continuing education is required and delivered through distance education, although lessons are intended for nutrition program leaders who have more nutrition knowledge than paraprofessionals.¹²⁶

Although all states currently provide nutritional educational services, they are not provided to all FSP participants.¹ In fiscal year 2007, the FNP delivered FSNE in 60 of the 64 parishes throughout Louisiana to 620,234 participants.¹²⁷ Parishes not included in the FNP program are Avoyelles, Calcasieu, East Feliciana, and St. Tammany. The FSNEP delivery methods are chosen by the state to meet parish needs. Delivery methods include direct contact, including sessions at a location serving low-income population with one-on-one contact, phone lessons talks, food demonstrations, taste testing, exercise sessions or videos and indirect contact that includes mailed newsletters, flyers, brochures and posters, and exhibits at health fairs.¹²⁶

Two principal teaching methods are used to deliver FSNE including one-on-one contact, which is an individual approach that provides personalized attention, encouragement, and group teaching, which is an efficient method to approach large audiences, exchange ideas, and answer questions. Participants are required to sign-in for direct contacts. Participants have the right to remain confidential. When participants receive more than one nutrition education session, an entry Nutrition Education Evaluation and Reporting Systems, (NEERS 5) FNP Food Behavior checklist is completed.

Table 1. Audience for FSNE sessions ¹

Audience	Example	Waivers
Certified Eligible Individuals participating in or applying for the FSP or persons residing in a FSP household. <i>This is the known FSP target audience</i>	<ul style="list-style-type: none"> • Participants referred by the local FSP office • Individuals reached through direct marketing to FSP participants • Individuals participating in the Food Distribution Program on Indian Reservations (FDPIR) • Ineligible parents who receive FSP benefits on behalf of their child • FSP participants in a FSP Job Readiness Training Program 	No
Likely Eligible (Proxy Criteria) Must meet one of the following: <i>By Income.</i> Individuals not certified eligible that have gross incomes \leq 130% of poverty guidelines. Excludes incarcerated persons, boarders, or college/university students	<ul style="list-style-type: none"> • Individuals referred by WIC, Medicaid, or Child Nutrition Programs • Individuals receiving Supplemental Security Income (SSI) or Temporary Assistance for Needy Families (TANF) • Individuals participating in TANF Job Readiness Training Programs 	No
<i>By Location.</i> Persons receiving FSNE at: FSP/TANF offices, public housing, food banks, food pantries, and soup kitchens in conjunction with the distribution of foods to needy persons at these sites.	<ul style="list-style-type: none"> • Persons in a TANF office waiting area or conference room • Persons at a public housing apartment community room or lobby • Persons visiting a food pantry to obtain food • Persons receiving a meal at a soup kitchen 	No
Potentially Eligible <i>Venues serving low-income populations based on income.</i> Persons at venues when it can be documented that the location/venue serves generally low-income persons where at least 50% of persons have gross incomes \leq 185% of poverty guidelines/thresholds.	<ul style="list-style-type: none"> • Persons residing or schools located in census tract areas where at least 50% of persons have gross incomes that are equal to or less than 185% of the poverty threshold • Children in schools where at least 50% of children receive free and reduced priced meals • Persons participating in the WIC program 	Yes
<i>Based on FSP redemptions.</i> Persons at stores with average monthly FSP redemptions of \$50,000. Stores with lower redemptions that do not meet the \$50,000 threshold but do meet the 50 % of 185 % low-income criterion may continue to be used as FSNE sites with an approved waiver.	<ul style="list-style-type: none"> • Persons shopping in grocery stores located in census tracts where at least 50% of persons have gross incomes that are equal to or less than 185% of the poverty threshold • Persons shopping in grocery stores when the store has been documented to redeem average monthly SNAP benefits of \$50,000 or more 	Yes

The NEERS5 is a multilevel system that collects information from parishes and the state level. The checklist was designed as an expansion to the previous report system. The food behavior checklist is used to collect information on how individuals practice nutrition knowledge.¹²⁸ Participants reached through indirect contact are not required to fill out an enrollment form. A contact list is available for participants to provide their contact information to receive nutrition sessions later from the FNP.¹²⁶ Topics presented include nutrition, diet and health, food buying/budgeting, food safety, and gardening education.¹²⁶

Nutrition education delivered in a decentralized manner by each state allows variations and produces gaps in the national data, but also allows states to target directly their principal needs. In 2008, the EARS, a data tool that continually and systematically collects demographic characteristics of Group 1, education strategies, content and resources was implemented. The EARS provides uniform data and information for management decisions, support policy initiatives, legal documentation, budget and planning.^{2, 129} Nutrition educators in each parish mail a report with copies of attendance forms to the state office. A quarterly report includes number of FNP contacts and FNP outcome statements from participants.

The effectiveness of nutrition education has been shown previously.^{24, 25} A study to assess the impact of 10 to 12 nutrition education sessions for EFNEP participants with pre/post testing found that clients retained their behavior change at least six month after graduation. Behaviors mentioned were using a grocery list, planning meals ahead of time, reading labels. The latter showed significant improvement at six month follow up.¹³⁰ Another study showed an improvement in participant's food resource management enabling them to reduce the number of times that they had to turn to emergency food sources.²⁵ Isolation may be one main barriers to participation of specific populations such as low-income women of childbearing age. The CES

programs incorporate opportunities for socialization, cooking classes and weight control in their curriculum as a cost effective tool.¹³¹

The Louisiana Cooperative Extension Service

In 1914, the Smith-Lever Act established the Cooperative Extension Services (CES) to provide instruction and practical demonstrations in agricultural and home economics to people who were not attending college.¹³² In 1862, the federal government “land-granted” federal land to universities to serve the citizens. Services offered are tax-supported educational programs based on the university’s research. Extension education takes place in the fields of agriculture, marketing, home economics, leadership development, community service, public affairs, home management, emergency preparedness, natural resources and 4-H youth development.¹³³

The CES mission is to assist people to improve their living conditions through an education process based on scientific knowledge focusing on issues and needs.¹³² The CES are a critical link between research and outreach.¹³⁴ County agents present research findings in the field by emphasizing practical hands-on learning approaches in a non-formal setting.¹³³

In 1998, the first nutrition education contract took place between state and the CES faculty in Brown County, Wisconsin. Land-grant colleges and universities were conducting FSNEP sessions in all 50 states by 2004.^{123, 126} Louisiana has contracted with the LSU AgCenter through the CES to deliver nutrition education and outreach to FSP participants. The CES works in collaboration with state and local agencies including WIC, HS, Red Cross, Goodwill Society, public schools and libraries, community centers, food pantries and grocery stores.¹³³ State FSP agencies contract with the Cooperative State Research, Education and Extension Service or CES, State Departments of Health or Education to provide nutrition education to FSP target audience (Figure 4).¹²³ Head Start, Even Start, Council of Aging and Step program collaborated with us.

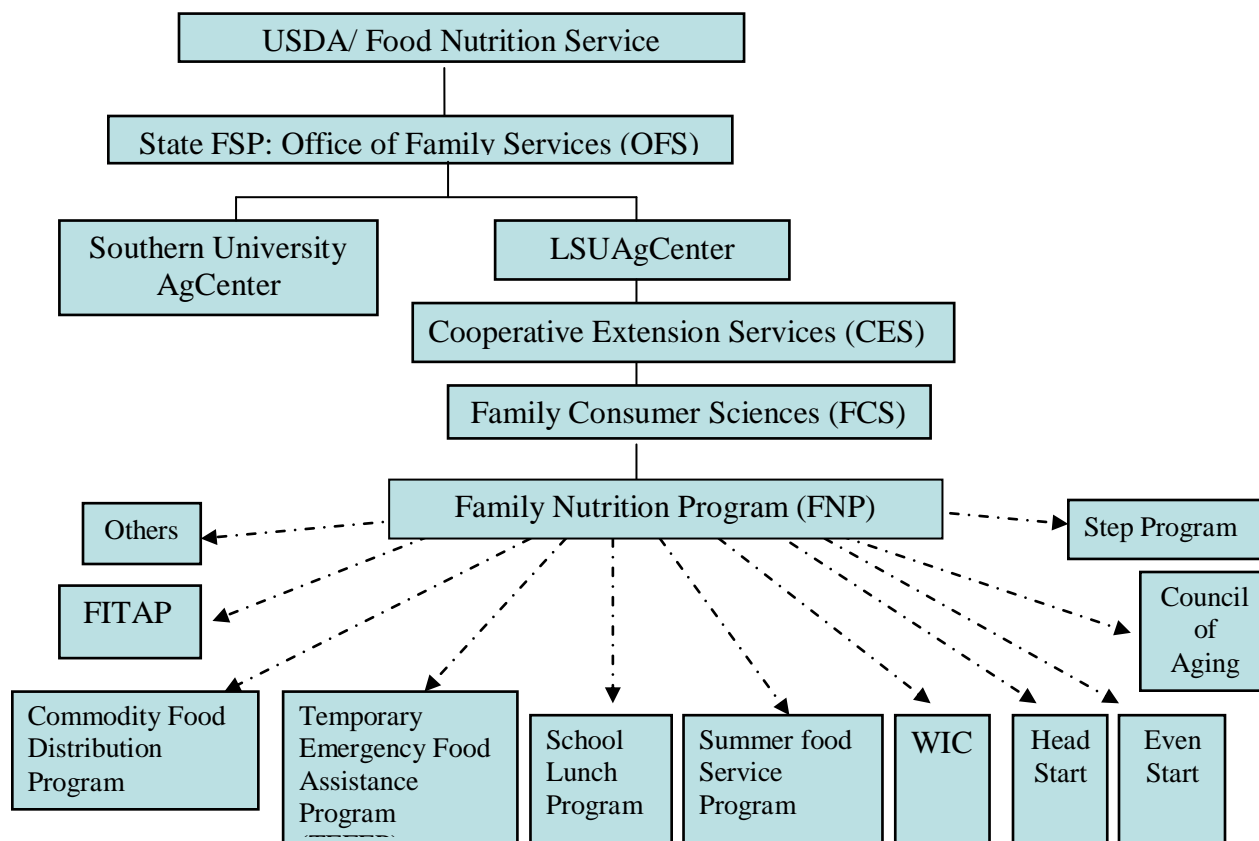


Figure 4. State/federal level Food Stamp Program in Louisiana and other federal program partnerships. Adapted from FNP Policy and Procedure handbook.¹²⁶ (SU= Southern University, LSU= Louisiana State University, FITAP= Family Independent Temporary Assistance Program, STEP= Student Training and Employment Program).

The Logic Model

The logic model was developed in the 1970s to evaluate causality in private, public, and nonprofit sector initiatives.¹³⁵ The logic model provides direction for a result-based performance as mandated by the Government Performance and Results Act (GPRA) for federal accountability in the public sector. The model links investments and activities. In this model, the program is described on what it tries to achieve, how its effectiveness is determined, and how it is performing.¹³⁶ Thus, programs designed by the CES must use the Logic Model,¹⁷ to plan, implement, evaluate and communicate the program's objectives. There are three logic model

components: inputs or resources invested into the program, outputs or educational and outreach activities that reached targeted population, and

outcomes that target population learns, promotes and practices intended lifestyle changes.

Figure 5 depicts the model graphically illustrating the interrelationships among a program's core components.^{137 138}

Outcomes are defined as the benefits clients receive or achieve from participation in the program including knowledge, perceptions/attitudes, skills or conditions, and practices or behaviors. Outcomes can be short term, those closely associated with the program's outputs; medium term or those resulting from practicing the short-term outcomes, or long-term or the impacts derived from the medium outcomes.¹³⁶

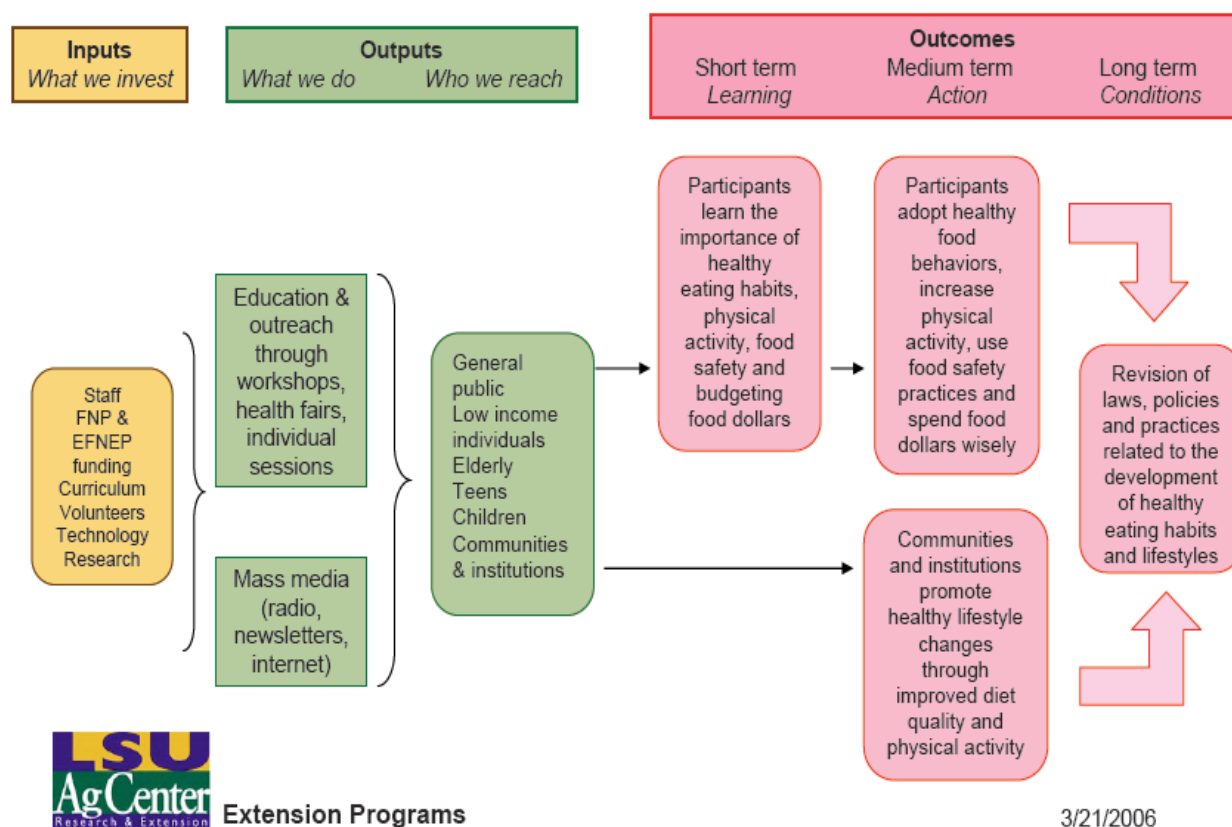


Figure. 5. LSUAgCenter's Cooperative Extension Program Logic Model.¹³⁹

The model shows a logical linkage among its components and identifies critical performance measures¹⁴⁰ by focusing on outcomes rather than outputs.^{137, 141} The FSNEP links to the FNP Logic Model components through science-based, behavioral interventions that include those designed to encourage eating fruits and vegetables, whole grains, and fat-free or low-fat dairy products every day; being physically active every day as part of a healthy lifestyle; and balancing energy intake from food and beverages with energy expended.

The Washington State Heart Disease and Stroke Prevention Program used the logic model as an evaluation-approach model in an outreach activity to determine how many of the African American Awareness and Screening Project screened patients with hypertension were treated by a health care provider later. The project directly contributed to the short-term outcome by increasing public awareness of heart disease. At the intermediate level it was shown that there was an increased recognition of symptoms and an increase in the calls to emergency services after increasing the awareness of heart disease.¹⁴²

The Community Nutrition Education Logic Model was used in an evaluation framework of dietary quality, food safety, food security, and shopping behavior/food resource management outcomes.¹⁴³ The logic model was used to assess the extent to which the information shared on violence in television programs was retained or practiced by participants.¹⁴⁴ It was also used in development and evaluation of youth literacy programs¹⁴⁵ and in a land development program yielding valuable information related to content, delivery, skills and educational needs of the program participants.¹⁴⁶ Since the model focuses on outcomes, it enables program managers to review through the model to identify best activities to achieve the desired results. It is helpful to identify why a program works well or not and what actions might be taken to change it.¹⁴⁷ The output component illustrates that outreach is vital to ensure effective access of low-income populations to program benefits and education.²

Health Literacy

Health literacy refers to the degree to which an individual is capable of obtaining, processing, and understanding basic health information and services to make appropriate health decisions.¹⁴⁸ Health literacy requires knowledge of health topics, as well as literacy and numeric skills, to understand cholesterol and blood sugar levels, medications, and nutrition labels. Choosing a healthy lifestyle requires that people are able to understand and use health information.¹⁴⁹ For instance, limited health literacy causes lack of knowledge or misinformation on health topics such as the relationship between diet and exercise or when reading nutrition labels. Individuals with low health literacy report a lack of knowledge about their medical condition or treatment, poor health status, and misunderstanding of health preventive services.¹⁵⁰

The National Coalition of Literacy defined the following levels of health literacy: proficient, which means that an individual can perform complex literacy activities; intermediate, which means that an individual can perform moderately challenging literacy activities; basic, suggesting an individual can perform simple everyday literacy activities, and below basic, which means that individuals can perform only the most simple and concrete literacy activities. In 2003, the National Assessment of Adult Literacy (NAAL) determined that only 12% of adults (25 million) had proficient health literacy, 53% (114 million) had intermediate health literacy, 22% (47 million) had basic health literacy, and 14% (30 million) had below basic health literacy.¹⁵¹ Low health literacy (basic and below basic) is a major source of economic inefficiency in the US healthcare system and costs \$106 billion to \$238 billion annually.¹⁴⁸

Education, language, culture, access to resources, and age are factors that affect health literacy skills,¹⁵² thus low health literacy prevails in the elderly, racial/ethnic minorities, people with less than a high school degree or graduate education degree (GED) certificate, low-income

populations, non-native speakers of English, and people with compromised health status. For instance, the elderly and individuals with low education levels were more likely to find nutrition labels difficult to understand.¹⁵³ The NAAL also indicated that adults with no health insurance or with Medicare or Medicaid coverage were more likely to have Basic or Below Basic health literacy than adults with health insurance.¹⁴⁸

Barriers to Health in Low Socioeconomic Status Population

Families with income levels below or near the federal poverty level⁷ have worse health than those with higher incomes, due in part to inadequate nutrition and unhealthy lifestyles.^{18, 20} Low-income families encounter many barriers to lifestyle changes. These include lack of nearby supermarkets,¹⁵⁴ limited selection of food in neighborhood stores,^{50, 155} lack of transportation to preferred stores,¹⁵⁶ lack of child care,¹⁵⁷ limited time to do grocery shopping,¹⁵⁸ and limited time for healthy cooking,^{158, 159} and effort needed to prepare food.^{50, 86, 155} Physical activity may be hindered by lack of time,^{159, 160} social support,¹⁶⁰ access to fitness centers,¹⁶¹ recreational facilities, or walking trails.¹⁵⁹

Adult populations may experience barriers to federal nutrition program participation that may ultimately affect the desired nutrition education outcomes.⁸⁶ Barriers to participation have been described as situational barriers when they relate to an individual's situation at a given time; institutional barriers, practices or procedures that discourage working adults from participating in educational activities; dispositional barriers or the individual's attitude toward self and learning; and informational barriers, referring to lack of awareness of available educational opportunities.^{162, 163} Dispositional barriers, also referred to as "psychosocial" barriers include attitudes, beliefs, values, and perceptions toward nutrition education.¹⁶³ Barriers to health care lead to poor health status. The Institute of Medicine (IOM) defines access as the use

of personal health services in a timely manner to ensure optimum outcomes. Barriers to health access include mainly health service cost, transportation, education, language, ethnicity, health provider attitudes, and gender.¹⁶⁴ Gender acts as a barrier to health care access for a great proportion of part-time female workers with no low benefit insurance plan or for homemakers who may not be able to leave house responsibilities.¹⁶⁵

Focus Group Discussions

Focus group discussions are a qualitative research method that facilitate exploring topics or populations that are not well understood by providing depth and context to participant's opinions and ideas through their conversation, and allowing an understanding of participants' experiences.¹⁶⁶ This method involves in-depth group interviews of homogeneous participants that are selected because they serve a purpose to "focus" on a topic of interest, although it is not necessarily a representative sample of a specific population.^{166, 167} The FGD can be used in a wide array of areas such as in academic research, program evaluation, quality improvement and marketing for problem identification, planning, implementation or assessment.¹⁶⁶ Focus group discussions are useful for health and nutrition intervention programs to explore individual's beliefs and concerns.¹⁶⁸ and have been identified as a useful method to determine nutritional educational needs,^{168, 169} program design and evaluation.^{29, 170} The FGD provide "success stories" that humanize programs and help identify positive activities and what can be done to correct activities that did not work.¹⁷⁰ FGD with program participants determine how the program helped them and why they attend, while non-participants can explain why they did not attend and help identify how to improve outreach activities.¹⁷⁰ For FGD, a small group of 6-8 participants is optimal; however, to increase the number of perceptions but still maintain order, six to ten participants are manageable.¹⁷¹ Typically three to five FGD allows adequate exploration of a

topic without missing information, reaching premature conclusions, or wasting resources.

However, depending on a program's goals a larger number of FGD may be needed to explore a wide range of issues and perspectives.¹⁷² When FGD yield repetitive information this indicates that theoretical saturation has been reached and further FGD do not need to be conducted.¹⁶⁶ The duration of a FGD ranges from one to two hours depending on the complexity of the topic and the number of questions.¹⁶⁶

Different types of questions that can be used in a FGD include opening questions to encourage participants to talk about a hobby or themselves and introductory questions on a general topic that provide an opportunity for participants to reflect on their experiences with the topic. Transition questions connect the participant and the topic and link the introductory and key questions. Insight on the main concerns of the study is provided by the key questions and ending questions bring closure to the FGD. The importance of each question determines the time allotted to answer and analyze each one. An opening question can be answered in 30 seconds as opposed to key questions that may be given 10-15 minutes in order to include time for pauses or probes to obtain in-depth information. In each question, the moderator should allow the participant a response time before probing for further in-depth information.

The FGD should be audio or video taped to allow clarifications during analysis²⁹ and verbatim transcription. A verbatim transcription of the FGD audiotapes by the moderator allows a tri-partite exposure to the interviews (the actual interview, listening to the tapes, and typing the transcripts).¹⁷³ Krueger's framework analysis^{168, 174} for FGD allows themes to develop from the research questions (preset themes) and from participants narratives (emergent themes).¹⁶⁸ A thematic framework¹⁶⁸ should follow by writing memos in the margin of the text with the moderator's ideas that developed into categories.¹⁶⁸ Open coding¹⁶⁸ of the participants quotes "in

vivo” gave rise to themes that will be discussed as study findings.¹⁷⁰ Using Post-it notes[®], a numeric content analysis (NCA)¹⁷³ should be done by counting the frequency of occurrence of a theme. Axial coding¹⁶⁸ groups the themes into categories. Axial coding takes place around the axis of categories by combining two or more related themes. A copy of the NCA becomes an “at-a-glance” sheet to code all FGD transcripts.¹⁷³ Kruger’s framework recommends pasting similar categories on pages with each emergent or preset themes and placing them on a long table or on the wall for interpretation.¹⁷⁴ Categories will capture the core whys, hows, and processes to form four to six core themes of the research.¹⁷³ Themes that developed from the FGD are the basis to create a theory. A grounded theory is a methodology that constructs a theory to explain important issues in people’s lives.¹⁷⁵

The FGD results are not reported as numbers since the unit of analysis is the group and not the individual participants.¹⁷⁰ Focus groups results can identify the outcomes of a program to be presented in colloquial speech and framed on the participants quotations.¹⁷⁶ The results cannot be generalized to a larger population, but provide information that can be transferred to other context under similar conditions.¹⁷⁰

Focus group discussions were used in a study to determine the attitudes of the elderly to a nutrition education program in Georgia.¹⁷⁷ Elders from a congregate meal site responded positively to the program in general, but referred to nutrition guidelines as “rules” or “orders.” They also requested nutrition information on specific diseases. It was concluded that the use of FGD for nutrition education evaluation may help develop more effective programs for the elderly.¹⁷⁷ Using FGD at a Head Start school, low-income mothers of pre-school children identified factors that affected the food intake of their children and some desirable features for a nutrition program by requesting videos to present appropriate family meals. Another finding

revealed that contradictory information or misconstruals about nutrition act as a barrier to change. For instance, blacks have been told not to drink milk due to a belief of a high prevalence of lactose intolerance.¹⁶⁹ Focus group discussions were also used in a study to evaluate overall satisfaction with a dietary education intervention for a group-based lifestyle program. Emergent themes included food/dietary factors, exercise issues, and support. Participants reported food-label reading and cooking sessions were valuable to them, as well as an encouraging group interaction and some useful monthly newsletters. The evaluation concluded that the use of a group setting and “peer” leaders were supportive in this lifestyle modification program.¹⁷⁸

CHAPTER 3

SUBJECTS AND METHODS

Study Design

A qualitative approach using focus group discussions was used to determine and compare Group 1 and Group 2 participant's behavior and lifestyle practices consistency with the current DGA and MyPyramid and their understanding of nutrition recommendations. Barriers and motivations to attend nutrition education sessions were also of interest. Additionally, SES characteristics of participants in both groups were determined. To serve this purpose, a survey and a questionnaire were developed or adapted from survey items used in previous research.^{24, 91, 126, 179} Figure 6 depicts the survey and FGD analysis flowchart and a detailed procedure of the FGD analysis is presented in Figure 7.

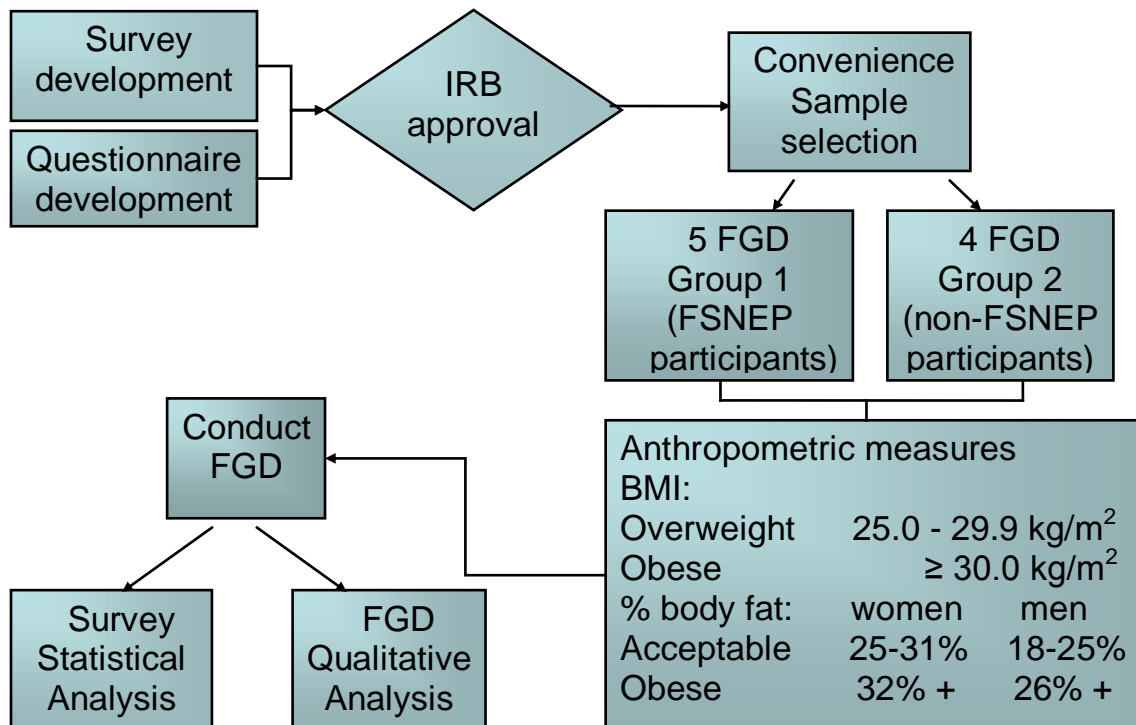


Figure 6. Survey and FGD analysis flowchart.

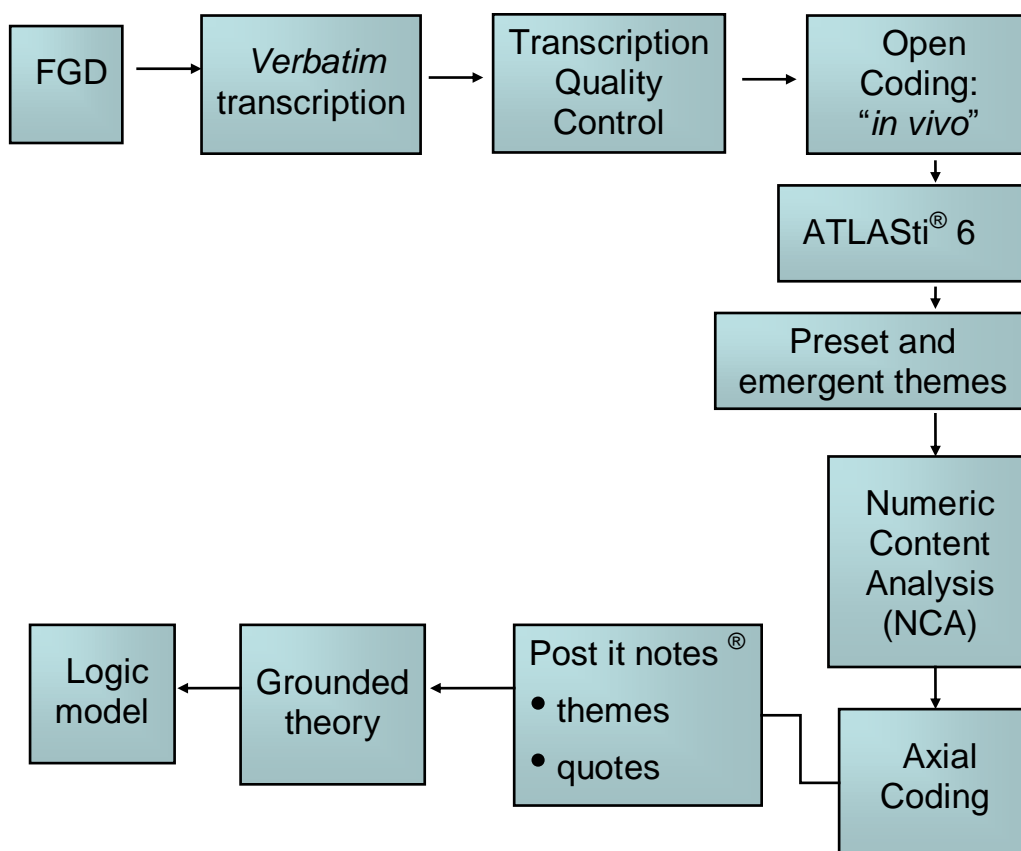


Figure 7. FGD analysis flowchart

Subjects

A convenience sample (n=56) from five parishes in Louisiana: Ouachita, Jefferson Davis, Point Coupee/West Feliciana, Livingston and Tangipahoa was used. Inclusion criteria required participants' age to be greater than 18 years and to have a gross monthly income of 130% of the poverty guideline or a net monthly income of 100% of the poverty level. The sample was divided into two groups: FSNEP participants (Group 1; n=30) who were enrolled in the FSP and had received at least one nutrition education session and non-FSNE participants (Group 2; n=26) comprised by participants from FSP or collaborating community agencies who had not received nutrition education from the FSNEP (Table 2). However, they could have received nutrition education from other non-FNP source.

Table 2. Selected FGD population characteristics for Group 1 and Group 2

Group	Livingston (n)	Tangipahoa (n)	Point Coupee/ West Feliciana (n)	Ouachita (n)	Jefferson Davis (n)
Group 1 (n=30)	Head Start (6): - Foster grandparents - Parents - HS employees Age > 60 (67%)	Council of Aging(6): - Seniors attending the Center Age > 60 (83%)	Head Start (7): - Parents Age 18-59 (100%)	Even Start(6): -Young Moms Age 18- 59 (100%)	Westminster Homes(5): -Senior residents Age >60 (100%)
Group 2 (n=26)	Head Start (5): -Parents -HS staff Age 18-59 (100%)	Head Start (8): -Parents Age 18-59 (100%)	Head Start (8): -Parents Age 18- 59 (100%)	Step Program (5): -Job trainees Age 18-59 (100%)	No attendees

LSU AgCenter Institutional Review Board (IRB) approval (Appendix B) was obtained prior to the study and each study subject signed a written informed consent (Appendix C) prior to participation. Participants in Group 1 were obtained from the FNP/LSUAgCenter 2008 database for Education and EARS. The EARS provided the list of parishes where the FNP serves the adult population. The FNP state office contacted the CES agent in elected parishes through a phone call and an invitation letter. The FSP Office of family Services provided the parish agents a list to identify and select Group 1 participants. The CES agents invited Group 2 participants through the managers of federal programs interested in prospectively including nutrition education sessions in their programs. Additionally, parish agents posted flyers (Appendix D) at the federal program offices to recruit volunteers.

Focus Group Discussions: Questionnaire and Survey

The Logic Model objectives and the EARS 2008 (Appendix F) objectives¹³⁷ of the FSNEP served as the basis to develop the FGD questions. The 10-item questionnaire (Table 3) was validated through a pilot test with the first FGD with group 1 participants and Group 2, respectively. After the questionnaire validation, some questions were clarified by making format changes. As a result, FNP meetings were changed to nutrition education sessions and probing examples (*e.g.*, reading food labels before buying, eating smaller portions, increase of whole grains, fruit and vegetable or low/non fat dairy, decreasing consumption of fat and sugar or increasing the frequency of breakfast) were included as part of the question 9 for Group1 and question 8 for Group 2. The question referring to the participants' opinion about the materials and information provided at FNP nutrition education sessions was omitted for Group 2. The two FGD for the pilot study were included in the study since the only modification was in the question format. The survey (Appendix F) collected the population characteristics and included the six-question USDA short form (Appendix G)¹⁷⁹ in a modified version (Appendix H) to determine food security status of Groups 1 and 2.⁹¹

To determine food security from the form, items 1 and 2 were scored as affirmative if response was (1) often true or (2) sometimes true; items were scored as negative if response was (3) never true. Items 3, 4, 5 and 6 were scored as affirmative if response was (1) yes and negative if response was (2) no. Subjects affirming zero item were classified as households with high food security,⁶³ Previously, subjects affirming one or two items were classified within the “households with food security.” According to the new classification, subjects who affirmed one or two item are classified as “households with marginal food security”.⁶³ In this study, subjects affirming one item were classified as “households with marginal food security.” Subjects affirming 2, 3, or 4

items⁹¹ were considered “households with food insecurity”⁶³; finally, households affirming 5 or 6 items⁹¹ were classified as “households with very low food security”.⁶³

Table 3. Focus group discussion questionnaire

Question	Type	Study Objective	Logic Model
1. Describe what you understand when FNP recommends a balanced meal?	Introductory (5mins)	None	None
2. How did you find out about the nutrition education sessions?	Transition 5 min	Determine the study participants’ awareness of FNP.	Output: What we do/who we reach
3. What motivates or allows you to come to the nutrition education sessions?	Key 10 min	Determine study participants motivation and enablers to attend FNP meetings.	Output: who we reach
4. How many meetings have you attended?	Transition 5 min	Determine study participants’ reliability based on regular attendance or convenience selection.	Output: who we reach
5. What prevents you from attending or returning to the nutrition education sessions?	Key 10 min	Identify barriers study participants experience to attend meetings.	Output: who we reach
6. What do you think about the information presented in the nutrition sessions? Listen for : (PROBE IF NECESSARY) -Little information -Exciting/boring materials and activities (displays, fact sheets, newsletters, food demonstrations, taste testing) -Interesting (captures attention) -Useful (menus, exercise and food safety advice) -Practical (budget, grocery lists easy to apply)	Key 15 min <i>*Question 6 was omitted for Group 2</i>	Identify barriers study participants experience to use the information provided in the meetings and preferred nutrition education delivery methods and design.	Output: what we do Outcome: Learning

Table continued

Question	Type	Study Objective	Logic Model
7. In the last six months, have you done anything to increase by one or more servings per day your: <ul style="list-style-type: none"> - fruit and vegetable intake - low/non-fat dairy products or - whole grains 	Key 10 min	Determine an increase in FNP adult participants' consumption either of fruits, vegetables, whole grains or of non-fat and low-fat dairy by one serving per day.	Outcome: Action
8. In the last six months, have you done anything to increase your 30-minute a day exercise by four or more days a week? For example: <ul style="list-style-type: none"> - gardening - taking stairs instead of elevator, - parking far from work - playing outside with children 	Key 10 m in	Determine an increase in FNP adult participants' moderate physical activity for at least four days per week 30 minutes or more.	Outcome: Action
9. In the last six months, have you done anything to match the food you eat and the calories that you burn in order to maintain a healthy weight? for example: <ul style="list-style-type: none"> -Reading food labels -Eating smaller portion sizes -Increase whole grain, vegetable and fruit, or low/non-fat dairy consumption -Decrease consumption of fat and sugar -Increasing the frequency of eating breakfast 	Key 10 min	Determine FNP participants' practice of three 2005 Dietary Guidelines to balance caloric intake from food and beverages to maintain a healthy weight.	Output: what we do Outcome: Learning/ Action
10. Do you have any suggestions to improve the materials or the program?	Ending 5 min	None	None

Procedure

In November 2008, FGD were conducted to assess perceptions and practice of healthy behaviors in both groups of participants. The moderator, a FNP nutrition graduate student (MP), attended a FGD training session delivered by Dr. Debra Davis of the LSUAgCenter. The parish agent organized the logistics for each FGD location. Managers at the HS, FSP, Council of Aging (COA), Step Program (SP), and Even Start (ES) provided a private room to ensure privacy to take anthropometric measures of participants. The moderator and assistant moderator arrived to each sites an hour before the scheduled start time to allow enough time to arrange tape recorder, scale, stadiometer, paperwork, and snacks. The assistant moderator was another FNP nutrition graduate student (BW) for the first two FGD. In the following seven FGD, the FNP director (AG) served as the assistant moderator and supervised the correct application of the study method as follows. First, the assistant moderator read the consent forms for the participants to sign. The moderator or the assistant moderator answered participants' questions about the consent form. The survey was handed to the participants and once each one completed it, the assistant moderator measured height, weight, percent body fat of the participants in a separate office to ensure privacy.

The 9 FGD lasted an average of one and a half hours. The FGD were conducted in an office or meeting room and recorded for *verbatim* transcription. The FGD were conducted with participants sitting around a table and the moderator sat at one end of the table. The moderator started each FGD with an introductory question that served as an icebreaker and set the stage for the topic. The key questions which obtained the core information on the topic lasted an average of fifteen minutes each. An end question requested participants' input to improve program activities. The assistant moderator sat behind the moderator to observe and take notes on the

participants' non-verbal communication. Food models (NASCO Fort Atkinson, Wisconsin) were displayed on the table to help participants visualize and determine portion size when providing their perspectives on healthy food consumption. Participants were given kitchen tools as an incentive for their participation. Focus group discussions were done in combination with a survey (Appendix G) to obtain the population characteristics including demographics, benefits from other food nutrition programs and information on nutrition education sessions attended; and the food security short form questionnaire. At the end of each FGD, fruit snacks and a fiesta mix recipe from USDA website recipe finder were provided. Participants' transportation costs were reimbursed with a \$5 gift card.

Anthropometry

Each participant removed their shoes and coat for the assistant moderator to measure their weight, height, and percent body fat. Height was taken twice and an average was calculated to ensure accuracy. A TANITA scale 4 (Model TBF-300A Quickmedical Snoqualmie, WA) and stadiometer (Shorr Productions, Olney, Maryland) were used to take weight and height, respectively. Participants stepped barefoot on the TANITA scale, which measured their percent body fat through bioelectric impedance. Percent body fat was classified as acceptable (25-31% and 18-25%) or obese ($\geq 32\%$ and $\geq 26\%$) for women and men, respectively. Concomitantly, the TANITA scale provided the BMI and classified in categories (weight (kg) / height [m^2]): (a) <18.5 underweight (b) 18.5-24.9 normal (c) 25.0-29.9 overweight and (d) ≥ 30 obese.³¹ Results were conveyed to each participant.

Assessment of Questionnaires

The moderator assigned code to each survey item and an FNP student worker (K. H.) designed an Excel database, which was revised by the FGD moderator. A descriptive statistical

analysis using Excel database was performed to describe and tabulate the population characteristics for age, gender, marital status, employment status, monthly income, mean number of children, disabled or elderly per household and the anthropometric measures. A second table was constructed to present nutrition information collected about nutrition programs benefits, mean number of sessions attended, topics delivered and use of grocery list. A Fisher's Exact test analysis for BMI and percent body fat was performed for Group 1 and Group 2. The percentage of FSNEP participants and non-participants in the categories for weight status groups was determined.

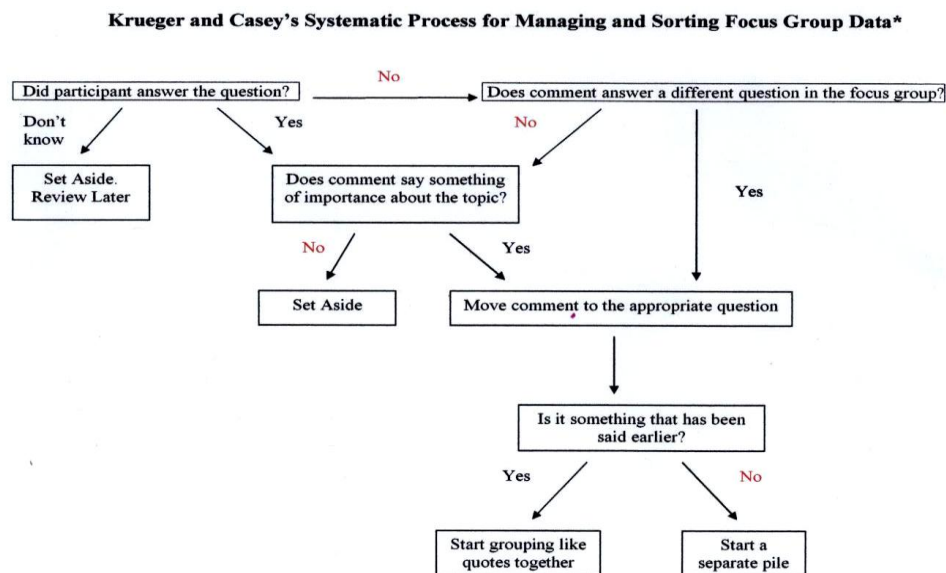
Coding and Analysis

Following each FGD, a debriefing session took place during which the moderator and assistant moderator shared impressions and notes that were taken about relevant information during the FGD for memoing. As soon as possible, the audiotapes were transcribed *verbatim*.¹⁸⁰ The focus group moderator transcribed 8 of the FGD and a FNP part-time employee (MR) transcribed the other. The moderator reviewed all transcriptions intending to understand parts that were not clear due to use of slang words. A second nutrition graduate student (BW) performed a final quality control to the tape transcripts to ensure correct understanding of slang words by the moderator. Qualitative data analysis was done using the 7 key questions for participants and the 6 key questions for non-participants. The qualitative responses were open coded in vivo with participants' responses and a grounded approach was used to identify core themes.¹⁸⁰

Krueger's framework analysis^{168, 174} for FGD was performed with themes that developed from the research questions (preset themes) and from participants narratives (emergent themes).¹⁶⁸ Preset and emergent themes are presented in tables in the next chapter. A thematic

framework¹⁶⁸ was done writing memos in the margin of the text with the moderator's ideas which developed into categories.¹⁶⁸ To manage and sort the data, each sentence in the transcript was numbered using the ATLAS.ti[®] 6 software (Thomas Muhr trial version) for FGD analysis. Each quote was read and assigned to the appropriate question (Figure 8).

Open coding¹⁶⁸ of the participants quotes "in vivo" gave rise to themes that provided the basis to discuss the findings.¹⁷⁰ An NCA¹⁷³ was done on a Post-it note[®] for each question. Figure 9 shows the NCA performed by counting the frequency of occurrence of a theme. Axial coding¹⁶⁸ was then used to group the themes into categories. Axial coding was done by combining two or more related themes. A copy of the NCA became an "at-a-glance" sheet to code all FGD transcripts.¹⁷³ Following Kruger's framework similar categories were pasted on pages with each FGD key question and placed on a long table for analysis and interpretation.¹⁷⁴ The quotations of the participants' main statements were used to provide insight on their behavior and lifestyle.¹⁸⁰



* adapted from Rabiee 2004, Focus group interview and data analysis.

Figure 8. Systematic process to manage and sort FGD data¹⁶⁸

Themes that developed from the FGD helped create a grounded theory on the behaviors and lifestyle changes of study participants. Grounded theory is a methodology that constructs a theory to explain important issues in people's lives.¹⁷⁵ Data from each core theme were analyzed and related to the Logic Model components.

Inter-rater reliability for FGD is often done by having different independent researchers code the transcripts and reach consensus on the core themes that emerge.¹⁷⁰ However, this study followed the principle that in qualitative studies the principal researcher is the individual who best knows the data since he/she has had more exposure since the interview and transcribing to perform an adequate analysis.¹⁸¹ Additionally, quality control was utilized, as described earlier, along with debriefing with the assistant moderator after each session.

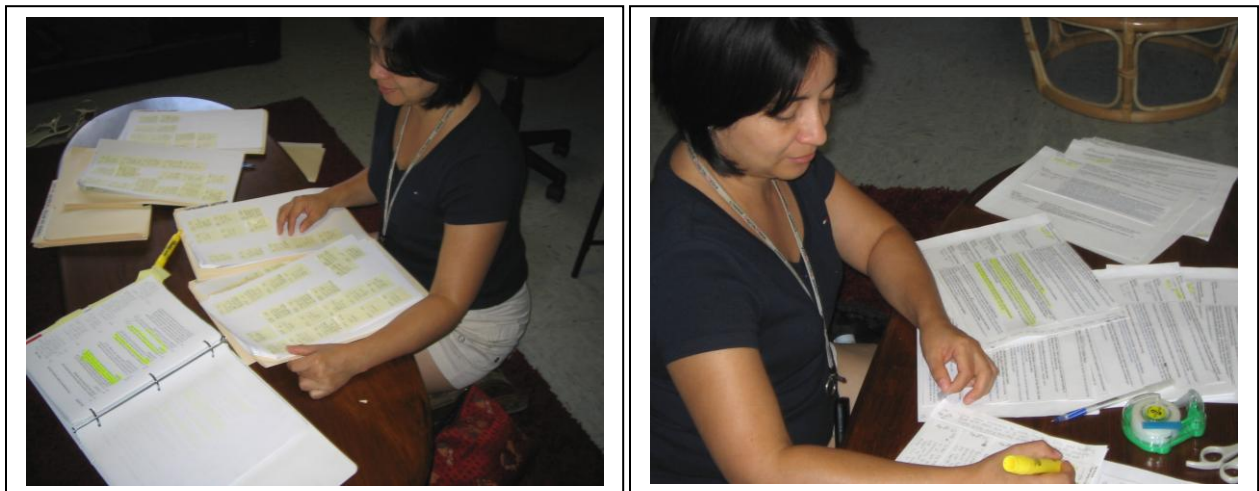


Figure 9. Numeric Content Analysis (NCA) was done in Post it® notes. Following Krueger's framework similar themes were cut and pasted together and enriched with participant's quotes.

CHAPTER 4

RESULTS

Demographics

Table 4 presents the population characteristics for both groups, mainly comprised by female participants, 97% and 96%, respectively and single 33% and 54%, respectively. In Group 1, 57% of the participants were Whites 18-59 years of age (50%) and 47% were 60 years of age or older. Blacks (58%), 18-59 years of age comprised the majority of the Group 2 participants.

Forty percent of the Group 1 participants had less than a high school education; 27% of the Group 2 participants had a GED or some college and 26.9% were college graduates. Approximately half of Group 1 participants were renters, unemployed, and had an average number of one child per household, while 58% of Group 2 participants owned a house, 62% were full time employed, and had an average of 1.8 children per household. On average, both groups reported a monthly income above a thousand dollars. Social Security benefits (37% and 12%) and FSP benefits (27% and 46%) were provided to Group 1 and Group 2, respectively.

Anthropometry

Forty-seven percent of Group 1 participants were obese; 37% were overweight; and 16% had a normal BMI. In Group 2, the majority of participants (81%) were obese; 8% were overweight; and 11% had a normal BMI. There was no significant difference for mean BMI (32.5 ± 9.9 [standard deviation or SD] and 35.8 ± 9.5 [SD]) between Group 1 and Group 2. Percent body fat showed Group 1 participants were mainly obese (83.4%) and 16.6% were within acceptable range. Group 2 participants were obese (96.2%) and 3.8% in acceptable range. No significant difference was found for mean percent body fat (41.9 ± 9.6 SD and 44.1 ± 7.1 SD) between Group 1 and Group 2 participants, respectively.

Table 4. Description of FGD population characteristics of Group 1 and Group 2

Variables	Group 1 (n=30)		Group 2 (n=26)	
Gender				
Male	1	3.3%	1	3.8%
Female	29	96.7%	25	96.2%
Race				
Blacks	10	33.3%	15	57.7%
Whites	17	56.7%	8	30.7%
Other	3	10.0%	1	3.8%
Not accounted (N/A)	0	0.0%	2	7.8%
Age				
18-59y	15	50.0%	26	100%
> 60 y	14	46.7%	0	0.0%
N/A	1	3.3%	0	0.0%
BMI categories				
Normal				
Overweight	5	16.7%	3	11.5%
Obese	11	36.7%	2	7.7%
	14	46.6%	21	80.8%
BMI				
Mean \pm Standard deviation (SD)	32.5 \pm 9.9		35.8 \pm 9.5	
% Body Fat categories				
Acceptable	5	16.6%	1	3.8%
Obese	25	83.4%	25	96.2%
% Body Fat				
Mean \pm Standard Deviation	41.9 \pm 9.6		44.1 \pm 7.1	
Marital Status				
Single	10	33.4%	14	53.8%
Married	6	20.0%	7	26.9%
Living with partner	1	3.3%	1	3.9%
Divorced	3	10.0%	3	11.5%
Widowed	3	10.0%	1	3.9%
N/A	9	30.0%	0	0.0%
Education level				
Less than High School graduate	1	3.3%	0	0.0%
Complete high school	12	40.0%	5	19.3%
Technical school + some high school, GED or some college	9	30.0%	5	19.3%
Some college	4	13.3%	7	26.8%
College Graduate	1	3.3%	2	7.7%
	4	13.4%	7	26.9%

Table continued

Variables	Group 1 (n=30)		Group 2 (n=26)	
Employment Status				
Full time	7	23.3%	16	61.7%
Part Time	4	13.3%	1	3.8%
Unemployed	15	50.0%	7	26.9%
Volunteer	3	10.0%	0	0.0%
Retired	0	0.0%	1	3.8%
N/A	1	3.3%	1	3.8%
Monthly Family Income				
\$0	0	0.0%	0	0.0%
\$1-199	2	6.6%	2	7.7%
\$200-399	1	3.4%	2	7.7%
\$400-599	1	3.4%	1	3.8%
\$600-799	6	20.0%	2	7.7%
\$800-999	6	20.0%	2	7.7%
\$1,000+	12	40.0%	13	50.0%
N/A	2	6.6%	4	15.4%
Housing				
Own	11	36.6%	15	57.7%
Rent	15	50.0%	5	19.2%
Multifamily housing	2	6.6%	4	15.4%
Mobile home	1	3.4%	0	0.0%
N/A	1	3.4%	2	7.7%
Mean number of children in household	1.0 ±1.3		1.8± 1.4	
Receive Benefits from Federal Programs				
Social Security	11	36.6%	3	11.5%
Food Stamps	8	26.6%	12	46.2%
WIC	5	16.6%	6	23.0%
Head Start	6	20.0%	8	30.7%

Table 5 shows Group 1 participants as high food security (32%) and low food security (42.8%) compared to Group 2 participants as high food security (31%), very low food security (42.3%), and very low food security (15.4%). Group 1 reported receiving a mean of 3.7 ± 1.4 SD nutrition education sessions on 15 different topics. Whereas Group 2 reported receiving 0.4 ± 1.2 SD nutrition education sessions; these came from the Department HHS , hospitals, WIC program, and from informal sources such as grocery stores.

Table 5. Food security and nutrition education of Group1 and Group 2 participants

Variables	Group 1 (n=30)		Group 2 (n=26)	
High Food Secure households	9	32.1%	8	31.0%
Marginally Food Secure households	7	25.0%	3	12.0%
Low Food Secure households	12	42.8%	11	11.0%
Very Low Food Secure households	0	0.0%	4	15.4%
Mean number nutrition education sessions attended	3.7 ± 1.4		0.4 ± 1.2	
Topics received				
Reading food labels	23		5	
Eating smaller portion sizes	20		4	
Whole grain consumption	19		3	
Vegetable and fruit consumption	26		7	
↓consumption of fat and sugar	21		2	
↓ Decrease consumption of salt	20		1	
↑ frequency of eating breakfast	16		3	
Low/non-fat dairy product consumption	18		3	
Physical activity	18		3	
Food safety	24		3	
Budget your expenses	16		3	
Grocery list	21		2	
Menu planning	17		3	
Food gardening	11		1	
Feeding children healthy meals/snacks	15		6	
Use of grocery list when shopping	22	73.3%	13	50.0%

Focus Group Discussions

Table 6 presents a summary of the emergent themes from participants' quotations and preset themes from the study key questions. The themes are presented with a descending frequency of occurrence in Table 7.

Group 1 (FSNEP Participants) Theme 1 Motivation to Attend the Nutrition Education

Sessions: Group 1 participants expressed their motivation to attend as well as a desire to learn up-date information, or reinforce their knowledge about a healthy lifestyle in order to improve

themselves, their family, or their HS audience. A senior Group 1 participant reflected: “We’d like to live normal and healthy, we would like to learn how to do that and take care. Nobody out there to take care of. So am trying to do a good job on me. And the doctor said I was doing a good job.” Concern about the other end of the age spectrum was mostly expressed by participants with an overweight problem in the family: “My motivation is that I’m overweight, and she [my daughter] doesn’t need to be.” A key motive for some Group 1 participants was learning about nutrition recommendations for cardiovascular disease, overweight, or diabetes.

Theme 2: Barriers to Attendance to Nutrition Education Sessions: Most participants identified as attendance barriers some health related issues mainly having a doctor’s appointment or being sick, or sickness in the family. Not welcoming help and resisting change were also mentioned as barriers. In two parishes, some Group 1 participants who are provided nutrition sessions during school hours mentioned a barrier as lack of childcare for school children’s siblings.

Although transportation was no problem for Tangipahoa Group 1 participants since the Council on Aging provides transportation from their homes to the center, grocery store, or the hair salon, many Group1 participants in West Feliciana and Monroe parishes face a transportation problem. The lack of public transportation in St. Francisville, a rural community in West Feliciana, is a significant issue: “Transportation is a big issue because we are in a rural community and they don’t have transportation to the program. But our [Head Start] home visitors are very good at going pick up parents.” Other participants stated using hitchhiking by asking friends or family members for a ride. Even Start young mothers in West Monroe in Ouachita Parish face a transportation problem when they do not have a car or gas. Even though other means of transportation are available, the mothers felt that these did not provide safe or sanitary conditions to travel with their young children.

Table 6. Summary of focus group discussion emergent and preset themes for Group 1 and Group 2.

Group 1	Group 2
<p><i>What motivates you to come to the nutrition education sessions?</i></p> <ul style="list-style-type: none"> • To learn, update or reinforce a healthier lifestyle in order to improve themselves and help others (<i>e.g.</i>, family, clients of the home based teachers) • To learn about nutrition therapy for their own or their families' illnesses (<i>e.g.</i>, cardiovascular disease, diabetes, overweight) • Importance of nutrition education to control US obesity epidemic in adolescents • Socialization (<i>e.g.</i>, activities outside the house, listening to the insight of others) 	<p><i>What would motivate you to come to the nutrition education sessions?</i></p> <ul style="list-style-type: none"> • To learn about a healthier lifestyle to and share the information with their family, HS children • To learn about diet intake for adjuvant management of illnesses (<i>e.g.</i>, overweight, high blood pressure, cholesterol problem, asthma and diabetes) • To prevent obesity • To achieve optimal health • To learn about the new MyPyramid, right portions, and counting calories • To find support to maintain the acquired healthy habits • To obtain pamphlet or newsletters with recipes and 30-minute a day exercises
<p><i>What prevents you from attending or returning to the nutrition education sessions?</i></p> <ul style="list-style-type: none"> • Health related issues (<i>e.g.</i>, being sick, sickness in the family, doctor's appointment, or scheduled visits of home nurse) • Babysitting issues • Transportation issues (<i>e.g.</i>, lack of public transportation in some parishes or if transportation is available its has unsafe and septic conditions) • People resist change • Priority issue • Another commitment • Weather conditions • Failing to remember about the session 	<p><i>What would prevent you from attending or returning to the nutrition education sessions?</i></p> <ul style="list-style-type: none"> • Health related issues (<i>e.g.</i>, being sick, sickness in the family, doctor's appointment) • Transportation issues (lack of public transportation in some parishes) • Another commitment • Severe weather conditions • A funeral or a family emergency • Work or school • Time the meeting is scheduled • Location where the meeting is scheduled • Not having enough notice • A presentation that does not capture their interest

Table continued

<p>Group 1</p>	<p>Group 2</p>
<p><i>Have you done anything in the last six months to increase your 30 minutes a day exercise by four or more days a week?</i></p> <ul style="list-style-type: none"> • Exercised with a 30-minute video • Exercised with a stationary bike • Exercised at their senior center 3 times a week • Walked to school, to visit or around the senior complex • Walked with a patient 1.5 hours a week, between house visits or selling products door to door. • Activities at their volunteer job require frequent displacement from one point to another. • Played with the children • Gardening or mowing the grass • Housework 	<p><i>Have you done anything in the last six months to increase your 30 minutes a day exercise by four or more days a week?</i></p> <ul style="list-style-type: none"> • Walked to visit or to the bus stop • Walked or played with their kids • Activities at their job require her frequent displacement from one point to another • Dancing • Parked far from the entrance • Housework
<p><i>Have you done anything to balance your calorie intake and calorie expenditure to maintain a healthy weight?</i></p> <ul style="list-style-type: none"> • Read food labels for servings, calories per serving, cholesterol, sodium, carbohydrates, and sugar. • Ate smaller portion sizes (no second servings, use a smaller plate) • Increased fruit and vegetable, whole grain, or low/non-fat dairy products by one or more servings per day • Decreased consumption of fat and sugar (peel off the skin from chicken, grilling, baking) • Ate breakfast every day • Decreased calorie intake 	<p><i>Have you done anything to balance your calorie intake and calorie expenditure to maintain a healthy weight?</i></p> <ul style="list-style-type: none"> • Read food labels for calories per serving, types of fat, sodium, sugar, and daily value. • Ate smaller portion sizes • Increased fruit and vegetable, whole grain, or low/non-fat dairy products by one or more servings per day. • Decreased consumption of fat and sugar (peel off the skin from chicken, grilling, baking) • Ate breakfast every day • Low calorie food consumption, calorie count

Table continued

Group 1	Group 2
<p><i>Misconceptions:</i></p> <ul style="list-style-type: none"> • Coconut milk is a dairy equivalent • Prediabetes prevention with a 3 gram sugar diet • Salt free seasoning brand presentation • Salt depletes the potassium in the body. • Clinical significance of celery sodium content • Menu planning flexibility • Calculating grocery prices per unit • Discount percentage • Sodium content considered for energy balance • 2% milk considered low fat milk • Increased consumption of monounsaturated fatty acids • FSNE advice helps her advise her diabetic patient about high cholesterol <p><i>What do you think about the information presented in the nutrition education sessions?</i></p> <ul style="list-style-type: none"> • Updating, reinforcing, and helpful information • Interesting and helpful recipes, menu planning, grocery list, label reading, and food safety advice • Good and healthy taste testing and food demonstrations • Food Bingo is mentally challenging • Information and visuals at the presentations become a topic of conversation for parents during the week • Enjoyed exercises using a chair or lifting vegetable cans • Effective comparison of labels and name brand products vs. great value brand products • Reported effective application of grocery list and following recommendations on not buying groceries when hungry and not buying unnecessary items 	<p><i>Misconceptions:</i></p> <ul style="list-style-type: none"> • Low fat milk doesn't have enough vitamins • Monosodium glutamate in fast foods is a health hazard • Overconsumption of low calorie food • Sodium content considered for energy balance • 2% milk considered low fat milk <p>Note: No information delivered by the FSNEP</p>

Table 7. FGD themes for Group 1 and Group 2. Parenthesis presents data in descending frequency of occurrence.

Group 1	Group 2
<p><i>Theme 1: Motivation to Attend the Nutrition Education Sessions</i></p> <p>1) Health Improvement:</p> <ul style="list-style-type: none"> • Learn & update nutrition knowledge (4) • Healthier lifestyle (4) • Eat/cook healthier (3) • Make me/my health better (3) • Helping family members eat healthy (2) • Maintain a healthy weight <p>2) Socialization:</p> <ul style="list-style-type: none"> • Activity outside the house (6) • Meet people and listen to others insight <p>3) Educate:</p> <ul style="list-style-type: none"> • Job requirement at community care center(2) • Home based teachers deliver nutrition sessions to their clients during their house visits (2) • Awareness of US obesity epidemic in adolescents; need to teach nutrition feed them at home, no fast food. • Bring information back to the family <p>4) Disease prevention:</p> <ul style="list-style-type: none"> • Overweight problem in the family, want to prevent kids getting overweight or obese(3) • To prevent a heart attack <p>5) Disease nutrition advice:</p> <ul style="list-style-type: none"> • Suffered a heart attack 	<p><i>Theme 1: Motivation to Attend the Nutrition Education Sessions</i></p> <p>1) Health Improvement:</p> <ul style="list-style-type: none"> • Cook/eat healthier food (13). Cook healthy food family will eat (2) and inexpensive (1). • Eat healthy to take care of an illness(4) • Portion control (6) • Optimal health(4) • Lose fat & build up muscle (2) • Learn to stay active • Lose weight • Learn about the new MyPyramid • Meal planning • Counting calories • Obtain support to maintain healthy habits <p>2)Disease nutrition advice:</p> <ul style="list-style-type: none"> • Overweight • High blood pressure • High cholesterol • Asthma • Diabetes <p>3) Educate:</p> <ul style="list-style-type: none"> • Learn about nutrition for home visit sessions • Learn about nutrition to educate HS children • Take knowledge to family <p>4) Incentive:</p> <ul style="list-style-type: none"> • Door prize • Monetary incentive <p>5) Disease prevention:</p> <ul style="list-style-type: none"> • Prevent obesity <p>No motivation</p>

Table continued

<p>Group 1</p>	<p>Group 2</p>
<p>Theme 2: Barriers to Attendance to Nutrition Education Sessions</p> <p>1) Health care reasons:</p> <ul style="list-style-type: none"> • Doctor's appointment (5) • Sickness(3) • Sick child(2) • If in the hospital • Standing weekly home nurse visits <p>2) Transportation:</p> <ul style="list-style-type: none"> • Monroe and Ouachita parish: School bus is not safe for little kids • public buses are unsafe and unsanitary with the elderly coughing and the presence of drug addicts • No ride • No gas <p>3) Idiosyncratic:</p> <ul style="list-style-type: none"> • Priority issue: parents think they cannot learn any new information, will not change or they don't think it is important enough to come back • Some people don't like being helped • If they learn they are not going to change <p>4) A commitment (4)</p> <p>5) Weather (4)</p> <p>6) Meeting logistics:</p> <ul style="list-style-type: none"> • Childcare issues • Scheduled time <p>7) Need to be reminded</p>	<p>Theme 2: Barriers to Attendance to Nutrition Education Sessions</p> <p>1) Health care reasons:</p> <ul style="list-style-type: none"> • Sickness(3) • Sick child(3) • Doctor's appointment <p>2) Meeting logistics:</p> <ul style="list-style-type: none"> • Scheduled time(3) • Scheduled location(2) • Enough notice <p>3) Work related:</p> <ul style="list-style-type: none"> • Having no substitute (2) • A scheduled exam • If substituting • Work in general <p>4) Transportation:</p> <ul style="list-style-type: none"> • Lack of public transportation (2 parishes) • No gas <p>5) Delivery Method:</p> <ul style="list-style-type: none"> • Uninteresting talk <p>6) Miscellaneous:</p> <ul style="list-style-type: none"> • Family emergency • School • Severe weather • Another commitment • A funeral

Table continued

<p>Group 1</p>	<p>Group 2</p>
<p><i>Theme 3: Fruit, and Vegetable, Whole Grain or low/non-fat Dairy Intake in the Last Six Months</i></p> <ul style="list-style-type: none"> • Increased consumption of reduced fat dairy (10) • Increased consumption of whole wheat bread/brown rice (10), more whole grains (4) • More fruits(12) and vegetables (11) • More vegetables (3) <p>No increase reported (7)</p> <p><i>Theme 4 Physical Activity in the Last Six Months</i></p> <ul style="list-style-type: none"> • Walking: around complex , running errands at work, to visit, between house visits, with patient, selling products, in campus, to school (13) • Exercise: <ul style="list-style-type: none"> ○ COA exercise session (3) ○ exercise (2) ○ video and rubber band ○ stationary bike • Playing with children (6). Walk with children (1) • Housework, cleaning and cooking (3) • Gardening (2) • Parking far from entrances (2) • No increase reported (6) 	<p><i>Theme 3: Fruit, and Vegetable, Whole Grain or low/non-fat Dairy Intake in the Last Six Months</i></p> <ul style="list-style-type: none"> • Increased consumption of reduced fat dairy (10) • Increased consumption of whole wheat bread/brown rice (6). More whole grains (5) • More fruits (6) and vegetables (3) • More vegetables (1) <p>No increase reported (19)</p> <p><i>Theme 4 Physical Activity in the Last Six Months</i></p> <ul style="list-style-type: none"> • Playing outside with children (7) • Walk the dog, walk to visit, to bus stop (3) • Parking far from entrance (2) • Walk/dance with kids • Dance on weekends • Cleaning and cooking, housework • Taking stairs instead of elevator <p>No increase reported (10)</p>

Table continued

Group 1	Group 2
<p><i>Theme 5: Calorie Balance in the Last Six Months</i></p> <p>Increasing consumption of:</p> <ul style="list-style-type: none"> • Reduced fat dairy (10) • Whole wheat bread/brown rice (10), whole grains (4) • Fruits (12) • Fruits and vegetables (11) • Vegetables (3) <p>Increasing the frequency of eating breakfast (18)</p> <p>Decrease consumption of fat (11) and sugar (6):</p> <ul style="list-style-type: none"> • Use of imitation eggs, low fat sausage, turkey sausage, lean meats or chicken. • Grilling, slow cooking, no frying. • Peel off skin from chicken • No fast food intake(2) • Use of fat free dressing • Reduced fat intake • Sugar substitute consumption (2) • Yogurt instead of sweets(2) • Less candy • Less soda <p>Reading food labels for:</p> <ul style="list-style-type: none"> • Reads food labels (5) • Sugar and carbohydrates (4) • Cholesterol, low calorie (3) • Carbohydrates • Number of servings <p>Portion control (6)</p> <p>Low calorie food consumption</p> <p>No calorie balance reported (19)</p>	<p><i>Theme 5: Calorie Balance in the Last Six Months</i></p> <p>Increasing consumption of:</p> <ul style="list-style-type: none"> • Reduced fat dairy (10) • Whole wheat bread/brown rice (6), whole grains (5) • Fruits (6) • Fruits and vegetables (3) • Vegetables (1) <p>Reading food labels:</p> <ul style="list-style-type: none"> • Calories per serving (2) • Calorie count • Carbohydrates (diabetic on Atkins diet) • Amount sugar, carbohydrates and fat • Type of fat • Number of servings (how many packages are needed) • Daily value <p>Portion control:</p> <ul style="list-style-type: none"> • Smaller portion/no second serving (3) • Use of smaller plate (2) <p>Decrease consumption of fat and sugar:</p> <ul style="list-style-type: none"> • Baking or grilling (2) • Use PAM spray <p>Increasing the frequency of eating breakfast</p> <p>No calorie balance reported (31)</p>

Table continued

Group 1	Group 2
<p><i>Theme 6: Misconceptions</i></p> <ul style="list-style-type: none"> • Coconut milk is a dairy equivalent: “I can’t [drink milk], but I like my milk from coconut. That’s the only way I can drink milk”. • 2% milk reported as low fat milk • A three-gram sugar diet to prevent a prediabetic state: “I was told 7 years ago when you get a certain age you can go with the prediabetic and the best thing to do is to follow a 3 grams sugar diet. If you try following the diet it is hard because if you get a petite four, you cut it in four, you get something else you read the back and your Jello your yogurt that is 27 so you got to take nine portions out of that. That’s how I follow it, I have little containers.” and “I read mine [labels] because of that 3% sugar.” The participant also considered eggs affected blood glucose. • Advise her diabetic patient with high cholesterol • “I’ve always been “saltoholic”, but I recently realized I didn’t know that salt deplete your system of potassium and sometimes I’m tired and I don’t have energy and so when I read that... that could be one of the reasons I get tired is because of salt consumption. The salt leaches the potassium • The clinical implication of sodium content in celery: “Everything has salt and sugar. Celery that one of your worst salts in natural foods.” • Increased consumption of monounsaturated fatty acids to balance calories 	<p><i>Theme 6: Misconceptions</i></p> <ul style="list-style-type: none"> • Low fat milk does not have enough ingredients, does not have enough vitamins and looks “watery” (2). • 2% milk reported as low fat milk • Fast food has a great amount of monosodium glutamate (MSG) was mentioned as a negative remark. • “I tried the Special K thing. They’re good but not enough. It wasn’t enough for me. It’s like you eat the right thing, but too much of the right thing.” • Sodium content in food is considered as a factor for balancing calorie intake with calorie expended to maintain a healthy weight. • Homemakers expressed a misunderstanding on meal plans not working “Meal planning is a problem when the family size increases or decreases. When someone comes to your house, you are not going to be rude. It’s southern hospitality [to make food for them].”

Table continued

<ul style="list-style-type: none">• Homemakers expressed a misunderstanding on meal plans not working because families have specific foods for specific days, “Grandmother had a certain day for everything” and “Chicken on Sunday.” Daily menu planning: “Make your menu and shop for that day. It is too rushed. So the menu thing didn’t work for me”.• Calculating groceries per unit price: “You get four for \$5. OK when you break it down you are still paying for that extra. I can see what you are saying when you pay five for \$5, I can deal with that. But you get five for \$4 or two for \$3; you’re still paying for the extra.”• Discount percentage: “You get 3 for \$5 and regular price is about \$1.86. You divide 3 into 5; you’re almost paying what the regular price was, so it’s really not a sale.”• Sodium content in food is considered as a factor for balancing calorie intake with calorie expended to maintain a healthy weight.	
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Table continued

Group 1

Theme 7: Perception on the Information provided in the Nutrition Education Sessions.

In general, the nutrition information delivered by FNP was described as good, helpful (2), informative (2), interesting, and updated.

Recipes:

- Recipes are good, fast, helpful, fun, healthy for kids (7)
- Many helpful recipes (3)
- Get recipes in a pink recipe book
- Get flyers with recipes
- Enjoyed them

Use of a grocery list:

- Shopping is cheaper, faster, and a good experience (3)
- Ate before shopping and bought less junk (2)
- Used grocery list and did well (2)
- No buying more than needed
- Did OK with price comparison
- Cheaper to buy big bag noodles and make them at home
- Received grocery list recommendations

Food demonstrations:

- Liked making ice cream, comparing calorie and sugar content between two drinks (3)
- Bean soup and fruit cocktail were good and healthy (3)
- Help see food previously thought not to be good, *e.g.*, Baked Lays (2)
- Helpful tips given with display of presentations of canned vegetables
- Show serving size

Food safety

- Informative food safety recommendation on thawing (3)
- Demonstration on hand washing with germ.
- Food safety information provided

Exercise session:

- Enjoyed (2)
- Good (1)

Table continued

- Helpful tip given about exercising with vegetable cans

Taste testing:

- Appreciate that agents asks for them to choose foods for the taste testing from a book (2)

Menu/ Meal planning:

- Informative and helpful (2)

Label reading:

- Helpful to pay attention to food labels
- Label reading provided

Visuals:

- Enjoyed
- Visuals and information delivered at sessions work better than pamphlets

Show video (film)**Newsletter sent in the mail****Food Bingo intellectually challenging, high attendance****Some negative descriptions were:**

1. Repetitious (4) though some stated having no objection to repeating since it is interesting and informative
2. Limited (2): no grocery list provided
3. Boring when agent comes often and repeats the information
4. MyPyramid poster on wall needs to be updated
5. Making a grocery list is not convenient time wise to make
6. No physical activity session provided (2 parishes)

Theme 3: Fruit, and Vegetable, Whole Grain or Low/non-fat Dairy Intake in the

Last Six Months: Group1 participants stated they had increased their fruit and vegetable, whole grains, or low/non-fat dairy intake for one serving or more per day in the last six months. A Group 1 participant stated, “My kids aren’t very picky. Their father was raised as a meat, potato, bread kind of family. I was raised more of no meat, veggie...so they [kids] get a variety... They have their own drawer, they can eat carrots, cheese sticks or grapes or apples; we don’t keep junk food in the house.” An elderly Group 1 participant talked about her change in personal preference regarding oatmeal: “I wasn’t one who was crazy about oatmeal, but I do. I make my oatmeal with 2% milk and take a whole apple and put it in my mini food chopper, chop it up, and add it to my oatmeal and cook it.” Another group one participant stated having acquired a habit of eating fruits while she traveled to her job site.

Fewer than half of the Group1 participants expressed that they had had no increase or low intake of fruit and vegetables, low/non-fat dairy intake, or whole grain consumption. Some of the barriers Group 1 participants’ faced to increase intake of the aforementioned menu items were, personal preferences or specific food restrictions. Finally, Group1 participants in one parish stated that the caterer for Council on Aging did not provide whole wheat bread and requested this be changed to follow the DGA recommendations.

Theme 4 Physical Activity in the Last Six Months: Group 1 participants engaged in different activities to increase their 30 minutes a day exercise by four or more days a week. Self-reports by Group1 participants disclosed the activity increment was achieved mainly by either walking around their housing complex, playing outside with the children, gardening or mowing the grass, doing housework, walking to work, to school, or to visit. A young mother of three children shared her walking routine, “I walk all the time. I walk on campus because I park my

car like really far from where my class is. I take my kids to the park. I put the baby in the stroller; you know she can't walk fast, and my five and four- year old child walks. So yeah, it has increased when I'm not lazy and tired." Work activities were also an opportunity for a constant and prompt displacement from one location to another when selling products door-to-door, walking with a patient, between house visits by parking far from the entrance or climbing stairs and senior volunteers running errands to the classrooms. Every week, Wal-Mart Stores were locations used by a few senior Group 1 participants to walk. Some senior Group 1 participants striving to keep some grade of physical independence expressed," "Mine is these two legs. I walk all over. I walk from my house to my daughter's house. They're no pushing me and if I don't want someone taking me, from my house before you even get to the highway its eight blocks, then you go another three or four that way, then you have to come back. So mine is these two and always been these two." In one of the parishes, almost all Group 1 participants enjoyed the exercise program established by the COA center. One Group 1 participant met the challenge, "I take exercise... because I need it. But I hate them exercises, I hate them with a passion, but I come I know I need it. You take medicine because you need it and you need to take exercise because you need it." A couple of Group 1 participants committed themselves to exercising by using exercise videos or a stationary bike.

Some Group 1 participants had not increased their daily physical activity by four or more days a week or had stopped it. One Group 1 participant stated that she is always planning to start. A mother participant mentioned an interruption to her walking routine due to her pregnancy, but also expressed her plans to start exercising again. She also plans to start practicing female boxing. Another Group 1 participant mentioned that she used to have her sister's support to walk with her, but now the latter went to college.

Theme 5 Calorie Balance in the Last Six Months: Most participants stated they did this mainly by increasing their fruit and vegetable, whole grains, or low/non-fat dairy products intake. Another relevant practice was increasing the frequency of eating breakfast. An elder Group 1 participant expressed the importance of eating breakfast, “I eat a good breakfast, ‘cause that’s the best thing you’ve got to go with. I used to work on the field so I had to have breakfast to work and I still do my good breakfast.” In the Even Start group, most mothers skipped breakfast. One young Group 1 participant expressed having breakfast during the weekdays only when going to school: “About five days a week, school days, because if I don’t eat breakfast, I’m weak, I’m tired and I can’t think.” Another participant stated “Yeah, whenever I have time, five times a week. Two days I might skip, like on the weekend cause I party all night and usually hung over so, so I can’t really... I really don’t feel like eating breakfast.” Moreover, in this group, half of the Group 1 participants skip lunch due to time issues and resort to cigarette smoking to curb their appetite: “I don’t eat lunch because I am out running around. I got a pack in my purse, smoking as I’m going, smoke curbing my appetite. I actually started smoking because of that. I found that out on TV. They were talking about how some stars would smoke to curb their appetite and I actually started smoking.” The following expressions elucidate the importance of body image to young adult females, “I’m trying to lose my stomach. I have been decreasing sugar and coffee and soda” and “I wanna lose my stomach, instead of starting off at Starbuck’s. I’ll just have a bottle of water and start my day with water. But I’m gonna start working out too. I wanna start working out to get my six-pack.”

Additional popular activities practiced by Group 1 participants were decreasing their fat consumption and energy intake. Healthy cooking methods used included baking, grilling, and use of egg whites or lean meats (*e.g.*, chicken, turkey). One Group 1 participant remarked on her

mother's cooking methods, "She [my mom] has high blood pressure, too. She gets healthy food, but the way she cooks it... she'll throw it in grease, it's kind of defeating the purpose. So, sometimes I just cook for myself". Another female Group 1 participant presented a healthy and economical lean meat alternative, "Grocery store went up, that's why when my boyfriend comes home; he goes deer hunting, that way we save up on meat." Added sugar consumption was decreased by substituting sweets for yogurt or fruits. Although for Group 1, the consumption of Kool Aid and soda was notable.

Almost all Group 1 participants reported reading food labels for number of servings, calories per serving, cholesterol, carbohydrates, and sugar or sodium content. Two Group 1 participants referred the importance of portion control in their homes due to an illness. One referred she watches portions for both her mother and herself, because her mother suffers from renal disease. This echoed the experience of a mother of two children who referred reading food labels for salt because of her girl with renal disease, and limiting sugar intake of her child with Attention Deficit and Hyperactivity Disorder

However, portion control was challenging for several Group 1 participants, "My thing now is portion sizes...we tend to get that whole-eat your food or you know it's going to run away, you're never gonna eat again. That kind of mentality." A young mother of twins shared her personal experience with lap band surgery and how portion control is necessary for her, "I do that, just because even though I had lap band surgery you still have some things you have to watch out for and my main thing is carbohydrates. I read food labels because I can only eat like 4 ounces, so I wanna know how many meals I can get from that can." This same participant expressed she skipped breakfast and kept track of inexpensive eating out options "Sometimes it's just cheaper to go out and eat, because Mondays kids eat free at, hang on, I've got it written.

Mondays kids eat free at El Chico. Tuesdays at Pablo Tejado. Wednesdays at Hobnob. Thursdays at Captain D's. Fridays at Shoney's and on Saturdays they eat free at Hooters! We don't go out every night, but with twins and a 10 year old, you got to plan a day you can afford. I got these because it's in the back of the telephone book."

One Group 1 participant shared her own experience about sometimes resisting change: "I don't do it [portion control]. Even though I am informed as to the ratio [fats, protein, and carbohydrates], I just prepare what I need. Now if I become ill, then I am forced to look at serving sizes more carefully than what I am informed of" and "Our heritage, our culture, how we've been raised, a lot of us been raised red beans and fried chicken and cornbread. It can go through literature and our schooling we learned that it's not healthy but it's good, and sometimes we go for things that is just good." Echoing that comment, another Group 1 participant who suffers from type 2 diabetes mellitus, referred how he sometimes indulged in unhealthy eating despite his illness: "I have to take my blood sugar for sure if I keep it between 120 and 140. If it's 120 or a little lower I'll eat three eggs or whatever... I test it and if it's way down kind of low or not low but in the bracket I want it to be in, I have a list you know, I say I don't care if I mess up this and I eat." Little use of low energy foods or low fat food was reported, mainly due to a higher cost than regular products or for not being of their personal preference, "Skim milk is like taking whole milk and pouring water in it." Further, two Group 1 participants expressed their dislike to keeping track of their energy intake.

Two Group 1 participants showed they were aware of their responsibility as role models for their children's food choices: "I know we are supposed to do that, like plan your meals for the week, but I haven't gotten into my head...maybe when my kids, like go away, I might. But their eating habits will be ruined for life." The second participant commented, "My kid's father

comes from a very unhealthy family. They have, you name it, and they have it. We don't fry food at our house, no salt. I use fresh herbs. If I can prevent my girls from having the same problems they have then I am going to make sure of that."

Theme 6 Misconceptions: Some misconceptions that derived from the FGD with Group 1 participants are presented here. A senior Group 1 participant who suffers from ischemic colitis and cannot ingest dairy products had a misconception about coconut milk being a dairy product. Another stated "I was told when you get a certain age you can go with the prediabetic and the best thing to do is to follow a 3 grams sugar diet. If you try following the diet it is hard." And a second Group 1 participant followed with his input referring to the 3 gram sugar diet as a percentage: "I read mine [labels] because of that 3 % sugar."

A homemaker expressed a misunderstanding on meal plans not working because families have specific foods for specific days, "Grandmother had a certain day for everything" and "Chicken on Sunday." Another erroneous concept was expressed, "Make your menu and shop for that day. It's too rushed. So the menu thing didn't work for me."

Theme 7 Perception on the Information provided in the Nutrition Education

Sessions: Group 1 participants reported receiving information through a variety of methods including presentations, food demonstrations, taste testing, food displays, visuals, hands-on activities (hand washing and germs), and flyers. Additionally, Group 1 participants in two parishes received information through food models and one parish used videos. An agent in one parish applied an engaging method with a Food Bingo game. The bingo game had a high attendance rate by the Group 1 senior participants who described it as mentally challenging. One parish agent took the weight and height of the participants and required that they attend a session to receive their results. Group 1 participants appreciated that the agent requests their input to

choose healthy recipes from a book for the taste testing sessions. However when probed, some elderly participants mentioned having little familiarity with computer technology to access healthy recipes in the USDA website, “I haven’t turned on the computer in a whole month” or “I don’t have a computer.” Making a grocery list has made shopping faster and cheaper as this participant stated: “I did a grocery list last week. It did work out for me. Forty dollars, exactly how much I spent. Usually spend \$150. So my husband said I had to start doing that every week. He was happy.” However, not everyone has had a positive experience with grocery lists. One Group 1 participant mentioned that she tried a grocery list and it was not effective for her because it was inconvenient time wise, or she would forget it or deviate from it.

There was consensus about good and helpful information about food safety advice on thawing food, hand washing, and cooking meats. A home based teacher described, “Thanksgiving is coming up; mom is used to doing food in a certain way even though I say” Mom, we’re supposed...” She’ll say we’re doing it her way, but I still share the information and then when I invite her to my house, she’ll see me doing it. And hopefully it’ll rub off.” Additionally, exercise sessions with the use of a chair and vegetable cans were highly praised among seniors. Some parishes sent recipes through mail, although not all Group 1 participants have received them.

In one parish, some Group 1 participants mentioned that the information was limited with no grocery lists provided; and sometimes boring due to repetition at frequent visits from the agent. In another parish, some Group 1 participants found the information to be repetitious. Nonetheless, the majority of Group 1 agreed that the information was interesting enough to warrant the repetition. Two parishes had Group 1 participants who reported little or no information on physical activity. In one parish, half of the Group 1 participants found that no

information on physical activity had been delivered to them. In a second parish, a few Group 1 participants stated that they were provided with a rubber band for exercise class, but no exercise class had taken place in their senior complex yet.

Group 2 (Non-FSNEP Participants) Theme 1 Motivation to Attend the Nutrition Education

Sessions: Table 7 shows Group 2 participants stated that they would attend nutrition education sessions and that they were mainly motivated by a desire to learn about a healthier lifestyle for themselves and their family including cooking healthy appetizing food for the family, serving the right portions, meal plans, or exercising. Obtaining support to maintain the acquired healthy habits was also of interest to them. Most Group 2 participants were interested in achieving optimal health and learning about nutrition recommendations for an illness in the family, such as overweight, hypertension, hypercholesterolemia, asthma, or diabetes. As one female Group 2 participant shared with us: “Everybody here knows my sister, she’s got like amputated, and she’s got diabetes. So I figured I should get in here and figure out how to eat right since we both need to. We’re traveling the same path, I’m hoping to maybe learn to eat better, you know, not end up like she is.” Finally, two Group 2 participants mentioned that providing an incentive, such as a token, a give away prize or door prize, would yield a high attendance rate. One participant expressed no motivation at all to attend, since that person had already taken nutrition classes 7 years ago in college.

Theme 2: Barriers to Attendance to Nutrition Education Sessions: The greatest barriers to Group 2 participants attending nutrition education sessions was health related issues such as being sick, having a sick child, or a doctor’s appointment. Group 2 participants reported mainly being sick or having a sick child as their main barrier. Time and location of the meeting was also considered as a possible barrier. Most Group 2 participants essentially concluded that

daytime meetings were convenient for them and especially if it took place at their work place. Enough notice would also be needed to attend.

In one of the parishes, Group 2 participants were employees or volunteers in an HS school; therefore, their attendance depended on a substitute's availability or having no scheduled exam. The substitutes' attendance depended on if they were working. Lack of transportation was a barrier for potential attendees who don't own a car. The latter problem was echoed in a second parish that lacks a public transportation system. Finally, one young Group 2 participant expressed as a barrier, "If you don't interest me, I'm not coming back. So far I am good, so I'll probably be back for another session." On a similar note, on participation was apathetic to answering questions and provided brief answers each time the moderator requested her input. Two Group 2 participants expressed their firm interest by stating that nothing would prevent them attending and one mentioned that sessions were positive reinforcement and updating.

Theme 3: Fruit, and Vegetable, Whole Grain or Low/non-fat Dairy Intake in the Last Six Months: Many Group 2 participants reported an increase in their fruit and vegetable, whole grains, or low/non-fat dairy intake by one serving or more per day in the last six months. "We keep a lot more fruit around the house instead of chips and cookies and sometimes my kids will have 4-5 servings a day. It just depends every day is different." Some Group 2 participants increased their fruit and whole grain intake after receiving nutrition recommendation for diabetes or hypercholesterolemia, "We just found out 4 months ago that my husband has high cholesterol, so he's eating more whole grained bread and oatmeal, so I'm increasing that too." A few Group 2 participants increased their whole grain intake by eating raisin bran cereal. Some Group 2 participants started consuming 2% milk. A few of the non-participants who consume 2% milk obtain it from the WIC program.

Some Group 2 participants revealed no change in their intake of fruits and vegetables or whole wheat bread. One participant adamantly substantiated her choice of personal preference and described how she was raised: “White, if I got to eat wheat, I don’t want to eat bread. I know the difference. White, that’s what I grew up on. That’s what I want. I want the Bunny Bread. I won’t try to change it. The truth is the truth!” A few Group 2 participants reported not engaging in any change due to having erratic meal times and a young participant who worked a night shift referred to decreasing her fruit and vegetable intake.

Theme 4: Physical Activity in the Last Six Months: The Group 2 participants engaged in few if any activities to increase their 30 minutes a day exercise by four or more days a week. Most Group 2 participants did not engage in any physical activity or had stopped exercising because of time issues, job change, having a baby, or theft. A senior woman reflected, “I had one [bike] that was stolen from me and I’m afraid to leave this one out. I would ride to my daughter’s house and then back. Everybody would laugh “look at Mrs. X on her bike.” Some also danced and played with the kids in the classroom. One woman said that she did not have time to play with her kids and that her work as a cashier did not encourage any exercise.

Theme 5: Calorie Balance in the Last Six Months: Most Group 2 participants stated that they had done some activity to match their energy intake and expenditure to maintain a healthy weight. Several Group 2 participants had started consuming 2% milk, increased fruit and vegetable, or their whole grain intake with Raisin Bran® cereal. Label reading was taking place effectively for energy content, types of fat, and calories per serving. One Group 2 participant lost weight by controlling the calorie count. One made a recommendation to achieve energy balance: “The calorie, this snack is supposed to serve 2½ servings, so I have to take that in account and multiply that by 2.5 and you realize that your 150 calories turns into 400 if you eat it

all. I really think they need to put how far you need to walk to burn that off on the same label and that would be a wakeup call.”

Two Group 2 participants referred to portion control by serving meals in smaller plates. In contrast, another non-participant stated that for her it was more a matter of stretching portions than portion control. Her portion sizes depended more on her household economy than healthy portions. “I cook for the next three days, ‘cause I have to watch my money and buying groceries and make it stretch.” Use of portion control and grocery lists challenged some individuals, “Men don’t want a small portion. They want a big bowl and a lot of food in a plate.” Additionally, a Group 2 participant mentioned that label reading took a lot of her grocery time. A young woman mentioned the Food Stamp Cycle; she ate breakfast for the first 1-2 weeks after getting the check. “Afterwards there are too many people and when you come back it’s all gone.”

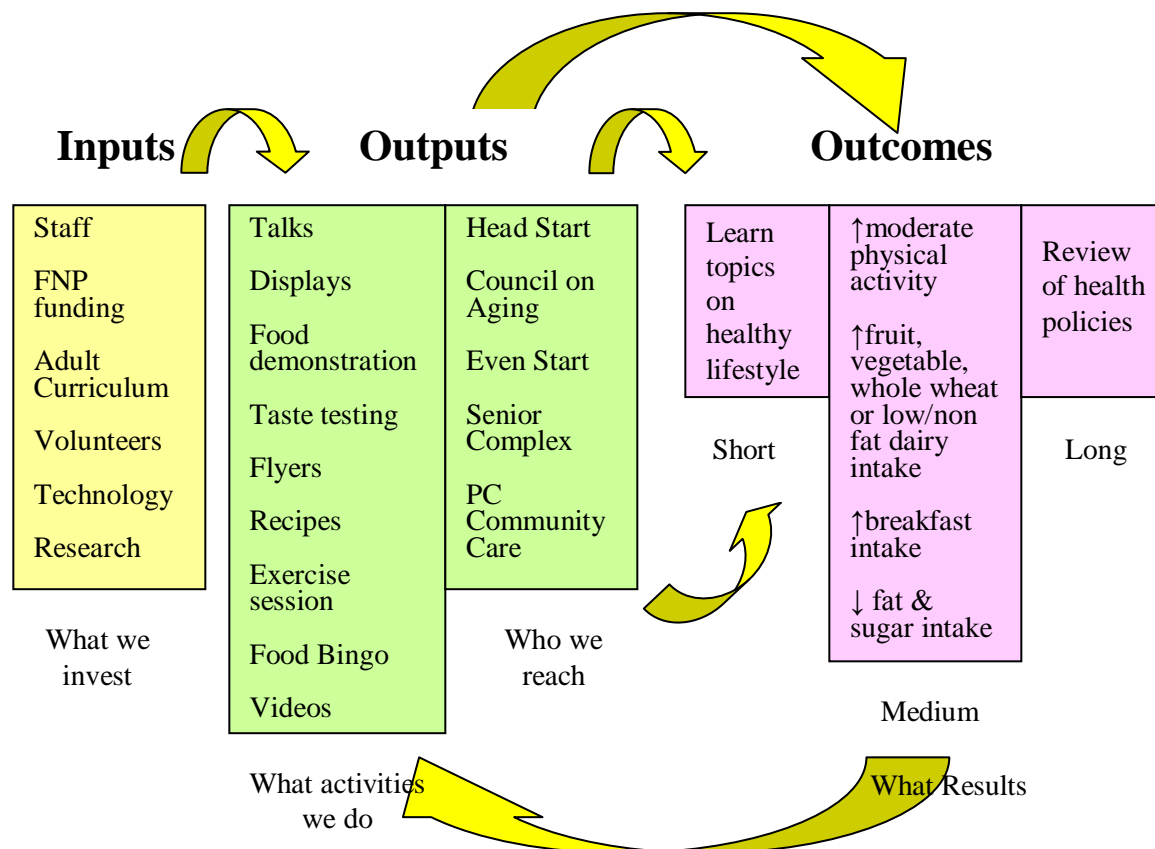
Some Group 2 participants reported no activity to achieve energy balance, instead they either skipped breakfast or had an unhealthy breakfast, “When I cook breakfast it’s not necessarily a healthy breakfast. I love pancakes, waffles, and a lot of butter in my grits. I have high blood pressure but I love bacon. I have bacon, eggs and pancakes or bacon, eggs or sausage. I don’t really know how to cook; I wouldn’t know what a healthy breakfast is.”

Theme 6: Misconceptions: There were some misconceptions. Two Group 2 participants stated a misconception about low fat milk “not having enough ingredients doesn’t have enough vitamins and looks watery.” Additionally, 2% milk was repeatedly mentioned as low fat milk.

A young participant mentioned trying low calorie products and another Group 2 participant mentioned that fast food has high levels of monosodium glutamate (MSG) as a negative remark. Sodium was considered for calorie balance. A homemaker expressed a misunderstanding on meal plans not working.

Application to the Logic Model

Figures 10 and 11 present the results from Group 1 and Group 2 participants related to the Logic Model, respectively. In Group 1, eight different FNP activities had reached the target population in 5 collaborative agencies. Group 1 participants stated they received nutrition education on numerous topics (short-term outcomes), which were delivered through a variety of methods (outputs). Their narratives on four healthy practices to achieve energy balance reflected the FSNEP outcomes.

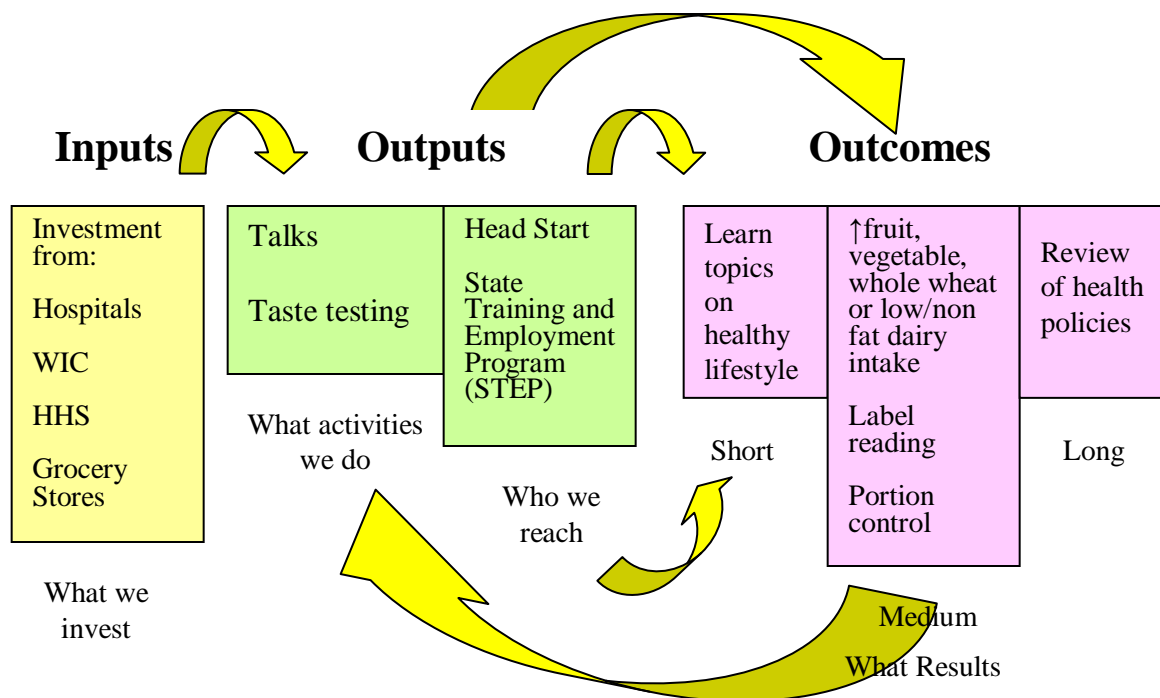


Modified from the University of Wisconsin Extension Program Development and Evaluation.

Figure 10. FGD Group 1 application to the Logic Model.

Group 2 participants were reached by networking with FNP collaborative agencies that were considering integrating a nutrition module to their program (HS, Step Program). Group 2

participants reported receiving fewer nutrition sessions on the same number of topics (short-term outcomes), which had been delivered by non-FSNEP sources in a very limited number of nutrition sessions (outputs). They reported engaging in three healthy practices to achieve energy balance (long-term outcomes). Two Group 1 participants stated that they had received nutrition information through “informal channels,” such as Google and the popular media.



Modified from the University of Wisconsin Extension Program Development and Evaluation.

Figure 11. FGD Group 2 application to the Logic Model.

CHAPTER 5

DISCUSSION

Focus group discussions were conducted to obtain the perception of FSNEP participants' and a comparable control population's ability to follow the DGA recommendations. Generally, both groups shared similarities, including being composed of single, female, Louisiana residents earning a monthly salary above \$1000; there was also a similar proportion of food secure individuals in each group. Group 1 participants were mainly White, with a bimodal age distribution of 18 to 59 years of age or older than 60 years, unemployed, and had an education level below high school. Group 1 had more elderly participants than Group 2, and Group 2 had a high percent of food stamp recipients. Most subjects in both groups were overweight /obese, although there was no significant difference in mean BMI or percent body fat between the groups. Group 1 participants had had more nutrition education than Group 2, and had made more life style changes, but both groups had barriers to making changes. Group1 had received a variety of topics on nutrition education sessions from the FNP. Group2 had received limited number of topics from non-FNP sources.

The age difference between Group 1 and Group 2 revealed different concerns and motivations to adopt a healthy lifestyle. Group 1, with more elders, expressed barriers to physical activity. However, the majority of Group 1 elders reported practicing their exercises either walking or using a chair or vegetable cans as weighs learned from the FNP nutrition sessions. The COA in Tangipahoa parish assisted them with age-appropriate exercises. Most Group 1 participants in this parish reported enjoying exercising or that being aware of its benefits made them attend the exercise class. The inter-group age disparity and small sample size limited the statistical analysis in this study. Additionally, this eligible population expressed barriers to

participation such as frequent medical appointments, illness or forgetting about the sessions. At the same time, the convenience sample provided a great opportunity to consider the input of this vulnerable population.

Food Stamp nutrition education is a benefit that provides nutritional advice to FSP participants to help them make healthy lifestyle changes. However, while providing nutrition education to certified eligible FSP participants, other eligible low-income individuals can attend the nutrition sessions. In these cases, although they are provided with information on how to apply to FSP, they might choose not to receive FSP benefits even when eligible or potentially eligible to participate. The most common reasons for eligible non-participants to go without FSP benefits include lack of information about eligibility, desire for independence, believing they do not need the benefits, dissatisfaction with benefit amount, complex application process, cultural barriers, and the stigma attached to participation.^{182, 183} Other barriers mentioned were transportation and communication problems encountered at the Food Stamp office.¹⁸² The FSP is an entitlement program that is available to individuals with little income and resources regardless of gender, age or employment to provide access to healthy food. Therefore, these populations miss the opportunity to be assisted in their household's food security and nutrient availability.¹⁸³ A FGD study was conducted in Los Angeles to explore reasons that would increase Blacks' participation in nutrition education programs. The study found that the label "low-income families" stigmatized participants and made it unlikely for them to participate in a program intended for "poor people" even though they were interested in learning about saving money and eating healthy.¹⁸⁴ In our study, almost half of Group 2 participants (46%) received FSP benefits, but no benefits from FSNEP. Finding reasons for this behavior was beyond the scope of the study objectives. Nevertheless, barriers to food stamp participation need to be addressed.

Transportation and a complex application process are two enrollment barriers that could be addressed simultaneously by having food stamp case workers visit soup kitchens and enroll participants the same day. Nutrition educators could make use of this juncture to deliver brief nutrition education sessions while eligible participants are having a meal. Similarly, to address any potential or perceived stigma, FSP caseworkers and nutrition educators may jointly visit senior centers and senior housing complexes to conduct the FSP application process. This would allow seniors to avoid perceived threatening office environments and feel comfortable in their own environment, thus increasing elderly participation in the program.¹⁸²

Studies examining the effectiveness of the FSP in assisting participants with a healthy lifestyle through nutrition education are limited.²⁴ Some studies^{16, 25} have shown participants made improvements in making healthy food choices and shopping skills, and a need to reduce informational and situational barriers to increase FSP participation. Focused interventions have shown an increased fruit and vegetable intake in the short term at the local level.^{26, 27} Nutrition education provided to low SES populations has shown to be effective in improving food security but individuals still need improvement in making dietary changes.² A study in Indiana on the effect of FSNEP after five nutrition education sessions on food security and nutrition was compared to a control group without FSNE intervention. The FSNE was successful as an appropriate intervention to improve participants' food insecurity and food insufficiency.¹⁸⁵ Another study in rural low SES adults in the South showed that participant's self-efficacy, pre-intervention and post-intervention, was a predictor of the population's ability to make dietary changes.¹⁸⁶ Some studies^{16, 25} have shown participants made improvements in making healthy food choices and shopping skills, and a need to reduce informational and situational barriers to increase FSP participation. Focused interventions have shown an increased fruit and vegetable

intake in the short term at the local level,^{26,27} but long-term effectiveness of interventions at state and national levels has not been determined.²⁸

Although obesity was common in both study groups, people in both groups reported making dietary changes to balance energy intake and output. Obesity is more prevalent in low income populations than in higher income populations.¹⁸⁷ Obesity results from an imbalance of energy intake and energy expenditure. Obesity is a major public health concern due to its association with chronic diseases.^{23, 37-44}

The DGA recommendations intend for individuals to achieve calorie balance through adequate calorie intake and calorie expenditure. The goal is to choose a nutrient dense diet that provides the nutrients an individual needs without too much energy (energy dense). Additionally, the DGA recommends a 30- minute moderate physical activity for adults most days of the week spending 3.5-7 kcal/min, including walking briskly, mowing the lawn, dancing, swimming, or bicycling on level terrain, and gardening.^{55,56} Low income populations are constrained by their household economy. This encourages making energy dense food choices at low cost as opposed to choosing nutrient dense foods, further contributing to the high obesity rates in low SES populations.^{82, 83} Further, physical activity may be a problem in this population due to lack of time,^{159, 160} social support,¹⁶⁰ access to fitness centers,¹⁶¹ recreational facilities, walking trails,¹⁵⁹ or cost.¹⁸⁸

This study could not determine whether the FNSEP participation influenced BMI. This study design cannot determine causal links and no baseline heights and weights from the time of FSNEP enrollment were available. Food stamp program policies do not allow taking anthropometric measures of participants. Additionally, there were differences in the dose of the nutrition education for both groups including number of sessions attended and topics delivered,

for instance, food safety classes are not likely to be helpful in weight loss or energy balance. No control was available to assess the influence of the other education programs had on the comparison population, which could be substantial for those delivered from a good hospital based program. It is recommended that a policy change that would allow FNP nutrition educators to take baseline anthropometric measures of the participants during direct contact situations be enacted.

A nationwide survey revealed that Americans considered diet and physical activity were important but incorrectly believed that they were making all necessary changes toward a healthful diet.¹⁸⁹ A study using the Continuing Survey of Food Intakes by Individuals 1989-1991 and the Diet and Health Knowledge Survey classified individuals who misperceived their fat intake to meet the DGA recommendation compared to their actual intake. Obese participants in this study could have reported their own misperceptions of the increased intake of food groups and decreased intake of discretionary calories, as well as their increase in physical activity.

Nutrition knowledge is not always translated into healthy behaviors.¹⁹⁰ Although nutrition knowledge is a necessary part of achieving a healthy lifestyle, barriers and motivators, such as an individuals attitudes and beliefs,¹²⁴ are factors that mediate the implementation of healthy behaviors.¹⁹⁰ Nutrition educators are encouraged to identify and address these factors to maximize FSNEP effectiveness to enable participants to practice a healthy lifestyle.¹³ Both study groups presented various misconceptions that hinder the implementation of a healthy behavior, for instance their use of monounsaturated fatty acids, such as olive oil, to balance energy intake is inaccurate since fats are energy dense macronutrients containing 9 kcal/g.

Low income populations placed more emphasis on price and familiarity of food consumed now or during their childhood.^{124, 191} Moreover, economical constraints in these

populations call for a range of grocery shopping practices involving quantity, price, quality, and nutritional differences such as selecting fattier cuts of meat.⁸³ This echoes some Group 2 participants' comments "I eat the basic, I don't eat all the extravagant stuff [pointing to food models]. My main dish is pork chops and chicken neck bones and turkey necks." And traditional fried meals like "chicken on Sunday." Nutrition educators are encouraged to present food demonstrations that are relevant to their audience by presenting culturally appropriate recipes and incorporating healthy cooking methods such as baking and grilling in the taste testing sessions. Meal planning should also be tailored according to each household income. In class assignments practicing the *Smart Choices Menu Planner*, *Food List* and *Thrifty Food Rules* fact sheets are strongly recommended.

A study with EFNEP homemakers to determine the effects of nutrition education and family interactions on iron intake found that food-related decisions depend on family dynamics.¹⁹² The study found that although the homemaker may know about healthy food choices, actual behavior changes might not be implemented if the individual with the power to make food-related decisions does not agree with the nutrition advice. It might be that the homemaker places more value on her husband's praising or acceptance¹⁹³ than in implementing a healthy lifestyle.¹⁹² This is consistent with a Group 1 participant expression "Men don't want a small portion..." Nutrition educators are encouraged to present demonstrations that are relevant to the audience by allowing participants to choose recipes from the USDA website for taste testing. Including the family members in these sessions is also advised.

A study conducted with 28 multi-ethnic FGD female FSP beneficiaries in six states obtained information on low-income shoppers' behaviors and food choices. The study findings were that females in all ethnic groups reported that their family members' taste preferences

influenced their food choices over their own taste preferences¹²⁰ and their children's requests influenced the purchase of more expensive, high sodium, sugar and fat, and energy dense foods.¹²⁰ Childhood eating habits give rise to adult eating habits. It is important to make early interventions in childhood eating habits as they will influence later adult habits.¹⁶⁹

Focus Group Discussions

The first theme of the FGD dealt with the motivation or possible motivation subjects' could have to attend the nutrition education sessions. In both groups, participants' main motivation was to improve their health by learning and updating their nutrition knowledge or cooking healthier food. Motivation to attend nutrition education sessions has been studied in a multi-level nutrition intervention for low-income Hispanics and the professionals and paraprofessionals who serve them. Low-income Hispanics' motivations were to improve their children's nutritional habits and learning to prepare quick, nutritious meals and snacks.¹⁹⁴ Childhood eating habits will enable later adult habits,¹⁶⁹ thus early dietary interventions are warranted. Group 1 participants expressed attending nutrition education sessions to improve their children's dietary habits to prevent obesity or as adjuvant therapy for a child with renal disease.

An intervention to increase fruit and vegetable consumption among urban adult Black women from public housing communities used seven 90-min classes delivered by a dietitian. The program presented a healthy eating approach including portion control, food label reading, and using recommended food guidelines for meal planning. Participants expressed a desire to lose weight as a motivation to enroll. Those who attended five to seven sessions showed the greatest dietary improvements. The study concluded that messages about healthy eating may have been more relevant than specific messages about fruits and vegetables.¹⁹⁵ The Dietary Guidelines recommend consuming a variety from all food groups intended to achieve adequate calorie

intake and calorie expenditure. The goal is to choose a nutrient dense diet and low energy dense intake from fats, added sugars or cholesterol. In this study, both Group 1 and Group 2 participants reported a recent increased intake of fruits and vegetables. Fruits and vegetables are important sources of fiber that may help in weight loss. The benefits of fiber intake will be described at the end of this section.

A survey to assess learning attitudes among people 50 years of age and older, showed that they were interested in learning about topics that would improve their quality of life including learning about a healthy diet and nutrition.¹⁹⁶ Congregate meals are delivered to eligible elderly in community centers, senior centers, faith-based facilities, schools, and adult's day care facilities. This provides the opportunity for elders to socialize while they have a balanced meal and to receive scientific-based nutrition education.

Additional FGD studies report participants interested in learning about disease specific nutrition information including high blood pressure and diabetes.^{177, 193} Group 1, half of it comprised by elderly, expressed socialization was their second interest to attend nutrition education sessions. However, Group 2 participants also mentioned wanting social support to maintain healthy habits. Individuals live in a network of social relationships which involve family, and external support from peers, coworkers and co-members of organizations to which they belong.^{197, 198} These relationships influenced food choices and dietary behaviors. As a result, social support becomes a contributing factor to the effectiveness of nutrition education.¹⁹⁹ Individuals in social networks support each other, emotionally through empathy, caring and trust; instrumentally through loans, babysitting or shopping; informational by advising and problem solving, and through appraisal by providing constructive feedback.⁴⁹ Nevertheless, the elderly are more likely to experience social isolation.¹⁹⁷ Strong social support enables a productive and

satisfying live by enhancing functional independence.¹⁹⁸ An intervention study for overweight/obese adults in a group-based lifestyle education program including diet and physical activity found that a group setting and encouraging 'peer' leaders were supportive to participants and it is recommended that programs should include social support component to enhance its effectiveness.¹⁷⁸

Creating an environment that promotes emotional support might be an effective strategy to increase program participation. Nutrition education could strengthen participants' social network by including family activities or encouraging social support to form walking groups in their neighborhood or in a mall while windowshopping.⁴⁹ Riding the bike in a group or with the family could also be advised. At work, individuals could be encouraged to take twice a day a 15-minute walking break instead of a coffee break.²⁰⁰

Group-based activities facilitate social interaction helping individuals learn by observing others²⁰¹ and exchanging ideas.¹²⁶ Group education sessions are an efficient approach to reach large audiences¹²⁶ and optimal for conduction at worksite, community and school-based settings.²⁰¹ Community sites to provide nutrition education sessions could be churches that already have a meeting space and cooking facilities. The Louisiana FSNEP works with group education sessions at the collaborative agencies facilities such as HS, COA, and Step Program.

A worksite intervention study promoting increased consumption of fruits, found that effectiveness of work site nutrition education interventions is likely to be enhanced by including participants social network support through family and coworkers.²⁰² In Texas, *Ollas del Buen Comer* (Skillets for Healthful Eating), a cultural-related health approach in which study circles provided group support through cultural identification, taught diabetes care practices to Hispanics using interactive activities including food demonstrations and physical activities.

Through a sense of community, *Ollas del Buen Comer* participants effectively examined and made diet and other lifestyle changes.²⁰³ Using culturally sensitive approaches in the nutrition sessions and interactive learning sessions might be effective strategies to promote healthy behaviors. For instance, using food models with common foods from the Latin American Food Pyramid[®], including corn and flour tortillas, brown and white rice, and fried beans. Regional food model from the South[®] including catfish, barbecued chicken, and collard greens with salt pork, cornbread and grits could be useful. Traditional fried foods could be modified such as the oil-less roux, browned flour, might be used to thicken stews and baked fried okra could substitute deep fried okra.

The second theme of the FGD explored the barriers that Group 1 and Group 2 participants encountered or could encounter in attending nutrition education sessions. Both groups expressed that health care reasons were the main barriers to participation including medical appointments, being sick or sickness in the family. However, it is likely that having a high number of elderly participants in this study might have influenced results from Group 1. Some Group 1 participants found that nutrition education sessions were sometimes repetitious and boring. Effective processing of information takes place 3-7 items at a time²⁰¹ and information delivered through talks requires the repetition of key concepts to allow information to move from short term memory to long term memory.⁴⁹ Therefore, sessions should be focused but certain amount of repetition is useful to recapitulate and emphasize important items.²⁰¹

Nutrition educators could approach potential absences by avoiding sequencing in their lesson plans, if possible, and considering activities to update participants that have missed class without boring participants that have attended. Nutrition educators need to consider situations that would warrant repetition of information and a variety of formats to deliver them *i.e.* absences due to

medical appointments or sickness could be covered in the next session using a 15-minute video segment and a 5-minute discussion with those who were absent. To avoid boring participants, each session needs to address different types of skills including label reading, cooking, exercise and a variety of activities should be performed such as watching videos, art projects, role playing, snack display, taste testing, comparing labels, or discussing food advertisements in the media.²⁰¹ Repetition of the process empowers participants to be in control of their food choices and develop skills that can be applied in any context including the classroom, home, grocery store or in a restaurant.

Transportation issues were another major barrier for Group 1 participants. Low income populations often experience lack of transportation.^{10, 204} Rural communities are more likely to present this difficulty compared to the urban locations.^{13, 205} Many rural households lack access to social services and affordable food due to this barrier.²⁰⁶ The lack of public transportation in St. Francisville, a rural community in West Feliciana, was a significant issue for Group 1 participants. In this community, HS home visitors are responsible for transporting parents who do not own a car. In West Monroe, Ouachita Parish, the Even Start program provides school transportation for young mothers and their toddlers; however, the mothers consider older children's lack of discipline a safety hazard on the bus. The nutrition educator could communicate the unsafe conditions of school bus transportation for toddlers, so the Even Start manager could address the discipline of the school children. Although reported less frequently, after meeting logistics or work related barriers, Group 2 participants also faced transportation issues in Point Coupee and Tangipahoa Parishes. Transportation issues could be addressed through a pilot program that offered tax deductions for transportation services in rural communities. The FNP could propose to the Louisiana Office of Family Services to provide

transportation in rural areas. This was done in South Carolina where a cheap transportation option in Kershaw County was created through an inexpensive bus line called the Kershaw Connection to bring clients to the office and also to doctors' appointments and to the grocery store.²⁰⁷

Group 1 participants in Point Coupee parish mentioned that some people do not come to the sessions because they dislike help or they will not change. Individuals show different readiness to implement behavior changes.⁴⁹ The transtheoretical model states that behavior changes progresses gradually through five stages: precontemplation, contemplation, preparation, action, and maintenance.^{49,208} Individuals are generally in the first three stages: precontemplation 40%, contemplation 40% and preparation 20%. Precontemplation involves lack of interest on behaviors or practices to improve their health due maybe to lack of information or misinformation or having lost interest due to previous failed attempts to improve. Contemplation involves individuals planning to make changes in the next six months. Procrastination might arise due to considering positive outcomes and energy or cost investments. Individuals in preparation are considering making changes in one month and might have initiated taking some steps. Nutrition programs might consider delivering information to individuals in the precontemplation stage. Individuals in the contemplation stage could be motivated through activities such as food demonstrations. Individuals in the preparation stage are ready for action-oriented strategies. It must be noted that the action-oriented stage is the one explored in this study regarding individuals behaviors or practices in the last six months.⁴⁹ Nutrition educators might succeed in overcoming participants' passive resistance by inspiring a collaborative environment. Individuals resist change as opposed to having control over their choices²⁰³ and being able to make decisions.²⁰⁹ Nutrition interventions that are matched to each individual's

stage of change could help make health programs effective.²⁰⁸ Nutrition education topics and activities could be decided by participants according to the relevance in their lives.²⁰³

A Group 1 participant mentioned that heritage and culture prevent any change to a healthier lifestyle. Due to Louisiana's history and multicultural blending, fried foods accompanied by rich gravies are traditional meals.⁷⁷ These interpersonal barriers that arise from cultural eating patterns^{194, 210} could be addressed during FNP food demonstrations or taste testing of baked, grilled, or slow cooked recipes portraying culturally appropriate dishes.

Childcare issues were mentioned by several Group 1 participants at the end of their list of priorities. Only one of Group 2 participants suggested providing childcare during nutrition education sessions. This is consistent with a previous study in Louisiana that found one FSNEP participant had mentioned lack of childcare as a barrier.²⁴ The study attributed this to nutrition education sessions being held during HS school hours or at the participant's house or through mail or telephone. The HS program through the President of the Parent's Committee, offered volunteers to provide childcare during nutrition sessions. Nutrition educators could assess the likelihood of having volunteers in other programs to take care of children during the sessions. Similarly, to transportation services, childcare services provided by the volunteer could be tax deductible. A recommendation is made for the FSP policies to allow the states to subsidize childcare during nutrition education sessions in order to increase the program's participation rates.

Theme three discussed specific food intake in the last six months. Both Group 1 and Group 2 participants stated they had increased their low/non-fat dairy, fruit and vegetable, and whole grains intake by one serving or more per day. In this study, participants reported barriers to increase their intake of non/low fat dairy products included personal preferences or a medical

condition that limited milk consumption. Nutrition agents could advise that participants consume more alternative sources of calcium such as fortified ready-to-eat-cereals, fortified soy milk or orange juice, or vegetables high in calcium.³⁴ Taste testing of soy milk in a variety of flavors could help to introduce this milk substitute. A Group 1 participant shared an effective way to keep fruits and vegetables available at home, “My kids aren’t very picky... they have their drawer with fruits and vegetables.” Additionally, Group 2 participants stated that the caterer for COA in Tangipahoa parish did not provide whole wheat bread and requested this be changed to follow current DGA recommendations.³⁴ Nutrition educators should closely monitor collaborative agencies following DGA recommendations by talking to the manager and interviewing participants about the food they are catered.

The fourth theme regarding any stated increment of moderate physical activity in the last six months showed a higher number of activities by Group 1 than Group 2 participants. Group 1 participants reported walking to visit, around the senior complex or between house visits as their main activity, followed by exercise sessions or exercising on a stationary bike or with a video. Group 2 participants seldom exercised. Playing or dancing with children was their main activity and walking (*e.g.*, the dog, to visit, to the bus stop) was their second activity. Research shows that barriers to physical activity include lack of time,^{159, 160} social support,¹⁶⁰ access to fitness centers,¹⁶¹ recreational facilities, or walking trails.¹⁵⁹ In light of this, low SES populations, women, Blacks, Hispanics and older adults tend to have low physical activity levels.²¹¹ A study assessing motivational readiness to exercise of young Black and Hispanic mothers reported as main barriers school or family commitments, lack of motivation, lack of time due to work or family responsibilities, and cost of exercise facilities. Other barriers were lack of skills or lack of family or friends support, and childcare issues.¹⁸⁸ Nutrition educators should include social

Support in physical activities by inviting family members to exercise sessions and promoting forming walking groups among friends.

Fruit and vegetable consumption in low income individuals is hindered by lack of transportation and access to good quality fruits and vegetables.²¹² Other factors that limit fruit and vegetable consumption by this population are taste, convenience, and perishability.²¹² Some Group 2 participants had increased their fruit and whole grain intake in accordance with their physician's recommendations for diabetes or hypercholesterolemia. Nevertheless, a Group 2 participant expressed that prices were a barrier for their fruit consumption. Studies have shown that low income populations experience the relatively high cost of fruits and vegetables as a barrier for fruit and vegetable consumption.^{50, 213} Consumption of vegetables by FSP²¹⁴ is lower than by higher income non-participants,²¹⁴ although no statistical difference was found with eligible non-participants. The USDA has considered a strategy to promote healthy food consumption using bonuses or coupons for FSP participants when buying fruits and vegetables. Price manipulation is a strategy that could lower the price and potentially engage participants to buy fruits and vegetables, if price were the barrier to their consumption. Studies^{215, 216} conducted to examine this approach found that consumer response to price manipulation may be weaker for some foods (*e.g.*, snack foods) but stronger for fruits and vegetables and also for dairy.²¹⁶ Although this strategy may increase purchases of these foods by FSP participants, additional studies are needed to assess if it would result in FSP meeting current DGA recommendations for fruits and vegetables.²¹⁵

Other studies implemented community gardens to ensure food security.²¹⁷ The University of California CES has encouraged this practice in low-income population to improve a household's nutrition and access to fresh, inexpensive vegetables.²¹⁸ Additional benefits of

community gardens are promoting a community atmosphere,²¹⁹ providing an opportunity to meet people,²¹⁹ and an opportunity for moderate physical activity.^{55, 56} A focus group study conducted with community gardeners to collect perceived health impacts of community gardens reported health benefits, increased access to food, improved nutrition, increased physical activity and improved mental health.²²⁰ LSU/CES gardening agents could help create community gardens to ensure availability and low cost of fruits and vegetables. This activity might be of great benefit for FSNE participants.

Additionally, FNP might address this cost barrier by emphasizing buying produce in season and shopping at farmer's markets. A collaborative effort to increase access to fruit and vegetables for FSNEP participants could be conducting a pilot program for farmer's market on wheels with season produce coming to low income neighborhoods on standing weekly visits.

Theme five dealt with Group 1 participants' stated adherence to current DGA to balance energy intake with energy spent to maintain a healthy weight. As described above, both Group 1 and Group 2 participants reported increasing their fruit, vegetable, whole grains, and low/non fat milk intake. The DGA recommendations for calcium/dairy or fruit and vegetable intake have been associated with weight loss. Dairy consumption is associated with a high level of physical activity and healthier eating habits.²²¹ A recent study of the effects of low calcium/dairy intake compared to a recommended calcium/dairy intake on weight maintenance after losing weight found that weight maintenance was similar for both groups. Nevertheless, group consuming the recommended amounts had greater lipolysis and greater energy consumption without gaining weight than the low intake group.²²² A retrospective study in early menopausal women with low dietary calcium intake showed an association with a high BMI. A limitation of this study was that the postmenopausal weight gain was not controlled.²²¹ A large randomized clinical trial

following postmenopausal women supplemented with calcium (< 1,200 mg) and vitamin D for seven years showed slower weight gain but no weight loss.²²³ These findings suggest that the calcium/dairy intake association with weight loss may depend on other factors such as total energy intake and a healthy lifestyle.²²³ Therefore, consumption of recommended dietary calcium/dairy intake could be advised to help with weight maintenance in FSP participants.

Consuming at least 3 or more ounce equivalents of whole grains per day may help with healthy weight maintenance.³⁴ Fruits and vegetable consumption is encouraged to increase the satiety and to replace high fat, high sugar snacks.²²⁴ Satiety²²⁵ is achieved by these high-fiber foods providing volume, a long digestion time,^{224, 225} and low fat and carbohydrate absorption that result in lower energy intake.²²⁵ Barriers to whole grain consumption includes identification problem for whole grain foods, cost, color, taste and texture.²²⁶ This is consistent with this study finding when a participant expressed her personal preference: “I’ve tried the whole wheat pasta and wheat rice; and it’s not as near as soft as the white, and it just has that taste to it. I tried it after my surgery and couldn’t cope with it.” Nutrition educators are encouraged to include food demonstration in their nutrition sessions and test tasting sessions with fruit and vegetables and whole wheat bread to promote fiber intake. Parents should be encouraged to avoid purchasing energy dense snacks but instead to maintain fruit available for their children and reward them for consuming them as snacks.²²⁷

Group 1 participants reported a high frequency of breakfast consumption; with the exception of those participants from Even Start. Young mothers skipped breakfast due to lack of time and resorted to cigarette smoking to curb their appetite. Smoking, lack of physical activity, low education level, higher BMI, and frequent alcohol use are factors associated with breakfast skipping.²²⁸ Breakfast skipping is correlated to increased risk of obesity.²²⁹ Conversely, research

about the effects of breakfast on short-term food intake patterns suggest that individuals who consume a breakfast of ready-to-eat cereal (RTEC) with milk may consume adequate amounts of dietary fiber²³⁰ and enhance weight loss efforts by increasing satiety and delaying hunger.^{231, 232} Additionally, micronutrient mean intakes for thiamine; riboflavin; niacin; folic acid; vitamins A, B6, and B12; and iron were higher among those who consumed RTEC cereals.²³³ Nutrition education sessions should include information on the benefits of breakfast consumption in nutrient adequacy and weight maintenance.²³⁴ Additional benefits of RTEC consumption include increasing whole grain intake and with the addition of milk addition.²³³

Another activity in accordance with current DGA, Group 1 participants reported practicing was decreasing their fat consumption by using healthy cooking methods or using lean meats. The current DGA recommend choosing foods that limit the intake of total fat, saturated fatty acids, cholesterol, and trans-fatty acids.³⁴ Fats are the most energy dense food with 9kcal/g. Decreasing fat intake may be the easiest way to reduce energy intake to maintain a healthy weight.²³⁵

Group 1 participants mainly reported decreasing their intake of added sugar intake by limiting consumption of carbonated beverages and sweets. The DGA recommendation for added sugars is no more than 32 g or 8 teaspoons for a 2000 kcal diet.³⁴ Added sugars are the “sugars and syrups added to food and beverages during processing or preparation, excluding the naturally occurring sugars in fruits or milk.”³⁴

Group 2 participants reported label reading as the second most frequent activity to balance calorie intake. In this study, label reading for calorie content, types of fat, and calories per serving was reported. Nutrition labeling aims to improve the diets of individuals by providing information to maintain a healthy diet and reduce the risk of disease.²³⁶ In general, food label use decreases individual’s average daily energy intake from total fat, saturated fatty

acids, cholesterol, and sodium. Additionally, nutrition label use increases average daily fiber intake.²³⁷ However, FSP participants who used labels consume more calories from saturated fatty acids and more cholesterol per day than FSP non-participants who used labels. The FSP non-participants who did not read labels consumed approximately 434 milligrams more sodium per day than non-FSP non-label users. Study findings suggested that FSP participants that read food labels still ate foods that were higher in fats and cholesterol than non-food stamp participants.²³⁷

The elderly and less educated individuals are more likely to find label reading difficult to understand.¹⁵³ In this study, Group 1 had a high numbers of elders who might have had some difficulty understanding food labels, thus resulting in misconceptions. Recommendations are made for FNP to conduct label-reading workshops where attendees bring their own nutrition label to be discussed in class. In class implementation of nutrition knowledge might increase its effectiveness and enable participants to use it in every context including their home, stores and when dinning out.

Barriers that participants reported to balancing energy intake with energy expended included the dislike to keeping track of their calorie intake expressed by two Group 1 participants, “Good part of losing weight is food journaling and I just hate that” and “I don’t have time to keep track of what I eat.” To increase the likelihood that participants apply what they learn in the nutrition education sessions, lessons should include topics and activities that are relevant to participants.²⁰³ Having participants choose recipes for food demonstrations was well accepted in one parish. USDA recipe finder is a good source for healthy recipes that includes a nutrition label for ach recipe. A democratic approach empowers participants by allowing them to decide what and how they want to learn, thus increasing the likelihood of practicing healthy behaviors.²⁰³ Detailed explanation of meal planning must be done for participants to correctly

implement and become aware of meal planning flexibility. Healthy meal plans can be adapted to each household's preference and needs during nutrition sessions.

The last preset theme assessed the Group 1 participants' opinion on the information provided by FNP nutrition educators. The most popular topics were the recipes, grocery lists, and food demonstrations. Additionally, Group 1 participants in two parishes received information through food models and one used videos. Videos facilitate learning among low literacy populations when presented no more than 8-minute periods due to the population's short attention span.²³⁸ Videos also help presenting role models of healthy behaviors and facilitate the visualization of concepts difficult to explain.²³⁸ Nutrition educators are encouraged to include video sessions in short segments followed by an activity to promote group interaction such as discussions.²³⁹

Group 1 participants expressed that the information delivered to them through food demonstrations, use of a grocery list, comparing name vs. great value brand products and label reading were helpful. There was consensus about good and helpful information about food safety advice on thawing food, hand washing, and cooking meats. Some parishes sent recipes through mail, although not all Group 1 participants received them. Almost all Group 1 participants found that the information they were provided was helpful, up-to-date, and reinforced nutrition knowledge. Nevertheless, one senior participant observed that the [old] Food Guide Pyramid poster on the wall needed to be updated.

Assessment of nutrition education outcomes is confounded by two factors. FSNEP is a benefit for FSP eligible participants; however nutrition education sessions may inadvertently reach persons that may be ineligible for the FSP.¹²⁶ Further, the decentralized delivery of nutrition education that allows each state to deliver information to meet local needs and preferred

educational approaches may provide barriers to individuals. These factors prevented the study to attain control of number of nutrition sessions and topics received by Group 1 participants. The dosage or number of exposures an individual has to a nutritional message is a multidimensional term. Dimensions of dosage include the number of education sessions, length of exposure, duration, and communication channels used. Sufficient time and practice are required to acquire information, skills, and behaviors for a healthy lifestyle.²⁴⁰⁻²⁴³ Nutrition education sessions for the FSP participants are different for each group in each parish. In the selected parishes, the dose of nutrition sessions depends on when the collaborating community agencies (HS, COA, and Even Start) can accommodate the nutrition education sessions in their schedule. Standardization of the topics to deliver to FSNEP audiences could help program assessment. The parish audience could decide delivery methods.

Nutrition education studies assessing delivery methods in school settings show that involving parents was more effective than only handing out brochures to the school children.^{240,}²⁴⁴ This parallels a comment of a participant mother who serves as the president of the HS parents' committee stating that visuals and information delivered at the sessions generate a topic of discussion during the week among parents and are more effective than brochures. A study that examined interventions by communication channel²⁴⁵, one-on-one sessions or delivered at work, religious organizations, or grocery stores found that dosage was positively associated with impact. For instance, the dietary improvement increased with intensity; however in individual or small groups even the low dose interventions²⁴⁶ with low intensity can produce modest dietary improvements by reducing the energy from saturated fatty acids or increasing the grams of fiber/day.²⁴⁷ Other factors to take in account with intervention intensity include the educator qualifications and participant interest.²⁴⁶

A final emergent theme explored Group 1 and Group 2 participants understanding of nutrition recommendations. Group 1 participants' had more misconceptions than Group 2 participants, suggesting that Group 2 participants are knowledgeable about nutrition. Some Even Start young Group 1 participants reported receiving nutrition information from "informal sources" such as Google and the Food Network Channel. The media is a leading source of nutrition information through television, magazines, Internet, and newspapers.²⁴⁸ Internet use as a nutrition research option is mostly done by adults 25-34 years of age and much less by adults older than 65 years of age.²⁴⁸ Other sources of nutrition information are family and friends, physicians, and radio.²⁴⁸ However, the media might fail to provide enough context for consumers to screen reasonable statements, thus leading to nutrition misinformation.²⁴⁹ This poses economic and health risks to individuals. Health consequences could be, interfering with adequate nutrition education and nutrition practices, and either delaying or failing to get or continue medical treatment.²⁴⁹ Further, nutrition misconceptions can also arise. A misconception is defined as a misunderstanding or a mistaken construct or notion.²⁵⁰ Nutrition misconceptions include receiving information only about what not to eat rather than what to eat, some foods that should never be eaten, and that vitamin supplements are required for a good health.²⁵⁰ Nutrition educators need to address misconceptions since individuals often do not make behavior changes because of erroneous constructs.⁴⁹

Misconceptions should be corrected deftly by avoiding taking a lecturer position; instead, the nutrition educator could emphasize the value of the experience that is being shared with the group and simply state findings by scientific research. Requesting other participants' input on their opinion or experience on the statement is also advised.⁴⁹ Credible nutrition information can be accessed through government websites such as the USDA website. Nutrition educators could

be trained, on a regular basis, on this important skill to advice on its use to their FSNE audience. A basic skill that FSNE audience needs to be taught is to distinguish scientific-based nutrition advice from quackery by questioning the author's qualifications and the evidence for the nutrition claims presented.²⁴⁹

A major misconception by Group 1 participants was about a three-gram diet to prevent a prediabetic state. There is no mention of a 3g or 3% sugar diet to prevent or treat diabetes in the scientific literature. Another misconception was that salt depletes potassium levels. This information is found in alternative medicine websites. A major misconception mentioned by a Group 1 participant referred to increasing the consumption of monosaturated fatty acids to balance calories. This practice reduces the risk of atherosclerosis but is not related to energy balance, since all fats have the highest energy of all macronutrients with 9 kcal/g.

Food Stamp participants have shown a significant lower sodium intake than high-income non-participants.²⁵¹ In this study, Group 1 participants referred a misunderstanding about sodium content in celery. Raw celery contains 80 mg of sodium per 100mg, which has no clinical significance for the usual sodium restriction of 2 g.²⁵² Moreover, both groups expressed the same misconception about sodium content in food being a factor for balancing energy intake. FNP nutrition educators could address these misunderstandings and correct them²⁵³ by informing participants of research findings indicating that obesity results from consuming more energy than the expended.²²⁵ Nutrition educators are advised to correct this misconception by addressing scientific research indicating negative effects of sodium on blood pressure only.

Group 2 participants mentioned monosodium glutamate (MSG) as a health hazard. Monosodium glutamate, a flavor enhancer in canned, Chinese and fast food, has been related to Alzheimer's disease²⁵⁴ and MSG Symptom Complex in asthmatics.²⁵⁴ The MSG Complex is

characterized by numbness, tingling, chest pain, headache, nausea, tachycardia, drowsiness, and weakness. This flavor enhancer has also been associated with asthma attacks. Studies found no safety hazard when MSG is consumed at usual levels and no evidence suggests that MSG causes brain lesions or neuronal damage.²⁵⁴

A Group 1 participant who suffered ischemic colitis considered coconut milk as a dairy equivalent: “I can’t [drink milk], but I like my milk from coconut. That’s the only way I can drink milk.” Both groups reported 2% milk as a low/non-fat milk. In 1998, the Food and Drug Administration (FDA) regulated labeling of milk, 2% became known as reduced fat instead of low fat; 1% milk remained as low-fat, and skim milk retained its name fat-free or no-fat milk. However, across USDA programs, 2% milk is presented under the category of low/fat free milk. Even when 2% milk intake does not follow the current DGA recommendations it is a healthier option than whole milk.

Study participants were interested in receiving specific nutrition information on medical issues such as cardiovascular disease, diabetes and obesity. A Group 1 participant expressed that FSNE advice helped her advise her diabetic patient with high cholesterol. However, nutrition educators’ training enables them to deliver nutrition education to promote health as a primary prevention strategy¹⁹⁸ for chronic diseases.²⁵⁵ Nutrition advice delivered by the FNP is not aimed to be adjuvant therapy to an established disease or replace a physician’s advice. Medical nutrition for secondary and tertiary prevention¹⁹⁸ aimed at reducing complications of an already established disease should be done by credentialed dietetics professionals.²⁵⁵ Nutrition advice should be based on scientific advances in medical nutrition and communicated accurately by credentialed dietetics professionals in a language easy to understand by the general public.²⁴⁹ Emphasis should be placed at the beginning of each nutrition education session that

recommendations are based on the current DGA intended for healthy Americans and FSNEP providing information exclusively as a primary prevention strategy.

Participants' Suggestions

Study subjects provided suggestions to improve the FSNEP. Group 1 participants suggested adding more food demonstrations and slow cooking recipes with vegetables. Nutrition workshops that include parents, children, and seniors living in senior complexes were requested as well as hanging posters, using food models to visualize portion size for those parishes not making use of them, and to mail brochures containing recipes, information on healthy lifestyles and addressing chronic disease prevention. Meanwhile, Group 2 participants expressed interest in attending food demonstrations of healthy vs. unhealthy cooking. Healthy, fast, inexpensive recipes using leftovers and a variety of spices were also requested. Additionally, they are interested in receiving brochures with weekly menu, grocery list, 30-minute exercise, portions, and nutrition recommendations for chronic diseases.

Study Limitations

This study had several limitations including, the use of a convenience sample. Control of the dimensions of dosage was not available, enrollment time and the type and number of nutrition education sessions that Group 1 participants attended varied from one to ten sessions. Intra-group homogeneity was accomplished as recommended for FGD²⁹, but inter-group homogeneity could not be attained since Group 1 and Group 2 participants were not matched by age and race. Weight, BMI, and percent body fat were not taken twice and averaged to ensure accuracy. This study design could not determine causal links and no baseline heights and weights from the time of FSNEP enrollment were available. Additionally, FGD presented some limitations: 1) the moderator was not indigenous to the population,²⁹ 2) results from this sample

population cannot be generalized because FGD studies are not intended to generalize, instead they are useful to gain understanding of motivations, behavior and opinions of the participants on a specific topic, 3) dominant participants in FGD may prevent hesitant participants from responding,¹⁷¹ which can be addressed by the moderator inviting each participant to speak in turn, and 4) the moderator can also introduce bias if he/she “leads” the questions instead of being neutral.

Conclusions

Group 1 participants received a higher number of nutrition sessions than Group 2 participants. The latter group received nutrition sessions from non-FSP sources including the HHS, physicians, and grocery stores through talks and taste testing. Conversely, Group 1 participants received more nutrition from the FNP funding. Different community agencies collaborated and a variety of delivery methods were used. Both groups appeared interested in nutrition; however, there was room for improvement in the dietary knowledge of low-income beneficiaries. The relationship between what individuals want, what professionals recommend, and what the food system supplies needs to be considered.¹²⁴ Further, educating low-income participants is difficult because of the complexity of dietary behaviors, attitudes and misconceptions regarding nutrition information. Group 1 participants reported receiving nutrition information through “informal channels,” such as Google and the popular media. Group 2 did not report any input from these channels, however it is likely that they are also exposed to them.

FGD analysis suggest that Group 1 and Group 2 participants exhibited similar lifestyle behaviors mainly by increasing low/non-fat dairy, fruit and vegetable, and whole grain intake in the last six months. Implementation of four healthy lifestyle behaviors was observed for Group 1. Although obesity prevailed in both groups, Group 2 had a higher prevalence of obesity. No

significant difference in BMI or percent body fat was found between the groups. This study design cannot determine causal links and no baseline heights and weights from the time of FSNEP enrollment were available. This study provides the basis for future research to assess the participant's perception of Louisiana FSNEP assistance to make healthy dietary choices and practice a healthy lifestyle.

Future Directions

Both sides of the equation, FSP policies and FSP participants, should be addressed to improve nutrition education program outcomes. The Farm Act 2008 authorized funding to develop pilot programs evaluating FSNEP ability to improve dietary choices. In Louisiana, the FNP could use this opportunity to conduct pilot programs, in a collaborative effort with the Farmer's Market, by providing incentives for purchasing fruit and vegetables. Another program pilot could address increasing accessibility to FSNEP sessions through amendments to FSP policy that would subsidize transportation and childcare during nutrition sessions.

Obesity has been associated to FSP participation. Food Stamp Program regulations do not allow taking participants' anthropometric measures that could serve as a baseline for comparison at enrollment and at a 6-month follow-up to elucidate this relationship. However, since FNP partially funds nutrition education activities, the LSU AgCenter funding allows taking participant's anthropometric measures. There is a need to collect baseline information on weight at enrollment and over time that would help determine causality.

In addition to the annual state level training session, nutrition educators are encouraged to continue education through the USDA website and meet with regional coordinators in a bi-monthly basis to discuss USDA website documents. Lesson planning could consider potential participant's absences and include a video or DVD to watch at home followed by a one-to-one

discussion with the nutrition educator. Individuals could be addressed by having the FNP redirect delivery of nutrition education by including in their lesson plans a stage-change approach in addition to the action-based approach being conducted. Understanding of an individual's readiness to change can be considered during lesson planning. Tailoring nutrition sessions to the individual's stage-change could be done by, providing scientific-based information and addressing misconceptions for individuals in the precontemplation stage; conducting motivational interviews that allow the individual's self-assessment and avoid confrontations; discussion to overcome personal barriers to change and successful activities that were done in previous attempts; and those individuals in the action stage that are increasing their fruit and vegetable intake could benefit from food demonstrations.

Nutrition educators are encouraged to present food demonstrations that are relevant to their audience by presenting culturally appropriate recipes and incorporating healthy cooking methods such as baking and grilling in the taste testing sessions. Including family members is also advised to strengthen participant's social network through family activities, forming walking groups in their neighborhood or a 15-minute walking break instead of a coffee break at work. Meal planning should consider a household's income. In class assignments to practice the *Smart Choices Menu Planner*, *Food List* and *Thrifty Food Rules* fact sheets are recommended. There is a need for FNP to conduct an assessment study of the effectiveness of the FSP in assisting participants to adopt a healthy lifestyle controlling for number of sessions received and representation of the population.

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APPENDIX A

2005 DGA KEY RECOMMENDATIONS

The 2005 DGA Key Recommendations³⁴, relevant to the scope of this study are:

1. ADEQUATE NUTRIENTS WITHIN CALORIE NEEDS

- Consume a variety of nutrient-dense foods and beverages within and among the basic food groups while choosing foods low in saturated and trans fats, cholesterol, added sugars, salt, and alcohol.
- Follow a balanced eating pattern, such as the USDA Food Guide to meet recommended intakes within energy needs.
- Consumption of vitamin B12 in its crystalline form (*i.e.*, fortified foods or supplements) for people older than 50.
- Women of childbearing age who may become pregnant should consume foods high in heme-iron and/or consume iron-rich plant foods or iron-fortified foods with an enhancer of iron absorption, such as vitamin C-rich foods.
- Women of childbearing age who may become pregnant and those in the first trimester of pregnancy should consume adequate synthetic folic acid daily (from fortified foods or supplements) in addition to food forms of folate from a varied diet.
- Older adults, people with dark skin, and people exposed to insufficient ultraviolet band radiation (*i.e.*, sunlight) should consume more vitamin D from vitamin D-fortified foods and/or supplements.

2. WEIGHT MANAGEMENT

- To maintain a healthy body weight, balance calories from foods and beverages with calories expended.

- To prevent weight gain over time, make small decreases in food and beverage calories and increase physical activity.
- A healthy way to lose weight is by decreasing calorie intake while maintaining an adequate nutrient intake and increasing physical activity.

3. PHYSICAL ACTIVITY

- Promote health, psychological well-being, and a healthy body weight by engaging in regular physical activity and reducing sedentary activities.
- Engaging in at least 30 minutes of moderate-intensity physical activity, above usual activity, on most days of the week reduces the risk of chronic disease in adulthood
- Engage in approximately 60 minutes of moderate- to vigorous-intensity activity on most days of the week together with adequate caloric intake requirements to prevent unhealthy body weight gain in adulthood.
- To sustain weight loss in adulthood practice at least 60 to 90 minutes of daily moderate-intensity physical activity together with an adequate caloric intake requirements.
- Older adults benefit from regular physical activity to reduce functional declines associated with aging.

4. FOOD GROUPS TO ENCOURAGE

- For a 2,000-calorie intake, recommendations are nine servings of fruits and vegetables per day. To ensure adequate fiber intake, whole fruit (fresh, frozen, canned, dried) and up to 1/3 of the requirement in fruit juice are recommended. Vegetable intake recommendations include dark green vegetables 3 cups/week Orange vegetables 2 cups/week Legumes (dry beans) 3 cups/week Starchy vegetables 3 cups/week, other vegetables 6 ½ cups/week.

- Choose a variety of fruit and vegetables each day. Select from all five vegetable subgroups (dark green, orange, legumes, starchy vegetables, and other vegetables) several times a week.
- Consume 3 or more ounce-equivalents of whole-grain products per day, with the rest of the recommended grains coming from enriched or whole-grain products. At least half the grains should come from whole grains.
- Consume 3 cups per day of fat-free or low-fat milk or equivalent milk products.

5. FATS

- Consume less than 10 percent of calories from saturated fatty acids and less than 300 mg/day of cholesterol, and keep trans fatty acid consumption as low as possible.
- Keep total fat intake between 20 to 35 percent of calories, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils. Plant sources of omega3 polyunsaturated fatty acids (α linolenic acid) include soybean oil, canola oil, walnuts, and flaxseed. Fish and shellfish contain omega3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA).
- Select and prepare lean meat, poultry, dry beans, and low-fat or fat free milk or milk products.
- Choose products low in saturated and/or trans fatty acids.

6. CARBOHYDRATES

- Choose fiber-rich fruits, vegetables, and whole grains often. Consuming at least 3 or more ounce equivalents of whole grains per day can reduce the risk of several chronic diseases and may help with weight maintenance. Half the grains should be whole grains to achieve the fiber recommendation. All grain servings can be wholegrain; however, it is advisable to include some folate-fortified products, such as folate-fortified whole grain cereals.

- Choose and prepare foods and beverages with little added sugars or caloric sweeteners.
- Reduce the incidence of dental caries by consuming sugar- and starch-containing foods and beverages less frequently.

7. SODIUM AND POTASSIUM

- Consume less than 2,300 mg (approximately 1 tsp of salt) of sodium per day.
- Choose and prepare foods with little salt. At the same time, consume potassium-rich foods, such as fruits and vegetables.
- Individuals with hypertension, blacks, and middle-aged and older adults should aim to consume no more than 1,500 mg of sodium per day, and meet the potassium recommendation (4,700 mg/day) with food. Reading labels, comparing sodium contents of foods, and purchasing the lower sodium brand may be one strategy to lower total sodium intake.

8. ALCOHOLIC BEVERAGES

- Alcoholic beverages should be consumed in moderation (up to one drink per day for women and up to two drinks per day for men).
- Individuals who should not consume alcoholic beverages are women of childbearing age who may become pregnant, pregnant and lactating women, children and adolescents, individuals taking medications that can interact with alcohol, and those with specific medical conditions.

9. FOOD SAFETY to avoid microbial foodborne illness:

- Clean hands, food contact surfaces, and fruits and vegetables. Avoid washing meat and poultry.
- While shopping, preparing or storing food separate raw, cooked, and ready-to-eat foods.
- Cook foods to a safe temperature to kill microorganisms.

- Chill (refrigerate) perishable food promptly and defrost foods properly.
- Avoid unpasteurized milk or any products made from unpasteurized milk, raw or undercooked products such as eggs, meat, and poultry.

APPENDIX B IRB/IACUC PROPOSAL

Approval Date:
Expiration Date:

APPLICATION FOR USE OF HUMAN SUBJECTS IN RESEARCH

Investigators: Carol O'Neil, PhD, LDN, RD; Annrose Guarino PhD, LDN, RD, Melly Perez,

Graduate Assistant

Department: Human Ecology

Title of Project: Effectiveness of Louisiana Food Stamp Program (FSP) 2008 in Improving Diet
and Other Lifestyle Measures

Objectives of the research:

1. Identify participant's preferred delivery methods and design as well as barriers they experience to attend meetings and to use the information provided in educational sessions.
2. Compare the effectiveness of the participants of the Louisiana FSNEP in making healthy food choices and choosing physically active lifestyles, within a limited budget, to eligible non-participants'?
3. Determine the effect that stated participation in the FSNEP sessions has on consumption of fruit, vegetables, whole grains, and non-fat and low-fat dairy.
4. Determine the effect that stated participation in FSNEP sessions has on moderate physical activity.
5. Determine FSNEP participants' stated adherence to three 2005 Dietary Guidelines for Americans to balance energy intake from food and beverages to maintain a healthy weight.
6. Determine the socioeconomic variations among FSNEP participants and non-participants in North and South Louisiana parishes (household income, employment, education, and family structure).

1. Procedures to be followed involving human subjects:

Human subjects will be adult volunteers recruited through fliers and parish agents in the Food Stamp Office. One group will consist of newly recruited Food Stamp Program (FSP) participants and other groups will have FSP participants in the previous six months. No subjects younger than 18 years of age will participate in this study. An incentive of kitchen tools will be provided. Snacks will be provided at the FGD and participants' transportation will be reimbursed per mileage. Volunteers will participate in focus group discussions (FGD) in which 6 - 10 persons

discuss healthy lifestyle choices among themselves, with guidance from the researcher that acts as a facilitator. This qualitative method will allow the researcher to obtain in-depth information of FSP participants' healthy lifestyle perceptions and practices to assess FSP outcomes. Concomitantly, a demographic survey will be done to obtain their demographic information, and percent body fat, weight and height will be measured. All individuals will provide written informed consent prior to participation in this study. Volunteers are free to withdraw at anytime. Their responses will be video or audio taped for transcription.

2. Methods will assure confidentiality of data.

The identity of the participants will remain confidential. Numbers will replace subjects' names when transcribing the tapes. Results will be available only to the investigators and will be kept in the office of the principal investigator in a locked file cabinet. Reports, presentations or publications resulting from this study will provide summary statistics only and will be stripped of individual identifiers.

4. Expected benefits to participants and society:

Individuals may receive no direct benefit from the study; however, the American population will benefit through recommendations to improve the nutrition education curricula and delivery methods of federal nutrition assistance programs. Data analysis will permit us to evaluate the effectiveness of FSNEP 2008 educational sessions and make necessary revisions to the program.

5. Expected risks to participants:

The actual risks to participants could be embarrassment to answer questions; however, participants can opt not to answer any question.

6. Possibility of specific alternative procedures that might be used in lieu of those proposed:

This project has no alternative procedures. This is the most appropriate way to obtain a large number of in-depth descriptions of the participants' lifestyle choices and practices and to determine their personal barriers to practicing good nutritional behaviors.

APPENDIX C INFORMED CONSENT

TITLE OF RESEARCH PROJECT: Effectiveness of Louisiana Food Stamp Nutrition Education Program in Improving Diet and Other Lifestyle Measures

I understand this is a Louisiana State University Ag Center (LSUAgCenter) study to determine the effectiveness of the Louisiana Food Stamp Program in assisting participants to practice a healthy lifestyle.

I volunteer to participate in a 2-hour focus group discussion with approximately 6 - 10 persons to discuss our experience needs and concerns about healthy lifestyles, with guidance provided by the researcher. I will also answer a demographic survey and my percent body fat, weight and height will be taken individually in a private area.

I understand the only risk associated with this study could be embarrassment to answer questions. However, I am free to leave at anytime without discrimination and may choose not to respond to any specific question(s). Answers will be audio taped. My identity will remain confidential. A number will replace my name when writing down information from the tapes.

I may receive no direct benefit from the study; however, the American population will benefit through recommendations to improve nutrition education and delivery methods of federal nutrition assistance programs. Analysis of the data obtained will permit to revise the program. I will receive useful kitchen tools for my participation. Snacks will be provided at the FGD and my transportation will be reimbursed per mileage.

The study has been discussed with me and all questions have been answered to my satisfaction. I may direct additional questions regarding this study to Dr. Carol O'Neil, School of Human Ecology, at 225-578-1631 or Dr. Annrose Guarino, School of Human Ecology, at 225-758-4449. If I have questions about my rights or other concerns, I can contact Dr. David Morrison at 225-578-8236 at the LSU AgCenter.

With full knowledge of the above information, I voluntarily consent to take part in this study.

Name of participant (please print): _____

Signature of participant: _____ Date: _____

Mailing address: _____ Phone: _____
(Street) (City) (Zip)

Witness (please print): _____

Signature of witness: _____ Date: _____

APPENDIX D
FLYER



is currently conducting a research on food consumption and physical activity of Louisiana's population. Join us in a focus group discussion that will allow you to talk about your lifestyle experience in an open environment. You will also fill in a questionnaire. There are no wrong or right answers and confidentiality of the information provided is guaranteed. You will have a great opportunity to present your point of view and useful kitchen tools to take home! Your participation will help us make our programs better. If you are interested, please contact:

Melly Perez
LSU Agcenter
mperez5@lsu.edu
225-758-8816

We look forward to seeing you on _____ at _____
at your local Food Stamp office!

APPENDIX E: LOUISIANA FSNEP GOALS AND OBJECTIVES FY 2008

PERFORMANCE INDICATOR	RATIONALE	DELIVERY METHOD	QUESTIONS
State level Goal: To improve the likelihood that FSNEP participants will adopt healthy food choices within a limited budget and incorporate active lifestyles and habits that promote good health			
State level objective: Statewide 25% of FSNEP participants targeted will increase consumption of either fruits, vegetables, whole grains or non-fat and low-fat dairy by one serving per day	85% of Louisiana low-income residents reported that they do not consume the recommended 5 servings of fruits and vegetables every day.	*Classes on selection and consumption of healthy foods within a limited budget and through gardening *conduct food demonstrations to illustrate recommended food preparation techniques * sponsor taste testing to promote a variety of food choices *promote use of commodity foods *distribute fact sheets and newsletters on 2005 Dietary Guidelines for Americans and food guidance system (MyPyramid) * Use videos, exhibits, public service announcements and displays to illustrate selecting healthy foods, stretching food dollars, and practicing food safety.	In the last six months, have you done anything to increase by one or more servings per day your: <ul style="list-style-type: none"> - fruit and vegetable intake - low/non-fat dairy products or whole grains
State level Objective: Statewide 25% of FSNEP participants targeted will be physically active for at least four days per week as part of a healthy lifestyle, Adults 30 minutes or more of moderate intensity and youth 60 minutes of moderate to vigorous activity.	Approximately 85% of Louisiana adults do not get regular physical activity	*demonstrate appropriate methods of physical activities *promote active lifestyles *distribute fact sheets and newsletters to promote active lifestyles *promote gardening as a physical activity *use videos, exhibits, public service announcements, and displays to illustrate the importance of physical activity for a healthy lifestyle.	In the last six months, have you done anything to increase your 30-minute a day exercise by four or more days a week? For example: <ul style="list-style-type: none"> - gardening - taking stairs instead of elevator, - parking far from work - playing outside with children

PERFORMANCE INDICATOR	RATIONALE	DELIVERY METHOD	QUESTIONS
<p>State level objective: Statewide 25% of FSNEP participants targeted will practice three 2005 Dietary Guidelines to balance caloric intake from food and beverages with calories to maintain a healthy weight.</p>	<p>36% of adults were overweight and 24% were obese.</p>	<ul style="list-style-type: none"> * conduct classes on obesity prevention * conduct food demonstrations to illustrate recommended food preparation techniques. * sponsor taste testing to promote a variety of healthy food choices. * promote the use of commodity foods * distribute fact sheets and newsletters on 2005 Dietary Guidelines for Americans and My Pyramid * use videos, exhibits and displays to illustrate selecting recommended foods to maintain a healthy weight. 	<p>In the last six months, have you done anything to match the food you eat and the calories that you spend in order to maintain a healthy weight? Listen for: (PROBE IF NECESSARY)</p> <ul style="list-style-type: none"> -Reading food labels before buying -Eating smaller portion sizes -Increase whole grain, vegetable and fruit consumption -Decrease consumption of fat and sugar -Increasing the frequency of eating breakfast

APPENDIX F: FGD POPULATION CHARACTERISTICS

No. _____
Height: _____
Weight: _____

Please fill in the blanks or check the most appropriate information.

1. Name: _____
2. Gender: ☐ Male ☐ Female
3. Age: ☐ 18-59 years ☐ 60 years or more
4. Marital status: ☐ single ☐ married ☐ living with partner ☐ divorced ☐ widowed
5. Are you pregnant? ☐ Yes ☐ No
6. Are you nursing? ☐ Yes ☐ No
7. Education Level:

<input type="checkbox"/> 6 th Grade or less	<input type="checkbox"/> 12 th grade or GED
<input type="checkbox"/> 7 th grade	<input type="checkbox"/> Technical School
<input type="checkbox"/> 8 th grade	<input type="checkbox"/> some college
<input type="checkbox"/> 9 th grade	<input type="checkbox"/> Graduated 2-year College
<input type="checkbox"/> 10 th grade	<input type="checkbox"/> Graduated College
<input type="checkbox"/> 11 th grade	<input type="checkbox"/> Post Graduate School
8. Do you consider yourself Hispanic/ Latino? ☐ Yes ☐ No
9. Race: (Check one)

<input type="checkbox"/> American Indian or Alaska Native	<input type="checkbox"/> Asian
<input type="checkbox"/> Native Hawaiian or Other Pacific Islander	<input type="checkbox"/> White
<input type="checkbox"/> Black	
10. Employment status: ☐ full time ☐ part time ☐ unemployed
11. Please check all Public Assistance Program(s) you or your children receive:

<input type="checkbox"/> National School Lunch Program
<input type="checkbox"/> School Breakfast Program
<input type="checkbox"/> Special Milk Program
<input type="checkbox"/> Summer Food Service Program
<input type="checkbox"/> Child and Adult Care Food Program
<input type="checkbox"/> FDPIR
<input type="checkbox"/> Social Security
<input type="checkbox"/> Food Stamps
<input type="checkbox"/> Head Start
<input type="checkbox"/> TANF
<input type="checkbox"/> TEFAP-Commodity
<input type="checkbox"/> WIC/CSFP
<input type="checkbox"/> other, please specify _____
12. Housing conditions: ☐ own ☐ rent ☐ multifamily housing
13. Indicate how many of the following people live in your home:

<input type="checkbox"/> disabled person	<input type="checkbox"/> pregnant woman	<input type="checkbox"/> elderly adult
--	---	--
14. How many children are living with you? _____

Please write down their age:

Age ____
Age ____
Age ____

Age ____
Age ____
Age ____

15. How long have you attended the FNP meetings? _____

16. How many nutrition education meetings have you attended? _____

17. Indicate the number of the following type of sessions you have received:

____ individual education sessions ____ group education sessions

18. Check the topics you have received information on:

- ____ Reading food labels to eat healthy
- ____ eating smaller portion sizes
- ____ Whole grain consumption
- ____ Vegetable and fruit consumption
- ____ Decrease consumption of fat and sugar
- ____ Decrease consumption of salt
- ____ increasing the frequency of eating breakfast
- ____ low/non-fat dairy product consumption
- ____ Physical activity
- ____ Food safety
- ____ Budget your expenses
- ____ Grocery list
- ____ Menu planning
- ____ Food Gardening
- ____ Feeding children healthy meals/snacks
- ____ other, specify _____

19. What incentives were provided during the education sessions you attended?

____ None ____ cooking thermometers ____ cups others, specify _____

21. Write the number of the following sessions you received:

____ food tasting ____ food demonstrations

22. Where did the education sessions take place?

23. Family income (per month):

- ____ \$0
- ____ \$1-199
- ____ \$200-399
- ____ \$400-599
- ____ \$600-799
- ____ \$800-999
- ____ \$1,000+
- ____ Other, please specify _____

24. Where do you usually shop for food?

- ____ Convenience store
- ____ Neighborhood store
- ____ Supermarket
- ____ Dollar store
- ____ other, please specify _____

25. Who does grocery shopping in your home?
___self ___ spouse other, specify _____

26. Do you use a list to go grocery shopping? ___ yes ___ no

27. How many minutes away is the grocery store from your house? _____

28. How do you get to the grocery store?
___family car ___ get a ride ___bus ___ walk other, specify_____

29. Who prepares the meals at home?
___ Self ___ spouse other, specify _____

30. How long did your Food stamp application process take?

31. Did you have any problem when applying to the Food Stamp Program?

For office use only:

Parish agent works with: ___ youth ___ adult ___ both

Parish agent feels the technique that works best for clients:
___ individual ___ group other, specify _____

APPENDIX G:
U.S. HOUSEHOLD FOOD SECURITY SURVEY MODULE: SIX-ITEM SHORT FORM
July 2008

FILL INSTRUCTIONS: Select the appropriate fill from parenthetical choices depending on the number of persons and number of adults in the household.

HH3. I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months—that is, since last (name of current month).

The first statement is, "The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- ☐ Often true
- ☐ Sometimes true
- ☐ Never true
- ☐ DK or Refused

HH4. "(I/we) couldn't afford to eat balanced meals." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- ☐ Often true
- ☐ Sometimes true
- ☐ Never true
- ☐ DK or Refused

AD1. In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?

- ☐ Yes
- ☐ No (Skip AD1a)
- ☐ DK (Skip AD1a)

AD1a. [IF YES ABOVE, ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

- ☐ Almost every month
- ☐ Some months but not every month
- ☐ Only 1 or 2 months
- ☐ DK

AD2. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?

- ☐ Yes
- ☐ No
- ☐ DK

AD3. In the last 12 months, were you every hungry but didn't eat because there wasn't enough money for food?

- ☐ Yes
- ☐ No
- ☐ DK

[End of Six-Item Food Security Module]

APPENDIX H
MODIFIED US HOUSEHOLD FOOD SECURITY SURVEY

These next questions ask about the food eaten in your household in the last 30 days. Please circle the most appropriate answer in your case.

1. "The food that I bought just didn't last, and I didn't have money to get more." Was that often, sometimes, or never true for you in the last 30 days?
(1) Often true
(2) Sometimes true
(3) Never true
2. "We couldn't afford to eat balanced meals." Was that often, sometimes, or never true for you in the last 30 days?
(1) Often true
(2) Sometimes true
(3) Never true
3. In the last 30 days, did you ever cut the size of your meals or skip meals because there wasn't enough money for food?
(1) Yes
(2) No
If yes, how many days did this happen _____.
4. In the last 30 days, did you ever eat less than you felt you should because there wasn't enough money to buy food?
(1) Yes
(2) No

If yes, how many times did this happen? _____

5. In the last 30 days, were you ever hungry but didn't eat because there wasn't enough money for food?
(1) Yes
(2) No
If yes, how many times did this happen? _____

VITA

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