

## **ABSTRACT**

SARGENT, DORIS ELLEN. Evaluation of Two Nutrition Education Programs: The Expanded Food and Nutrition Education Program (EFNEP) and Out For Lunch (OFL). (Under the direction of Dr. Robert D. Mustian)

The purpose of this study was to examine the behavior changes, barriers to preparing healthy meals, quality of life and internal locus of control with two nutrition education programs EFNEP and OFL.

Data for this study were collected by surveying participants in the EFNEP and OFL Program before and after participation in the programs.

The research was guided by the following questions. (1) Do participants change behavior after participating in EFNEP or OFL?; (2) Are participants able to overcome barriers that prevent them from preparing healthy meals after participating in EFNEP or OFL?; (3) Do participants demonstrate an increase in their quality of life after participating in EFNEP or OFL?; (4) Do participants experience changes in their perceived control of their environment after participating in EFNEP or OFL?, and (5). What effect, if any, does the method of program delivery have on change in behaviors, overcoming barriers to healthy meals, a change in locus of control and quality of life after participating in EFNEP or OFL?

Among the 268 respondents, there were 141 respondents from the OFL Program and 127 from EFNEP. The majority of the participants were female, African-American, between the ages of 21-30 and had a high school education or less.

Data analysis revealed participation in EFNEP and OFL nutrition education programs influences behavior change with low-income clients and perceived quality of life improved for respondents after participating in the two programs. Participation in

EFNEP and OFL did not impact clients in overcoming barriers in preparing healthy meals, and participation in the programs did not seem to have an influence on the perceived control of one's life. Changes in behavior were not dependent on the method of delivery for the two programs EFNEP and OFL.

Evaluation of Two Nutrition Education Programs: The Expanded Food and Nutrition  
Education Program (EFNEP) and Out For Lunch (OFL)

by

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A dissertation submitted to the Graduate Faculty of

North Carolina State University

In partial fulfillment of the  
requirements for the degree of

Doctorate of Education

In

Agriculture and Extension Education

Raleigh, NC

2006

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## **DEDICATION**

In Memory of My Parents

**Omar Lemon Houck**

and

**Mildred Hazel Houck**

They instilled in me the value of an education  
and inspired me to become the person that I am today.

## **BIOGRAPHY**

Doris Ellen Houck Sargent was born on April 4, 1941, in Paradise, Pennsylvania, the middle child of three siblings to the parents of Omar and Mildred Houck. She was reared on a farm in Lancaster County immersed in the culture of the Pennsylvania Dutch. She graduated from Pequea Valley High school in 1959. She continued her education at Mansfield University, Mansfield, Pennsylvania, where she received a Bachelor of Science degree in Home Economics Education. Upon completion of this degree, she taught in a local high school for three years.

In May of 1968, she married and began her family. Her first few years of marriage were on a dairy farm in Northern Pennsylvania with her husband and five children. Later the family moved to a larger farm with a restaurant and jug-milk plant. The next twelve years of her life, she was involved in the operation of the restaurant, dairy bar and dairy farm.

In 1988, she returned to Mansfield University and received her Bachelor of Science degree in Nutrition. She sat for the R.D. examination and became a Registered Dietitian in 1992. While working as a clinical dietitian and food service supervisor, she continued her education at Mansfield University and received her Masters in Home Economics Education with a major in Nutrition in 1993.

In 1994, she accepted a position with Penn State Cooperative Extension as a Family and Consumer Science Extension Agent. She worked in this position for five years.

She came to North Carolina in 1999 as the Assistant Coordinator for the

Expanded Food and Nutrition Education Program where she worked to design and implement innovative food and nutrition education programs for limited-resource audiences. After five years in this position, she accepted the responsibility as the Program Coordinator for the Out For Lunch Program. When funding ended for this position, the Nutrition Services Branch of the Department of Health offered her employment in their department. In this present position, she develops curriculums and delivers nutrition education training for school personnel including Child Nutrition staff, teachers and students.

## ACKNOWLEDGEMENTS

I would like to take this opportunity to recognize the support, encouragement and assistance of faculty, professional colleagues, family and friends during this process of graduate studies, which eventually resulted in this research and dissertation.

First, I would like to thank my committee for their continuing support and expertise. Dr. David Jenkins's office door was always open for me. He kept me going and instilled in me the need to finish this degree in a timely manner. Dr Carolyn Lackey supported me from the beginning, and provided support as a supervisor, mentor, colleague, professor and especially as a friend. Dr Gary Moore is and always will be one of the best professors that I studied under in my graduate program. Not only did he provide the support to complete this terminal degree, he made the entire process motivating and exciting. I would especially like to thank the chair of my committee, Dr. David Mustian. Dr. Mustian provided me with guidance, encouragement and direction. He made me believe in myself and gave me the support I needed to be successful. I will always be grateful for his words of encouragement and for always being there for me.

Thank you to my dear friend and fiancé, Peter Banko Jr., who always encouraged me to continue with my studies and put my needs before his own. He unselfishly sacrificed many weekends to help with the editing, typing and data entry, and provided unconditional loving support throughout this whole process.

Without the ongoing encouragement from my family, this research would not have come to fruition. Thanks to my children, Holly, Nathaniel, Bradley, Rebecca and Travis. Your continual support for your Mom was always there and was the motivation that I needed to keep going. Also my sincere thanks to my sister, Ruth Solburg, who

provided constant support through her prayers and encouragement.

I would like to thank my many friends who helped me through this entire process. I would like to recognize and thank my friend and colleague, Susan Baker, who encouraged me from the beginning and made me believe that I could complete a terminal degree. Also, my friend, Joann Banik, who counseled me many nights over the phone and provided support even though she was a hundred miles away. Thanks to my friend, Lynn Hoggard, who took this journey with me, and encouraged and commiserated with me through every step in the process. I also appreciate the formatting advice and recommendations that I received from Jack Ellis while working on this dissertation. Finally, a special thank you to Lorelei Jones, EFNEP Coordinator, and the Program Assistants who helped with the collection of the data for this research. Without their willingness to accept this additional responsibility this research would not have been possible.



# TABLE OF CONTENTS

	page
<b>LIST OF TABLES .....</b>	<b>x</b>
<b>INTRODUCTION.....</b>	<b>1</b>
Introduction.....	1
Out For Lunch.....	3
Expanded Food and Nutrition Education Program.....	4
Statement of the Problem.....	6
Significance of the Study.....	10
Limitations of the Study.....	12
<b>LITERATURE REVIEW .....</b>	<b>13</b>
History of the Expanded Food and Nutrition Education Program.....	14
History of Out For Lunch – A Food Stamp Nutrition Education Program.....	15
Behavior Change and Nutrition Education.....	18
Barriers to Preparing Healthy Meals and Nutrition Education.....	25
Barriers to Fruit and Vegetable Intake and Nutrition Education.....	29
Locus of Control and Nutrition Education.....	31
Rotter’s Theory.....	31
Health Locus of Control.....	32
Locus of Control and Nutrition.....	34
Locus of Control and Weight Loss.....	35
Locus of Control and Minorities.....	36
Quality of Life and Nutrition Education.....	37
Socioeconomic Status and Nutrition.....	38
Socioeconomic Status and Environment.....	42
Socioeconomic Status and Education.....	43
Socioeconomic Status and Income.....	46
Socioeconomic Status and Locus of Control.....	48
Program Delivery.....	49
Motivators.....	49
Delivery Method.....	51
Subject Matter for Programs.....	55
Recruitment.....	60
Barriers to Participation.....	60
Delivery Logistics.....	62
<b>METHODOLOGY .....</b>	<b>64</b>
Research Design.....	64
Sample and Population.....	65
Instruments.....	65

Table of Contents (continued)	page
Measurement of the Variables .....	69
Data Collection Process .....	69
Data Analysis .....	70

**FINDINGS .....73**

Profile of the Participants .....	73
Behavior Change.....	80
Barriers to Preparing Healthy Meals.....	85
Quality of Life.....	90
Locus of Control .....	91
Characteristics of Respondents in EFNEP and OFL .....	99
Behavior Change with EFNEP and OFL .....	106
Barriers to Preparing Healthy Meals with EFNEP and OFL.....	112
Quality of Life for EFNEP and OFL .....	117
Locus of Control for EFNEP and OFL.....	119
Range of Behavior Change for Frequency and Percentage Distribution for Low, Moderate and High Levels for EFNEP and OFL.....	127
Frequency and Percentage Distribution for Total Score for Barriers to Healthy Meals for EFNEP and OFL.....	129
Frequency and Percentage Distribution for Internal, Mixed and External Locus of Control for Total Participants EFNEP and OFL.....	130
Comparison of Mean Behavior Change Before and After Participation in EFNEP and OFL .....	134
Comparison of Mean Barriers to Healthy Meals Before and After Participating in EFNEP and OFL.....	137
Comparison of Mean Quality of Life Before and After Participating in EFNEP and OFL .....	139
Comparison of Mean Locus of Control Before and After Participating in EFNEP and OFL .....	141
Mean Difference in Behavior Change for Gender, Race, Age, Education, Marital Status, Number of Adults, Residence, Income and Employment .....	143
Mean Difference in Barriers to Healthy Meals for Gender, Race, Age, Education, Marital Status, Number of Adults, Residence, Income and Employment .....	156
Mean Difference in Quality of Life for Gender, Race, Age, Education, Marital Status, Number of Adults, Residence, Income and Employment .....	167
Mean Difference in Locus of Control for Gender, Race, Age, Education, Marital Status, Number of Adults, Residence, Income and Employment .....	177
Summary .....	188

**SUMMARY CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS ...192**

Purpose.....	192
Conclusions and Implications.....	193

Table of Contents (continued)	page
Recommendations for Future Research .....	203
Recommendations for Nutrition Education Research.....	204
<b>REFERENCES.....</b>	<b>206</b>
<b>APPENDICES .....</b>	<b>216</b>
Appendix A Consent Form .....	217
Appendix B Behavior Change Instrument.....	219
Appendix C Barriers to Healthy Meals Instrument .....	221
Appendix D Self-Anchoring Scale .....	222
Appendix E Locus of Control Instrument.....	223
Appendix F Demographic Information.....	225

## LIST OF TABLES

	Page
Table 4.1 Frequency and Percentage Distribution of Respondents by Demographic Factors for Total Respondents .....	75
Table 4.2 Frequency and Percentage Distribution for Behavior Change for Total Respondents .....	81
Table 4.3 Frequency and Percentage Distribution for Response to Barriers to Healthy Meals for Total Respondents .....	86
Table 4.4 Frequency and Percentage Distribution for Quality of Life for Total Respondents .....	91
Table 4.5 Frequency and Percentage Distribution for Locus of Control for Total Respondents .....	92
Table 4.6 Frequency and Percentage Distribution by Characteristics for Total Respondents .....	100
Table 4.7 Frequency and Percentage Distribution in Response to Behavior Change For Total Respondents .....	107
Table 4.8 Frequency and Percentage Distribution to Barriers for Healthy Meals For Total Respondents .....	113
Table 4.9 Frequency and Percentage Distribution for Quality of Life for Total Respondents .....	118
Table 4.10 Frequency and Percentage Distribution of Responses to Locus of Control From Total Respondents .....	120
Table 4.11 Pre-Post Difference in Behavior Scores for all Respondents .....	128
Table 4.12. Frequency and Percentage Distribution for Total Scores to Barriers for Healthy Eating for Total Respondents .....	129
Table 4.13 Pre-Post Differences in Total Scores for Locus of Control for Total Respondents .....	130
Table 4.14 Pre-Post Differences in Locus of Control Total Scores from EFNEP Respondents .....	132

Tables (continued)	page
Table 4.15 Pre-Post Differences in Locus of Control for Total Scores for Respondents in OFL.....	133
Table 4.16 Difference in Means Behavior Change from Total Respondents.....	134
Table 4.17 Difference in Means Behavior Change with EFNEP Respondents.....	135
Table 4.18 Difference in Means Behavior Change with OFL Respondents.....	135
Table 4.19 Differences in Means Behavior Change for Total Scores for Respondents .....	136
Table 4.20 Difference in Means Barriers to Preparing Healthy Meals for EFNEP.....	137
Table 4.21 Difference in Means Barriers to Preparing Healthy Meals for OFL .....	138
Table 4.22 Difference in Means Barriers to Preparing Healthy Meals for Total Respondents .....	138
Table 4.23 Difference in Means Quality of Life for EFNEP Respondents .....	139
Table 4.24 Difference in Means Quality of Life for OFL Respondents.....	140
Table 4.25 Differences in Means Quality of Life for Total Respondents .....	140
Table 4.26 Difference in Means for Locus of Control for EFNEP and OFL .....	141
Table 4.27 Difference in Means for Locus of Control for EFNEP.....	142
Table 4.28 Difference in Mean for Locus of Control for OFL.....	142
Table 4.29 Differences in Means for Locus of Control for Total Respondents .....	143
Table 4.30 Difference in Means Behavior for Gender for EFNEP and OFL Respondents...144	144
Table 4.31 Difference in Means Behavior for Race for EFNEP and OFL Respondents.....145	145
Table 4.32 Difference in Means Behavior for Age for EFNEP and OFL Respondents.....146	146
Table 4.33 Difference in Means Behavior for Education for EFNEP and OFL Respondents .....	147
Table 4.34 Difference in Means Behavior for Marital Status for EFNEP and OFL Respondents .....	149

Tables (continued)	page
Table 4.35 Difference in Means Behavior for Number of Adults in Household for EFNEP and OFL Respondents.....	150
Table 4.36 Difference in Means Behavior for Residence for EFNEP and OFL Respondents .....	151
Table 4.37 Difference in Means Behavior for Income for EFNEP and OFL Respondents...153	
Table 4.38 Difference in Means Behavior for Employment Status for EFNEP and OFL Respondents .....	155
Table 4.39 Difference in Means Barriers to Healthy Meals for Gender for EFNEP and OFL Respondents.....	157
Table 4.40 Difference in Means Barriers to Healthy Meals for Race for EFNEP and OFL Respondents .....	158
Table 4.41 Difference in Means Barriers to Healthy Meals for Age for EFNEP and OFL Respondents .....	159
Table 4.42 Difference in Means Barriers to Healthy Meals for Education for EFNEP and OFL Respondents.....	160
Table 4.43 Difference in Means Barriers to Healthy Meals for Marital Status for EFNEP and OFL Respondents.....	161
Table 4.44 Difference in Means Barriers to Healthy Meals for Number of Adults in the Household for EFNEP and OFL Respondents.....	162
Table 4.45 Difference in Means Barriers to Healthy Meals for Residence for EFNEP and OFL Respondents.....	163
Table 4.46 Difference in Means Barriers to Healthy Meals for Income for EFNEP and OFL Respondents.....	164
Table 4.47 Difference in Means Barriers to Healthy Meals for Employment for EFNEP and OFL Respondents.....	166
Table 4.48 Difference in Means Quality of Life for Gender for EFNEP and OFL Respondents .....	167
Table 4.49 Difference in Means Quality of Life for Race for EFNEP and OFL Respondents .....	168

Tables (continued)	page
Table 4.50 Difference in Means Quality of Life for Gender for EFNEP and OFL Respondents .....	169
Table 4.51 Difference in Means Quality of Life for Education for EFNEP and OFL Respondents .....	170
Table 4.52 Difference in Means Quality of Life for Marital Status for EFNEP and OFL Respondents .....	171
Table 4.53 Difference in Means Quality of Life for Number of Adults in the Household for EFNEP and OFL Respondents.....	172
Table 4.54 Difference in Means Quality of Life for Area of Residence for EFNEP and OFL Respondents.....	174
Table 4.55 Difference in Means Quality of Life for Income for EFNEP and OFL Respondents .....	175
Table 4.56 Difference in Means Quality of Life for Employment for EFNEP and OFL Respondents .....	176
Table 4.57 Difference in Means Locus of Control for Gender for EFNEP and OFL Respondents .....	178
Table 4.58 Difference in Means Locus of Control for Race for EFNEP and OFL Respondents .....	179
Table 4.59 Difference in Means Locus of Control for Age for EFNEP and OFL Respondents .....	180
Table 4.60 Difference in Means Locus of Control for Education for EFNEP and OFL Respondents .....	181
Table 4.61 Difference in Means Locus of Control for Marital Status for EFNEP and OFL Respondents .....	182
Table 4.62 Difference in Means Locus of Control for Number of Adults in Household for EFNEP and OFL Respondents.....	183
Table 4.63 Difference in Means Locus of Control for Residence for EFNEP and OFL Respondents .....	185
Table 4.64 Difference in Means Locus of Control for Income for EFNEP and OFL Respondents .....	186

Tables (continued)	page
Table 4.65 Difference in Means Locus of Control for Employment for EFNEP and OFL Respondents .....	187



# CHAPTER 1

## INTRODUCTION

Enhanced nutrition is necessary for a healthy population. In our society the incidences of obesity and many related chronic diseases are increasing, and guidelines related to nutrition are now of greater interest for our population. Obesity is now close to replacing tobacco as the leading cause of death. Researchers have predicted that if something is not done to reduce the rate of overweight and obesity, the current generation of children will be the first since the turn of the century to live a shorter life span than their parents (Olshansky & Ludwig, 2005). Overweight is defined as a Body Mass Index (BMI) from 25 to 30, and obesity is defined as a BMI greater than 30 (Duyfe, 2002). Poor nutrition and an inactive way of life threaten the nation's efficiency and economic strength, our national defense and the overall health and quality of life for our citizens.

The costs are significant. Overweight, obesity and associated chronic diseases cost over \$100 billion every year, and that figure is increasing. Poor diets and physical inactivity are estimated to be the factors in 310,000 to 580,000 deaths annually in the United States from cancer, kidney, cardiovascular disease and diabetes (Smith, 2004).

In the past nutritionists were concerned about the inadequate intakes of certain vitamins and minerals, resulting in nutritional deficiencies such as rickets, scurvy and beriberi. Now the nutritional problems of Americans are the strong relationships between nutrition and chronic diseases such as coronary heart disease, cancer, stroke and obesity. Solutions for the problems are now concentrated on understanding an individual's behavior and what influences their food choices.

The Healthy Eating Index (HEI) originated from the Federal Government's National Health and Nutrition Examination Survey (NHANES) to provide a measure of food intake. The HEI score is based on 100 points with 10 categories each worth 10 points. An HEI score of over 80 implies a healthy diet, a score between 51 and 80 is a diet that needs improvement and a score less than 51 is considered to be a poor diet. HEI scores generally increase with higher levels of education and income. Among adults during 1999-2000, those with more than a high school diploma had a higher mean HEI score compared with a lower score for individuals without a high school diploma (Baslotia, Carlson, Gerrior, Juan, & Lino, 2000).

People with a household income over 180 percent of the poverty threshold had a higher mean HEI score (65) than did people with a household income below the poverty threshold (61.7). Individuals in higher income families had better scores on grains, vegetables, fruits, milk, meat and variety components of the HEI than people in lower income households (Baslotia et al., 2000).

Gleason et al. (2000) indicated on average, low-income adults have lower dietary knowledge levels than high-income adults. The high-income group is 10 to 20 percent more likely than the low-income group to recall specific dietary information. Low-income adults can properly recognize just over half of a set of health problems associated with specific dietary practices such as eating too much fat or not enough fiber. More than two-thirds of these adults know the consequences of being overweight, eating too much fat and eating too much cholesterol, while only 40 percent know that not eating enough fiber is associated with bowel problems, heart problems and cancer (Gleason, Rangarajan, & Olson, 2000).

Compared with higher income respondents, low-income participants with children in the household were found to be less aware of the diet/disease relationships, less likely to use the nutrition panel on the food label and when buying foods, are significantly less likely to have low-fat and low-cholesterol eating practices. Low-income respondents with children were more concerned with price, convenience and how well food keeps than were higher income participants (Morten, 1997).

The Economic Research Services (ERS) explored the connections between nutrition knowledge and food choices and established that nutrition education is a worthwhile investment. They noted that in socio-economically matched individuals, a one-point improvement on a nutrition knowledge scale correlated to a 7 percent improvement in diet quality. In matched households, an improvement in the primary meal preparer's knowledge translates to a 19 percent improvement in household meal quality (Hamilton & Rossi, 1995). Nutrition education is the center of the two programs evaluated in this research. This study looked at the Expanded Food and Nutrition Education Program (EFNEP) and Out For Lunch (OFL), a food stamp nutrition education program, and evaluated the impact the two programs have on behavior changes with a low-income population. The study also considered barriers low-income clients need to overcome to preparing healthy meals, changes in perceived quality of life and increase in internal locus of control after participating in the program.

### **Out For Lunch**

Out For Lunch is an example of a nutrition education program that has participated in this United States Department of Agriculture (USDA) funded program for

the past seven years. The Out For Lunch Program's major goal is to provide educational programs that increase, within a limited budget, the likelihood of making healthy food choices consistent with the most recent dietary advice as reflected by the Dietary Guidelines and the USDA Food Guide Pyramid. Lessons taught by paraprofessionals in Out For Lunch focus on teaching limited-resource individuals and families in North Carolina the skills needed to select, store, prepare and serve food safely and to adopt economically sound shopping skills to prevent food insecurity.

The Out For Lunch Program is housed in 41 North Carolina counties with programs provided by 39 Adult Nutrition Program Assistants and 23 Preschool Nutrition Program Assistants. The primary audience continues to be young families, males and females with children, who are receiving food stamps. However, an increasing number of individuals ages 35-65, who have older dependent children living in the home, are participating in the program.

Out For Lunch Program Assistants, teach an average of 5,000 food stamp participants annually. The Out for Lunch Program offers four, four-hour group sessions with an average of 12 participants per class. The clients, instructed in lessons on nutrition, participate in the actual food preparation of three to four different recipes with hands-on experiences.

### **Expanded Food and Nutrition Education Program**

The fundamental objective of EFNEP is to promote sound nutritional principles among low-income families. Unlike welfare and food assistance programs, EFNEP focuses on nutrition and nutrition-related knowledge and skills. Rather than simply providing food for poor families, EFNEP concentrates on providing them with

knowledge of how to use the already available food and resources and the importance of nutrition (Brink, 2000).

The success of EFNEP is credited to several factors. First is the use of the trained paraprofessional, who is familiar with the community, to deliver the lessons. The use of former EFNEP participants as program volunteers is another factor in the success of EFNEP. The program tailors educational efforts to the needs of the individual or the group therefore meeting the needs and wishes of the participants (Randall, Brink, & Joy, 1995).

In North Carolina EFNEP is located in 55 counties with 40 Adult Program Assistants and 15 Youth Program Assistants. Methods of delivery may include direct teaching in groups or one-to-one situations. The hands-on, learn-by-doing approach allows the participants to gain the practical skills necessary to make positive behavior changes. EFNEP reaches over 4,200 individuals with 87 percent of the participants taught in groups and the remainder taught in individual sessions. EFNEP is delivered as a series of 6 to 12 lessons averaging 30-45 minutes each, over several months. Program Assistants demonstrate how to prepare a recipe and offer samples to taste.

The education of low-income individuals on the benefits of healthy eating and improving their quality of life has been the goal of two nutrition programs housed in the Family and Consumer Science Department of North Carolina Cooperative Extension at North Carolina State University. Cooperative Extension, part of the College of Agricultural and Life Sciences Department, carries this charge forward for the university through its mission, which is to help people put research-based knowledge to work to improve their lives.

The two programs involved in this effort, the Expanded Food and Nutrition Education Program (EFNEP) and the Out For Lunch Program (OFL) have provided nutrition education for low-income clientele for several years. However, to this date neither program has determined if participants are able to overcome barriers that prevent them from preparing healthy meals, if their quality of life improves or if the participants feel that they have more internal control after participating in EFNEP or OFL classes. In this research, the above constructs were explored.

### **Statement of the Problem**

According to the report *Dietary Intake and Dietary Attitudes Among Food Stamp Participants and Other Low-Income Individuals* compiled in September 2000, there are a large number of low-income adults who are not aware of specific facts related to the health consequences of particular dietary practices. Specifically, on average low-income adults can correctly identify just over half of a set of health problems associated with definite dietary practices such as eating too much fat or not getting enough fiber. On average low-income adults know less than half of the Food Guide Pyramid recommendations for intake of the five major food groups, including receiving at least six servings of grain products and three servings of vegetables daily (Gleason et al., 2000; Gleason, Rangarajan, & Olson, 2002; Rogers, Simon, Lucker, J., & Newman, 1995; Rogers, Simon, Zucker, Mackessy, & Newman-Palmer, 1995).

The prevalence of obesity is greatest among low-socioeconomic status individuals, particularly among low-income women living in the South (Townsend, 2000). Obesity is a risk factor of hypertension, some forms of cancer, stroke and heart

disease, and the leading factor for the development of diabetes. (Murphy, Townsend, Peerson, & Rose, 1998).

Monroe and colleague's (2002) study with 32 low-income women in the south also found a high level of obesity and overweight with an average BMI for the group at 27.54. The research concluded that participants had poor diets even though few of them reported food insecurity or hunger. Their eating habits are an example of a typical unchanged "Southern diet" with a strong emphasis on fats (fried foods, fat meats eaten and used as seasoning), starches and large quantities of food when food is available. They also depended on fast foods and had little variety of fruits and vegetables and scarcely any dairy products (Monroe, O'Neil, Tiller, & Smith, 2002).

Research supports that low-income clients have poorer diets and present with more chronic diseases (Gleason et al., 2000). Poor intake of fruits and vegetables leads to an individual being deprived of nutrients from these foods and at greater risks to chronic disease. (Kubena & McMurray, 1996) Obesity is evident in the low-income population and programs that encourage participants to change their dietary intake and decrease the incidences of food insecurity will promote changes for low-income clients. Nutrition educators need to consider techniques to encourage participants in their programs to conquer the day-to-day problems they encounter and encourage changes in their lives.

Working with clients who are overweight is a challenge for nutrition educators since the consequences of being overweight may be much less negative for some black women than for white women. Although there is a concern about being overweight and an awareness of health risks with black women, social and cosmetic motivations for

weight loss may not support weight loss efforts among black women, particularly after age 45 (Kuchler & Jayachandran, 2002)

Low-income individuals face many barriers to preparing healthy meals for their families. Shanker and Klassen (2001) conducted a focus group with WIC (Supplemental Program for Women's Infant and Children's) to identify barriers for making positive behavior changes in fruit and vegetable consumption with low-income white women. The focus group stated cost, storage space, time and difficulty in changing both personal and family food behaviors as barriers for fruit and vegetable consumption by their families. (Shankar & Klassen, 2001). Specific data on these barriers needs to be explored for this targeted population. A study of the prevalence of such barriers to the limited resource population within the counties of North Carolina will provide specific data to aide in the design and development of nutrition educational programs and social marketing messages to help low-income individuals overcome the barriers preventing positive choices.

Historically low-income clients feel as if they do not have internal control over their lives, but are influenced by outside forces or powerful others in their lives. This research examined the relationship of locus of control and the intervention of the EFNEP and Out for Lunch Programs to establish if nutrition knowledge and hands-on intervention encourages low-income individuals to demonstrate more internal control over their lives after participating in the programs. By demonstrating internal control, it may be probable that EFNEP and OFL participants will formulate healthier choices and will not be dependent on powerful others or assume their health is a result of luck or fate.



Locus of control theory differentiates between internal and external locus of control as crucial adoption of a new behavior (Rotter, 1966). The theory promotes that individuals learn to recognize that reaching a particular goal for reward or behavior is mostly within their control or outside their control.

Locus of control is believed to be an important factor in explaining health behavior in that the more a person feels powerless to control his/her life, the less likely he/she is to comply with officially recommended health actions (Murimi, 2001). Locus of control has been used mainly with weight loss and obesity in the area of nutrition. A limited amount of research has focused on locus of control with nutrition education with the low-income population. This research explored this area to determine if nutrition education programs should address this construct to help low-income clients to improve their internal locus of control.

Quality of life was a construct examined in this research. In order to participate in the Out for Lunch Program or EFNEP, participants are on food stamps or at 180 percent of the poverty level. According to the U.S. Census Bureau in North Carolina, in the year 2000 all ages in poverty was 12.9 percent, and families with children 0-17 years of age, 16.5 percent were in poverty ("2002 indicators of welfare dependence", 2003).

Socioeconomic status (SES) influences how individuals make decisions related to healthy food choices and obesity. Wardle and Steptoe (2003) concluded lower SES was associated with less health consciousness (thinking about things to do to keep healthy), stronger beliefs in the influence of chance on health, less thinking about the future and lower life expectancies (Wardle & Steptoe, 2003).

This research evaluated changes in the quality of life of clients after participating in EFNEP or the Out for Lunch Program. The author suggested that after participating in the program, EFNEP or OFL, clients gained more confidence and demonstrated a perceived better quality of life.

### **Significance of the Study**

This study is designed to demonstrate the impact of nutrition education with low-income clients participating in two nutrition education programs, EFNEP and OFL. The two programs are dedicated to providing research-based information to low-income clients. From this commitment comes the need to improve the diets of low-income clients with the hope they will also perceive they have a better quality of life.

Knowing how to help clients make behavior changes, understanding the barriers that prevent them from preparing healthy meals and helping participants improve their quality of life, and develop an internal locus of control will provide the groundwork for improving nutrition education programs. This study of the limited resource population within the counties of North Carolina will provide specific data to aide in the design and development of nutrition educational programs, and better equip paraprofessionals to provide families with the information they need to improve their dietary intake for themselves and their families.

Traditionally low-income clients perceive that external forces control their life. By helping participants increase their internal control, it is possible that EFNEP and OFL participants will formulate healthier choices, and will not be dependent on powerful others or assume their health is a result of luck or fate.

Finding the most effective and efficient method of delivery for nutrition education is a challenge for educators. This research looked at the two methods of program delivery of EFNEP and Out For Lunch, to determine impact for each program.

The purpose of this study was to answer the following Research Questions:

1. Do participants change behavior after participating in EFNEP or OFL?
2. Are participants able to overcome barriers that prevent them from preparing healthy meals after participating in EFNEP and OFL?
3. Do participants demonstrate an increase in their quality of life after participating in EFNEP or OFL?
4. Do participants increase their internal locus of control after participating in EFNEP or OFL?
5. What effect, if any, does the method of program delivery have on change in behavior, overcoming barriers to healthy meals, an increase in internal locus of control and quality of life after participating in EFNEP or OFL?

More and more research supports the importance of a healthy diet in the prevention of chronic diseases. The 2005 U.S.D.A. Dietary Guidelines encourages individuals to eat a diet that is lower in fat, includes whole grains, contains four to five cups of fruits and vegetables and three low-fat dairy products daily, and increase their activity to maintain or lose weight ("Dietary guidelines for Americans 6th edition", 2005). An evaluation of the two programs is important to establish if nutrition education programs are

effective in helping low-income participants make behavioral changes that comply with the dietary guidelines to further behavior change leading to enhanced quality of life.

### **Limitations of the Study**

This study was limited to the population of EFNEP and OFL programs in North Carolina; therefore, the findings cannot be generalized to other low-income programs in other states. In addition, the questions were self-reporting and may not reflect the true situation of the respondent. Although respondents were encouraged to answer the questions to the best of their ability, there is no way to determine if the answers were an accurate and honest response.

The Program Assistant teaching the class administered the questionnaires. The peer educators differed in terms of how effectively they related to their participants, how enthusiastic they were in presenting the questionnaire, and how well they conducted the nutrition session. These variations in the Program Assistants abilities and performance without a doubt influenced participant's responses. Respondents may not have answered honestly, because they did not want their response to reflect on the Program Assistant.

Another limitation to the study was there was not equal participation from both programs with OFL having a larger number of respondents, and the sample size was small for the population numbers for both programs.

## **CHAPTER 2**

### **LITERATURE REVIEW**

Nutrition education and its influence on health and survival have greatly increased over the last twenty years. The new 2005 Dietary Guidelines, which provide the scientific research for MyPyramid ("Dietary guidelines for Americans 6th edition", 2005), are examples of the federal government's effort to provide scientific-based nutrition information for the consumer and encourage healthy eating practices. Even with progress towards implementing the Dietary Guidelines for Americans, many consumers, especially low-income individuals, are still not consuming enough fruits and vegetables, whole grains and dairy products (Morten, 1997; Quan, Salomon, Nitzke, & Reicks, 2000). Developing a better understanding of consumers' food and nutrition related knowledge, attitudes and practices is the first step in changing dietary behavior.

This study examined two programs serving low-income clients, the Expanded Food and Nutrition Education Program (EFNEP) and the Out For Lunch Program, a federally funded Food Stamp Nutrition Education Program, to evaluate changes in nutrition knowledge and behavior, locus of control, quality of life and barriers for preparing healthy meals confronted by this population. The research also looked at the method of delivery to determine which program would be more suitable to meeting the needs of the participants.

This chapter contains a history of EFNEP and OFL, a review of the literature, and what the research suggests are the results of nutrition education on behavior change, barriers to preparing healthy meals, quality of life and locus of control. The research related to program delivery is also included in this chapter

## **Background**

### **History of the Expanded Food and Nutrition Education Program**

The Expanded Food and Nutrition Program (EFNEP) is a nutrition education program administered by the Extension Services of the United States Department of Agriculture (USDA). The program utilizes paraprofessionals to deliver basic food and nutrition information to low-income families.

By the early 1900's United States Government, leaders were attempting to address the issue of malnutrition in this country. The attention of concerned Americans turned toward the plight of less fortunate Americans. One of the most shocking realizations was that in the midst of the land of plenty; children were going to bed unfed. A country that had provided food for millions of people in other countries had somehow managed to overlook the hunger of its own citizens. In this environment of concern the Expanded Food and Nutrition Education Program was created (U.S. Department of Agriculture, 1975).

Supplemental programs were established to address the nutritional needs of the low-income population including the Food Stamp Program (FSP), the Department of Agriculture's Supplemental Food Program (CSEP), the Special Supplemental Food Program for Women Infants and Children (WIC) and the National School Lunch Program (NSLP). The establishment of these and other supplemental food programs provided additional food resources to families in poverty. Surveys indicated most low-income

families participating in food assistance programs were still nutritionally at risk. Harris (1984) described the realities faced by low-income African-Americans. She stated there is a need for “culturally specific nutrition education to meet the needs of high-risk groups: adolescent mothers, isolated elderly and the single female-headed household” (Harris, 1984).

After five pilot programs conducted by the Extension Service, the Alabama Project, which utilized paraprofessionals to teach nutrition education to low-income homemakers, proved to be the most successful. The experience from this pilot program demonstrated that persons indigenous to the community and of the same economic level had a greater potential to establish understanding and to communicate with potential participants. Employment of paraprofessionals proved to be an effective cost-efficient strategy to reach and teach nutrition education to low-income families. In August of 1968 the Federal Extension Service (FES) initiated an extensive nutrition education program with low-income families. As a result, the USDA provided \$10 million to the Cooperative Extension Service in November of the same year and EFNEP was born (U.S. Department of Agriculture, 1975).

### **History of Out For Lunch -A Food Stamp Nutrition Education Program**

Since the mid 1940's the U.S. Government has committed to ensuring that its citizens neither go hungry nor suffer the consequences of inadequate dietary intake. Today the USDA implements 15 programs as a “food safety net” to provide low-income citizens with food or the means to purchase food (Hamilton & Rossi, 1995).

The Food Stamp Program (FSP) is designed to safeguard the health and well-being of the nation's population by raising the level of nutrition among low-income

households. The proportion of food stamp households with earnings has increased from about 20 percent for most of the 1980's and early 1990's to 27 percent in 2000. At the same time, the proportion of households with income from Temporary Assistance for Needy Families (TANF) has declined from 42 percent in 1984 to 26 percent in 2000 following the decline in TANF caseloads. Over half of all food stamp households have children, and the majority of households (89%) have incomes below the poverty level ("2002 indicators of welfare dependence", 2003).

The FSP provides food stamp benefits to low-income households, which can be used to purchase food from authorized retail dealers. Benefits are awarded to participating families to ensure they have the resources to purchase an adequate supply of nutritious foods. Food stamp benefit amounts are the difference between 30 percent of a household's net income and the Thrifty Food Plan (TFP) amount based on household size. The TFP is a low-cost food plan designed to provide a nutritionally adequate diet for most households, while conforming as much as possible to the usual diets for low-income families (Bradbard, Michaels, Fleming, & Campbell, 1997).

Nutrition education is an important part in the Food Stamp Program. Nutrition education teaches individuals to make healthier choices and stretch their food dollars to feed their families. The goal of Food Stamp Nutrition Education is to provide educational programs that increase, within a limited budget, the likelihood of all food stamp recipients making healthy food choices and choosing active lifestyles consistent with the most recent advice reflected in the dietary guidelines (Winicki, Joshua, & Gundersen, 2002).



Under the current regulations, states can choose if they want to provide nutrition education to food stamp recipients as part of their program operations. Nutrition Education is an optional program, but states are encouraged to provide nutrition education for food stamp participants. To secure the funds the United States Department of Agriculture (USDA) reimburses the state for 50 percent of the allowable administrative costs to operate the education program. The number of state agencies with approved Nutrition Education Plans increased from seven in 1992 to 50 state agencies in 2003. Federal funds approved for Food Stamp Nutrition Education also grew from \$661,000 in 1992 to over \$192 million in 2003 ("Nutrition program facts: Food stamp nutrition education", 2004).

States provide a variety of Food Stamp Nutrition Education Programs across the United States targeting low-income clients of all ages. Cooperative Extension Service (CES) is the primary agency contracted to provide Food Stamp Nutrition Education. Other agencies include public health departments, welfare centers, universities of higher learning, and nutrition education networks.

The USDA's Food and Nutrition Service (FNS) provides guidance and direction for the states to encourage the most useful nutrition teaching tools and approaches available. FNS requires the states to focus on four core elements including food security, food safety, dietary quality, and food resource management as well as shopping and behaviors.

At the cornerstone of the USDA nutrition assistance programs, the Food Stamp Program (FSP) plays a critical role in helping improve nutrition education among low-income individuals. Under current regulations, states have a choice of providing nutrition

education to food stamp recipients as part of their program operations. The goal of Food Stamp Nutrition Education (FSNEP) is to improve the diets of food stamp recipients through nutrition education activities that increase self-sufficiency.

Fifty-one percent of individuals between the ages of 20 and 65 will participate in the Food Stamp Program. In addition, individuals who use food stamps are likely to do so at several points across the life span. The fact that approximately half of all adults will use the Food Stamp Program illustrates the widespread reach of this federal food assistance program. Race and education have an impact on the use of food stamps. Being black and not graduating from high school substantially raises the likelihood of turning to federal food assistance programs (Rank & Hirschl, 2005). In North Carolina 47 percent of the population is eligible for food stamps with over 500,000 blacks with a median family income of \$18,750 (CDC, 2002).

### **Behavior Change and Nutrition Education**

We could assume that higher levels of nutrition knowledge and positive attitudes toward nutrition would result in healthier choices. The relationship between nutrition knowledge and dietary behaviors is a subject of controversy. Although some studies have identified positive associations between knowledge and dietary behavior, others have not (Axelson M.L., Federline T.L., & Brinberg D., 1985; Jeffrey & Pirie, 1982). A review of nutrition education research and intervention in the United States since 1980 supports the effectiveness of nutrition education for the public. The most effective programs are those that are behaviorally focused and theory based (Contento et al., 1995; Randall et al., 1995).

Lower-income adults appear to have lower levels of dietary knowledge than higher-income adults. They are less likely to know specific facts about the health problems associated with particular dietary practices such as the Food Guide Pyramid, recommendations for food group consumption and the fat/cholesterol content of particular foods. In contrast, the nutrition knowledge of food stamp participants and low-income non-participants is very similar. There are no significant differences between these groups in their nutrition knowledge (Kantor, 1998; Sapp, 2002).

Although EFNEP has been shown to be effective in improving diet quality among low income consumers, only a small percentage of food stamp participants are involved in EFNEP (Morten, 1997). Studies have found that provisions of food stamps will not achieve the goals for which the food stamp program was established, and additional resources provided by the Food Stamp Program alone may not substantially change participants' dietary intake (Cason, Cox, Burney, Poole, & Wenrich, 2002; Wolman, Stallings, Meacham, & Goodner, 1994). For low-income women, participation in the Food Stamp Program is associated with a 9.1 percent increase in the predicted probability of obesity. Participation in the Food Stamp Program for five years, compared to no participation in the program, was associated with approximately a 20.5 percent increase in the predicted probability of current obesity (Gibson, 2003; Townsend, Peerson, Love, Achterberg, & Murphy, 2001).

Butler and Raymond indicated that adequate income was not a guarantee of adequate nutrition and reported “even rudimentary knowledge of nutrition” can increase intake considerably (Cason et al., 2002). A Food Stamp Nutrition Education Program in Texas was effective in teaching limited-resource individuals and families food and

nutrition skills that mirror the Dietary Guidelines for Americans and the Food Guide Pyramid (Anding, Fletcher, Laanen, & Supak, 2001).

Several studies with EFNEP suggest improvements in food budgeting, food preparation and planning, and food and nutrient intake after participating in EFNEP (Burney & Haughton, 2002; Cason et al., 2002; Contento et al., 1995; Del Tredici, Joy, Omelich, & Laughlin, 1988; Schuster et al., 2003). Food shopping skills taught in nutrition education programs with participants from EFNEP and Food Stamp Programs demonstrated statistically significant relationship between careful food shopping practices and nutrient availability (Hersey et al., 2001). Participants in a Welfare To Work Program reported a greater degree of confidence in managing resources, which included a 9 percent increase in managing food money and food stamps and a 7 percent increase in maintaining food resources (Smith, 1998). EFNEP clients who kept a shopping list and estimated food expenditures from recalls saved significantly more on food expenditures than did participants who estimated food expenditures and did not receive nutrition education (Burney & Haughton, 2002).

Arnold and Sobal's research reported similar findings, but they also indicated that increased nutrition knowledge and healthier eating practices did not lead to corresponding nutrient intake changes. Almost all participants reported their families were healthier after they graduated from EFNEP, indicating their families had more energy and fewer illnesses. Additional changes beyond food and nutrition occurred in education, employment and health and community involvement (Arnold & Sobal, 2000; Brink & Sobal, 1994). Knowledge, attitude and beliefs were more strongly related to the content of the intervention and were more specific to the behavior change in research

conducted by Smith et al. In this study, in which knowledge was conceptualized in relation to food choices rather than more abstract concepts such as nutrient levels, knowledge was a strong predictor of behavioral changes (Smith, Baghurst, & Owen, 1995).

In comparison of two groups with one receiving EFNEP instruction and one control group, EFNEP produced highly significant changes in behavior, knowledge and attitude as well as dietary habits. The major impact was in milk consumption and in fruit and vegetable consumption. In both of these food groups participants increased their consumption to the ideal serving size (Block, 1985). Working with mother/daughter dyads in an obesity prevention program, Fitzgibbon (1995) and colleagues suggested that changes in knowledge and behavior may occur with a six-week obesity prevention program for a poverty-level African-American group of mothers and daughters (Fitzgibbon, Strolley, & Kirschenbaum, 1995). Fidalgo (1988) and associates found an increase in knowledge, behavior and attitudes with an Hispanic population. (Fidalgo & Chapman-Novkofski, 1988).

Research by Torisky (1969) also supported improvements in average servings from milk and the fruit and vegetable groups (Torisky et al., 1969). Other research confirmed increased intakes in milk, protein and fruit and vegetable food groups with EFNEP participants (Amstutz, 1982; Del Tredici et al., 1988). Graduates in EFNEP had significantly decreased their intake of fats (Stack & Cox, 1997), sweets and alcohol despite a decline in purchasing power (Del Tredici et al., 1988). However, Cason et al. (2000) reported undesirable changes with an increase in servings of fats and sweets (Cason et al., 2000).

In a longitudinal study by Nierman, (1986) EFNEP participants' 24-hour recall scores increased significantly due to EFNEP participation. Retention of these changed scores for five years was also significant (Nierman, 1986). However, results from Brink (2000) on 24 hour recall indicated the Recommended Dietary Allowances (RDAs) for three macronutrients and five of the micronutrients did not change significantly (Brink, 2000). Similar results were found between graduation and follow-up for protein, calcium and vitamin A. Intakes declined but were within acceptable ranges of the RDAs (Brink & Sobal, 1994). Other studies have suggested that EFNEP participants are still not consuming the recommended number of servings from the grain, dairy, fruit and vegetable groups (Keefe, 1988; Luccia, Kunkel, & Cason, 2003).

Graduate EFNEP homemakers in South Carolina consumed over 100% of the RDAs for protein, vitamin A, vitamin C and vitamin B6, but they did not meet the RDAs for calories, iron and calcium (Doeleman, Kunkel, & Cason, 1998). Research by Reemps (1983) and colleagues with 310 EFNEP participants suggested that homemakers maintained their meat intake and significantly increased their milk, bread and cereal and fruits and vegetables when compared to 140 low income individuals who were not participating in EFNEP (Reemps, Caster, & Pesihier, 1983).

Crayton's (1991) research with EFNEP clients indicated nutritional intake improvement with older participants. The 15-18 year olds did not meet two-thirds for the RDAs for several of the nutrients studied. The 19-24 year olds showed continued and steady improvement up to the fourth recall. The 25-50 year olds showed little gain from participation in the program. Individuals in the age group of 51 or over were the ones to

meet two-thirds of the RDAs for iron and showed continuous improvement in their nutrition intake up to the fourth food recall (Crayton, 1991).

Research with EFNEP and cancer participants demonstrated a decrease in fat and an increase in dietary fiber and vitamin C. Individuals receiving EFNEP lessons only, decreased their fat intake and increased vitamin E intake. Intakes of calcium, folate and vitamins A and E increased among those participating in the cancer-prevention programs and those receiving EFNEP lessons only, but the changes were not significant (Cox et al., 1995).

After participating in a food stamp education program, a greater percentage of clients planned meals ahead of time, compared prices when buying food, reported running out of food less often before the end of the month and shopped with a grocery list. They also refrigerated meat and dairy products within two hours of serving, thawed foods correctly, thought of healthy foods when preparing meals for their families and used the nutrition facts label to make food choices (Cason et al., 2000).

Investigation of the fruit and vegetable intake with the low-income population suggested education was found to affect consumption behavior indirectly through its impacts on attitude. Coupons directly affected consumption behavior but did not affect attitude toward fruits and vegetables directly or indirectly. Coupons showed a stronger impact on consumption behavior than education. Both the coupons and education were effective in changing attitude and behavior in this study (Anderson J. et al., 2001).

Knowledge and awareness of dietary recommendations have consistently been associated with higher fruit and vegetable consumption (Campbell et al., 2004; Havas et

al., 1998). A Market Basket Booklet improved mothers' confidence in handling fresh produce and encouraged them to serve fruits and vegetables more frequently, but did not reduce overall barriers related to fruits and vegetables or increase fruit and vegetable consumption with WIC clients (Birmingham, Schultz, & Edlefsen, 2004).

Recent reviews have indicated that behavioral theory-based nutrition education programs are more successful at achieving food behavior change than knowledge-based programs. Research on goal setting for dietary change among adults suggests that goal-setting procedures are likely to lead to change (Contento, Balch, & Bonner, 1995; Contento et al., 1995; Cullen, Baranowski, & Smith, 2002; Derrickson, Buchanan, Kauri Asing, & Okuma, 2003). Studies suggest nutrition education programs for low-income clients should appreciate and build on existing abilities of participants and provide opportunities for self-directed learning and activities, and build social support, networks and trust among participants (Arnold, Ladipo, Nguyen, Nkinda-Chaiban, & Olson, 2001). A comprehensive review of interventions by Randell (1995) found that nutrition education works and is a significant factor in improving dietary practices when behavioral change is set as the goal, and the educational strategies used are designed with that as a purpose (Randall et al., 1995).

Studies by Reed (1996) suggested basic nutrition knowledge about topics such as serving sizes and how to read food labels is needed. Receiving new information related to diet and various diseases and observing the health problems of family members motivated mothers in this study to make changes in their diet (Reed, 1996). Focus groups suggested clients would change their eating behavior if there were activities to increase



learning, and menus were convenient, low cost, healthy and met children's tastes (Shankar & Klassen, 2001).

Low-income parents exhibit more concern about feeding their children a healthy diet than what they eat themselves. Focus groups with WIC clients conducted by Treiman (1996) indicated it was sometimes more difficult to keep the discussion focused on the women's eating habits as they were more concerned about what to feed their children. Another area of interest with this group was that women were concerned about nutrition during pregnancy, but concern lessened soon after delivery (Treiman et al., 1996).

A comparison of EFNEP and FSNEP suggested that the two programs were equally effective in bringing about significant improvements in intakes of nearly all food groups and nutrients in both food stamp and non-food stamp recipients. The only differences were that participation in EFNEP seemed to result in an undesirable increase in fat intake, whereas participation in FSNEP did not. In addition, the food stamp participants made significantly greater gains on intake of fruits and vitamin C than EFNEP and greater gains on intake of vitamins A and B6. This suggests that food stamp recipients may benefit slightly more than non-food stamp recipients from nutrition education with some nutrients; however, both groups were very positively impacted by the nutrition education provided by EFNEP and FSNEP (Cason et al., 2000).

### **Barriers to Preparing Healthy Meals and Nutrition Education**

Clients participating in EFNEP and OFL Programs confront many barriers that make it difficult for them to make healthy food choices. In the *Continuing Survey of*

*Food Intake of Individuals*, overall scores from the Dietary Adequacy Score results were lower in women below the federal poverty index than those from the total population (Baslotia & Guthrie, 1995). The lowest income households decreased their consumption of fresh vegetables by 22 percent compared with a reduction of 12 percent of the higher income households. Larger households, with more children, consume less food per person than do smaller households (Lutz, Blaylock, & Smallwood, 1993). Lappalainen and colleagues (1998) observed that individuals with less education reported more barriers than individuals with a higher education (Lappalainen, Koikkalainen, Julkunen, Saarinen, & Mykkanen, 1998).

Children's preference plays an important part in food selection for mothers in low-income families, and children's preferences for unhealthful food options proved to be a major barrier. (Shankar & Klassen, 2001). When conducting focus groups with WIC clients, Birkett and colleagues (2004) supported that parents were not sure how to buy, prepare or introduce healthier foods to children. Parents were also unsure what was appropriate for children at different ages and how to be physically active with their children. Key barriers to change with the focus groups included inadequate parenting skills, lack of knowledge, unhealthy social environments, lack of time and lack of social support or financial support (Birkett, Johnson, Thompson, & Oberg, 2004). Mothers believed it would be easier to encourage increased vegetable consumption in their children if fathers would model this behavior (Reed, 1996; Reicks, Randall, & Haynes, 1994).

Focus groups with Hispanic food stamp participants suggested that children greatly influenced what women bought in the grocery store, even if the children were not

present when their mothers were shopping (Hampl & Sass, 2001). Relatives and friends were also considered to be important influences on children, both positive and negative, on food choices (Reed, 1996). Coveney and colleagues' (2002) research suggests that men (husbands or partners) have exerted an influence over what food is actually provided, but more recent research indicates that children play an important part in determining family food habits and purchases (Coveney, 2002).

EFNEP participants cited similar barriers including extra time and money needed to purchase and prepare healthful foods, food preference by family members, lack of interest and skills in cooking and insufficient knowledge about which foods are healthful (Hartman, McCarthy, Park, Schuster, & Kushi, 1994; Reicks et al., 1994; Treiman et al., 1996). The most frequently cited barriers to healthful eating by Eikenberry (2004) were time and financial considerations (Eikenberry & Smith, 2004). Nestle and colleagues (1998) also reported that economic considerations served as barriers to meeting dietary requirements (Nestle et al., 1998). Bradbard (1997) reported lack of time as a barrier along with ethnic pressure and children's preferences (Bradbard et al., 1997). Along with time and money as physical barriers, Povey and colleagues (1998) also described psychological barriers such as the individuals' inability to assess the healthiness of their own diet (Povey, Conner, Sparks, James, & Shepard, 1998). Smith and Owen (1992) indicated another barrier was food eaten by friends and family (Smith & Owen, 1992).

Molaison and colleagues (2005) focus groups with low-income African-American adolescents indicated taste was a barrier for fruit and vegetable consumption. The sweet flavor of fruit or adding sugar to vegetables during preparation was mentioned in their focus groups. Members of this focus group talked about family members, especially

grandparents, who grew vegetables; and this may explain why grandmothers in the study were identified as having a strong influence on fruit and vegetable consumption (Molaison, Connell, Stuff, Yadrick, & Bogle, 2005).

African-Americans identified negative taste as a barrier to the consumption of high-calcium foods such as milk, cheeses and yogurt (Zablah, Reed, Hegsted, & Keenan, 1999). Similarly, Glanz and colleagues (1998) found that taste and cost are most influential on food choices (Glanz, Basil, Maibach, Goldberg, & Snyder, 1998). Perceived barriers such as cost and availability were more significant in the low-income population than in populations with higher incomes (Havas et al., 1998; Lappalainen, Koikkalainen, Julkunen, Sarinen, & Mykkanen, 1998; Treiman et al., 1996; Zenk et al., 2005).

Working families lack the time needed to shop for and cook a full meal, and it is even harder for a single-parent household to find time. This lack of time can lead to quick trips to the closest fast food restaurant. A study in the *International Journal of Obesity* suggested that people of color eat fast food more often than whites. Low-income and minority neighborhoods are less likely to have supermarkets, and individuals are forced to shop at more expensive, poorer quality corner stores and convenience marts (Leff, 2002).

Dibsdall's (2003) research with low-income clients indicated that two-thirds of participants did not think that lack of money prevented them from eating a healthy diet, 73 percent of participants strongly or moderately believed they ate healthy anyway. Of the remaining 27 percent who did not strongly believe they were eating healthy, less than

half of them also though the lack of money prevented them from eating healthy (Dibsdall, Lambert, Bobbin, & Frewer, 2003).

### **Barriers to Fruit and Vegetable Intake and Nutrition Education**

Low-income populations have lower levels of fruit and vegetable consumption than do higher income populations. Several factors affect consumption of fruits and vegetables by low-income families. Intervention approaches for low-income clients must be taken into consideration and address barriers to purchasing, preparing and consuming fruits and vegetables.

Working with clients with low literacy skills, Macario (1998) cited several barriers to eating a healthful diet such as cost of fresh fruits and vegetables, time needed to prepare healthful dishes, perceived unpalatability of a prudent diet, ease of eating unhealthy food at a fast food restaurant and from vending machines and concern that some canned foods may cause cancer. Participants also emphasized the difficulty of eating a balanced diet with their erratic work schedules (Macario, Emmons, Sorensen, Hunt, & Rudd, 1998). Quan and colleagues (2000) also established that cost was the most important factor affecting food choices. Other factors included lack of availability, time and the effort to prepare and eat fruits and vegetables, a dislike for them or a preference for other foods (Quan et al., 2000). Shankar and Klassen (2001) found cost and time to be barriers, but also reported childhood memories of being forced to eat vegetables were deterrents to requiring their children to eat adequate amounts of vegetables (Shankar & Klassen, 2001). Cost and time related to fruits and vegetables presented barriers whereas family preferences did not (Birmingham et al., 2004).

Treiman et al.(1996) also indicated barriers with WIC clients including lack of availability of fruits and vegetables, time and effort to prepare and preference for other foods (Treiman et al., 1996). Using a Likert scale with WIC families, Schultz and colleagues (2004) suggested most respondents (65%) agreed that they avoided serving fresh fruits and vegetables because they take too much preparation time. There was an agreement among many (54%) that canned or frozen fruits and vegetables are easier to prepare than fresh. Most respondents (65%) agreed that fresh fruits and vegetables are too expensive to buy compared to canned or frozen (Schultz & Edlefsen, 2004). WIC participants contributed their lack of knowledge to lack of support from partners and family members to encourage fruit and vegetable consumption (Birkett et al., 2004).

Cost, cooking skills, lack of social support and childhood eating patterns were stated as reasons for not increasing fruit and vegetable consumption in African-Americans, with cost cited as the primary structural barrier. They identified some fruits and vegetables as more economical than others, but believed fruits and vegetables overall were costly compared with other foods (Shankar & Klassen, 2001).

The most frequently cited barriers for buying new fruits and vegetables were knowing if the fruits and vegetables taste good, cost, and a desire to “stick to what I like”. The major barriers to eating fruit for a snack were lack of availability, preference for other foods and time and effort to prepare and eat fruit (Treiman et al., 1996). Henry et al. (2003) also listed the major factors influencing decision making associated with fruit and vegetable purchasing and preparation were preferences, cost and specific needs and wants for different fruits and vegetables. Other important factors included availability, seasonality, appearance, convenience, nutrition/health, advice from others and spoilage

concerns (Henry et al., 2003). Balch and colleagues (1997) found price, taste and convenience to be both benefits and barriers for consuming fruits and vegetables. Most participants mentioned (good) price, taste and convenience as benefits they received from buying and eating fruits and vegetables. They mentioned these same factors when asked why they did not eat more fruits and vegetables (Balch, Loughrey, Weinberg, Lurie, & Eisner, 1997).

### **Locus of Control and Nutrition Education**

Locus of control, a construct resulting from Rotter's Social Learning Theory, has received a significant amount of attention in behavioral research. The role of reinforcement or reward is established as an important one in the achievement and implementation of skills and understanding. However, others may view circumstances considered by some individuals as a reward differently. One of the determinants to this reaction is the degree to which the individual recognizes that the reward depends upon his own behavior or traits versus the degree to which he feels the reward is controlled by outside forces and may take place independently of his own dealings.

### **Rotter's Theory**

The result of a reinforcement following some behavior by an individual is not a simple automatic process but depends upon whether or not the person perceives a causal connection between his own behavior and the reward. A perception of causal relationship can vary in degree. When a reinforcement is perceived by the individual as following some action of his own but not being entirely dependent upon his action, then it is usually thought to be the result of luck, chance or fate as under the control of powerful

others, or as unpredictable because of the great intricacy of the forces surrounding him. When an individual interrupts the event in this way, it is labeled as a belief in *external control*. If the person perceives that the event is subject to his own behavior or his own relatively permanent individuality, it is termed as a belief in *internal control*. It has been hypothesized that this variable is of major significance in understanding the nature of the learning processes in different kinds of learning situations, and that consistent individual differences exist among individuals in the degree to which they are likely to attribute personal control to reward in the same situation (Rotter, 1966).

Rotter's Social Learning Theory incorporated two key constructs-expectancy beliefs and the value of the outcome in assessing one's behavior potential. The theory suggests that if an individual believes that a behavior will lead to a valued outcome in a given situation, he or she will be more likely to engage in that behavior in a situation. If a behavior is designed to improve, enhance or protect one's health, engaging in the behavior is more likely to occur if health is a desired outcome or a valued goal (Smith & Wallston, 1992).

### **Health Locus of Control**

Wallston et al. developed the original Health Locus of Control (HLC) scale as a one-dimensional measure of people's belief that their health is or is not determined by their behavior. Individuals with higher scores on the 11-item HLC scale are labeled as "health-externals". They are assumed to expect that the issues which determine their health are luck, fate, chance or powerful others, factors over which they have little control. On the other end of the scale are the "health-internals" who believe that the



locus of control for health is internal and that one stays or becomes healthy or sick as a result of his or her behavior (Wallston, Wallston, & Devellis, 1978).

Wallston (1991) stated in a later research that the HLC scale demonstrated that selected health behaviors were not in and of themselves predicted by HLC scores; it was only when subjects highly value health (the most important reinforcer in health related situations) that HLC scores bothered to include an assessment of health value. Wallston also observed that high internality scores predict health behavior only in situations where reinforcement is important. (Wallston, 1991).

Levenson was a proponent for the multidimensionality characteristic of the locus of control constructs. She demonstrated that externals' beliefs could be divided further into two beliefs: chance expectations such as fate or luck, and control by powerful others such as family member or physicians. Levenson proposed that individuals who believe powerful others are in control of their lives may behave and think differently from those who believe events in their lives are unordered and occur only because of chance or fate. She developed an 8-item Likert-type scale (Internal, Powerful Others and Chance) to measure generalized locus of control beliefs and demonstrate initial evidence of their discriminate validity. This led to the development of the Multidimensional Health Locus of Control (MHLC) with the three subscales mentioned above (AbuSabha & Achterberg, 1997; Wallston et al., 1978).

Most of the studies with the Multi-dimensional Health Locus of Control Scale have concentrated on the role of the internal health locus of control. Individuals indicating an internal locus of control take responsibility for their own actions and engage

more readily in health-promoting behaviors. Behaviors such as breast self-examination, compliance for patients with hypertension and precautionary behavior with AIDS have been associated positively with internality. Studies by Speake et al. and Konen et al show positive relationships between internality and the common indicators of health behavior. Studies by Ewart et al. Geuer et al., Read et al. and Schank et al did not find a relationship (AbuSabha & Achterberg, 1997).

### **Locus of Control and Nutrition**

A review of studies related to nutrition and locus of control by AbuSabha and Achterberg (1997) suggests mixed results. For example, Saturnino-Springer et al. found a positive correlation between dietary behavior and internal locus of control in a study with 943 pregnant women. Women who scored high on the internal Nutrition Locus of Control (NLOC) had diets with levels higher than the Recommended Dietary Allowances (RDA) for vitamin A, riboflavin, vitamin B-6, calcium, magnesium and potassium. In contrast, the significant correlations with the external NLOC scale were all negative. Pregnant women who scored high on external NLOC reported diets that were less adequate in riboflavin, calcium, phosphorus and dietary fiber (Saturnino-Springer & Bogue, 1994). Eden found a weak relationship between dietary behavior and locus of control with 105 healthy Jewish men and women living in Israel. The inconsistency from these findings is understandable since locus of control should not be used as the only cognitive construct to predict health behavior. Locus of control is but one of the constructs that affect behavior and when used alone its result of behavior is slight. When used with other constructs its effect may add significantly to the overall results (AbuSabha & Achterberg, 1997).

## **Locus of Control and Weight Loss**

In the area of nutrition locus of control is related mainly to weight loss and obesity. Manno and Marson noted in their control group that externally oriented subjects weighed more initially but lost less weight, although heavier subjects generally lost more weight; thus, among control group subjects, internals were more successful. Bellack failed to find a significant correlation between locus of control and weight loss. O'Bryan's research suggested overweight women tend to be more external. Although externals and internals in her sample differed on a variety of self-reported measures, they did not differ on behavioral indices, including a quest for information and learning. Since all subjects were involved in the Take off Pounds Sensibly (TOPS) Program, they are somewhat comparable to treatment groups in other studies (Wallston & Wallston, 1978).

Jeffery and Christensen found within their "willpower" treatment group that subjects with greater weight loss were more internal than subjects with less weight loss. Balch and Ross, using a self-control weight reduction program, found significant correlations between internals and completion of the program and between internals and success in the program (weight loss greater than the medium of eight pounds). Wallston et al. (1978) failed to find significant differences in weight reduction between internals and externals using either Rotter's I-E scale or the HLC to measure these traits. However, HLC externals lost more weight in the externally oriented group program, while HLC internals lost more weight in the internally self-directed program. Subjects in programs matched to their locus of control expressed greater satisfaction with the program (Wallston & Wallston, 1978).

There is conflicting research related to weight loss and locus of control. Internal locus of control has been used to predict weight-loss behavior; yet this relationship has indicated several inconsistencies. Some research results are positive and others have indicated no relationship (AbuSabha & Achterberg, 1997).

Holt and colleagues (2001) used the Weight Locus of Control (WLOC) developed by Saltzer, with the idea that weight related behaviors could be predicted by a locus of control scale specific to weight. The WLOC was used to predict intentions to lose weight in undergraduates. Students with a high value on health or physical appearance and who scored high in the internal direction on the WLOC reported significantly more behavioral intent than externals with similar values (Saltzer, 1978). The results of Holt's research suggested that internality was positively related to five variables: ratings of three health education materials, confidence, motivation, behavioral intent, and actual behavior. Externality related positively to three variables, external etiology of overweight, several exterior barriers to physical activity and having a negative view of social support (Holt, Clark, & Kreuter, 2001).

### **Locus of Control and Minorities**

Researchers have identified locus of control as an important factor in behavioral change in minority groups. Tyler and Holsinger (1975) found that American Indian students were more externally controlled than were their white counterparts (Tyler & Holsinger, 1975). Another study by Riggs (1984) with underprivileged African-Americans concluded that these youth, compared to their white classmates, might feel their health is more externally controlled (Riggs & Noland, 1984). . This study also

indicated that income is an additional key factor for external locus of control. Minorities, many who are economically disadvantaged, may feel that they have less control over their health and health behaviors. When working with an obesity prevention program with minority youth, Jackson et al. (1991) concluded, the cultural orientation of some minority groups is one of an external locus of control over their health status. An external locus of control, a feeling of low self-efficacy, and an inability to choose or provide appropriate modeling will make it more difficult to change behavior (Jackson, Proulx, & Pelican, 1991).

Weitzel's (1990) work with white, black and Hispanic blue-collar workers suggested that whites scored significantly higher than blacks on the Internal Health Locus of Control (IHLC) and that blacks scored significantly higher than whites on the Chance Health Locus on Control (CHLC). No significant differences were found with the Hispanic population even though the mean was 28.06 for whites and 26.80 for Hispanics for the IHLC (Weitzel & Waller, 1990).

### **Quality of Life and Nutrition Education**

In this research the author looked at socioeconomic status (SES) as a measure for quality of life. Social class is measured by education, income, occupation or a composite of the three dimensions. (Winkleby, Fortmann, & Barrett, 1990). SES is a complex occurrence predicted by a broad range of variables that is often thought of as a combination of financial, occupational and educational influences. Education is the most commonly defined measure of SES, but other dimensions need to be taken into consideration. Although these dimensions of SES are interrelated, it could be suggested

that each reflects somewhat different individual and societal forces associated with an individual's quality of life. As individuals gain control of specific parts of their lives, they are able to make changes to other areas, although it is important to recognize that empowerment applies both to nutrition and non-nutrition areas (Arnold & Sobal, 2000). This research investigated this particular construct to determine if participation in nutrition education programs indicated an improvement in the individual's perception of their quality of life after participating in the nutrition education program.

### **Socioeconomic Status and Nutrition**

Higher dietary fat intakes and lower dietary fiber intakes have been found in lower socioeconomic status groups compared to higher status groups in the United States (Gleason et al., 2000). These findings have important implications for nutrition educators as nutrition-related chronic diseases, such as Type-2 diabetes mellitus, coronary heart disease and hypertension, disproportionately affect low-income women. For many women these chronic conditions are left untreated or treated intermittently when there is a crisis (Monroe et al., 2002).

Smith et al. (1992) investigated the socioeconomic status of dietary fat and fiber intake and suggested that positive personal beliefs about diet and health, fewer perceptions of external influences on food choice and higher social status were found to be associated with lower dietary fat and higher dietary fiber densities (Smith & Owen, 1992). Low-income groups may also have less knowledge of a relationship between diet, fiber and cancer prevention (Cox et al., 1995). Kristal and colleagues (2001) concluded from their study of 838 women that only women with a college education

increased their intake of fruits and vegetables (Kristal, Hedderson, Patterson, & Neuhauser, 2001). Other studies suggest that education was directly related to fruit, vegetable and fiber intake (Havas et al., 1998; Steptoe & Wardle, 1999), and parents with children at home were at greater risk of eating two or fewer fruit and vegetable servings (Laforge, Greene, & Prochaska, 1994).

Lynch and colleagues (1997) concluded from their study of 2,647 men that people from low-socioeconomic groups are least likely to purchase or consume foods that are consistent with the dietary guideline's recommendations. Many adult behaviors and psychosocial characteristics damaging to health are consistently reflective of poor childhood conditions, low levels of education and blue-collar employment. In their findings Lynch and colleagues suggested there were significant differences across levels of childhood SES for intake of fruits, vegetables, salt, vitamins A and C and coffee. Men born into the poorest childhood circumstances had 28 percent lower intake of fruit, 15 percent lower intake of vegetables, 12 percent lower intake of vitamin A, 8 percent lower intake of vitamin C, higher levels of salt, and were more likely to be heavy coffee consumers. (Lynch, Kaplan, & Salonen, 1997).

The difference was even more evident when looking at education. Significant graded differences were evident for fruits, vegetables, total fat, saturated fat, salt, vitamins A and C and coffee with the least-educated group having the poorest overall dietary profile. Men with only a primary education consumed 39 percent less fruit, 32 percent fewer vegetables and 8 percent more saturated fat compared to men with more than a high school education (Lynch et al., 1997). Studies by Parsons and Ball (2004) also supported that childhood socioeconomic conditions are predictors of later obesity,

which suggests the differential rate of weight gain by SES may possibly begin early in life and is influenced by parental SES (Ball & Crawford, 2004; Parsons, Power, Logan, & Summerbell, 1999).

Turrell (1998) investigated the relationship between SES and healthy food choices by focusing on the issue of food preferences or what an individual reported as a food liking or disliking. He suggested that socioeconomic groups differ in their extent of compliance with recommended food purchasing choices, and the reasons for the differences are not clear. Studies have found that food choices of disadvantaged social groups are sometimes influenced by structural, material and economic constraints. Choices are influenced by attitudes and beliefs towards health and food, and limited knowledge about the interrelationship between food, nutrition, health and diseases (Turrell, 1998). Previous studies by Turrell (1996) suggested that individuals on welfare were significantly less likely than their more affluent counterparts to choose foods recommend in the dietary guidelines when shopping. Often food-related behaviors of the low-income group are often limited by structural and economic factors. For example, large supermarkets are less likely to be located in disadvantaged areas; and if stores are available, they do not stock foods recommend by the dietary guidelines. Difficult economic conditions also limit their capacity to afford these foods (Turrell, 1996).

The relationship between obesity and lower socioeconomic status is an area of interest for researchers today because it may lead to a better understanding of the development of obesity with the lower SES group. Low-income individuals tend to have diets that are high in fat and calories and low in fiber and vitamins, and the rates of obesity are higher in this group (Murphy et al., 1998). Murphy and colleagues' (1998)



research points out that although all the variables were significantly associated with income and overweight in this bi-variate analysis, none had sufficient explanatory power to eliminate the association of income and weight in multivariate analyses. Two demographic variables, education and race, reduced the association (Murphy et al., 1998). Wardle and Griffith's (2001) work with British adults also supported that men and women from higher SES groups would be more likely to try to control their weight. They were also more likely to perceive themselves as being overweight and monitored their weight more often, despite their lower BMI and lower prevalence of obesity, than with individuals from a lower SES status. They were more likely to make an attempt to lose weight and reported more restrictive dietary habits and more regular physical activity (Wardle J & Griffith, 2001).

Ball's (2004) review of literature indicated that persons with lower SES are at risk of weight gain. The results of this review on longitudinal studies in developed countries provided reasonable support for this hypothesis. Among largely non-black samples there were relatively consistent inverse associations between occupation status and weight gain for both men and women (Ball & Crawford, 2004). Women with low incomes or little education are more likely to be obese than women of higher socioeconomic status (Kuchler & Jayachandran, 2002).

Siege-Riz and Popkin's (2001) observation of dietary trends among low-socioeconomic status suggested that diet quality significantly improved between 1977 and 1996 for Hispanics and non-Hispanic whites. Hispanic and non-Hispanic white women significantly decreased their total fat and cholesterol intakes; however fruit and vegetable intakes did not increase (Siege-Riz & Popkin, 2001).

## **Socioeconomic Status and Environment**

Working with 243 black and Latino women Sanders-Phillips (1994) indicated that having health insurance, lower perceived susceptibility to cancer and high levels of social support were significantly related to healthy eating habits. Exposure to domestic violence, lower income and knowledge of risk factors and lower perceived self-efficacy in changing health outcomes were associated with lower levels of intent to change eating habits. (Sanders-Phillips, 1994). There is considerable evidence that self-efficacy, the conviction that one can successfully execute the behaviors to produce the outcome (Chang, Nitzke, Brown, Baumann, & Oakley, 2003), is significantly related to an individual's willingness to change general health habits and eating habits, especially in blacks and Latinos (Sanders-Phillips, 1994).

Sanders-Phillips (1994) also suggested that levels of acculturation, socioeconomic status, locus of control and perceived barriers are related to healthy eating habits in low-income ethnic minority groups. Low-income environments, which can include high levels of unemployment, violence, stress, and social isolation, may also limit opportunities for engaging in healthy behaviors and decrease motivation to engage in healthy behaviors (Sanders-Phillips, 1994).

Feinstein's (1993) review of literature on socioeconomic status and health cites the works of the Alameda County Study, which supports that residence in a poverty area in which basic public health services may be substandard is as important a factor of elevated mortality as any other socioeconomic factors. Haan, Kaplan and Camacho's conducted a study on mortality outcomes, with a dependent variable that measured

mortality and included independent variables as a set of controls (age, race, sex, baseline physical health status, smoking, weight and social support), income, education and a dummy variable. In this research, they found that neither income nor education was statistically significant, while the poverty area dummy variable was significant. Hadley's research suggests that areas with increased medical expenditures have lower mortality rates; and he estimates that a 10 percent increase in expenditures per capita will reduce mortality between 1 and 2 percent (Feinstein, 1993).

### **Socioeconomic Status and Education**

Lu and colleagues (2002) investigated the relationship of education, income and occupation with 2,116 individuals in South Carolina. Their findings indicated that dietary behavior varied significantly by income, educational level and occupation. Individuals with less income or fewer years of education or who were unemployed consumed significantly more fatty food and less nutritious foods than their counterparts. Individuals with a higher educational level were more likely to practice healthy dietary behavior. Not only was dietary behavior significantly and positively related to the consumption of nutritious foods, it was also inversely related to the consumption of fatty foods. Lu and colleagues also suggested that dietary behavior was strongly associated with both general and mental health status. People who consumed high fatty foods more frequently than nutritious foods reported poorer general health and more days of mental health problems than people who consumed nutritious foods more often (Lu, Samuels, & Huang, 2002).

Smith and colleagues (1992) indicated that higher educational status respondents had a weaker and inverse association with percent of energy from total saturated fat and refined sugar and a positive association with fiber intake than participants with lower educational status (Smith & Baghurst, 1992). Steptoe et al. (1999) found educational status was associated with differences in fiber intakes but not in fat consumption. Increased fiber consumption was due primarily to the variations in the amount of fruit and vegetables eaten and the involvement of high fiber cereals consumed by individuals from a higher SES (Steptoe & Wardle, 1999).

Steptoe and colleagues reported that lower-social status people (whether classified by education or occupation) were more likely to believe that healthy food is expensive than were higher status individuals. They also indicated that the less educated group scored significantly higher on the mood and sensory appeal factors of food than did the more educated. They concluded the less educated respondents were more concerned that their food should taste and smell good and were more likely to choose foods that made them feel better (Steptoe & Wardle, 1999).

Winkleby and colleagues (1992) also looked at the relationship between education and risks for cardiovascular diseases. They concluded the relationship between SES measures and risk factors was strongest and most consistent for education, showing higher risks associated with lower levels of education. This study also suggested higher education may be the best SES predictor of good health (Winkleby, Jatulis, Frank, & Fortmann, 1992).

In Feinstein's (1993) review of literature between socioeconomic status and health, Kitagawa and Hauser also found an inverse relationship between educational attainment and mortality from heart disease for both men and women. In the same review of literature, Kitagawa and Hauser's research also supported a strong inverse relationship between years of schooling and mortality. They even go further to state that educational disparities probably provide more reliable indicators of socioeconomic differential in mortality in the United States than a difference in incomes (Feinstein, 1993).

Silver's findings were similar in that he found a significant, negative relationship between median household income and mortality and consistently found a significant, negative relationship between education and mortality (Feinstein, 1993). Winkleby and colleagues' findings showed highly significant associations between education level and six risk factors associated with disease. Results of their analysis confirm previous findings of a stronger educational effect for hypertension, smoking and obesity and a weaker effect or no effect for cholesterol (Winkleby et al., 1990).

Feinstein (1993) also reports that the works of Feldman et al. suggested that compared with white men, the mortality rate among white women with the least education was substantially higher than among persons with the most education. Results from their research suggest that educational attainment exerts a large and statistically significant effect on heart disease mortality, even when the other risk factors are included. Among young men and women, the relative mortality risk of the least educated was approximately twice that of the best educated (Feinstein, 1993).

## **Socioeconomic Status and Income**

Income is another predictor of dietary behavior. The higher the income level the more frequently an individual's dietary intake improves. Dietary behavior was also found to be strongly associated with both general and mental health status. People who consumed high fatty foods more frequently than nutritious foods reported poorer general health than people who consumed nutritious foods (Lu, Samuels, & Huang, 2002).

Turrell's (1998) results concluded that the food choices of respondents in the high-income group were more consistent with dietary guideline recommendations, and they reported liking a greater number of healthy foods. On the other hand, respondents in the low-income sample were significantly less likely to buy healthier food when shopping; and their preference scores suggested they dislike many of the healthier alternatives. While it is still not clear why socioeconomic groups differ in their food preferences, Turrell suggested possible reasons including: reporting bias, a discrepancy in exposure to healthy food as a consequence of the inconsistent impact of health promotion campaigns, structural and economic barriers to the purchasing of these foods and specific cultural beliefs and values (Turrell, 1998).

Smith and Baghurst (1992) suggested income level was inversely related to percent of energy from fat and sugar, and income level was positively related to high alcohol intake (Smith & Baghurst, 1992). However, Lynch and colleagues (1997) reported those who were born into high childhood SES were significantly less likely to report frequent bouts of drunkenness than men from less advantaged homes (Lynch et al., 1997).

A low-income family's proportion of income spent on food is higher than that of a higher, socioeconomic status family. As the household income increases, expenditures on food does not increase proportionally. There is a point beyond which families do not spend more on food as family income increases. This phenomenon is known as Engle's Law and is the result of the finite capacity humans have for food. Wealthy families in the United States spend about 9 percent of household income on food while poorer families spend over 40 percent of their income on food. Similar results have been found in the United Kingdom and Australia. Poorer families have less discretionary spending power on food (Coveney, 2002). Although income level was unrelated to fiber density, high income was positively associated with high percent of energy from complex carbohydrates (Smith & Baghurst, 1992).

In Feinstein's (1993) review of literature, both Menchik's and Palmer's results were similar in that both income and wealth exert a negative and significant impact on mortality whereas education is negative but insignificant. Wing et al. also suggested income as a predictor of heart disease. Logue and Jarjoura investigated the relationship between social class and heart disease and found lower-middle class to have approximately twice the mortality of the upper-middle class and the working poor to have more than four times the mortality of upper-middle class (Feinstein, 1993).

Weitzel and colleagues' (1990) research with white, Hispanic and black blue collar workers suggested that household income was a significant predictor of Hispanics' health-promoting behaviors, although it failed to add the predictions of similar behaviors for the other ethnic groups in the study (Weitzel & Waller, 1990).

## **Socioeconomic Status and Locus of Control**

Wardle and Steptoe (2003) looked at the relationship between attitudes and beliefs that might influence behavioral choices including locus of control, future salience, subjective life expectancy and health consciousness. Their findings suggested that cigarette smoking, lack of exercise and low fruit and vegetable intake were more prevalent in the lower class respondents. The three factors from this study that surfaced as being positively associated with socioeconomic status and with the possibility of participating in healthy behaviors were locus of control, future salience, and conscious awareness of the importance of lifestyle on health (Wardle & Steptoe, 2003).

A study with 249 volunteers in Australia suggested that SES, locus of control, stages of change and motivation were not predictive of dietary changes, whereas high cholesterol levels, obesity, knowledge about appropriate food selection and confidence, and change in knowledge were all independently predictive of dietary change. However, the participants in this study were different from the population sample in that they had healthier dietary intakes, were more likely to be of higher SES and had stronger beliefs in a healthy diet (Smith et al., 1995).

Weitzel's (1990) research with blue-collar workers suggests that whites perceived themselves to have greater Internal Health Locus of Control than did blacks, while blacks perceived themselves to have greater Chance Health Locus of Control than did whites. Weitzel suggests this raises the question whether locus of control is related to education given the differences in the education found in these two samples. However, this line of reasoning does not hold true with the Hispanic sample. Studies on ethnicity and health



locus of control report that Mexican-American women had significantly higher Powerful Others Health Locus of Control and Chance Health Locus of Control than white or black females (Weitzel & Waller, 1990).

Sanders-Phillips' (1994) research supported that self-efficacy was an important correlate of intent to change eating habits. Women who believed that they could control their health outcomes were more likely to report intent to change. There is considerable evidence that self-efficacy is significantly related to an individual's willingness to change general health habits and eating habits, particularly in blacks and Latinos (Sanders-Phillips, 1994). Havas et al (1998) also reported that self-efficacy was a strong predictor of fruit and vegetable consumption for women enrolled in the WIC program, followed by attitudes, perceived barriers and social support (Havas et al., 1998).

### **Program Delivery**

Food stamp participants have moderate levels of nutrition knowledge, and they are aware of some of the association between nutrition and health. However, they are unaware of other key parts of nutrition information. Assuming there is a link between nutritional knowledge and dietary intakes, continuing program efforts to promote nutrition education may lead to an improvement in the nutritional quality of participants' dietary intake,

### **Motivators**

Research supports that low income participants would be motivated to change their eating habits for health concerns including weight loss and healthful eating for

themselves and especially their children, (Birkett et al., 2004; Birkett, Johnson, Thompson, & Oberg, 2004; Hartman, McCarthy, Park, Schuster, & Kushi, 1997; Havas et al., 1998; Morten, 1997; Reed, 1996; Satia, Galanko, & Nehouser, 2005; Treiman et al., 1996). They also had concerns about cholesterol levels, high blood pressure and diabetes as potential reasons for changing their diets (Hartman et al., 1994). Receiving new information related to diet and various diseases and observing the health problems of other family members were factors for motivation in focus groups conducted by Reed (Reed, 1996).

Low-income women will make substantial dietary changes when convinced of health benefits through effective teaching methods. Prevention of cancer and chronic disease should be integrated into the EFNEP curriculum to encourage change (Cox et al., 1995). Clients with low literacy skills were most worried about cancer, especially breast cancer. Participants wanted to learn more about diabetes, high blood pressure and heart disease, food labels, the safety of canned foods and methods of food preparation to maintain weight (Macario et al., 1998).

Focus groups with women participating in WIC suggested that women who were breastfeeding or pregnant reported eating more healthy foods. Being pregnant was less an important predictor than breastfeeding, but the two experiences may be similar in that women are more aware of healthful eating during pregnancy and thus eat more fruits and vegetables. The time of breastfeeding and pregnancy may present particular windows of opportunity for presenting messages on eating healthy foods (Havas et al., 1998; Peterson et al., 2002).

Family was the most common promoter of healthful eating, whereas living alone was a frequent barrier to healthful eating. Family and social relationships have been shown to have an impact on an individual's food choices (Birkett et al., 2004; Coveney, 2002). Promoting eating together as a family may be another method of increasing healthful eating (Eikenberry & Smith, 2004)..

Attention to motivators and reinforcers that have personal meaning for the particular population group is essential for enhancing awareness and motivation (Randall et al., 1995). When food occupies a large percentage of family income, over 40 percent in some cases, the risk of spending precious resources on unfamiliar foods cannot be considered. Women, who often have a key managerial role in family finances, are expected to be accountable and responsible (Coveney, 2002). It is important for decision makers in low-income households to improve shopping practices for increasing food availability without a simultaneous increase in food expenditures (Bhargava, 2004).

### **Delivery Method**

The results of some studies suggest videos are popular methods used to deliver nutrition education, cost less to deliver and resulted in increases in nutrition education (Cox, White, & Gaylord, 2003; Holston, O'Neil, Guarino, & Keenan, 2004; Meloy, 1998; Reed, 1996). Program Assistants spent less time delivering the video lesson series than the traditional series, suggesting that a larger caseload may be possible with the video method (Cox et al., 2003). Hartman's (1994) research also supported the use of videos if they were interesting, but clients were also interested in hands-on activities like trying new foods and recipes (Hartman et al., 1994).

Studies support hands-on learning, but also suggested repetition and a supportive environment (Edward & Evers, 2001; Macario et al., 1998). Lectures were an ineffective way to present nutrition information, especially with little or no discussion (Birkett et al., 2004), and games were not mentioned by any focus group in this study. Participants requested educational programs that provide opportunities to take part in discussion and interactive activities (Birkett et al., 2004; Hartman et al., 1994; Holston et al., 2004; Macario et al., 1998). Participants suggested avoidance of medical jargon and extra information which was not needed to change eating behavior (Hartman et al., 1994).

Research supports demonstrations and hand-outs as one of the best teaching methods (Macario et al., 1998; Meloy, 1998). Cooking and tasting demonstrations, especially with easy and tasty recipes, may be motivating for the low-income population (Hartman, McCarthy, Schuester, & Kuski, 1994; Reicks et al., 1994). Randall's (1995) review of literature promotes active participation including not only food-based activities such as tasting and food preparation, but also active involvement in analyzing one's diet, and setting goals and participating in group projects (Randall et al., 1995)

Loughrey and colleagues' (2001) study with 491 participants found that successful nutrition education strategies are recommended which break abstract nutrition concepts into practical action steps that can be easily mastered. For example, guidance about adding more fiber to the diet should include a brief discussion of the Nutrition Facts Panel of the food label. It should include making a specific request to ask people to go to the grocery store and compare the fiber content on the food label of several breakfast cereals and purchase a cereal that contains 20% or more of the Daily Value for fiber (Loughrey, Baslotia, Zizza, & Dinkins, 2001).

Low-income mothers with young children who have been successful in increasing fruit and vegetables are those who practice specific behaviors such as starting the day with juice or fruit or eating a vegetable at dinner. Most of the behaviors studied were rated as easy or somewhat easy to do, signifying that barriers may not be insurmountable. Self-efficacy was associated with an increase in fruit and vegetable consumption, suggesting that nutrition education should help women find strategies to reduced perceived barriers (Quan et al., 2000).

Focus groups with Food Stamp Nutrition Education Program participants suggested the development and evaluation of nutrition education programs that appreciate and build on existing abilities of participants, provide opportunities for self-directed learning and activities, and build social support, social networks and trust among participants were more effect with low-income populations (Arnold et al., 2001).

Computer-generated letters tailored to personal needs were more effective in reducing fat intake and increasing fruit and vegetable intake than general nutrition education. Computer-tailored information is a promising means of stimulating people to change their diet toward the dietary recommendations (Brug, Steenhuis, van Assema, & de Vries, 1996). WIC clients, using a computer kiosk in a waiting area, demonstrated improvements in nutrition knowledge and self-efficacy to improve dietary choices, but it did not change in dietary behavior (Campbell et al., 2004). A WIC website was a preferred method of nutrition education by WIC clients in a focus group (Birkett et al., 2004). An interactive multimedia program, using extensive audio and graphics with low-income Hispanics, indicated that 94 percent of participants increased their total knowledge from 30 percent at pretest to 80 percent at post-test (Cammy, Anderson, &

Gould, 2002). An intervention that integrated a telephone-based, personalized behavior change and functional foods proved to be an effective model for reducing serum lipids in hypercholesterolemic men and women (Kris-Etherton et al., 2002) .

Birmingham et al. (2004) provided a booklet for WIC mothers. After receiving the booklet, participants reported feeling more confident about choosing good quality produce (70%) and storing fruits and vegetables appropriately (68%), and felt that it was easier to include fruits and vegetables in their family meals (74%). However, the intervention did not reduce the overall barriers related to fruit and vegetable consumption or increase the fruit and vegetable consumption of the mothers (Birmingham et al., 2004).

The Maryland WIC 5 A Day Promotion Program was designed to increase fruit and vegetable consumption by using three 45 minute sessions, which used diverse printed materials. The recipe book was similar to one used in the study by Birmingham and colleagues. The Maryland project lasted for six months and included individualized mailings as a method of follow-up education. The Maryland project increased the number of servings per day of fruits and vegetables and demonstrated a significant positive change in knowledge, attitudes, self-efficacy and perceived social support while reducing the perceived barriers toward fruit and vegetable consumption (Havas et al., 1998). Similar to Havas, Townsend et al. suggested means scores were all or mostly affirmative for perceived control of shopping and control of food preparation for reducing barriers to fruit and vegetable consumption. (Townsend & Kaiser, 2005).

Nutrition interventions for the learning process must be simple and participatory for low-income clients regardless of their literacy level (Holston et al., 2004; Macario et al., 1998; McCarthy, Lansing, Hartman, & Himes, 1992)

### **Subject Matter for Programs**

Theory suggests that the more directly related a particular area of knowledge is to a behavior, the more likely it is to have impact on that behavior. In the area of dietary behavior, research seems to support this theory. For example, in a study of factors predicating dietary change, Smith et al.(1995) found improvements in applied knowledge of food selection to be significantly associated with dietary change. Knowledge of the Food Guide Pyramid serving recommendations was found to have significant effects on dietary status (Smith et al., 1995). With low-income families, nutrition education programs that also include practical education on food shopping and budgeting, such as those offered by EFNEP, have been shown to improve diet quality (Brink & Sobal, 1994; Hersey et al., 2001; Torisky et al., 1969).

Nutrition education programs, provided by EFNEP in meal planning and preparation, food safety, food buying have helped participants improve their dietary practices (Arnold et al., 2001; Brink & Sobal, 1994; Hartman et al., 1997). Other studies suggest that nutrition education can have a positive impact on dietary intake along with other food and nutrition behaviors of low-income individuals (Anding et al., 2001; Campbell et al., 2004).

Hartman's (1997) research points out that participants wanted information about what foods to eat and how-to preparation tips. Most participants were interested in

recipes, but the time they had to spend on food preparation was limited; therefore they were more interested in convenience foods. Individuals with health concerns, such as weight loss, were interested in information pertaining to cutting calories and food preparation techniques. Participants interested in lowering their cholesterol to prevent heart disease were concerned about low-fat food preparation techniques and recipes (Hartman, McCarthy, Park, Schuster, & Kushi, 1997).

Participants expressed concern and an understanding of the relationship of diet and nutrition to diseases and will make dietary changes when convinced of the health benefits especially for heart disease, hypertension and cancer (Cox et al., 1995; King & Turner, 2004) . The high rate of obesity with food stamp participants indicates a need for nutrition education or other programs that encourage weight loss (Gibson, 2003). However, research by Balch et al. (1997) working with the 5 A Day campaign, suggested that consumers wanted messages on the more compelling and immediate benefits that revolve around feeling more energetic, good and light (with weight control implications) rather than more traditional health-oriented benefits (Balch et al., 1997).

Interventions that focus on an increase of fruits and vegetables should provide concrete messages such as consume five or more servings per day (Havas et al., 1998; Luccia et al., 2003). Clients who were concerned about their children's eating habits wanted advice on how to get their kids to try different foods and snacks (Hartman et al., 1994). Traditional foods provided by the Mexican and Mexican-American diet, including chilies, beans, corn and squash, provided fruits and vegetables for the picky children in these families (Hampfl & Sass, 2001). When preparing meals for children or



adults, there is a need for convenient and affordable foods that taste good (Glanz et al., 1998; Hartman et al., 1994).

Focus groups, conducted by Shankar and Klassen (2001) participants asked for activities to learn and share menus that would be convenient, low cost, healthy and appeal to children. They believed that participatory activities, including sessions for family and children to share meals together from the menus they developed, would help them use their knowledge and skills at home. The author also suggested that educators working with urban populations should suggest the use of farmer's markets and personal gardens. It was evident from the focus group that women had a major role in the preparation and purchasing of food and determined what that family would eat. They also exhibited some structure in the family with the preparation of evening meals (Shankar & Klassen, 2001).

Working with focus groups that consisted of individuals on food stamps, Bradbard and colleagues (1997) revealed that participants said they are aware of the need to serve low-fat foods but are uncertain how this translates to specific food choices. Many also believe that healthy eating costs more money, and this presents a major obstacle because of their very limited budget. In addition, while some respondents said they use the nutrition information on the food labels, others said they do not understand how to use the food label. Many participants said they would like help with menu planning and using information on nutrition labels, with the focus on planning nutritious meals at a low cost. Others said their cooking was in a "rut, and they would benefit from information on how to plan low-cost meals that will appeal to their ethnic/cultural group (Bradbard et al., 1997). Nutrition information on packaged foods is a useful way to educate clients on point-of-purchase nutrition education (Satia et al., 2005).

Luccia and colleagues (2003) suggested that subject matter for EFNEP clients include low-fat food choices, and the use of low-fat cooking methods, and an increase of fruits and vegetables and fiber, especially whole grain breads, cereals and beans. It should also encouraged the consumption of calcium using low-fat dairy products and non-dairy foods high in calcium (Luccia et al., 2003). Zablah et al. (1999) also suggested an increase in calcium for African-American women using programs that provide methods for self-assessment of current intake and delivery methods that provide motivational approaches. Barriers to calcium consumption should be addressed, including suggestions of other foods sources if they dislike the taste of dairy foods and/or have perceived digestion problems (Zablah et al., 1999).

Treiman et al. (1996) suggested interventions to identify and help participants overcome barriers to increasing fruit and vegetable consumption; such as teaching individuals how to find the best buys in order to maintain a constant supply of fruits and vegetables to overcome the lack of availability; and teach quick and easy ways to prepare fruits and vegetables to overcome the time barrier . Other methods should include opportunities for them to share ways of preparing fruits and vegetables and to taste a variety of these to overcome not liking fruits and vegetables. Interventions that emphasize the low cost of many fruits and vegetables relative to other foods, and how to get the best buys to overcome the barrier of cost are means for low-income participants to increase their fruit and vegetable intake (Treiman et al., 1996). Eikenberry and Smith (2004) also suggested interventions focusing on quick and easy, healthful, less expensive food preparation or selection of more convenient, yet inexpensive healthful food may help overcome the most common barriers in this population (Eikenberry & Smith, 2004).

It may be more valuable to increase individuals' awareness of their own diets and focus on the barriers preventing them from making healthy dietary changes (Povey et al., 1998).

Hersey and colleagues (2001) looked at dietary quality and food shopping practices of low-income individuals and suggested that careful food shopping practices were reported by a substantial number of low-income households. For example, 41 percent of food stamp participants and 41 percent of EFNEP participants reported they looked for specials (51%), used shopping lists (50%), stocked up on bargains (42%) or used coupons (42%). This suggests that low-income populations use many careful shopping practices. The studies analyzed in this report demonstrated a statistically significant relationship between careful food shopping practices and nutrient availability (Hersey et al., 2001).

Comparisons across income groups found evidence that the poor economize on their food purchases to limit spending. They accomplish this by purchasing random-weight products on sale, purchasing a greater proportion of store labels and purchasing less expensive meat, poultry and fresh fruits and vegetables. By selecting less expensive meat, poultry and fresh fruits and vegetables, low-income households are able to spend less for food (Leibtag & Kaufman, 2003). When planning nutrition programs for low-income participants, it is essential to identify the skills and resourcefulness that are already present in this population and the inadequate extent to which food skills can compensate for income. Research suggests that food skills alone are unlikely to protect very poor families from hunger and food insecurity (Hersey et al., 2001; McLaughlin, Tarasuk, & Kreiger, 2003).

McAllister's (1994) research with the financial cost of healthy foods suggested that healthful eating is not necessarily more expensive, but that restructuring the diet rather than using a direct substitution approach is the more cost effective strategy (McAllister & Baghurst, 1994). Working with single mothers, Lino and Guthrie (1994) suggested that nutrition education programs which consider the income constraints and food shopping behavior of single-parent families are needed (Lino & Guthrie, 1994).

Glanz and colleagues' (1998) survey with 2,967 adults indicated on a 5-point scale that taste was the most important consideration for food choices for respondents. The means score for taste was 4.7 followed by cost (4.1), nutrition (3.9), convenience (3.8) and weight control (3.4). One strategy to change people's perception of the importance of nutrition might be to stress the good taste of healthful foods. Also, one way to get people to eat more fruits, and vegetables and breakfast cereals is to stress their convenience and suggest easy ways to include them in their diet (Glanz et al., 1998).

### **Recruitment**

Research with some focus groups suggests plenty of extra time and money to recruit low-income participants. Many do not have phones, and they often relocate unexpectedly without leaving a forwarding address. Sending a personal invitation in a letter (King & Turner, 2004) and providing an incentive, such as a coupon to a local supermarket, resulted in a higher response (Macario et al., 1998). If money is a limiting factor, preformed groups are an option (Hartman et al., 1994).

Focus groups in studies conducted by King et al.(2004) suggested that programs directed to low -income clients need to be more descriptive of the program's content than

using acronyms such as EFNEP or FSNEP. They also suggested that labeling the program as low-income was a “turn off” for participants (King & Turner, 2004).

### **Barriers to Participation**

Holston and colleagues suggested that barriers included lack of transportation, childcare, interest and times of nutrition education sessions. Family and personal barriers generally negatively influenced use of information from nutrition education programs (Holston et al., 2004). Damron and colleagues’ (1999) research with WIC participants found similar result for barriers to participation in the program including withdrawal from WIC, moving, not able to contact participants, childcare, transportation and lack of interest. This author also suggested that there may be other reasons women are more concerned about taking care of their families than in taking care of themselves (Damron et al., 1999).

Richardson et al.(2003) indicated that transportation was a barrier to educational programs for EFNEP participants. They also specify that low educational achievement of most participants, as well as their low economic status, could influence self-esteem negatively and suggested it may lead to a lack of comfort in group settings (Richardson, Williams, & Mustian, 2003). French and colleagues (1998) suggest that programs for low-income clients should provide on-site childcare, be offered in a convenient location and avoid an enrollment fee. Some health care professionals argue paying for a program motivates participants to attend more sessions, but there is little supporting data (French, Jeffery, Story, & Neumark-Sztainer, 1998).

Hartman and colleagues' (1994) study on the literacy level of participants in EFNEP suggests that many of the current printed health and nutrition education materials are of limited use for populations such as EFNEP and other low-income individuals. (Hartman et al., 1994).

### **Delivery Logistics**

Luccia and colleagues (2003) suggest that EFNEP is effective in implementing significant dietary changes in graduates either in a group or individual settings (Keefe, 1988; Luccia et al., 2003). Hebert's (2001) work also supports that group nutrition interventions result in positive behavior changes, but additional support through individual or group meetings may increase the effectiveness of the program (Hebert et al., 2001). In a meta-analysis by Contento et al.(1995) when educational methods were compared, there was an advantage to using groups in terms of cost efficiency and cost effectiveness including one that showed small groups plus a follow up telephone conversation were very effective (Contento et al., 1995). However, there is research to support greater behavior change when participants received individual rather than group instruction (Cason, Scholl, & Kassab, 2002; Dicken, Dollahite, & Habicht, 2005).

Shanker and Klassen's (2001) research with 230 low-income women concentrated on food purchasing and food purchasing behaviors. When asked what would make people change their eating behavior, women favored small group processes led by both peers and educators. The leaders of the groups would be more successful if they were older women from the community and knowledgeable homemakers. This was important because of the value placed on the cultural experiences rather than the textbook. They

indicated that earlier program leaders demonstrated a lack of understanding of the emotional difficulties intrinsic in changing one's behavior and the perception that participants had been talked to as though they were uninformed (Shankar & Klassen, 2001).

Meloy's (1998) work with food stamp recipients suggested they preferred classes on weekdays over Saturday with Wednesday being the most popular day of the week. Evenings were the preferred class time, and six two hour classes were preferred (Meloy, 1998). Wyoming EFNEP was able to decrease the participant dropout rate by shortening the interval between visits and implementing a concentrated six months program (Ross, 1986).

Torisky et al. (1969) found the length of time spent in the program did not affect the dietary improvement or retention. Brink and colleagues reported no significant relationship between the time spent in the program or between the number of lessons received and food group or nutrient intake (Torisky et al., 1969). Del Tredici and colleagues observed an increased intake in the milk, protein and fruit and vegetable groups and related these changes to the length of the EFNEP visits, the number of EFNEP visits and the EFNEP instruction topics (Del Tredici et al., 1988).

The purpose of the study was to examine the changes in behavior, barriers to eating healthy foods, changes in internal locus of control and quality of life with participants in the EFNEP and OFL programs. This study also looked at two nutrition education programs to evaluate the method of delivery of nutrition education.

## **CHAPTER 3**

### **METHODOLOGY**

#### **Research Design**

This study used descriptive design and quantitative methodology. Four instruments with pre-post questionnaires, were administered to measure changes in behavior in dietary intake, reduction in barriers to healthy food choices, increase in internal locus of control and improvement in the quality of life of low-income individuals after participating in nutrition education programs. The method of delivery was also evaluated in this research. Respondents involved in this study also provided demographic, familiar and psychosocial information. Participants signed an Informed Consent Form for Research from the Human Subjects Research Committee. A copy of this Consent Form is in the Appendices (Appendix A) for review.

Twenty Extension Program Assistants were randomly chosen from the OFL and EFNEP programs, ten from EFNEP and ten from OFL to take part in the research. Two Program Assistants from EFNEP were not able to participate in the study. Program Assistants and Nutrition Program Supervisors (NPS) received letters with the instructions and copies of the instruments. Program Assistants and NPS Agents were trained on the content and the protocol for administering the instruments with a conference call. During the data collection process, the researcher made individual calls to the Program Assistants. E-Mail was a method of communication to answer questions and provide additional information for the Program Assistants.



## **Sample and Population**

The population for this study was participants in the Expanded Food and Nutrition Education Program (EFNEP) and Out For Lunch (OFL), a Food Stamp Nutrition Education Program in the state of North Carolina. The sample was a convenience sample of the EFNEP and OFL population. Participants represented eighteen counties randomly selected across the state. All of the counties were rural counties. This population was predominately female, with children, African-American and under the age of forty.

## **Instruments**

The EFNEP Survey (Behavior Checklist) measures changes in knowledge and behavior. The EFNEP survey provides information on participant's nutrition, food safety and food resource behaviors. The questionnaire used in this study consisted of ten questions chosen from the nineteen-question EFNEP Behavior Check list. The Behavior Checklist was developed by an expert panel of Extension specialists and USDA evaluation specialists and was tested for content validity using a panel of experts. The reliability coefficient (Cronbach's alpha) calculated using 2,984 Virginia participants in 1999 was .8032, indicating acceptable internal consistency (Cason et al., 2000).

The ten questions from the Behavior Checklist were Likert-scale with four options: seldom, sometimes, most of the time and almost-always. The participants received the same set of questions at the beginning and at the end of the nutrition programs. EFNEP participants received a questionnaire with the nineteen questions used for all participants in EFNEP, but only the questions that were the same as the OFL questionnaire were used in this study. This nineteen-item instrument was used to prevent repetition of questions

for the EFNEP population, and prevent burdening them with additional paperwork. The questionnaire with nineteen responses for EFNEP contained a “Do Not Do” Column with the Likert scale. This column was combined with the “Seldom” column in the final analysis. A copy of the instrument is provided in the Appendices (Appendix B) for review.

The instrument to measure the barriers to healthy eating was developed after a thorough review of literature identifying barriers to healthy eating for the population in the study. Experts from the Family and Consumers Science Department at North Carolina State University and Program Assistants reviewed the list of barriers for healthy eating. After this review, the list of fifteen barriers was finalized.

Participants were asked to check the barriers that prevented them from making healthy food choices. The same list of barriers was presented at the beginning of the education program and at the end of the program. Participants were given the opportunity to list other barriers that were not part of the original list. A copy of this instrument is in the Appendices (Appendix C) for review.

The measure for quality of life was a self-anchoring scale with 10 steps. Participants were instructed to think of an individual they know that had a poor quality of life and place that individual on step number one; they were instructed to think of someone they know that had a high quality of life and place that individual on step number 10. After completing this process, individuals were instructed to put an X on the step that reflected their quality of life. The same instrument was used for the pre and post evaluation for this construct.

The instrument for quality of life was developed and reviewed by an evaluation expert with Cooperative Extension at North Carolina State University. This instrument was piloted with OFL participants in two counties by the author and an evaluation specialist with Cooperative Extension at North Carolina State University. A copy of this instrument is in the Appendices (Appendix D) for review.

Nowicki-Strickland Locus of Control Scale for Adults measures locus of control. The most popular scale for measuring Locus of Control in adults was developed by Rotter (Rotter, 1966). This scale was not desirable for some adults due to the difficult reading level and other complexities. The reading level was the motivation for Nowicki and Strickland to develop the Nowicki-Strickland Internal-External Control Scale for adults (ANS-IE) (Nowicki & Duke, 1974).

Data gathered from 766 individuals in 12 separate studies established reliability for Nowicke-Strickland Internal-External Scale for adults. The analysis of the data suggested that the scale was psychometrically sound (split half reliability ranging from .74 to .86,  $N=158$  test-retest reliability over a six-week period,  $r=.83$ ,  $n=48$ ). Support for the construct of validity of the ANS-IE comes from (a) significant positive correlations between the scale and the Rotter ( $r=.68$ ,  $df=47$ ,  $p<.01$ ;  $r=.48$ ,  $df=37$ ,  $p<.01$ ;  $r=.44$ ,  $df=33$ ,  $p<.05$ ) (b) significant relations with the Eysenck Neuroticism Scale (males,  $r=.36$ ,  $df=35$ ,  $p<.05$ ; females,  $r=.32$ ,  $df=46$ ,  $p<.05$ , (c) significant relations with Taylor Manifest Anxiety scale scores (males,  $r=.34$ ,  $df=35$ ,  $p<.10$ ; females,  $r=.40$ ,  $df=46$ ,  $p<.05$ ), (d) significant differences found among hospitalized schizophrenics (mean = 16.30), hospitalized non-psychotics (mean = 11.95), and staff workers (mean = 9.20); significant but opposite relations for males and females and achievement in three separate

studies (females,  $r = .63$ ,  $df = 38$ ,  $p < .01$ ;  $r = .62$ ,  $df = 26$ ,  $p < .05$ ;  $r = .39$ ,  $df = 26$ ,  $p < .05$ ; males  $r = .48$ ,  $df = 36$ ,  $p < .01$ ;  $r = .42$ ,  $df = 34$ ,  $p < .05$ );  $r = .50$ ,  $df = 22$ ,  $p < .01$ . The above findings are sufficient reasons for further use of the ANS-IE scale (Nowicki & Duke, 1974).

The instrument used in this research study consisted of twenty-two questions taken from the 40 questions of the original Nowicki-Strickland Internal-External Scale for non-college and college adults that measure an individual's control over events such as "Do you think you can stop yourself from catching a cold?" The scale is keyed so that the higher the score the more external the locus of control orientation. In the initial conference call with Program Assistants, they suggested the forty-question instrument was too lengthy for their clients. Program Assistants, Nutrition Program Supervisors (NPS) and an evaluation expert recommended the twenty-two questions from the forty-item questionnaire to use with this population. Selection of twenty-two questions with a yes and no response provided the final pre and post instrument used in this research. Cronbach's Alpha for indication of internal validity were acceptable for this shorter version. A copy of this instrument is in the Appendices (Appendix E) for review.

Demographic, familial and social information was collected from all respondents using a ten-instrument questionnaire. The questionnaire was presented to each participant at the beginning of the EFNEP and OFL programs. A copy of the instrument can be found in the Appendices (Appendix F) for review.

## **Measurement of the Variables**

The dependent variables in this study were 1. behavior change 2. barriers to healthy eating 3. locus of control 4. quality of life and 5. program delivery method. Behavior change was measured by asking respondents to respond to 10 questions with a Likert scale from seldom to almost-always. Respondents were asked to review a list of barriers to preparing healthy meals and check the ones they perceived to be barriers. Quality of life was measured by asking participants to indicate their quality of life on a self-anchoring scale. Locus of control was measured with 22 yes and no questions. Similar questionnaires were used before and after participating in EFNEP or OFL nutrition education classes.

The Independent variables included the EFNEP or the Out for Lunch Nutrition Education Programs. Gender, race, age, level of education, marital status, number of adults in the household, area of residence, weekly income and employment were also Independent variables. All variables were measured with percentage and frequency distribution and with a t-test.

## **Data Collection Process**

The instruments were copied and mailed to the Program Assistants participating in the study along with incentives for participants. The incentives included pocket calculators, bag clips and small kitchen utensils such as measuring spoons and cups, paring knives, peelers etc. Program Assistants were trained in the administration of the instrument via a conference call, and NPS Agents were available for questions during the data collection process. Program Assistants received a copy of directions to read to participants

at the beginning of the session. They also stressed the information in the questionnaires was confidential, and the information collected would not be shared with any other agency. Participants in the sessions were instructed not to answer any question they were not comfortable with, and they did not have to complete the questionnaire if they did not want to participate in the study. Program Assistants read the questionnaire or provided a volunteer for participants who were unable to read. The responses to the instruments for OFL were mailed directly to the author when the pre and post questionnaire were completed. Self-addressed, stamped envelopes were provided for the responses. EFNEP responses were sent to the NPS agent who mailed them to the State office. The author obtained the instruments from the state EFNEP office.

### **Data Analysis**

The data collected were analyzed in several ways to meet the objectives of the study and answer the research questions presented in Chapter 1. A profile of the respondents was evaluated and the responses for each variable were described.

The author coded the four questionnaires and a computer database was created. The computation of frequencies and means and the t-test were conducted using the Statistical Package for the Social Sciences (SPSS) computer program. The following computations were completed:

1. For the respondents in EFNEP and OFL, frequency and percentage distribution were computed for each value of all demographic, familial, and social variables. The data were used in describing the respondents.

2. For respondents in EFNEP and OFL, frequency and percentage distributions were computed for responses to behavior change, barriers to healthy eating, quality of life and locus of control.
3. For respondents in EFNEP and OFL, a mean behavior change score for each value of the dependent variables was computed by summing the behavior change group. The mean for all respondents for each value of the dependent variables was computed. T-tests were used to identify significant differences between behavior change means for EFNEP and/or OFL respondents before and after participating in nutrition education classes.
4. For respondents in EFNEP and OFL, mean barriers to preparing healthy meals score for each value of the dependent variables was computed by summing the barrier scores. The means for all respondents for each value of the dependent variables were calculated. To test for the mean barriers to preparing healthy meals scores for EFNEP and/or OFL respondents before and after participating in nutrition education classes were subjected to a t-test to determine whether the differences were significant.
5. For respondents in EFNEP and OFL, mean quality of life was subjected to a t-test to determine if the differences were significant after participating in EFNEP and/or OFL

6. For respondents in EFNEP and OFL a mean locus of control for external, mixed and internal scores for each value of the dependent variables was computed by summing the locus of control scores. The mean for all respondents for each value of the dependent variables was calculated. To test the mean locus of control scores for EFNEP and/or OFL respondents before and after participating in nutrition education classes data were subjected to a t-test to determine whether the differences were significant.
7. Group means for EFNEP and OFL and t values were included for each dependent variable by each independent variable. The mean for all behavior scores for EFNEP and/or OFL were subjected to a t-test to determine whether the differences were significant.
8. The alpha levels for all tests was set at .05. The independent variables were compared using the two tailed t-tests to measure the difference in the means within and between the two programs, EFNEP and OFL.



## **CHAPTER 4**

### **FINDINGS**

The purpose of this research was to measure changes in behavior, barriers to healthy eating, changes in internal locus of control and quality of life with low-income clients participating in the Expanded Food and Nutrition Program (EFNEP) and Out For Lunch (OFL), a food stamp nutrition education program. This research also looked at the impact on the method of delivery of the two programs. Data were collected with four pre-post questionnaires from a convenience sample of participants in the two programs.

This chapter presents the findings of this study, including a description of the respondents according to their demographic, familial and social characteristics. It includes answering five research questions pertaining to the relationship between the dependent variables, behavior change, barriers to preparing healthy meals, locus of control, and quality of life and the independent variables of the programs EFNEP and OFL, gender, race, age, education, marital status, number of adults in household area of residence, income and employment status. Also tested was the research question there is no difference in the method of delivery of the program.

#### **Profile of Participants**

A total of 268 individuals, 141 with the OFL Program and 127 from EFNEP, supplied the data that were used in the analysis of this research. The type of

demographic, familial and social variables selected for this study included gender, race, age, education, marital status, number of children, number of adults in household, place of residence, income and employment. The frequency and percentage distribution of EFNEP and OFL participants is represented in Table 4.1

<b>Table 4.1</b> Frequency and Percentage Distribution of Respondents by Demographic Factors for Total Respondents N=268		
<b>Variable</b>	<b>No.</b>	<b>%</b>
<b>Program</b>		
Out For Lunch	141	52.5
EFNEP	<u>127</u>	<u>47.4</u>
Total	268	100.0
<b>Gender</b>		
Female	215	80.2
Male	<u>53</u>	<u>19.8</u>
Total	268	100.0
<b>Race</b>		
African-American	138	51.5
Hispanic	37	13.8
Native American	12	4.5
White (non-Hispanic)	80	29.9
Asian/Pacific Islander	<u>1</u>	<u>.4</u>
Total	268	100.0
<b>Age</b>		
Under 20	50	18.7
21-30	90	33.6
31-40	55	20.5
41-51	28	10.4
over 50	<u>45</u>	<u>16.8</u>
Total	268	100.0
<b>Education</b>		
Less than high school	60	22.6
Some high school	78	29.4
High school graduate	70	26.4
Technical/Vocational School	11	4.2
Some College	27	10.2
College graduates	<u>19</u>	<u>7.2</u>
Total	265	100.0
<b>Marital Status</b>		
Single	82	37.1
Married	94	42.5
Separated	14	6.3
Divorced	15	6.8
Widowed	<u>16</u>	<u>7.2</u>
Total	221	100.0
<b>Number of children</b>		
Under four years of age		
1 child	75	80.6
2 children	<u>18</u>	<u>19.4</u>
Total	93	100.0
Five to twelve years of age		
1 child	59	54.1
2 children	47	43.1
3 children	<u>3</u>	<u>2.8</u>
Total	109	100.0

<b>Table 4.1 Continued</b>		
<b>Variable</b>	<b>No</b>	<b>%</b>
<b>Thirteen to 18 years of age</b>		
1 child	33	47.8
2 children	32	46.4
3 children	<u>4</u>	<u>5.8</u>
Total	69	100.0
<b>Over nineteen years of age</b>		
1 child	22	52.4
2 children	10	23.8
3 children	8	19.0
4 children	1	2.4
5 children	<u>1</u>	<u>2.4</u>
Total	43	100.0
<b>No Children</b>	43	100.0
<b>Number of Adults in household including participant</b>		
One adult	102	39.1
Two adults	82	31.4
Three adults	46	17.6
Four adults	25	9.6
Five adults	<u>6</u>	<u>2.3</u>
Total	261	100.0
<b>Area of Residence</b>		
Farm	27	10.2
Towns under 10,000	117	44.3
Town/city (up to 50,000)	112	42.4
Suburb of cities (50,000)	25	2.3
Central city (over 50,000)	<u>6</u>	<u>.8</u>
Total	261	100.0
<b>Total Weekly Income</b>		
Less than \$100.00	7	25.8
\$100 to \$199	66	29.9
\$200 to \$299	42	19.0
over \$300	<u>56</u>	<u>25.3</u>
Total	221	100.0
<b>Employment</b>		
Full time	47	20.9
Part time	46	20.4
Unemployed	<u>132</u>	<u>58.7</u>
Total	225	100.0

## **Gender**

Out of the 268 participants that responded to the questionnaire the majority were female with 215 (80.2 percent). The male gender was represented by 53 participants which was 19.8 percent of the total group.

## **Race**

Respondents were asked to select from six groups the one that they considered themselves a member: African-American, Hispanic, Native American, white (Non-Hispanic) and Asian/Pacific Islander. Of the 268 participants 138 (51.5 percent) were African-American, 37 (13.8 percent) were Hispanic, 12 (4.5 percent) were Native Americans, 80 (29.9 percent) were white and one individual (.4 percent) was Asian.

## **Age**

Participants were asked to select from five categories for age. Fifty (18.7 percent) were under the age of 20, 90 (33.6 percent) were between the age of 21 to 30, 55 (20.5 percent) were between the age of 31 to 40, 28 (10.4 percent) were between the ages of 41 to 50 and 45 (16.8) were over 51. It is not surprising that the greatest proportion of participants fell into the frequency of 21 to 30 or the 31 to 40 age range since EFNEP criteria requires the participant to have a child (children) or be pregnant, and the OFL population were food stamps clients, predominately younger mothers with children.

## **Education**

Out of the 265 respondents 60 (22.6 percent) had less than a high school education, 78 (29.1 percent) had some high school, 70 (26.4 percent) were high school graduates, 11 (4.2 percent) had attended a technical or vocational school, 27 (10.2 percent) had some college and 19 (7.2 percent) were college graduates. The two frequencies that were highest for education were some high school or high school graduates.

## **Marital Status**

Out of the five categories 268 respondents indicated that 82 (37.1 percent) were single, 94 (42.5 percent) were married, 14 (6.3 percent) were separated, 15 (6.8 percent) were divorced and 16 (7.2 percent) were widowed. The high percentage of single individuals and the high rate of females (80.2 percent) is an indication of the majority of single mothers who participate in EFNEP and OFL. Forty-seven of the participants did not respond to this question.

## **Number of Children**

Participants indicated the number of children they had in each age range. In children under four years, 75 (80.6 percent) had 1 child and 18 (19.4 percent) had two children. With the age range of 5-12 years, 59 (54.1 percent) had one child, 47 (43.1 percent) had two children and 3 (2.8 percent) had three children. With teenage children ages 13-18 years, 33 (47.8 percent) had one child, 32 (46.4 percent) had two children, and four (5.8 percent) had three children. Out of the 268 participants 43 (16 percent) did not

have any children. The highest number of participants in this study had children under four years or between the ages of 5-12.

### **Adults in Household**

Respondents provided the number of adults living in their household including themselves. Families with one adult represented 102 (39.1 percent), 82 (31.4 percent) were in households with two adults, 46 (17.6 percent) were in homes with three adults and 31 (11.9 percent) lived in households with four or more adults. Single-family households represented the largest percentage for this category.

### **Place of Residence**

Respondents provided information on the size of the town or city where they lived. The five choices included farm, towns under 10,000 and rural non-farm, towns and cities 10,000-50,000, suburbs of cities over 50,000 and central cities over 50,000. From the above categories, 27 (10.2 percent) lived on a farm, 117 (44.3 percent) lived in a town under 10,000, 112 (42.4 percent) lived in a town or city with a population of 10,000 to 50,000, 25 (2.3 percent) lived in the suburbs of a city over 50,000 and 2 (.8 percent) lived in a central city with a population of over 50,000. The largest frequency represented was small cities and towns less than 50,000.

### **Income**

Participants reported their weekly income as follows: 57 (25.8 percent) received less than \$100. a week, 66 (29.9 percent) received from \$100 to \$199, 42 (19.0 percent) had an income of \$200 to \$299 and 56 (25.3 percent) received a weekly income over

\$300. Out of the 268 respondents, 47 elected not to answer this question. The questionnaire did not determine if the income was from employment or assistance programs such as Temporary Aide for Needy Families (TANF) or social security.

## **Employment**

Out of 268 respondents, 47 (20.9 percent) stated they were employed full time, 46 (20.4) were employed part time, and 132, (58.7) did not have any type of employment. The majority of respondents participating in the nutrition education programs were unemployed. Forty-three respondents did not answer this question.

## **Behavior Change**

The participant's changes in behavior were measured with a pre-post questionnaire with 10 questions with a Likert-scale from the EFNEP Behavior Survey. The four choices for responses included seldom, sometimes, most of the time, and almost always. The frequency and percentage distribution of the responses to the pre-post questionnaire regarding behavior change are shown in Table 4.2.

The first question asked was "How often do you plan meals ahead of time?" Respondents indicated that before participating in the program 24.3 percent seldom planned, 42.9 percent sometimes planned and 24.3 percent planned most of the time. After completion of a nutrition education program, 24.7 percent were still planning



<b>Table 4.2</b> Frequency and Percentage Distribution for Behavior Change for Total Respondents N=268				
<b>Variable</b>	<b>Pre-Questionnaire</b>		<b>Post-Questionnaire</b>	
	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
<b>How often do you plan your meals ahead of time?</b>				
Seldom	65	24.3	29	11.7
Sometimes	115	42.9	61	24.7
Most of the time	65	24.3	74	30.0
Almost always	<u>23</u>	<u>8.6</u>	<u>83</u>	<u>33.6</u>
Total	268	100.0	247	100.0
<b>How often do you shop with a grocery list?</b>				
Seldom	88	32.8	34	13.8
Sometimes	78	29.1	47	19.0
Most of the time	59	22.0	68	27.5
Almost always	<u>43</u>	<u>16.0</u>	<u>98</u>	<u>39.7</u>
Total	268	100.0	247	100.0
<b>How often do you compare prices before you buy food?</b>				
Seldom	59	22.0	17	6.9
Sometimes	53	19.8	29	11.7
Most of the time	81	30.2	83	33.6
Almost always	<u>75</u>	<u>28.0</u>	<u>118</u>	<u>47.8</u>
Total	268	100.0	247	100.0
<b>How often do you use low fat milk?</b>				
Seldom	114	42.5	51	20.7
Sometimes	59	22.0	41	16.7
Most of the time	33	12.3	53	21.5
Almost always	<u>62</u>	<u>23.1</u>	<u>101</u>	<u>41.1</u>
Total	268	100.0	246	100.0
<b>How often do you make meals that include a variety of foods from the Food Guide Pyramid?</b>				
Seldom	79	29.5	15	6.1
Sometimes	92	34.2	66	26.8
Most of the time	70	26.1	87	35.4
Almost always	<u>27</u>	<u>10.1</u>	<u>78</u>	<u>31.7</u>
Total	268	100.0	246	100.0
<b>How often do you eat low fat foods instead of high fat foods?</b>				
Seldom	74	27.6	36	14.6
Sometimes	126	47.0	69	28.0
Most of the time	51	19.0	62	25.2
Almost always	<u>17</u>	<u>6.3</u>	<u>79</u>	<u>32.1</u>
Total	268	100.0	246	100.0
<b>How often do you wash your hands with warm soapy water before preparing food?</b>				
Seldom	13	4.9	3	1.2
Sometimes	33	12.3	9	3.7
Most of the time	35	13.4	34	13.9
Almost always	<u>186</u>	<u>69.4</u>	<u>199</u>	<u>81.9</u>
Total	268	100.0	245	100.0

<b>Table 4.2 continued</b>				
<b>Variable</b>	<b>Pre-Questionnaire</b>		<b>Post Questionnaire</b>	
	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
<b>How often do you thaw foods at room temperature?</b>				
Seldom	54	20.1	100	40.7
Sometimes	78	29.1	52	21.1
Most of the time	75	28.1	56	22.8
Almost always	<u>61</u>	<u>22.8</u>	<u>38</u>	<u>15.4</u>
Total	268	100.0	246	100.0
<b>How often do you use the Nutrition Facts Label to make food choices?</b>				
Seldom	97	36.2	38	15.4
Sometimes	105	29.2	61	24.8
Most of the time	33	12.3	58	23.6
Almost always	<u>33</u>	<u>12.3</u>	<u>89</u>	<u>36.2</u>
Total	268	100.0	246	100.0
<b>When you have the option of getting a “super-sized” portion of food how often do you order it?</b>				
Seldom			157	
Sometimes	120	44.8	56	63.8
Most of the time	98	36.6	22	22.8
Almost always	31	11.6	<u>11</u>	8.9
Total	<u>19</u>	<u>7.1</u>	246	<u>4.5</u>
	268	100.0		100.0

sometimes, 30.0 percent were planning most of the time, but participants who were planning meals almost-always had increased from 8.6 percent to 33.6 percent after attending EFNEP or OFL.

Participants were asked, “How often do you shop with a grocery list?” Responses indicated that 32.8 percent and 29.1 percent answered seldom and sometimes, respectively, at the beginning of the nutrition education classes, but reported most of the time, 27.5 percent, and almost always, 39.7 percent, at the end of the sessions. The seldom category illustrated a decline from 32.8 percent to 13.8 percent, whereas the almost-always category improved from 16.0 percent to 39.7 percent.

Before participating in the education sessions, participants were asked, “How often do you compare prices before buying food?” Twenty-two percent responded seldom, 19.8 percent responded sometimes, 30.2 percent responded most of the time. After completion of the nutrition education classes, 33.6 percent responded most of the time and 47.8 percent responded almost-always. The seldom category dropped from 22.0 percent to 6.9 percent.

Participants indicated that they seldom, 42.5 percent, and sometimes, 22.0 percent used low-fat milk. After attending classes with EFNEP or OFL, respondents stated their intake of low-fat milk had increased to most of the time, 21.5 percent, to almost-always, 41.1 percent. The increase in the almost-always category went from 23.1 percent to 41.1 percent.

Responses to the question “How often do you make meals that include a variety of foods from the Food Guide Pyramid?” suggested that 29.5 percent and 34.2 percent of

participants seldom or sometimes, respectively, did not follow the Pyramid when selecting foods. With the post questionnaire, 35.3 percent and 31.7 percent responded with most of the time and almost always.

Respondents indicated they ate low-fat foods instead of high-fat foods seldom, 27.6 percent, and sometimes, 47.0 percent, before participating in nutrition education with EFNEP and OFL. After the intervention, 14.6 percent and 28.0 percent indicated they ate more high-fat foods, seldom and sometimes respectively, whereas 25.2 percent and 32.1 percent ate low-fat foods instead of high-fat foods most of the time and almost always. Participants in the almost always category increased from 6.1 to 32.2 after attending EFNEP or OFL.

In response to the question “How often do you wash your hands with warm soapy water before preparing food”, 13.4 percent responded most of the time and 69.4 percent responded almost always. After completion of the class, the category sometimes had decreased from 12.3 percent to 3.7 percent. After participating in the sessions, 81.9 percent of participants indicated they almost always washed their hands before preparing food.

When asked, “How often do you thaw frozen foods at room temperature?”, 28.1 percent responded sometimes and 22.8 percent answered almost always. After completing the class 40.7 percent indicated that they seldom thawed food at room temperature and 21.1 percent answered sometimes.

Responses to the question “How often do you use the Nutrition Facts Label?” suggested that 36.2 percent and 29.2 percent seldom or sometimes used the food label,

and only 12.3 percent almost-always used the food label when purchasing food. At the end of the nutrition education classes, 23.6 percent stated they used the label most of the time and 36.2 percent stated they used the label almost always.

Participants were asked to respond the question “If you have an opportunity of getting a super-sized portion of food how often do you order it?” The responses to the question indicated the 44.8 percent seldom order super-sized portions and 36.6 percent sometimes order larger portions. Their responses increased to 63.8 percent for seldom, and sometimes decreased to 22.8 percent. After participating in the class only 4.5 percent of participants indicated that they super-size when purchasing food.

### **Barriers to Preparing Healthy Meals**

Participants responded to a questionnaire with a list of barriers that they perceived prevented them from preparing healthy meals for their families. Participants checked all of the reasons that prevented them from preparing healthy meals for their families. They received the same list of barriers before the nutrition education sessions and after participation in EFNEP or OFL. The frequency and percentage distribution responses are listed on Table 4.3.

In response to the barrier “I do not have enough time to cook healthy meals”, 29.9 percent indicated this was a barrier in the pre-questionnaire, but at the end of the class, this barrier decreased to 13.1 percent. Seventy percent of the respondents indicated that time was not a barrier to preparing healthy meals before participating in the class.

<b>Table 4.3</b> Frequency and Percentage Distribution for Responses to Barriers to Healthy Meals for Total Respondents N=268				
Variable	Pre Questionnaire		Post-Questionnaire	
	No.	%	No.	%
<b>I do not have enough time to cook healthy meals</b>				
Barrier	80	29.9	5	13.1
Not a barrier	<u>188</u>	<u>70.1</u>	<u>232</u>	<u>86.6</u>
Total	268	100.01	267	100.0
<b>I cannot cook</b>				
Barriers	38	14.2	11	4.1
Not a barrier	230	<u>85.8</u>	<u>256</u>	<u>95.5</u>
Total	268	100.0	167	100.0
<b>I do not have a grocery store near my house</b>				
Barrier	24	9.0	14	5.2
Not a barrier	<u>244</u>	<u>91.0</u>	<u>253</u>	<u>94.8</u>
Total	268	100.0	267	100.0
<b>My children won't eat healthy foods</b>				
Barrier	28	10.4	11	4.1
Not a barrier	<u>240</u>	<u>89.6</u>	<u>256</u>	<u>95.5</u>
Total	268	100.0	267	100.0
<b>Healthy foods cost too much money</b>				
Barrier	4	14.9	17	6.3
Not a barrier	<u>228</u>	<u>85.1</u>	<u>251</u>	<u>93.7</u>
Total	291	100.0	268	100.0
<b>I do not like to cook</b>				
Barrier	39	14.6	12	4.5
Not a barrier	<u>229</u>	<u>85.4</u>	<u>255</u>	<u>95.1</u>
Total	268	100.0	267	100.0
<b>I do not have a refrigerator</b>				
Barrier	5	1.9	1	.4
Not a barrier	<u>263</u>	<u>98.1</u>	<u>267</u>	<u>99.6</u>
Total	268	100.0	268	100.0
<b>I do not have a stove</b>				
Barrier	9	3.4	1	.4
Not a barrier	<u>259</u>	<u>96.6</u>	<u>267</u>	<u>99.6</u>
Total	268	100.0	268	100.0
<b>I do not have a car</b>				
Barrier	34	12.7	20	7.5
Not a barrier	<u>234</u>	<u>87.3</u>	<u>247</u>	<u>92.2</u>
Total	268	100.0	267	100.0
<b>I do not know what foods are good for me and my family</b>				
Barrier	48	17.9	6	2.2
Not a barrier	<u>220</u>	<u>82.1</u>	<u>261</u>	<u>97.4</u>
Total	268	100.0	267	100.0

<b>Table 4.3 continued</b> <b>Variable</b>	<b>Pre Questionnaire</b>		<b>Post-Questionnaire</b>	
	No.	%	No.	%
<b>I do not have enough kitchen equipment</b>				
Barrier	8	3.0	1	.4
Not a barrier	<u>260</u>	<u>97.0</u>	<u>267</u>	<u>99.6</u>
Total	268	100.0	268	100.0
<b>No one in my family likes what I cook</b>				
Barrier	24	9.0	10	3.7
Not a barrier	<u>244</u>	<u>91.0</u>	<u>257</u>	<u>95.9</u>
Total	268	100.0	267	100.0
<b>I don't know how to follow a recipe</b>				
Barrier	32	12.5	5	1.9
Not a barrier	<u>235</u>	<u>87.7</u>	<u>262</u>	<u>97.8</u>
Total	267	100.0	267	100.0
<b>Other reasons</b>				
Barrier	25	9.7	6	2.2
Not a barrier	<u>242</u>	<u>90.3</u>	<u>262</u>	<u>97.8</u>
Total	267	100.0	268	100.0

With the barrier “I cannot cook”, 14.2 percent of participants, indicated that this was a barrier, and 85.8 percent answered it was not a barrier. After participating in the class, 4.1 percent of the clients suggested that not being able to cook was still a barrier.

Ninety-one percent of participants indicated that not having a grocery store near their house was not a barrier and 9.0 percent answered this was a barrier. After participating in the nutrition education classes, 94.8 percent indicated that not having a grocery store was not a barrier.

Participant’s response to the barrier “My children will not eat healthy foods” indicated that 10.4 percent perceived this to be a barrier in the pre-questionnaire, and 4.1 percent suggested it as a barrier after nutrition education classes. Eighty-nine percent of the participants felt that this was not a barrier at the beginning of the classes, and 95.5 percent suggested it was not a barrier at the end of the sessions.

“Healthy foods cost too much money” was a barrier that 14.9 percent of participants indicated was an obstacle for them. This barrier decreased to 6.3 percent after participating in the EFNEP and OFL classes. A majority of the participants, 85.1 percent, indicated that this was never a barrier for them.

Response to the barrier “I do not like to cook” indicated that 14.6 percent of the participants said this was a difficulty before participating in EFNEP or OFL, and this decreased to 4.5 percent after the sessions. Eighty-five percent responded that this was never a barrier for them even before participating the nutrition education sessions.



Not having a refrigerator or a stove was not a barrier for this population. Only 1.9 percent indicated they did not have a refrigerator, and 3.4 percent indicated they did not have a stove. In the post questionnaire this had dropped to one individual, to .4 percent for not having a stove or refrigerator.

Responses to the barrier “I do not have a car” indicated that 12.7 percent considered this a barrier, whereas 87.3 percent of the participants did not consider it an obstacle at the beginning of the sessions. After participating in the class, 7.5 percent still found this to be an obstacle for them.

“I do not know what foods are good for me and my family” was a barrier for 17.9 percent of the participants before attending the nutrition education classes. This barrier decreased to 2.2 percent after attending the classes. In the pre-questionnaire 82.1 percent said this was not a difficulty, and after completing the sessions 97.4 indicated it was not a barrier.

Not having kitchen equipment was a barrier for only 3.0 percent of this population. Ninety-seven percent suggested this was not a barrier in the beginning of the classes, and this increased slightly to 99.6 percent after nutrition education.

Responses to the barrier “No one in my family likes what I cook” indicated that 91 percent of the participants did not consider this as a barrier; and after participating in the session, this increased to 95.9 percent. Only 3.7 percent indicated this as a hindrance at the completion of the sessions.

Not knowing how to follow a recipe was a barrier for 12.5 percent of the participants before the classes. After the nutrition education classes, this decreased to only 5 individuals or 1.9 percent. Ninety-seven percent of the EFNEP and OFL clients suggested this was not a barrier at the end of the sessions.

### Quality of Life

Quality of life was illustrated with a self-anchoring scale consisting of ten steps numbered from one to ten. The Program Assistants instructed participants to think of an individual they thought had a low quality of life and picture that person on step one. They were to think of a person they perceived as having a high quality of life and put that individual on the highest step. The Program Assistant asked the participants to place themselves on the step they felt was a representation of their quality of life. The frequency and percentage distribution is represented on Table 4.4

**Table 4.4** Frequency and Percentage Distribution for Quality of Life for Total Respondents N=268

Variable	Pre Questionnaire		Post Questionnaire	
	No.	%	No.	%
Step 1	2	.7	0	0.0
Step 2	9	3.4	0	0.0
Step 3	13	4.9	3	1.2
Step 4	33	12.3	4	1.7
Step 5	62	23.2	35	14.5
Step 6	30	11.2	32	13.3
Step 7	39	14.6	38	15.8
Step 8	36	13.5	47	19.5
Step 9	20	7.5	32	13.3
Step 10	<u>23</u>	<u>8.6</u>	<u>50</u>	<u>20.7</u>
<b>Total</b>	<b>268</b>	<b>100.0</b>	<b>268</b>	<b>100.0</b>

At the beginning of the nutrition education classes, 9.0 percent of the participants placed themselves on steps 1 to 3. After the sessions, the percent of individuals who placed themselves in this category of 1 to 3 was only 1.2 percent. Within the range of steps for 4-6, at the beginning of the sessions 46.7 percent of the participants indicated they were in this range, and at the end of the sessions, this decreased to 31.2 percent. Forty-four percent of the participants put themselves at the top of the graphic in the range of 6-10 before attending an EFNEP or OFL class. After participating in the classes, this range increased to 69.3 percent, which was represented by 167 individuals out of 268.

### **Locus of Control**

Participants answered 22 questions with a response of Yes or No to measure locus of control. Respondents were instructed there were no right or wrong answers to the questions. The frequency and percentage distribution for total respondents is represented in Table 4.5.

With the question “Do you believe that most problems will solve themselves if you just don’t fool with them?”, the response to *Yes* was 23.3 percent before and 23.4 percent at the end of the sessions. The response to *No* did not indicate any change either with a 76.7 percent before and with 76.6 percent after the classes.

Response to the question “Do you believe you can keep yourself from catching a cold?”, 37.6 percent stated *yes* before the sessions and 42.1 suggested *yes* after

<b>Table 4.5</b> Frequency and Percentage Distribution for Locus of Control for Total Respondents N=268				
<b>Variable</b>	Pre-Questionnaire		Post-Questionnaire	
	No	%	No	%
<b>Do you believe that most problems will solve themselves if you just don't fool with them?</b>				
Yes	60	23.3	55	23.4
No	<u>197</u>	<u>76.7</u>	<u>180</u>	<u>76.7</u>
Total	257	100.0	235	100.0
<b>Do you believe you can stop yourself from catching a cold?</b>				
Yes	97	37.6	99	42.1
No	<u>161</u>	<u>62.4</u>	<u>136</u>	<u>57.9</u>
Total	258	100.0	235	100.0
<b>Are some people just born lucky?</b>				
Yes	98	38.0	96	40.7
No	<u>160</u>	<u>62.0</u>	<u>140</u>	<u>59.3</u>
Total	258	100.0	236	100.0
<b>Are you often blamed for things that are not your fault?</b>				
Yes	125	48.4	109	46.0
No	<u>133</u>	<u>51.6</u>	<u>128</u>	<u>54.0</u>
Total	258	100.0	237	100.0
<b>Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway?</b>				
Yes	76	29.5	58	24.7
No	<u>182</u>	<u>70.5</u>	<u>177</u>	<u>75.3</u>
Total	258	100.0	235	100.0
<b>Do you feel that if things start out well in the morning, it is going to be a good day no matter what?</b>				
Yes	132	51.2	133	56.4
No	<u>126</u>	<u>48.8</u>	<u>103</u>	<u>43.6</u>
Total	258	100.0	236	100.0
<b>Do you believe that wishing can make good things happen?</b>				
Yes	89	34.5	78	33.1
No	<u>169</u>	<u>65.5</u>	<u>158</u>	<u>66.9</u>
Total	258	100.0	236	100.0
<b>Do you feel when you do something wrong, there is very little you can do to make it right?</b>				
Yes	77	29.8	70	29.7
No	<u>181</u>	<u>70.2</u>	<u>166</u>	<u>70.3</u>
Total	258	100.0	236	100.0
<b>Do you feel that the best way to handle most problems is to just not think about them?</b>				
Yes	66	25.6	55	23.3
No	<u>192</u>	<u>74.4</u>	<u>181</u>	<u>76.7</u>
Total	258	100.0	236	100.0
<b>Do you feel that you have a lot of choices in deciding who your friends are?</b>				
Yes	223	86.4	193	81.4
No	<u>35</u>	<u>13.6</u>	<u>44</u>	<u>18.6</u>
Total	258	100.0	237	100.0

<b>Table 4.5</b> continued				
<b>Variable</b>	Pre-Questionnaire		Post-Questionnaire	
	No.	%	No.	%
<b>If you find a four-leaf clover, do you believe that it might bring you good luck?</b>				
Yes	91	5.3	78	33.1
No	<u>167</u>	<u>64.7</u>	<u>158</u>	<u>66.9</u>
Total	258	100.0	236	100.0
<b>Do you feel that when a person your age is angry with you there is little you can do to stop him or her?</b>				
Yes	78	30.2	89	37.7
No	<u>180</u>	<u>69.8</u>	<u>147</u>	<u>62.3</u>
Total	258	100.0	236	100.0
<b>Have you ever had a good luck charm?</b>				
Yes	111	43.0	105	44.7
No	<u>147</u>	<u>57.0</u>	<u>130</u>	<u>55.3</u>
Total	258	100.0	235	100.0
<b>Do you believe that whether or not people like you depends on how you act?</b>				
Yes	185	71.7	84	78.6
No	<u>73</u>	<u>28.3</u>	<u>50</u>	<u>21.4</u>
Total	258	100.0	234	100.0
<b>Have you ever felt that when people were angry at you it was for no reason at all?</b>				
Yes	117	48.3	116	52.5
No	<u>125</u>	<u>51.7</u>	<u>105</u>	<u>47.5</u>
Total	242	100.0	221	100.0
<b>Most of the time do you feel that you can change what might happen tomorrow by what you do today?</b>				
Yes	150	62.0	152	68.8
No	<u>92</u>	<u>38.0</u>	<u>69</u>	<u>31.2</u>
Total	242	100.0	221	100.0
<b>Do you believe that when bad things are going to happen, they just are going to happen no matter what you do to try to stop them?</b>				
Yes	135	5.8	105	47.5
No	<u>107</u>	<u>42.2</u>	<u>116</u>	<u>52.5</u>
Total	242	100.0	221	100.0
<b>Do you think people can get their own way if they just keep trying?</b>				
Yes	156	64.7	134	60.9
No	<u>85</u>	<u>35.3</u>	<u>86</u>	<u>39.1</u>
Total	241	100.0	220	100.0
<b>Do you feel that when good things happen, they happen because of hard work?</b>				
Yes	203	83.9	177	80.5
No	<u>39</u>	<u>16.1</u>	<u>43</u>	<u>19.5</u>
Total	242	100.0	220	100.0
<b>Do you feel that when someone does not like you, there is little you can do about it?</b>				
Yes	138	57.0	106	48.
No	<u>104</u>	<u>43.0</u>	<u>114</u>	<u>51.8</u>
Total	242	100.0	220	100.0

<b>Table 4.5</b> continued				
<b>Variable</b>	<b>Pre-Questionnaire</b>		<b>Post-Questionnaire</b>	
	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
<b>Are you the kind of person that believes that planning makes things turn out better?</b>				
Yes	201	83.1	197	89.5
No	<u>41</u>	<u>16.9</u>	<u>23</u>	<u>10.5</u>
Total	242	100.0	220	100.0
<b>Do you think it is better to be smart than lucky?</b>				
Yes	205	84.4	187	84.6
No	<u>38</u>	<u>15.6</u>	<u>34</u>	<u>15.4</u>
Total	243	100.0	221	100.0

completing the classes. Before the session 62.4 percent answered *no* and after the classes 57.9 responded with a *no* to the question that you can stop yourself from catching a cold.

Participants responded to the question “Are some people just born lucky” with a response of *yes* by 38.0 percent before and 40.7 responded *yes* after participating in nutrition education classes. Sixty two percent answered *no* before and 59.3 responded *no* after the classes to the question are some people just born lucky.

In response to the question “Are you often blamed for things that are not your fault”, 48.4 percent of the participants responded with a *yes* before and a 46.0 with a *yes* after the classes. At the end of the sessions more than half, or 54 percent, answered *no* to the question “Are you blamed for things that are not your fault?”

Participants were asked to respond to the question “Do you feel that most of the time it doesn’t pay to try harder because things never turn out right anyway?” Twenty-nine percent responded with a *yes* before and 24.7 responded with a *yes* after attending nutrition education classes. Seventy percent of the 258 participants responded with a *no* before and 75.3 percent with a *no* after attending the sessions.

Fifty-one percent of the participants answered *yes* to the question “Do you feel that if things start out well in the morning, it is going to be a good day?”, 51 percent said *yes* before participating in the classes, and 56.4 responded *yes* after attending the classes. The number of participants that responded with a *no* to this question was 48.8 percent before the class started and 43.6 percent at the end of classes.

A majority, 65.5 percent, of this population answered *no* to the question “Do you believe wishing can make things happen?” before attending nutrition education classes and 66.9 percent after participating in the classes. Responses to *yes* for this question were 34.5 percent before the sessions and 33.1 percent after the sessions.

Responses to the question “Do you feel when you do something wrong there is very little you can do about it?”, 29.8 percent answered *yes* before and 29.7 answered *yes* after the classes. Seventy percent of the population responded with a *no* before and after the classes with EFNEP or OFL.

Seventy-four percent of the participants answered *no* to the question “Do you feel that the best way to handle most problems is not to think about them?” After the session the response from EFNEP and OFL were similar with 76.7 percent. Twenty-five percent of the participants answered *yes* to this question before the sessions and 23.3 percent answered *yes* after the classes.

Response to the question “Do you feel that you have a lot of choices in deciding who your friends are?” 84.4 percent of the participants responded *yes* before and 81.4 responded with a *yes* after the classes in nutrition education. The percentage that responded *no* to this question was 13.6 percent before and 18.6 percent after attending the classes.

With the question “If you find a four-leaf clover, do you believe it will bring you good luck?”, 35.3 percent answered *yes* before participating in the classes and 33.1 percent responded with a *no* after attending the sessions. A majority of participants, 64.7 percent, answered *no* to this question before attending classes in nutrition education.



Response to the question “Do you feel that when a person your age is angry with you there is little you can do to stop him or her?”, 30.2 percent answered *yes* before attending classes, and this increased slightly to 37.7 percent after attending the sessions. However, 69.9 percent of the clients answered *no* to this question before they participated in EFNEP or OFL classes.

Participants responded to the question “Have you ever had a good luck charm?” Before participating in the classes, 43.0 percent responded with a *yes*, and after completing the class 44.7 percent answered with a *yes*. Respondents that answered *no* to this question were 57.0 percent before and 55.3 percent after attending EFNEP or OFL education sessions.

Before participating in the classes, 71.7 percent of the participants answered *yes* to the question “Do you believe that whether or not people like you depends on how you act?” After the class, the *yes* response to this question was 78.6 percent.

In response to the question, “Have you ever felt that when people were angry at you it was for no reason at all?” 48.3 percent answered *yes* before and 52.5 percent responded with a *yes* after attending the classes on nutrition education. The response to *no* to this question was 51.7 percent before and 47.5 percent after the sessions.

With the question “Most of the time do you feel that you can change what might happen tomorrow by what you do today?”, 62.0 percent of the respondents answered *yes* before and 68.8 percent answered *yes* after participating in nutrition education classes. Thirty-one percent of the participants answered *no* to this question at the end of the nutrition education sessions.

Participants response to the question “Do you believe that when bad things happen, they just are going to happen no matter what you do to try to stop them?” with 55.8 percent answering *yes* before participating in the classes and 47.5 percent answering *yes* at the end of the nutrition education sessions. Forty-two percent responded *no* at the beginning of the classes and 52.5 percent answered *no* after completing the classes.

Before participating in nutrition education, 64.7 percent of the participants answered *yes* to the question “Do you think people can get their own way if they just keep trying?” The response after participating in the classes decreased slightly to 60.9 percent.

A majority of the participants, 83.9 percent, answered *yes* to the question “Do you feel that when good things happen, they happen because of hard work?” at the beginning of the classes. After participating in the class, 80.5 percent answered *yes* to this question. Only 16.1 percent answered *no* to this question before attending the classes, and 19.5 percent after participating in the nutrition education.

The response to the question “Do you feel that when someone does not like you there is little you can do about it?” before the education classes was *yes* at 57.0 percent and after the class was 48.2 percent. Before participating in the sessions, 43.0 percent answered *no*, and after the classes 51.8 percent answered *no* to the question.

Eighty three percent of the respondents answered *yes* to the question “Are you the kind of person that believes planning makes things turn out better?” before they attended nutrition education sessions. After participating in the program, 89.5 percent answered

*yes* to this question. Ten percent of the participants answered *no* to the questions after completing the nutrition education classes.

Participants were asked the question “Do you think it is better to be smart than lucky?” With this question, 84.4 percent responded *yes* to this question before attending nutrition education classes and 84.6 percent after participating in the classes. With the *no* response, there was a 15.6 percent response at the beginning of the session and 15.4 percent at the end of the nutrition education classes.

### **Characteristics of Respondents in EFNEP and OFL**

Two hundred and sixty eight individuals, 141 with the OFL Program and 127 from EFNEP, provided the data that was used in the analysis of this research. A comparison between participants in EFNEP and OFL for gender, race, age, education, marital status, number of children, number of adults in household, area of residence, weekly income and employment is represented on Table 4.6.

#### **Gender**

The percentage for females was higher than for males in both programs with 103 (81.1 percent) with EFNEP and 112 (79.4 percent) in OFL, and the total number of females was 215 (80.2 percent). The male representation for both programs was 53 (19.8 percent), with 24 (18.9 percent) in EFNEP and a slightly higher number of males in OFL at 29 (20.6 percent).

<b>Table 4.6</b> Frequency and Percentage Distribution by Characteristics for Total Respondents N=268						
Variable	Total		EFNEP		OFL	
	No.	%	No.	%	No.	%
<b>Program</b>	268	100.0	127	47.4	141	52.6
<b>Gender</b>						
Female	215	80.2	103	81.1	112	79.4
Males	<u>53</u>	<u>19.8</u>	<u>24</u>	<u>18.9</u>	<u>29</u>	<u>20.6</u>
Total	268	100.0	127	100.0	141	100.0
<b>Race</b>						
African-American	138	51.5	88	69.3	50	35.5
Hispanic	37	13.8	7	5.5	30	21.3
Native American	12	4.5	12	9.4	0	00.0
White	80	29.9	20	15.7	60	42.6
Asian Pacific/Islander	<u>1</u>	<u>.4</u>	<u>0</u>	<u>00.0</u>	<u>1</u>	<u>00.7</u>
Total	268	100.0	127	100.0	141	100.0
<b>Age</b>						
Under 20	50	18.7	29	22.8	21	14.9
21-30	90	33.6	41	32.3	49	34.8
31-40	55	20.5	22	17.3	33	23.4
41-50	28	10.4	14	11.0	14	9.9
Over 50	<u>45</u>	<u>16.8</u>	<u>21</u>	<u>16.5</u>	<u>24</u>	<u>17.0</u>
Total	268	100.0	127	100.0	141	100.0
<b>Education</b>						
Less than high school	60	22.6	41	32.5	19	13.7
Some high school	78	29.4	26	20.6	52	37.4
High school graduate	70	26.4	35	27.8	35	25.2
Technical/Vocational	11	4.2	5	4.0	6	4.3
Some college	27	10.2	15	15.1	12	8.6
College graduate	<u>19</u>	<u>7.1</u>	<u>4</u>	<u>3.1</u>	<u>15</u>	<u>10.8</u>
Total	268	100.0	126	100.0	139	100.0
<b>Marital Status</b>						
Single	82	37.1	28	33.7	54	39.1
Married	94	42.5	38	45.8	56	40.6
Separated	14	6.3	3	3.6	11	8.0
Divorced	15	5.6	7	8.4	8	5.8
Widowed	<u>16</u>	<u>7.3</u>	<u>5</u>	<u>8.4</u>	<u>9</u>	<u>6.5</u>
Total	221	100.0	83	100.0	138	100.0
<b>Number of Children</b>						
Under 4 years of age						
1 child	75	80.6	43	81.1	32	80.0
2 children	<u>18</u>	<u>19.4</u>	<u>10</u>	<u>18.9</u>	<u>8</u>	<u>20.0</u>
Total	93	100.0	52	100.0	40	100.0

Table 4.6 continued	Total		EFNEP		OFL	
	No.	%	No.	%	No.	%
<b>Variable</b>	268	100.0	127	47.4	141	52.6
<b>Number of Children</b> Five to twelve years of age						
1 child	59	54.1	35	54.7	24	53.3
2 children	47	43.1	28	43.8	19	42.2
3 children	<u>3</u>	<u>2.8</u>	<u>1</u>	<u>1.5</u>	<u>2</u>	<u>4.4</u>
Total	109	100.0	64	100.0	45	100.0
<b>Number of Children</b> Thirteen to eighteen years of age						
1 child	33	47.8	17	37.8	6	66.7
2 children	32	46.4	26	57.8	16	25.0
3 children	<u>4</u>	<u>5.8</u>	<u>2</u>	<u>4.4</u>	<u>2</u>	<u>8.3</u>
Total	69	100.0	45	100.0	24	100.0
<b>Number of Children</b> Over 19 years of age						
1 child	22	52.4		62.5	12	26.2
2 children	10	23.8	13	18.8	7	26.9
3 children	8	2.4	3	18.8	5	19.2
4 children	1	2.4	0	0.0	1	3.8
5 children	<u>1</u>	<u>2.4</u>	<u>0</u>	<u>0.0</u>	<u>1</u>	<u>3.8</u>
Total	42	100.0	16	100.0	26	100.0
<b>No Children</b>	42	100.0	4	100.0	39	100.0
<b>Number of Adults Living in the Household</b>						
One adult	102	39.1	63	50.4	39	28.7
Two adults	82	31.4	24	19.2	58	42.6
Three adults	46	17.6	20	16.0	26	19.1
Four adults	25	9.6	15	12.0	10	7.4
Five adults	<u>6</u>	<u>2.3</u>	<u>4</u>	<u>2.4</u>	<u>3</u>	<u>2.1</u>
Total	261	100.0	125	100.0	136	100.0
<b>Area of Residence</b>						
Farm	27	10.2	14	11.0	13	9.5
Town under 10,000	117	44.3	49	38.6	68	49.6
Town under 10,000-50,000	112	42.4	64	50.4	48	35.0
City suburb over 50,000	6	2.3	00	00.0	6	4.4
Central city over 50,000	<u>2</u>	<u>.8</u>	<u>00</u>	<u>00.0</u>	<u>2</u>	<u>1.5</u>
Total	264	100.0	127	100.0	137	100.0
<b>Weekly Income</b>						
Less than \$100.	57	25.8	27	30.0	30	22.9
\$100. - \$199.	66	29.9	29	32.2	27	28.2
\$200. - \$299	42	19.0	22	24.4	20	15.3
Over \$300.	<u>56</u>	<u>25.3</u>	<u>12</u>	<u>13.3</u>	<u>44</u>	<u>33.6</u>
Total	221	100.0	90	100.0	131	100.0
<b>Employment</b>						
Full-time	27	20.9	16	18.8	31	22.1
Part-time	46	20.4	21	24.7	25	17.9
Unemployed	<u>132</u>	<u>58.7</u>	<u>48</u>	<u>56.5</u>	<u>84</u>	<u>60.0</u>
Total	225	100.0	85	100.0	140	100.0

## **Race**

EFNEP programs had more African Americans, 88 (69.3 percent), while OFL served 50 (35.4 percent) African Americans. The Hispanic population was lower for EFNEP at 7 (5.5 percent) and 30 (21.3 percent) with OFL. The total number of Hispanics was 37 (13.8 percent) for both programs. EFNEP was the only program having Native Americans in the program with 12 or 4.5 percent of the total sample. The OFL Program had a higher percentage of white participants, 60 (42.6 percent), with EFNEP at 20 (15.7 percent). The total of white participants with both programs was 80 (29.9 percent).

## **Age**

The majority of participants for both programs were in the age group of 21-30 with 41 (32.3 percent) for EFNEP and 49 (34.8 percent) for OFL. EFNEP served more clients in the under-20 age group at 29 (22.8 percent), and OFL had more participants in the age range of 31-40 with 33 (23.4 percent). The number of participants in the age groups of 41-50 and over 50 were similar with 14 (11.0 percent) and 14 (9.9 percent) respectively for EFNEP and OFL, and in the over-50 age range 21 (16.5 percent) and 24 (17.0 percent) respectively for EFNEP and OFL.

## **Education**

Participants with OFL tended to have more education with 52 (37.4 percent) with some high school and 35 (25.2 percent) as high school graduates. EFNEP had 41 (32.5

percent) with less than a high school education compared to OFL at 19 (13.7 percent). EFNEP's percentage of high school graduates at 35 (27.8) was slightly higher than OFL at 35 (25.2 percent). OFL had more students attend or complete college with 19.4 percent, and EFNEP had 14.2 percent participants attend or complete college. Neither program had a high percentage of participants attend a technical or vocational school, representing 4.2 percent for both programs.

### **Marital Status**

Both programs worked with a high percentage of individuals who were single, with EFNEP at 28 (33.7 percent) and OFL at 54 (39.1 percent). Representation of married individuals in the two programs was 38 (45.8 percent) in EFNEP and 56 (40.6 percent) in OFL. The numbers for separated, divorced and widowed were low for both programs with a distribution of 14 (6.3 percent) for separated, 15 (5.6 percent) for divorced, and 16 (7.2 percent) for widowed individuals for the total sample in both programs.

### **Number of Children**

Both programs served a clientele with a majority of children under the age of 12 years. In the range of children under the age of four represented by 93 participants, EFNEP had 43 (81.1 percent) and OFL had 32 (80.0 percent) of clients with one child in this age group. Participants in both programs had more children in the five to twelve range. EFNEP had 35 (54.7 percent) with one child and 28 (43.8 percent) with two children. OFL had 24 (53.3 percent) with one child and 19 (42.4 percent) with two

children. The total for the sample was 59 (54.1 percent) for one child and 47 (43.1 percent) for two children.

The number of children in the thirteen to eighteen range, representing 69 individuals in the sample, was 17 (37.8 percent) for EFNEP and 16 (66.7 percent) for OFL with one child. With the category of two children, EFNEP was 26 (57.8 percent) and six (25.0 percent) for OFL. The lowest number of children for both programs was in the over nineteen years of age, which had 42 individuals in the category. EFNEP participants with one child over nineteen was 62.5 percent and OFL was 26.2 percent; 18.8 percent in EFNEP and 26.9 percent in OFL had two children over nineteen. OFL served more participants who did not have children. From the sample of 42 individuals, four (.09 percent) participants in EFNEP did not have children and 39 (90.6) with OFL did not have children.

### **Number of Adults in Household**

Both of the programs have a majority of participants who were the only adult in their household. The percentage distribution for this grouping was 63 (50.4 percent) for EFNEP and 39 (28.7

percent) for OFL. OFL had a higher occurrence of participants that had a household with two members at 42.6 percent for OFL and 19.2 percent for EFNEP. For three adults in the household, the frequency was 20 (16.0 percent) for EFNEP and 26 (19.1 percent) for OFL.



## **Area of Residence**

The majority of participants for both programs lived in towns under 10,000 or in a city of 10,000-50,000. With EFNEP 49 (38.6 percent) lived in town under 10,000 and 64 (50.4 percent) lived in a city with a population of 10,000 to 50,000. In the OFL program 68 (49.6 percent) lived in a town fewer than 10,000, and 48 (35.0 percent) lived in a city with 10,000 to 50,000. A small number of the participants lived on a farm with 14 (11.0 percent) in EFNEP and 13 (9.5 percent) in the OFL Program. EFNEP did not have participants who lived in cities or suburbs over 50,000, and OFL had 6 (4.4 percent) living in cities or suburbs over 50,000.

## **Weekly Income**

EFNEP had fewer individuals in the less than \$100 income range, 27 (30 percent) in EFNEP and 30 (22.9 percent) in OFL. With the income range of \$100 to \$199 there were 29 (32.2 percent) participants in EFNEP and 27 (28.2 percent) in OFL. A higher percentage of EFNEP participants were in the range of \$200 to \$299 with 22 (24.4 percent) and 20 (15.3 percent) in OFL. The number of participants earning over \$300 a week was not comparable in both programs with 12 (13.3 percent) in EFNEP and 44 (33.6 percent) in OFL.

## **Employment**

Unemployment was high in both programs with 48 (56.5 percent) in EFNEP and 84 (60 percent) in OFL with a total of all participants who were unemployed at 132 (58.7 percent). Sixteen (18.8 percent) in EFNEP and 31 (22.1 percent) in OFL were employed

full time, and 21 (24.7 percent) in EFNEP and 25 (17.9 percent) in OFL were employed part time.

### **Behavior Change with EFNEP and OFL**

The respondent's responses to behavior change were measured with 10 questions with a Likert scale for responses including: seldom, sometimes, most of the time and almost-always. Participants in the two programs, EFNEP and OFL received the same set of questions at the beginning and at the end of the session. The frequency and distribution of the responses to the pre-post questionnaire for behavior changes with the EFNEP and OFL Programs are represented in Table 4.7.

In response to the question "How often do you plan meals ahead of time?", 22.8 percent in EFNEP and 25.5 percent in OFL answered seldom, and 42.5 percent in EFNEP and 43.3 percent in OFL responded sometimes. After participating in the classes 43 (34.4 percent) in EFNEP and 31 (25.4 percent) in OFL responded most of the time, and 53 (42.4 percent) of EFNEP and 30 (24.6 percent) of OFL clients almost always planned meals ahead of time.

Participants were asked the question "How often do you shop with a grocery list?" A total of 59.9 percent of EFNEP participants and 63.8 percent of the OFL respondents answered with seldom and sometimes. After participating in EFNEP 76.0 percent of the individuals answered most of the time and almost always using a shopping list. The percentages for OFL for this question were lower with 58.2 percent responding in the most of the time and almost always selection.

<b>Table 4.7</b> Frequency and Percentage Distribution in Response to Behavior Change for Total Respondents N=268												
<b>Variable</b>	<b>Pre-Questionnaire</b>						<b>Post Questionnaire</b>					
	<b>Total</b>		<b>EFNEP</b>		<b>OFL</b>		<b>Total</b>		<b>EFNEP</b>		<b>OFL</b>	
	No	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>How often do you plan meals ahead of time?</b>												
Seldom	65	24.3	29	22.8	36	25.5	29	11.7	9	7.2	20	16.4
Sometimes	115	42.9	54	42.5	61	43.3	61	24.7	20	16.0	41	33.6
Most of the time	65	24.3	32	25.2	33	23.4	74	30.0	43	34.4	31	25.4
Almost always	<u>23</u>	<u>8.8</u>	<u>12</u>	<u>9.5</u>	<u>11</u>	<u>7.8</u>	<u>83</u>	<u>33.6</u>	<u>53</u>	<u>42.4</u>	<u>30</u>	<u>24.6</u>
Total	268	100.0	127	100.0	142	100.0	247	100.0	125	100.0	122	100.0
<b>How often do you shop with a grocery list?</b>												
Seldom	88	32.8	43	33.9	45	31.9	34	13.8	13	10.4	21	17.2
Sometimes	78	29.1	33	26.0	45	31.9	47	19.0	17	13.6	30	24.6
Most of the time	59	22.0	30	23.6	29	20.6	68	27.5	32	25.6	36	29.5
Almost always	<u>43</u>	<u>16.0</u>	<u>21</u>	<u>16.5</u>	<u>22</u>	<u>15.6</u>	<u>98</u>	<u>39.7</u>	<u>63</u>	<u>50.4</u>	<u>35</u>	<u>28.7</u>
Total	268	100.0	127	100.0	141	100.0	247	100.0	125	100.0	122	100.0
<b>How often do you compare prices before you buy food</b>												
Seldom	59	22.0	31	24.4	28	19.9	17	6.9	9	7.2	8	6.6
Sometimes	53	19.8	24	18.9	29	20.6	29	11.7	11	8.8	18	14.8
Most of the time	81	30.2	37	29.1	44	31.2	83	33.6	39	31.2	44	36.1
Almost always	<u>75</u>	<u>28.0</u>	<u>35</u>	<u>27.6</u>	<u>40</u>	<u>28.4</u>	<u>118</u>	<u>47.8</u>	<u>66</u>	<u>52.8</u>	<u>52</u>	<u>42.6</u>
Total	268	100.0	127	100.0	141	100.0	247	100.0	125	100.0	122	100.0
<b>How often do you use low-fat or non-fat milk?</b>												
Seldom	114	42.5	61	48.0	53	37.6	51	20.7	21	16.9	30	24.6
Sometimes	59	22.0	28	22.0	31	22.0	41	16.7	23	18.5	18	14.8
Most of the time	33	12.3	14	11.0	19	13.5	53	21.5	28	22.6	25	20.5
Almost always	<u>62</u>	<u>23.1</u>	<u>24</u>	<u>18.9</u>	<u>38</u>	<u>27.0</u>	<u>101</u>	<u>41.1</u>	<u>52</u>	<u>41.9</u>	<u>49</u>	<u>40.2</u>
Total	268	100.0	127	100.0	141	100.0	246	100.0	124	100.0	122	100.0

<b>Table 4.7</b> continued												
<b>Variable</b>	<b>Pre-Questionnaire</b>						<b>Post Questionnaire</b>					
	<b>Total</b>		<b>EFNEP</b>		<b>OFL</b>		<b>Total</b>		<b>EFNEP</b>		<b>OFL</b>	
	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
<b>How often do you make meals that include a variety from the FG Pyramid?</b>												
Seldom	79	29.5	38	29.9	41	29.1	15	6.1	8	6.5	7	5.7
Sometimes	92	34.3	43	33.9	49	34.8	66	26.8	26	21.0	40	32.8
Most of the time	70	26.1	31	24.4	39	27.7	87	35.4	45	36.3	42	34.4
Almost always	<u>27</u>	<u>10.1</u>	<u>15</u>	<u>11.8</u>	<u>12</u>	<u>8.5</u>	<u>78</u>	<u>31.7</u>	<u>45</u>	<u>36.3</u>	<u>33</u>	<u>27.0</u>
Total	268	100.0	127	100.0	141	100.0	246	100.0	124	100.0	122	100.0
<b>How often do you eat low-fat foods instead of high-fat foods?</b>												
Seldom	74	27.6	45	35.4	29	20.6	36	14.6	18	14.5	18	14.8
Sometimes	126	47.0	54	42.5	72	51.1	69	28.0	27	21.8	42	34.4
Most of the time	51	19.0	21	16.5	30	21.3	62	25.2	31	25.0	31	25.4
Almost always	<u>17</u>	<u>6.3</u>	<u>7</u>	<u>5.5</u>	<u>10</u>	<u>7.1</u>	<u>79</u>	<u>32.1</u>	<u>48</u>	<u>38.7</u>	<u>31</u>	<u>25.4</u>
Total	268	100.0	127	100.0	141	100.0	246	100.0	124	100.0	122	100.0
<b>How often do you wash your hands with warm water before preparing a meal?</b>												
Seldom	13	4.9	9	7.1	4	2.8	3	1.2	2	1.6	1	.8
Sometimes	33	12.31	23	18.1	10	7.1	9	3.7	6	4.8	3	2.5
Most of the time	36	3.4	13	10.2	23	16.3	34	13.9	16	12.9	18	14.9
Almost always	<u>186</u>	<u>69.4</u>	<u>82</u>	<u>64.6</u>	<u>104</u>	<u>73.8</u>	<u>199</u>	<u>81.2</u>	<u>100</u>	<u>80.6</u>	<u>99</u>	<u>81.8</u>
Total	268	100.0	127	100.0	141	100.0	245	100.0	124	100.0	121	100.0
<b>How often do you thaw frozen food at room temperature?</b>												
Seldom	54	20.1	25	19.7	29	20.6	100	40.7	57	46.0	43	35.2
Sometimes	78	29.1	40	31.5	38	27.0	52	21.1	16	12.9	36	29.5
Most of the time	75	28.0	38	29.9	37	26.2	56	22.8	29	23.4	27	22.1
Almost always	<u>61</u>	<u>22.8</u>	<u>24</u>	<u>18.9</u>	<u>37</u>	<u>26.2</u>	<u>38</u>	<u>15.4</u>	<u>22</u>	<u>17.7</u>	<u>16</u>	<u>13.1</u>
Total	268	100.0	127	100.0	141	100.0	246	100.0	124	100.0	122	100.0

<b>Table 4.7</b> continued												
<b>Variable</b>	<b>Pre-Questionnaire</b>						<b>Post Questionnaire</b>					
	<b>Total</b>		<b>EFNEP</b>		<b>OFL</b>		<b>Total</b>		<b>EFNEP</b>		<b>OFL</b>	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>How often do you use the Nutrition Facts label to make food choices?</b>												
Seldom	97	36.2	46	36.2	51	36.2	38	15.4	19	15.3	19	15.6
Sometimes	105	39.2	44	34.6	61	43.3	61	24.8	14	11.3	47	38.5
Most of the time	33	12.3	17	13.4	16	11.3	58	23.6	34	27.4	24	19.7
Almost always	<u>33</u>	<u>12.3</u>	<u>20</u>	<u>15.7</u>	<u>13</u>	<u>9.2</u>	<u>89</u>	<u>36.2</u>	<u>57</u>	<u>46.0</u>	<u>32</u>	<u>26.2</u>
Total	268	100.0	127	100.0	141	100.0	246	100.0	124	100.0	122	100.0
<b>When you often have the option of a super-sized portion how often to you order it?</b>												
Seldom	120	44.8	61	48.0	59	41.8	157	63.8	84	67.7	73	59.8
Sometimes	98	36.6	41	32.3	57	40.4	56	22.8	27	21.8	29	23.8
Most of the time	31	11.6	17	13.4	14	9.9	22	8.9	9	7.3	13	10.7
Almost always	<u>19</u>	<u>7.1</u>	<u>8</u>	<u>6.3</u>	<u>11</u>	<u>7.8</u>	<u>11</u>	<u>4.5</u>	<u>4</u>	<u>3.2</u>	<u>7</u>	<u>5.7</u>
Total	268	100.0	127	100.0	141	100.0	246	100.0	124	100.0	122	100.0

A larger number of participants, 31 (24.4 percent), with EFNEP seldom compared prices before buying food than participants in OFL, 28 (19.9 percent). After completing the lessons with EFNEP and OFL, 66 (52.8 percent) of the participants and 52 (42.6 percent) of the participants, respectively, almost always compared prices before buying food.

Before participating in the two programs, clients that selected low-fat or no-fat milk were higher in the seldom and sometimes categories with 70.0 percent in EFNEP and 59.6 percent in OFL. After attending classes in EFNEP and OFL, the numbers and percentages increased in the most of the time and almost always choices to 80 (64.5 percent) with EFNEP and 74 (60.7 percent) with OFL. For the total number with the two programs, the seldom and sometimes choices decreased from 173 (64.5 percent) to 92 (37.4 percent) at the end of the sessions with EFNEP and OFL.

When asked “How often do you make meals that include a variety of foods from the Food Guide Pyramid”?, 38 (29.9 percent) in EFNEP and 41 (29.1 percent) in OFL responded they seldom include a variety of foods from the Pyramid. After participating in EFNEP, 45 (36.3 percent) of participants answered most of the time and 45 (36.3 percent) answered almost always. With the OFL program 42 (34.4 percent) responded most of the time, and 33 (27.0 percent) answered almost always to preparing a variety of foods from the Pyramid.

Before attending the classes in EFNEP, 5.5 percent of participants almost always and 7.1 percent of OFL participants almost always ate low fat foods instead of high-fat foods. After participating in EFNEP classes, the almost always category increased to 48 (38.7 percent) in EFNEP and 31 (25.4 percent) in OFL.

Even before participating in classes with the two programs, 82 (64.6 percent) of the EFNEP participants and 104 (73.8 percent) of OFL participants washed their hands in warm soapy water before preparing a meal. After participating in the class, this number and percentage increased to 100 (80.6 percent) with EFNEP and 99 (81.8 percent) with OFL.

When responding to the question “How often do you thaw frozen food at room temperature?”, EFNEP clients responded 40 (31.5 percent) sometimes and 38 (29.9 percent) answered most of the time. OFL participants responded 38 (27.0 percent) sometimes and 37 (26.2 percent) most of the time. After participating in EFNEP and OFL, 57 (46.0 percent) and 43 (35.2 percent), respectively, seldom thawed frozen foods at room temperature.

More clients participating in OFL (79.5 percent) than EFNEP (68.8 percent) seldom and sometimes used the Nutrition Facts label to make food choices. After participating in the educational sessions, a larger percentage 57 (46.0 percent) of EFNEP clients indicated they almost always used the Nutrition Facts label compared to 32 (26.2 percent) of OFL participants who used the Nutrition Facts label.

A high percentage (81.4 percent) of individuals in EFNEP and OFL indicated before participating in the classes that they did not super size their portions when they had the option. EFNEP participants answered that 102 (80.3 percent) of the time they seldom or sometimes, and OFL indicated that 81 (82.2 percent) of the time they seldom or sometimes did not super size portions. At the end of EFNEP and OFL classes only

11(4.5 percent) of participants almost always super-sized their portions when they had the option.

### **Barriers to Preparing Healthy Meals with EFNEP and OFL**

Participants in both programs were asked to check from a list any barriers that prevented them from preparing healthy meals for their families. They received the same list of barriers at the beginning and after completing the classes with EFNEP and OFL. The frequency and percentage of distribution to barriers to preparing healthy meals for EFNEP and OFL is represented in Table 4.8.

The first barrier that participants responded to was “Do not have enough time to cook.” A large majority (81.9 percent) of EFNEP participants and (59.6 percent) of OFL participants did not consider this to be an obstacle before participating in classes. In the post questionnaire, 124 (97.6 percent) of the EFNEP participants and 108 (77.3 percent) of OFL still considered not having enough time to cook was not a barrier.

Response to the barrier “I cannot cook”, both EFNEP (87.4 percent) and OFL (84.4 percent) participants did not consider this to be a barrier before they participated in nutrition education classes. At the end of the sessions, the percentages for EFNEP (99.2 percent) and OFL (92.9 percent) indicated “I cannot cook” was not a barrier. Only 1 (.8 percent) of EFNEP and 10 (7.1 percent) of OFL participants considered this as a barrier in the post-questionnaire.

“Not having a grocery store near my house”, was not a barrier before participating in the programs. Responses with EFNEP 117 (92.1 percent) and OFL 127 (90.1 percent)



<b>Table 4.8</b> Frequency and Percentage Distribution to Barriers for Healthy Meals by Total Respondents N=268												
<b>Variable</b>	<b>Pre-Questionnaire</b>						<b>Post-Questionnaire</b>					
	<b>Total</b>		<b>EFNEP</b>		<b>OFL</b>		<b>Total</b>		<b>EFNEP</b>		<b>OFL</b>	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>I do not have enough time to cook</b>												
Barrier	80	29.9	23	18.1	57	40.4	35	13.1	3	2.4	32	22.7
Not a barrier	<u>188</u>	<u>70.1</u>	<u>104</u>	<u>81.9</u>	<u>84</u>	<u>59.6</u>	<u>232</u>	<u>86.9</u>	<u>124</u>	<u>97.6</u>	<u>108</u>	<u>77.3</u>
Total	268	100.0	127	100.0	141	100.0	267	100.0	127	100.0	140	100.0
<b>I cannot cook.</b>												
Barrier	38	14.2	16	12.6	22	15.6	11	4.1	1	.8	10	7.1
Not a barrier	<u>230</u>	<u>85.8</u>	<u>119</u>	<u>87.4</u>	<u>119</u>	<u>84.4</u>	<u>256</u>	<u>95.9</u>	<u>126</u>	<u>99.2</u>	<u>130</u>	<u>92.9</u>
Total	268	100.0	225	100.0	141	100.0	267	100.0	127	100.0	140	100.0
<b>I do not have a grocery store near my house.</b>												
Barrier	24	9.0	10	7.9	14	9.9	14	5.2	8	6.3	6	4.3
Not a barrier	<u>244</u>	<u>91.0</u>	<u>117</u>	<u>92.1</u>	<u>127</u>	<u>90.1</u>	<u>253</u>	<u>94.8</u>	<u>119</u>	<u>93.7</u>	<u>134</u>	<u>95.7</u>
Total	268	100.0	127	100.0	141	100.0	167	100.0	127	100.0	140	100.0
<b>My children won't eat healthy foods.</b>												
Barrier	28	10.4	13	10.2	15	10.6	11	4.1	1	.8	10	7.1
Not a barrier	<u>240</u>	<u>89.6</u>	<u>114</u>	<u>89.8</u>	<u>126</u>	<u>89.4</u>	<u>256</u>	<u>95.9</u>	<u>126</u>	<u>99.2</u>	<u>130</u>	<u>92.9</u>
Total	268	100.0	127	100.0	141	100.0	267	100.0	127	100.0	140	100.0
<b>Healthy food costs too much money.</b>												
Barrier	40	14.9	16	12.6	24	17.0	17	6.3	1	.8	16	11.3
Not a barrier	<u>228</u>	<u>85.1</u>	<u>111</u>	<u>87.4</u>	<u>117</u>	<u>83.0</u>	<u>251</u>	<u>93.7</u>	<u>126</u>	<u>99.2</u>	<u>125</u>	<u>88.7</u>
Total	268	100.0	127	100.0	141	100.0	268	100.0	127	100.0	141	100.0
<b>I do not like to cook.</b>												
Barrier	39	14.6	24	18.9	15	10.6	12	4.5	4	3.1	8	5.7
Not a barrier	<u>229</u>	<u>85.4</u>	<u>103</u>	<u>81.1</u>	<u>126</u>	<u>89.4</u>	<u>255</u>	<u>95.5</u>	<u>123</u>	<u>96.9</u>	<u>132</u>	<u>94.3</u>
Total	268	100.0	127	100.0	141	100.0	267	100.0	127	100.0	140	100.0
<b>I do not have a refrigerator to store foods.</b>												
Barrier	5	1.9	4	3.1	1	.7	1	.4	0	00.0	1	.7
Not a barrier	<u>263</u>	<u>98.1</u>	<u>123</u>	<u>96.9</u>	<u>140</u>	<u>99.3</u>	<u>267</u>	<u>99.6</u>	<u>127</u>	<u>100.0</u>	<u>140</u>	<u>99.3</u>
Total	268	100.1	127	100.0	141	100.0	268	100.0	127	100.0	141	100.0

<b>Table 4.8 continued</b>												
<b>Variable</b>	<b>Pre-Questionnaire</b>						<b>Post-Questionnaire</b>					
	<b>Total</b>		<b>EFNEP</b>		<b>OFL</b>		<b>Total</b>		<b>EFNEP</b>		<b>OFL</b>	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>I do not have a stove to cook meals</b>												
Barrier	9	3.4	6	4.7	3	2.1	1	.4	0	00.0	1	.7
Not a barrier	<u>259</u>	<u>96.6</u>	<u>121</u>	<u>95.3</u>	<u>137</u>	<u>97.9</u>	<u>267</u>	<u>99.6</u>	<u>127</u>	<u>100.0</u>	<u>140</u>	<u>99.3</u>
Total	268	100.0	127	100.0	140	100.0	268	100.0	127	100.0	141	100.0
<b>I do not have a car to go to the store.</b>												
Barrier	34	12.7	21	16.5	13	9.2	20	7.5	10	7.9	10	7.1
Not a barrier	<u>234</u>	<u>87.3</u>	<u>106</u>	<u>83.5</u>	<u>128</u>	<u>90.8</u>	<u>247</u>	<u>92.5</u>	<u>117</u>	<u>92.1</u>	<u>130</u>	<u>92.9</u>
Total	268	100.0	127	100.0	141	100.0	267	100.0	127	100.0	140	100.0
<b>I do not know what foods are good for me.</b>												
Barrier	48	17.9	20	15.7	28	19.9	6	2.2	1	.8	5	3.5
Not a barrier	<u>220</u>	<u>82.1</u>	<u>107</u>	<u>84.3</u>	<u>113</u>	<u>80.1</u>	<u>261</u>	<u>97.8</u>	<u>126</u>	<u>99.2</u>	<u>135</u>	<u>96.5</u>
Total	268	100.0	127	100.0	141	100.0	267	100.0	127	100.0	140	100.0
<b>I do not have kitchen equipment to prepare food.</b>												
Barrier	8	3.0	2	1.6	6	4.3	1	.4	0	00.0	1	.7
Not a barrier	<u>260</u>	<u>97.0</u>	<u>125</u>	<u>98.4</u>	<u>135</u>	<u>95.7</u>	<u>267</u>	<u>99.6</u>	<u>127</u>	<u>100.0</u>	<u>140</u>	<u>99.3</u>
Total	268	100.0	127	100.0	141	100.0	268	100.0	127	100.0	141	100.0
<b>No one in my family likes what I cook</b>												
Barrier	24	9.0	7	5.7	17	12.1	10	3.7	1	.8	9	6.4
Not a barrier	<u>244</u>	<u>91.0</u>	<u>120</u>	<u>94.3</u>	<u>124</u>	<u>87.9</u>	<u>257</u>	<u>96.3</u>	<u>126</u>	<u>99.2</u>	<u>132</u>	<u>93.6</u>
Total	268	100.0	127	100.0	141	100.0	267	100.0	127	100.0	141	100.0
<b>I do not know how to follow a recipe.</b>												
Barrier	32	11.9	5	3.9	27	19.1	5	1.9	1	.8	4	2.8
Not a barrier	<u>235</u>	<u>88.1</u>	<u>122</u>	<u>96.1</u>	<u>113</u>	<u>80.9</u>	<u>262</u>	<u>98.1</u>	<u>126</u>	<u>99.2</u>	<u>136</u>	<u>97.2</u>
Total	267	100.0	127	100.0	140	100.0	267	100.0	127	100.0	140	100.0
<b>Others</b>												
Barrier	25	9.3	13	10.1	12	8.5	6	2.2	2	1.6	4	2.8
Not a barrier	<u>242</u>	<u>90.7</u>	<u>114</u>	<u>89.9</u>	<u>128</u>	<u>91.5</u>	<u>262</u>	<u>97.8</u>	<u>125</u>	<u>98.4</u>	<u>137</u>	<u>97.2</u>
Total	267	100.0	127	100.0	140	100.0	268	100.0	127	100.0	141	100.0

indicated that this was not a barrier. After participating in the program, this percentage increased slightly with 119 (93.7 percent) with EFNEP and 134 (95.7 percent) with OFL. At the end of the nutrition education classes, 6.3 percent of EFNEP and 4.3 percent of OFL still considered not having a grocery store near their home to be a barrier.

In the EFNEP classes 114 (89.8 percent) and in OFL 126 (89.4 percent) participants did not perceive that their children not eating healthy foods to be a barrier. After completing the class this increased to 126 (99.2 percent) and 130 (92.9 percent) respectively. Eight percent of EFNEP and 7.1 percent of OFL participants still considered this a barrier.

The barrier “Healthy food costs too much money” was an obstacle for 16 (12.6 percent) for EFNEP participants and 24 (17.0 percent) for OFL before attending nutrition education classes. This decreased to .08 percent for EFNEP and 11.3 percent for OFL after participating in the class. Before participating in EFNEP or OFL out of 268 individuals, 228 (85.1 percent) did not indicate that “healthy food cost too much money was a barrier”.

The response that “I do not like to cook” was a barrier before participating in EFNEP or OFL with 24 (18.9 percent) and 15 (10.6 percent) respectively. After attending the sessions this decreased to 4 (3.1 percent) for EFNEP and 8 (5.7 percent) for OFL. In the post-questionnaire 255 (95.5 percent) of participants, 123 (96.9 percent) with EFNEP and 132 (94.3 percent) with OFL, indicated that this was not a barrier.

Not having a refrigerator to store food was not a problem for participants in either program. Before beginning the session, 4 (3.1 percent) of EFNEP and 1 (.7 percent) of OFL clients listed not having a refrigerator as a barrier. After completing the program this decreased to no clients in EFNEP and 1 client in OFL listing this as a barrier. At the completion of their classes, 100.0 percent of EFNEP and 99.3 percent of participants stated this was not a barrier.

Not having a stove to cook meals was a barrier for 6 (4.7 percent) of EFNEP and 3 (2.1 percent) for OFL. In the post-questionnaire the numbers had decreased to 0 in EFNEP and 1 (.7 percent) in OFL. This was not considered a barrier by 100.0 percent and 99.3 percent after completing the sessions in EFNEP and OFL respectively.

“I do not have a car to go to the store” was a barrier specified by 21 (16.5 percent) in EFNEP and 13 (9.2 percent) in OFL. The number and frequency decreased after participation in the two programs, 7.9 percent for EFNEP and 7.1 percent in OFL.

Clients participating in EFNEP and OFL considered “I do not know what foods are good for me” to be a barrier with 20 (15.7 percent) and 28 (19.9 percent) respectively. Before participating in the classes, 84.3 percent in EFNEP and 80.1 percent in OFL did not consider this as a barrier; and after the sessions this increased to 99.2 percent for EFNEP and 96.5 for OFL.

Not having the kitchen equipment to prepare food was not a major barrier for either program with 1.6 percent of EFNEP and 4.3 percent of OFL participants considering this to be a barrier in the pre-questionnaire. Upon completion of the class, this decreased to zero percent for EFNEP and .7 percent for OFL. Before starting the

classes 260 (97.0 percent), participants from both programs did not consider this to be a barrier.

“No one in my family likes what I cook” was more of a barrier for participants in OFL 17 (12.1 percent) than EFNEP 7 (5.7 percent). After completion of the program, there was a slight decrease in OFL 9 (6.1 percent) and more of a decrease in EFNEP to 1 (.8 percent). After participating in the sessions, this was not a barrier for 99.2 percent in EFNEP and 93.9 percent for OFL.

Before attending educational sessions, participants in OFL (19.1 percent) considered “I do not know how to follow a recipe” to be more of a barrier than EFNEP (3.9 percent) participants. Ninety-nine percent of EFNEP and 97.2 percent of OFL did not consider this a barrier after attending sessions on nutrition education.

### **Quality of Life for EFNEP and OFL**

With the two programs, quality of life was illustrated with a self-anchoring scale with steps numbered from one to ten. The Program Assistant instructed participants to think of an individual they thought had a low quality of life and put that person on step one. They were to think of a person they perceived as having a high quality of life and put that individual on the highest step. The Program Assistant asked the participants to place themselves on the step they felt was a representation of their quality of life. The frequency and percentage distribution is represented on Table 4.9.

**Table 4.9** Frequency and Percentage Distribution for Quality of Life for Total Respondents N=267

Variable	Pre-Questionnaire						Post Questionnaire					
	Total		EFNEP		OFL		Total		EFNEP		OFL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Step 1	1	.7	1	.8	1	.7	0	0.00	0	0.00	0	0.00
Step 2	9	3.4	2	1.6	7	5.0	0	0.00	0	0.00	0	0.00
Step 3	13	4.9	7	5.5	6	4.3	3	1.1	1	0.8	2	1.7
Step 4	33	12.3	21	16.5	12	8.6	4	1.7	2	1.6	2	1.7
Step 5	62	23.1	27	21.3	35	25.0	35	14.5	14	11.2	21	18.1
Step 6	30	11.2	19	7.9	20	14.3	32	13.3	17	13.6	15	12.9
Step 7	39	14.6	21	16.5	18	12.9	38	14.2	24	19.2	14	12.1
Step 8	37	13.5	18	14.2	18	12.9	47	19.5	27	21.6	20	17.2
Step 9	20	7.5	12	9.4	8	5.7	32	13.3	18	14.4	14	14.1
Step 10	24	9.0	8	6.3	16	11.4	50	18.7	22	17.6	28	24.1
<b>Total</b>	267	100.0	127	100.0	141	100.0	241	100.0	125	100.0	116	100.0

In the pre-questionnaire 9 (7.9 percent) of EFNEP and 14 (10 percent) of OFL participants placed themselves on the first three steps of the graphic. After completing the class the numbers and percentages decreased to 1 (.8 percent) for EFNEP and 1 (1.7 percent) for OFL in the first three steps. Within the range of steps from 4-6, 45.7 percent of EFNEP and 47.9 percent of OFL placed themselves in this category at the beginning of the classes. After participating in EFNEP and OFL, the percentage decreased to 26.4 percent for EFNEP and 32.7 for OFL. On the higher steps of 7 to 9, 40.1 percent of EFNEP and 31.5 percent of OFL indicated they felt their quality of life would be in this range before starting the program. In the post-questionnaire, this same category increased to 55.2 percent for EFNEP and 43.5 percent for OFL. With the highest step of 10, 8 (6.3 percent) of EFNEP and 16 (11.4 percent) of OFL participants placed themselves on this step before starting the educational sessions. However, upon completion of EFNEP and OFL, this increased to 22 (17.6 percent) and 28 (24.1 percent) for the two programs respectively.

### **Locus of Control for EFNEP and OFL**

Participants with both programs, EFNEP and OFL answered 22 questions with a response of yes or no measuring locus of control. Instructions for the participants included the statement “There are no right or wrong answers to the questions.” Respondents were encouraged not to answer questions that were uncomfortable for them to provide a response. The frequency and percentage distribution for Locus of Control for EFNEP and OFL is represented in Table 4.10.

In response to the question “Do you believe that problems will solve themselves if you just don’t fool with them?”, 28.2 percent of EFNEP and 19.3 percent of OFL responded with *yes*, whereas 71.8 percent and 80.7 percent, respectively, responded *no* before participating in EFNEP and OFL classes. After attending the sessions, the number that continued to answer *yes* to this question was 27.0 percent for EFNEP and 20.0 percent for OFL.

Participant’s response to the question “Do you believe you can keep yourself from catching a cold?” indicated *yes* for 38 (32.2 percent) in EFNEP and 59 (42.1 percent) from OFL. Eighty (67.8 percent) of EFNEP and 81 (57.9 percent) of OFL participants responded with a *no* to the question. In the post-questionnaire responses to *yes* indicated a slight increase with a response of 35.7 percent for EFNEP and 48.3 percent for OFL.

A majority of participants in both programs responded *no* to the question “Are some people just born lucky?”, with 61.9 percent from EFNEP and 62.1 percent from OFL from a total of 160 (62.0 percent) participants. The response of *yes* to this question was 38.1 percent at the beginning and 44.3 percent at the end for EFNEP. For OFL the

Variable	Pre-Questionnaire						Post Questionnaire					
	Total		EFNEP		OFL		Total		EFNEP		OFL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Do you believe that problems will solve themselves if you just don't full with them?</b>												
Yes	60	23.3	33	28.2	27	19.3	55	34.4	31	27.0	24	20.0
No	<u>197</u>	<u>76.7</u>	<u>84</u>	<u>71.8</u>	<u>113</u>	<u>80.7</u>	<u>180</u>	<u>76.6</u>	<u>82</u>	<u>73.0</u>	<u>96</u>	<u>80.0</u>
Total	257	100.0	117	100.0	140	100.0	235	100.0	115	100.0	120	100.0
<b>Do you believe you can keep yourself from catching a cold?</b>												
Yes	97	37.6	38	32.2	59	42.1	99	42.1	41	35.7	58	48.3
No	<u>161</u>	<u>62.4</u>	<u>80</u>	<u>67.8</u>	<u>81</u>	<u>57.9</u>	<u>136</u>	<u>57.9</u>	<u>74</u>	<u>63.3</u>	<u>62</u>	<u>51.7</u>
Total	258	100.0	118	100.0	140	100.0	235	100.0	115	100.0	120	100.0
<b>Are some people just born lucky?</b>												
Yes	98	38.0	45	38.1	53	37.9	96	40.7	51	44.3	45	37.2
No	<u>160</u>	<u>62.0</u>	<u>73</u>	<u>61.9</u>	<u>87</u>	<u>62.1</u>	<u>140</u>	<u>59.3</u>	<u>64</u>	<u>55.7</u>	<u>76</u>	<u>62.8</u>
Total	258	100.0	118	100.0	140	100.0	236	100.0	115	100.0	121	100.0
<b>Are you often blamed for things that are not your fault?</b>												
Yes	125	48.4	53	44.9	72	51.4	109	46.0	48	41.7	61	50.0
No	<u>133</u>	<u>51.6</u>	<u>86</u>	<u>55.1</u>	<u>68</u>	<u>48.6</u>	<u>128</u>	<u>54.0</u>	<u>67</u>	<u>58.3</u>	<u>61</u>	<u>50.0</u>
Total	258	100.0	118	100.0	140	100.0	237	100.0	115	100.0	122	100.0
<b>Do you feel that most of the time it doesn't pay to try hard?</b>												
Yes	76	29.5	30	25.4	46	32.9	58	24.7	31	27.0	27	22.5
No	<u>182</u>	<u>70.5</u>	<u>88</u>	<u>74.6</u>	<u>94</u>	<u>67.1</u>	<u>177</u>	<u>75.3</u>	<u>84</u>	<u>73.0</u>	<u>93</u>	<u>77.5</u>
Total	252	100.0	118	100.0	140	100.0	235	100.0	115	100.0	120	100.0
<b>Do you feel that if things start out well in the morning it will be a good day?</b>												
Yes	132	51.2	58	49.2	74	52.9	133	56.4	66	57.4	67	55.4
No	<u>126</u>	<u>48.8</u>	<u>60</u>	<u>50.8</u>	<u>66</u>	<u>47.1</u>	<u>103</u>	<u>43.6</u>	<u>49</u>	<u>42.6</u>	<u>54</u>	<u>44.6</u>
Total	258	100.0	118	100.0	140	100.0	236	100.0	115	100.0	121	100.0



<b>Table 4.10</b> continued												
	Pre-Questionnaire						Post Questionnaire					
	Total		EFNEP		OFL		Total		EFNEP		OFL	
<b>Variable</b>	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Do you believe wishing can make things happen?</b>												
Yes	89	34.5	40	33.9	49	35.0	78	33.1	35	30.4	43	35.5
No	<u>169</u>	<u>65.5</u>	<u>78</u>	<u>66.1</u>	<u>91</u>	<u>65.0</u>	<u>158</u>	<u>66.9</u>	<u>80</u>	<u>69.6</u>	<u>78</u>	<u>64.6</u>
Total	258	100.0	118	100.0	140	100.0	236	100.0	115	100.0	121	100.0
<b>Do you feel when you do something wrong there is little you can do about it?</b>												
Yes	77	29.8	32	27.1	45	32.1	70	29.7	40	34.8	30	24.8
No	<u>181</u>	<u>70.2</u>	<u>86</u>	<u>72.9</u>	<u>95</u>	<u>67.9</u>	<u>166</u>	<u>70.3</u>	<u>75</u>	<u>65.2</u>	<u>91</u>	<u>75.2</u>
Total	158	100.0	118	100.0	140	100.0	236	100.0	115	100.0	121	100.0
<b>Do you feel that the best way to handle problems is to think about them?</b>												
Yes	66	25.8	31	26.3	35	25.0	55	23.3	34	29.6	21	17.4
No	<u>192</u>	<u>74.4</u>	<u>87</u>	<u>73.7</u>	<u>105</u>	<u>75.5</u>	<u>181</u>	<u>76.7</u>	<u>81</u>	<u>70.4</u>	<u>100</u>	<u>82.6</u>
Total	258	100.0	118	100.0	140	100.0	236	100.0	115	100.0	121	100.0
<b>Do you feel that you have a lot of choice deciding who your friends are?</b>												
Yes	223	86.4	103	87.3	120	85.7	193	81.4	90	78.3	103	84.4
No	<u>35</u>	<u>13.6</u>	<u>15</u>	<u>12.7</u>	<u>20</u>	<u>14.3</u>	<u>44</u>	<u>18.6</u>	<u>25</u>	<u>21.7</u>	<u>19</u>	<u>15.6</u>
Total	258	100.0	118	100.0	140	100.0	237	100.0	115	100.0	122	100.0
<b>If you find a four-leaf clover will it bring you good luck?</b>												
Yes	91	35.3	32	27.1	59	42.1	78	33.1	39	33.9	39	32.2
No	<u>167</u>	<u>64.7</u>	<u>86</u>	<u>72.9</u>	<u>81</u>	<u>57.9</u>	<u>158</u>	<u>66.9</u>	<u>76</u>	<u>66.1</u>	<u>82</u>	<u>67.8</u>
Total	258	100.0	118	100.0	140	100.0	236	100.0	115	100.0	121	100.0
<b>Do feel when a person is angry with you there is little you can do to stop?</b>												
Yes	78	30.2	31	26.3	47	33.6	89	37.7	41	35.7	48	39.7
No	<u>180</u>	<u>69.8</u>	<u>87</u>	<u>73.7</u>	<u>93</u>	<u>66.4</u>	<u>147</u>	<u>62.3</u>	<u>74</u>	<u>64.3</u>	<u>73</u>	<u>60.3</u>
Total	258	100.0	118	100.0	140	100.0	236	100.0	115	100.0	121	100.0
<b>Have you ever had a good luck charm?</b>												
Yes	111	43.0	47	39.8	64	45.7	105	44.7	54	47.4	51	42.1
No	<u>142</u>	<u>57.0</u>	<u>71</u>	<u>60.2</u>	<u>76</u>	<u>54.3</u>	<u>130</u>	<u>55.3</u>	<u>60</u>	<u>52.6</u>	<u>70</u>	<u>57.9</u>
Total	258	100.0	118	100.0	140	100.0	235	100.0	114	100.0	121	100.0

<b>Table 4.10 continued</b>												
<b>Variable</b>	<b>Pre-Questionnaire</b>						<b>Post Questionnaire</b>					
	<b>Total</b>		<b>EFNEP</b>		<b>OFL</b>		<b>Total</b>		<b>EFNEP</b>		<b>OFL</b>	
	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
<b>Do you believe whether or not people like you depends on how you act?</b>												
Yes	185	71.7	88	74.6	97	69.3	184	78.6	84	73.3	100	88.3
No	73	28.3	30	25.4	43	30.7	50	21.4	30	26.3	20	16.7
Total	258	100.0	118	100.0	140	100.0	234	100.0	114	100.0	120	100.0
<b>Have you ever felt when people were angry with you, it was for no reason?</b>												
Yes	117	48.3	53	52.0	64	45.7	116	52.5	54	54.0	62	51.2
No	125	51.7	49	48.0	76	54.3	105	47.5	46	46.0	59	48.8
Total	242	100.0	102	100.0	140	100.0	235	100.0	100	100.0	121	100.0
<b>Do you believe that when bad things are going to happen, they just happen?</b>												
Yes	135	55.8	59	57.8	76	54.3	105	47.5	48	48.5	57	46.7
No	107	44.2	43	42.2	64	45.7	116	52.5	51	51.5	76	53.3
Total	242	100.0	102	100.0	140	100.0	221	100.0	99	100.0	122	100.0
<b>Do you think people get their own way if they just keep trying?</b>												
Yes	156	64.7	66	65.3	90	64.3	134	60.9	57	57.6	77	63.6
No	85	35.3	35	34.7	50	35.7	86	39.1	42	42.4	44	36.4
Total	241	100.0	101	100.0	140	100.0	220	100.0	99	100.0	121	100.0
<b>Do you feel when good things happen, they happen because of hard work?</b>												
Yes	203	83.9	86	84.3	117	83.6	177	80.5	79	79.8	98	81.0
No	39	16.1	16	15.7	23	16.4	43	19.5	20	20.2	23	19.0
Total	242	100.0	102	100.0	140	100.0	220	100.0	99	100.0	121	100.0
<b>Do you feel that when someone does not like you, there is little you can do?</b>												
Yes	138	57.0	59	57.8	79	56.4	106	48.2	47	47.5	59	48.8
No	104	43.0	43	42.2	61	43.6	114	51.8	52	52.5	62	51.2
Total	242	100.0	102	100.0	140	100.0	220	100.0	99	100.0	121	100.0
<b>Do you think it is better to be smart than lucky?</b>												
Yes	205	84.4	84	81.6	121	86.4	197	89.5	88	88.9	109	90.1
No	38	15.6	19	18.4	19	13.6	23	10.5	11	11.1	12	9.9
Total	243	100.0	103	100.0	140	100.0	220	100.0	99	100.0	121	100.0

response of *yes* was 37.9 percent at the beginning and 37.2 percent at the end of the sessions.

Before participating in the programs, fifty-three (44.9 percent) of EFNEP and 72 (51.4 percent) of OFL clients thought they were often blamed for things that were not their fault. This percentage remained constant after the program with EFNEP at 41.7 percent and OFL at 50.0 percent. Clients who responded *no* to this question were 55.1 percent from EFNEP and 48.6 percent from OFL before the program and 58.3 percent and 50.0 percent respectively after attending the nutrition education classes.

To the question “Do you feel that most of the time it doesn’t pay to try hard because things never turn out right?”, a majority of EFNEP, (74.6 percent) and OFL (67.1 percent) answered *no* to this question. After participating in EFNEP and OFL, the response of *no* increased to 73.0 percent and 77.5 percent respectively.

When asked the question “Do you feel that if things start out well in the morning, it is going to be a good day no matter what you do?”, there was a small increase with the *yes* answer with the pre and post responses. Participants responded with *yes* for 49.2 percent before and 57.4 percent after participating in EFNEP. OFL participants responded with *yes* for 52.9 percent and 55.4 percent after participating in the program. Participants’ responses to the *no* choice decreased with both programs from pre to post. Before participating in classes, 50.8 percent of EFNEP and 47.1 percent of OFL responded with a *no*; after the class, the percentages for the two groups were 42.6 percent and 44.6 percent respectively.

In response to the question “Do you believe wishing can make things happen?”, 40 (33.9 percent) of EFNEP and 49 (35.0 percent) of OFL participants answered *yes* to the question before participating in the program. After completing the program, the percent for EFNEP decreased to 30.4 percent, but with OFL the percentage remained the same at 35.5 percent. A majority of clients in both programs answered *no* before with EFNEP at 66.1 percent and OFL at 65.0 percent.

A larger margin of individuals in both programs answered *no* to the question “Do you feel when you do something wrong, there is very little you can do about it?” with a representation from EFNEP at 86 (72.9 percent) and OFL at 95 (67.9 percent). With the *yes* response, 27.1 percent of EFNEP and 32.1 percent of OFL participants denoted this reaction at the beginning of the sessions. After finishing the class, the percentage increased for EFNEP to 34.8 percent and decreased in OFL to 24.8 percent.

In response to the question “Do you think that the best way to handle problems is just to think about them?”, 26.3 percent of EFNEP and 25.0 percent of OFL responded *yes* to this question. After attending sessions with EFNEP and OFL, the responses to *yes* were higher for EFNEP at 29.6 percent and lower for OFL at 17.4 percent. Before participating in EFNEP or OFL classes, 192 (74.4 percent) of all participants responded *no* to the question, and at the end of the sessions this increased slightly to 181 (76.7 percent).

Participants in EFNEP and OFL believed they had a choice in deciding who their friends were. With EFNEP 87.3 percent responded *yes*, and 85.7 percent of OFL participants responded with *yes*. The percentage of clients that answered *no* to this

question before attending EFNEP and OFL was 12.7 percent and 14.3 percent equally. This percentage increased with EFNEP to 21.7 percent and a slight increase in OFL with 15.6 percent in the post-questionnaire.

In response to the question “If you find a four-leaf clover, do you believe it brings you good luck?”, 27.1 percent of EFNEP and 42.1 percent of OFL participants answered yes in the pre-questionnaire. After participating in the classes, the percentage increased for EFNEP to 33.9 percent and decreased in OFL to 32.2.

Participants’ responses to the question “Do you feel that when a person is angry with you, there is very little you can do to stop him or her?” suggested that 31 (26.3 percent) of EFNEP and 47 (33.6 percent) of OFL answered *yes* to the question. After participating in the session, this increased to 35.7 percent in EFNEP and 39.7 percent in OFL.

Before participating in the nutrition classes, 47 (39.8 percent) of EFNEP and 64 (45.7 percent) of OFL answered *yes* to the question “Have you ever had a good luck charm?” After attending the sessions, the percentages increased for EFNEP to 47.4 percent but decreased slightly for OFL to 42.1 percent.

Participants in EFNEP and OFL believe that whether or not people like you depends on how you act. In EFNEP 74.6 percent responded with a *yes*, and 69.3 percent of OFL answered with a *yes*. After participating in EFNEP and OFL, this decreased to 73.3 percent and increased to 88.3 percent respectively.

Response to the question “Have you ever felt when people were angry with you, it was usually for no reason at all?”, the responses from the two programs was similar before and after the program and with the yes and no answers. Before participating EFNEP responded with 52.0 percent and OFL with 45.7 percent to *yes*. After participating in the program, the numbers for the *yes* responses were 54.0 percent for EFNEP and 51.2 percent for OFL.

Participants were asked “Most of the time do you feel that you can change what will happen tomorrow by what you do today?” Clients in EFNEP responded with a *no* for 37.3 percent and OFL 38.6 percent. After participating in the sessions, there were little changes in EFNEP at 37 percent and an increase in OFL with 73.6 percent with the *no* response.

Responding to the question “Do you believe that when bad things are going to happen, they just happen no matter what you try to do?”, 59 (57.8 percent) of EFNEP and 76 (54.3 percent) of OFL answered *yes*. After participating in EFNEP and OFL, this decreased to 48 (48.5 percent) and 57 (46.7 percent) respectively who responded *yes*.

When asked the question “Do you think people get their own way if they just keep trying?” the response to *yes* was 65.3 percent for EFNEP and 64.3 for OFL. Both programs indicated a decrease in the response to *yes* with EFNEP at 57.6 percent and OFL at 63.6.

To question “Do you feel when good things happen they happen because of hard work?”, responses for *yes* from EFNEP were 84.3 percent and OFL 83.6 percent. After

participation in the program, this decreased to 79.8 percent of EFNEP and 81.0 percent for OFL.

In response to the question “Do you feel when someone does not like you, there is little you can do about it?”, 57.8 percent with EFNEP responded *yes* and 56.4 percent of OFL responded *yes*. After participating in nutrition education sessions, the response to *yes* decreased to 47.5 percent for EFNEP and 48.8 percent for OFL.

In response to the pre-questionnaire a majority of participants (88.2 percent) in EFNEP and 79.3 percent in OFL stated *yes* to the question “Are you the kind of person who believes that planning ahead makes things better?”. The percentage for *yes* remained the same for EFNEP at 88.9 percent but increased for OFL to 90.1 percent at the end of the sessions.

Participants were asked to respond to the question “Do you think it is better to be smart than lucky?” The response to *yes* was 81.6 percent from EFNEP and 86.4 percent from OFL. The response to *yes* increased in EFNEP to 88.9 percent, and increased in OFL to 90.1 in the post-questionnaire.

### **Range of Behavior Change for Frequency and Percentage Distribution for Low Moderate and High levels for EFNEP and OFL**

Changes in behavior responses to seldom, sometimes, most of the time and almost always were computed on a scale with variables from 10-36 and identified as low, moderate and high answers. The results are presented on Table 4.11

**Table 4.11** Pre-Post Differences in behavior scores for all respondents N=268

<b>Variable</b>	<b>Pre-Questionnaire</b>		<b>Post Questionnaire</b>	
	<b>No</b>	<b>%</b>	<b>No.</b>	<b>%</b>
Behavior Change				
Low (10-20)	82	30.6	43	17.3
Moderate (21-25)	100	37.4	63	25.5
High (26-36)	<u>86</u>	<u>32.0</u>	<u>141</u>	<u>57.2</u>
<b>Total</b>	<b>268</b>	<b>100.0</b>	<b>247</b>	<b>100.0</b>

Within the low group from 10-20 the total for both programs was 82 (30.6 percent) before participating in EFNEP and OFL. This was the lowest percentage for the three categories but only slightly lower than the pre-questionnaire high range of 32 percent. After attending nutrition education classes the low group decreased to 43 (17.3 percent) which was the lowest percentage for the three groups for the pre and post-questionnaire.

The numbers in the moderate group were from 21-24. The largest percentage was evident in the moderate group with the number of participants of 100 and 37.4 percent in this category at the beginning of the classes. In the post-questionnaire, the number decreased to 63 (25.5 percent).

In the high group (26-36) eighty-six participants with 32 percent indicated they were in this category before participating in EFNEP or OFL. The number increased to 141 (57.2 percent) after completion of the nutrition education sessions. The high group



in the post-questionnaire demonstrated the highest percentage for all three categories in this distribution for behavior change.

**Frequency and Percentage Distribution for Total Scores for Barriers to Healthy Eating for Total Respondents**

The group (1-16) of the percentage and frequency distribution for total scores for barriers to preventing healthy meals is shown on Table 4.12.

**Table 4.12** Frequency and Percentage Distribution for Total Scores to Barriers for Healthy Eating for Total Respondents N=268

Pre-Questionnaire			Post-Questionnaire		
Variable	No.	%	Variable	No.	%
Number of barriers checked					
1:00	86	41.7	1:00	1	.4
2:00	57	27.7	9:00	182	67.9
3:00	35	17.0	10:00	45	16.8
4:00	17	8.3	11:00	24	9.0
5:00	7	3.4	12:00	10	3.7
6:00	3	1.5	13:00	3	1.1
8:00	<u>1</u>	<u>.4</u>	14:00	1	.4
			15:00	1	.4
			16:00	<u>1</u>	<u>.4</u>
<b>Total</b>	<b>206</b>	<b>100.0</b>		<b>268</b>	<b>100.0</b>

Within the group of 1-3, the numbers and percentages were high with 86 (41.7 percent) at 1, 57 (27.7 percent) at 2 and 35 (17.0 percent) at 3 in the pre-questionnaire. With the post-questionnaire, the category of 9-12 was the highest. In this group 9 was the highest at 182 (67.9 percent), 10 with 45 (16.8 percent) and 11 at 24 (9.0 percent). As the

numbers increased from 12 to 16, the numbers and percentages decreased from 10 (3.7 percent) at 10 to 1 (.4 percent) at 16.

**Frequency and Percentage Distribution for Internal, Mixed and External Locus of Control for Total Participants, EFNEP and OFL**

The range for the frequency and percentage distribution of External, Mixed and Internal locus of control before and after participating in EFNEP and OFL is shown on Table 4.13

**Table 4.13** Pre-Post Differences in Total Scores for Locus of Control for Total Respondents N=268

<b>Variable</b>	<b>Pre-Questionnaire</b>		<b>Post-Questionnaire</b>	
	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
Locus of control				
External (16-34)	78	30.2	79	33.3
Mixed (35-37)	85	32.8	69	29.1
Internal (38-44)	<u>96</u>	<u>37.0</u>	<u>89</u>	<u>37.6</u>
<b>Total</b>	<b>259</b>	<b>100.0</b>	<b>237</b>	<b>100.0</b>

With the pre-questionnaire with the group 16-34, 78 (30.2 percent) of the participants in EFNEP and OFL demonstrated an external locus of control. After participation in the sessions, this increased to 79 (33.3 percent). The pre-questionnaire for Externals at 30.2 percent, was the lowest percentage for all three ranges.

The category for Mixed locus of control was 35-37. Before participating in EFNEP or OFL, 85 (32.8) participants were in this group; and after finishing the sessions this decreased to 69 (29.1 percent). With the Internal group (38-44), there were 96 (37.0 percent) participants in this range at the beginning of the classes and 89 (37.6 percent) at the end. The post-questionnaire Internal group at 37.6 percent had the highest percent of participants from the three categories.

The range for the frequency and percentage distribution of External, Mixed and Internal locus of control before and after participating in EFNEP is shown on Table 4.14.

**Table 4.14** Pre-Post Differences in Locus of Control Total Scores from EFNEP Respondents N=127

<b>Variable</b>	<b>Pre-Questionnaire</b>		<b>Post-Questionnaire</b>	
	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
Locus of control				
External (16-34)	39	32.7	49	42.7
Mixed (35-37)	35	30.3	32	27.8
Internal (38-44)	<u>44</u>	<u>37.0</u>	<u>34</u>	<u>29.5</u>
<b>Total EFNEP</b>	<b>119</b>	<b>100.0</b>	<b>115</b>	<b>100.0</b>

In the External group (16-34) for EFNEP there were 39 (32.7 percent) participants before participating in classes, and this increased to 49 (42.7 percent) at the end of the sessions. The External post-questionnaire at 42.7 percent was the highest for all three categories. For the mixed group of 35-37, the pre-questionnaire indicated 35 (30.3 percent) were in this category. After attending nutrition education classes this decreased to 32 or 27.8 percent.

For the Internals with the group of 38-44, the pre-questionnaire indicated that 44 (37.0 percent) were in this category, and after participating in EFNEP this decreased to 34 (29.5 percent).

The distribution for the frequency and percentage distribution of External, Mixed and Internal locus of control before and after participating in OFL is shown on Table 4.15.

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**Table 4.15** Pre-Post Differences in Locus of Control for Total Scores for Respondents in OFL N=141

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<b>Variable</b>	<b>Pre-Questionnaire</b>		<b>Post-Questionnaire</b>	
	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
Locus of control				
External (6-34)	39	27.8	30	24.5
Mixed (35-37)	49	35.1	37	30.3
Internal (38-44)	<u>52</u>	<u>37.1</u>	<u>55</u>	<u>45.1</u>
<b>Total OFL</b>	<b>140</b>	<b>100.0</b>	<b>122</b>	<b>100.0</b>

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The external group from 6-34 specified 39 (27.8 percent) Externals at the beginning of the educational classes, and after attending OFL classes this decreased to 30 (24.5 percent). The mixed category (35-37) had 49 (35.1 percent) participants in this group before participation in OFL. The number and percentage increased to 37 (30.3 percent) after attending OFL. For the Internal group of 38-44, the number of participants was 52 (37.1 percent) before participating in OFL. The Externals increased to 55(45.1 percent) after attending OFL which was the highest percentage for any of the three categories.

## Comparison of Means Behavior Change Before and After Participating in EFNEP and OFL

Differences in the means behavior change for EFNEP and OFL was evaluated from pre and post-questionnaires by a t test to determine if the differences were statistically significant. The results are presented in table 4.16.

**Table 4.16** Difference in Means Behavior Change from Total Respondents

Factor	Mean	sd	N	t-test
Behavior Change				
<b>Pre</b> EFNEP	22.81	5.04	127	1.288
<b>Pre</b> OFL	23.58	4.60	141	
<b>Post</b> EFNEP	26.27	5.01	125	-2.048.0*
<b>Post</b> OFL	25.01	4.68	122	

\*Significant at p value <.05

The mean for behavior change before participating in EFNEP was 22.81, and for OFL the mean was 23.58. The difference in means was not statistically significant. A significant difference was found at the  $p < .05$  level of significance between the mean for EFNEP (26.27) and that for OFL (25.01) after participation in EFNEP or OFL.

Differences in means behavior change scores for EFNEP were considered from pre and post-questionnaires by a t test to determine if the differences were statistically significant. The results are shown in table 4.17.

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**Table 4.17** Difference in Means Behavior Change with EFNEP Respondents

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Factor		Mean	sd	N	t-test
Behavior Change					
<b>Pre</b>	EFNEP	22.80			
			6.42	125	-6.049*
<b>Post</b>	EFNEP	26.27			

---

\*Significant at p value <.05

Difference in means behavior change for EFNEP from pre-post questionnaires were tested with a t-test. A significant difference was found at the  $p < .05$  level of significance between the mean for pre EFNEP (22.80) and post EFNEP (26.27).

Difference in the means behavior change scores for OFL were tested from pre and post-questionnaires by a t-test to determine if the differences were statistically significant. The results are shown in Table 4.18.

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**Table 4.18.** Difference in Means for Behavior Change for OFL Respondents

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Factor		Mean	sd	N	t-test
Behavior Change					
<b>Pre</b>	OFL	23.56			
			6.26	122	-2.544*
<b>Post</b>	OFL	25.00			

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\*Significant at p value <.05

Difference in means behavior change before and after participating in OFL were also tested. A significant difference  $p < .05$  level of significance was established between the pre (23.56) and post (25.00) questionnaire when participating in OFL.

Total mean scores for EFNEP and OFL were compared for behavior change from the pre and post-questionnaire. The results are presented on table 4.19.

**Table 4.19** Difference in Means Behavior Change for Total Scores for Respondents

Factor	Mean	sd	N	t-test
<b>Behavior Change</b>				
<b>Pre</b>				
Total EFNEP/OFL	23.17			
		6.41	247	6.055
<b>Post</b>				
Total EFNEP/OFL	25.65			

Significant at  $p$  value  $<.05$

Differences in the mean scores for Pre-EFNEP and OFL and for Post-EFNEP and OFL were subjected to a t-test. A significant difference was found at the  $p <.05$  level of significance between the mean of pre (23.17) and post (25.65).



**Comparison of Mean Barriers to Preparing Healthy Meals Before and After Participating in EFNEP and OFL**

Difference in means barriers for preparing healthy meals for EFNEP were computed from pre and post-questionnaires by a t test to determine if the differences were statistically significant. The results are presented in table 4.20.

**Table 4.20** Difference in Means Barriers to Preparing Healthy Meals for EFNEP Respondents

Factor	Mean	sd	N	t-test
Barriers to preparing healthy meals				
<b>Pre</b> EFNEP	8.10			
<b>Post</b> EFNEP	9.04	7.25	127	1.468

Significant at p value <.05

Difference in means barriers to preparing healthy meals from pre and post-questionnaire were subjected to a t-test. There was not a significant difference between the mean pre-questionnaire (8.10) and post-questionnaire (9.04).

Difference in the means barriers for preparing healthy meals for OFL were tested from pre and post questionnaires by a dependent t-test to determine if the differences were statistically significant. The results are shown in table 4.21.

**Table 4.21** Difference in Means Barriers to Preparing Healthy Meals for OFL Respondents

Factor	Mean	sd	N	t-test
Barriers to preparing healthy meals				
<b>Pre</b> OFL	10.05			
<b>Post</b> OFL	7.75	9.58	141	-2.857*

Significant at p value <.05

Difference in means barriers for preparing healthy meals from the results of pre and post-questionnaires for OFL were subjected to a t-test. A significant difference was found at the p <.05 level of significance between the pre-questionnaire (10.05) and post questionnaire (7.75).

Difference in the mean barriers for preparing healthy meals for total respondents were tested from pre and post-questionnaires by a t-test to determine if the differences were statistically significant. The results are shown in table 4.22.

**Table 4.22** Difference in Means Barriers to Preparing Healthy Meals for Total Respondents

Factor	Mean	sd	N	t-test
Barriers to preparing healthy meals				
<b>Pre</b> Total EFNEP/OFL	9.13			
<b>Post</b> Total EFNEP/OFL	9.63	8.69	268	-1.440

\*Significant at p value <.05

Difference in the means barriers for preparing healthy meals for a total for EFNEP and OFL were subjected to a t-test. There was not a significance difference between the pre-questionnaire (9.13) and the post (9.63).

### **Comparison of Mean Quality of Life Before and After Participating in EFNEP and OFL**

Comparison of mean quality of life before and after participating in EFNEP was computed with a t-test. The results of this t-test are listed below in Table 4.23.

**Table 4.23** Difference in Means Quality of Life for EFNEP Respondents

Factor	Mean	sd	N	t-test
Quality of Life				
<b>Pre</b> EFNEP	6.17			
<b>Post</b> EFNEP	7.59	2.02	125	-7.850*

\*Significant at p value <.05

Difference in the means quality of life before and after participation in EFNEP classes were also subjected to a t-test. A significant difference was found at p <.05 level of significance with the pre-questionnaire (6.17) and the post-questionnaire (7.59).

Comparison of the means quality of life before and after participating in OFL was computed with a t-test. The results of this test are presented on Table 2.24.

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**Table 4.24** Difference in Means Quality of Life for OFL Respondents

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Factor	Mean	sd	N	t-test
<b>Quality of Life</b>				
<b>Pre</b> OFL	6.16			
		2.43	115	6.111*
<b>Post</b> OFL	7.54			

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\*Significant at p value <.05

Difference in the mean quality of life before participation in OFL and after participation in OFL were computed by a t-test. The results of this test indicated a significant difference at the  $p < .05$  level of significance between the mean for pre (6.16) and the post (7.54) questionnaires.

Comparison of the means quality of life for EFNEP and OFL was evaluated using a t-test. The results are shown on Table 4.25

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**Table 4.25** Difference in Mean for Quality of Life for Total Respondents

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Factor	Mean	sd	N	t-test
<b>Quality of Life</b>				
<b>Pre</b> Total EFNEP/OFL	6.16			
		2.22	268	-9.779*
<b>Post</b> Total EFNEP/OFL	7.57			

---

\*Significant at p value <.05

Difference in means quality of life for total scores for EFNEP and OFL were computed using a t-test. A significant difference was found at the  $p < .05$  level of significance for the pre-questionnaire (6.16) and post-questionnaire (7.57).

### **Comparison of Mean Locus of Control Before and After Participating in EFNEP and OFL**

Difference in means locus of control before and after participating in EFNEP and OFL classes were subjected to a t-test. The results are made known on Table 4.26.

**Table 4.26** Difference in Means for Locus of Control for EFNEP and OFL

Factor	Mean	sd	N	t-test
Locus of Control				
<b>Pre</b> EFNEP	34.69	6.17	119	2.48*
<b>Pre</b> OFL	36.24	3.14	140	
<b>Post</b> EFNEP	34.38	5.76	115	3.45*
<b>Post</b> OFL	36.66	3.14	122	

Significant at  $p$  value  $< .05$

Difference in mean Locus of Control scores for pre-questionnaire for EFNEP and OFL were computed using a t-test. A significant difference was found at the  $p < .05$  level of significance between the pre EFNEP (34.69) and pre OFL (36.24). Differences in mean Locus of Control scores for post-questionnaire for EFNEP and OFL were subjected to a t-test. A significant difference was found at the  $p < .05$  level of significance between the post EFNEP (34.38) and post OFL (36.66).

Difference in means for locus of control before and after participating in EFNEP was computed with a t-test. The results of this t- test are listed in Table 4.27.

**Table 4.27** Difference in Means for Locus of Control for EFNEP

Factor	Mean	sd	N	t-test
Locus of Control				
<b>Pre</b> EFNEP	34.96	4.21	115	1.485
<b>Post</b> EFNEP	34.38			

Significant at p value <.05

Difference in locus of control scores for pre and post questionnaires was computed using a t-test. The pre mean was 34.96 and the post mean was 34.38. There was no significant difference between the two means.

Difference in mean for locus of control for OFL were computed using a t-test. The information is presented in Table 4.28.

**Table 4.28** Difference in Means for Locus of Control for OFL

Factor	Mean	sd	N	t-test
Locus of Control				
<b>Pre</b> EFNEP	36.21	4.16	140	-1.289
<b>Post</b> EFNEP	36.69			

Significant at p value <.05

Difference in mean for locus of control were computed for OFL for pre and post questionnaires. The pre score was 36.21 and the post was 36.69. There was no significant difference at  $p < .05$  level of significance.

Difference in means locus of control for total respondents before and after participating in EFNEP and OFL were computed by a t-test. Results are reported in Table 4.29.

**Table 4.29** Differences in Means for Locus of Control for Total Respondents

Factor	Mean	sd	N	t-test
Locus of Control				
<b>Pre</b> Total EFNEP/OFL	35.60	4.20	236	.124
<b>Post</b> Total EFNEP/OFL	35.57			

Significant at p value  $< .05$

Difference in mean locus of control for total respondents of EFNEP and OFL before and after participating in EFNEP and OFL were subjected to a t-test. No significant differences were found between the mean for pre-total EFNEP/OFL (35.60) and post-total EFNEP/OFL (35.57).

**Mean Differences in Behavior Change Indicators by Gender, Race, Age, Education Marital Status, Number of Adults in Household, Area of Residence, Income and Employment**

Difference in means behavior change and demographic, familial and social variables for gender, race, age, marital status, number of adults in the household, area of

residence, income and employment were computed. The results are presented on Tables 4.30-4.42.

### Behavior Change and Gender

Differences in means behavior change and gender is reported in Table 4.30.

**Table 4.30** Difference in Means Behavior for Gender for EFNEP and OFL Respondents

Factor		Mean	sd	N	t –test
<b>Gender</b>					
<u>EFNEP</u>					
<b>Pre</b>	<b>Female</b>	23.18			
			6.10	101	-7.995*
<b>Post</b>	<b>Female</b>	28.03			
<u>EFNEP</u>					
<b>Pre</b>	<b>Male</b>	21.21			
			7.45	22	-6.355*
<b>Post</b>	<b>Male</b>	30.88			
<u>OFL</u>					
<b>Pre</b>	<b>Female</b>	23.89			
			6.36	99	-4.030*
<b>Post</b>	<b>Female</b>	26.46			
<u>OFL</u>					
<b>Pre</b>	<b>Male</b>	22.17			
			7.39	23	-3.583*
<b>Post</b>	<b>Male</b>	27.69			

\*Significant at p value <.05

Respondents were asked to check their gender in the demographic survey. For the mean behavior change with gender there was a significant difference with females in EFNEP from the pre (23.18) to the post (28.03) questionnaire at the  $p > .05$  level of significance.

Males in the EFNEP program differences in mean behavior change at pre was 21.21 and post at 30.88 indicating a significant difference in behavior change at the  $p < .05$  level of significance.



With OFL, the pre mean for females was 23.89 and the post was 26.46. This was significant at  $p < .05$  level of significance. Males in OFL responded with a pre of 22.17 and a post mean of 27.69. There was a significant difference between the two means at the  $p < .05$  level of significance. Both males and females in both programs demonstrated an increase in behavior change that was significant.

### Behavior Change and Race

For the purpose of analysis by race, respondents were grouped into African Americans and White/Others. The results are presented in Table 4.31.

**Table 4.31** Difference in Means Behavior for Race for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Race</b>				
<u>EFNEP</u>				
<b>Pre</b> <b>African-American</b>	23.07			
		6.12	87	-8.911*
<b>Post</b> <b>African-American</b>	28.92			
<b>Pre</b> <b>White/Others</b>	22.18			
		7.74	38	-4.462*
<b>Post</b> <b>White/Others</b>	27.79			
<u>OFL</u>				
<b>Pre</b> <b>African American</b>	23.28			
		7.16	46	-4.324*
<b>Post</b> <b>African American</b>	27.85			
<b>Pre</b> <b>White/Others</b>	23.73			
		6.18	76	-3.190*
<b>Post</b> <b>White/Others</b>	26.00			

\*Significant at  $p$  value  $< .05$

EFNEP respondents reported a mean of 23.07 for behavior change by African Americans and a post mean of 28.92. This was significant at the  $< .05$  level of significance. The group of White/Others indicated a pre of 22.18 and a post mean of 27.79. This was significant at the  $p < .05$  level of significance.

OFL respondents had a pre mean of 23.28 and a higher post mean of 27.85 with African Americans, which was significant at the  $p < .05$  level. Whites/Others group indicated a pre mean of 23.73 and a post mean of 26.00. This was significant also at the  $p < .05$  level of significance. Respondents for race, African-Americans and White/Others demonstrated a significant difference before and after participating in EFNEP and OFL.

### Behavior Change and Age

For the purpose of analysis, age responses were grouped into age 30 and less and age 31 and above. The results of this analysis are reported on Table 4.32.

**Table 4.32** Difference in Means Behavior for Age for EFNEP and OFL Respondents

<b>Factor</b>		<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<u>Age</u>					
<u>EFNEP</u>					
<b>Pre</b>	<b>age&lt;30</b>	22.57			
			6.49	37	-5.220*
<b>Post</b>	<b>age&lt;30</b>	28.14			
<b>Pre</b>	<b>age&gt;31+</b>	22.90			
			6.62	63	-7.476*
<b>Post</b>	<b>age&gt;31+</b>	29.15			
<u>OFL</u>					
<b>Pre</b>	<b>age&lt;30</b>	23.20			
			6.56	46	-4.830*
<b>Post</b>	<b>age&lt;30</b>	27.98			
<b>Pre</b>	<b>age&gt;31</b>	23.65			
			6.59	75	-2.909*
<b>Post</b>	<b>age&gt;31</b>	25.87			

\*Significant at the p value  $< .05$

Respondents in EFNEP reported a pre mean of 22.57 for age 30 years and less and a post mean which was higher at 28.14 with behavior change. This was significant at  $p < .05$  level of significance. For respondents at the age of 31 years or more the pre mean was 22.90 and a higher post at 29.15. This was significant at  $p < .05$  level of significance.

With the OFL respondents, the pre mean for behavior change with race was 23.20 for 30 years and less and the post was higher at 27.98. The pre mean for 31 years and over was 23.65 and a post of 25.87. Both of these age groups in OFL demonstrated a significant differences at  $p < .05$  level of significance. Pre means for EFNEP and OFL were similar in both age groups, but EFNEP had higher post means for both age groups. The two programs indicated a significant difference with both age groups with the pre and post means.

### Behavior Change and Education

For the purpose of analysis, education was grouped into less than high school and some high school, and high school graduation, some college and college graduate. The results are presented on Table 4.33.

**Table 4.33** Difference in Means Behavior for Education for EFNEP and OFL Respondents

Factor	Mean	sd	N	t –test
<b>Education</b>				
<u>EFNEP</u>				
Pre <high school	22.58			
Post <high school	29.08	7.13	65	-7.338*
Pre >high school	23.03			
Post >high school	28.03	5.99	60	-6.461*
<u>OFL</u>				
Pre < high school	23.73			
Post <high school	26.61	6.73	62	-3.378*
Pre. >high school	23.40			
Post >high school	27.78	6.58	60	-3.980*

\*Significant at p value < .05

Group mean with EFNEP for behavior change by less than high school and some high school was significantly different with a pre mean of 22.58 and a post of 29.08. With respondents with a high school plus education, the pre mean was 23.03 and post mean was 28.03. This was significant at  $p < .05$  level of significance.

OFL respondents with less than high school indicated a pre mean of 23.73 and a higher post mean of 26.61. The respondents with a high school and greater education had a pre mean of 23.40 and a post mean of 27.78. Both groups in OFL indicated a significant difference at the  $p < .05$  level of significant. Respondents in EFNEP with less than a high school education demonstrated the most change with the two programs. With both groups of education, EFNEP and OFL both indicated a significant difference in behavior change by education.

### **Behavior Change and Marital Status**

For the purpose of analysis, marital status was grouped into Single, Married and Others. Others includes separated, divorced, widowed. The results are presented in Table 4.34.

**Table 4.34** Difference in Means Behavior for Marital Status for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t-test</b>
<b>Marital Status</b>				
<u>EFNEP</u>				
<b>Pre single</b>	22.68			
<b>Post single</b>	29.79	6.00	28	-6.266*
<b>Pre married</b>	22.68			
<b>Post married</b>	29.79	6.00	28	-6.266*
<b>Others</b>	23.00			
<b>Others</b>	28.53	6.35	17	-3.593*
<u>OFL</u>				
<b>Pre single</b>	23.14			
<b>Post single</b>	26.74	6.66	46	-3.670*
<b>Pre married</b>	24.04			
<b>Post married</b>	26.49	5.96	47	-2.813*
<b>Others</b>	22.88			
<b>Others</b>	27.81	1.17	26	-4.217*

\*Significant at p value < .05

Single respondents in EFNEP had a pre mean of 22.68 that was significantly different from the mean post of 29.79. Respondents who were married demonstrated a pre mean of 22.68 and post of 29.79 which was significantly different at  $p < .05$  level of significance. The Others group had a pre mean of 23.00 and a post of 28.53 which was significantly different at  $p < .05$  level of significance.

OFL respondents that were single had a pre mean of 23.14 and a post of 26.74. Married respondents had a pre mean of 24.04 and a post mean of 26.49 and the Others group reported a pre mean of 22.88 and post of 27.81. All three groups in OFL with behavior change by marital status demonstrated a statistical difference at  $p < .05$  level of

significance. In comparison of the two groups, the single and married group in EFNEP demonstrated the most change within the two groups with pre to post means.

### **Behavior Change and Number of Adults in Household**

For analysis purpose, number of adults in the household was grouped into one, two and three or more adults in the household. The results are presented in Table 4.35.

**Table 4.35** Difference in Means Behavior for Number of Adults in the Household for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Number of adults in household</b>				
N=13				
<u>EFNEP</u>				
<b>Pre One adult</b>	21.08			
		2.06	13	3.365*
<b>Post One adult</b>	19.00			
<b>Pre Two adults</b>	21.94			
		4.24	17	-2.231*
<b>Post Two adults</b>	24.24			
<b>Pre Three adults+</b>	23.27			
		6.38	95	-11.418*
<b>Post Three adults+</b>	30.66			
<u>OFL</u>				
<b>Pre One adult</b>	23.52			
		6.28	21	1.112
<b>Post One adult</b>	22.00			
<b>Pre Two adult</b>	23.70			
		5.11	30	-.893
<b>Post Two adults</b>	24.53			
<b>Pre Three adults+</b>	23.52			
		6.30	71	-7.331*
<b>Post Three adults+</b>	29.00			

\*Significant at p value <.05

Respondents with one adult in the household for EFNEP with behavior change had a pre mean of 21.08 and a post of 19.00. This was significant at p<.05 level of significance. Respondents with two adults in the household also demonstrated a

significant change with a pre of 21.94 and a post of 24.24. The greatest change was in household with three or more adults with a pre of 23.27 and a post of 30.66 which was significant at  $p < .05$  level of significance.

OFL respondents did not demonstrate a significant change with one adult in the household with a pre of 23.52 and a post of 22.00, and with two adults with a pre of 23.70 and a post of 24.53. There was a significant change at  $p < .05$  level of significance with more than three adults in the household with a pre of 23.52 and a post of 29.00

### **Behavior Change and Area of Residence**

For analysis purposes, residence was grouped into farms, towns with a population less than 10,000 and rural non farm areas, and towns with a population over 10,000. The results are presented on Table 4.36.

**Table 4.36** Difference in Means Behavior for Residence for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Residence</b>				
<u>EFNEP</u>				
<b>Pre towns &lt;10,000/rural</b>	23.08			
		6.47	61	-8.744*
<b>Post towns &lt;10,000/rural</b>	30.33			
<b>Pre 10,000+</b>	22.53			
		6.52	64	5.371*
<b>Post 10,000+</b>	26.91			
<u>OFL</u>				
<b>Pre towns &lt;10,000/rural</b>	23.59			
		6.63	73	-4.165*
<b>Post towns &lt;10,000/rural</b>	26.83			
<b>Pre 10,000+</b>	23.76			
		6.90	45	-2.919*
<b>Post 10,000+</b>	26.76			

\*Significant at p value  $< .05$

EFNEP respondents who lived in towns under 10,000/rural demonstrated a significant difference from the pre mean of 23.08 to the post mean of 30.33 with results that were significant at  $p < .05$  level of significance. Respondents living in towns over 10,000 indicated a pre mean of 22.53 and a higher post mean at 26.91. This was significant at  $p < .05$  level of significance.

OFL respondents indicated a significant difference from the pre mean of 23.59 and a post at 26.83. This was significant at  $p < .05$  level of significance. With individuals living in towns over 10,000 the pre mean was 23.76 and a post slightly higher at 26.76 which was significant at  $p < .05$  level of significance. EFNEP demonstrated the greatest change with participants living in towns under 10,000/rural, and OFL had the least change with participants living in towns greater than 10,000. However, EFNEP and OFL had a significant difference between the pre and post mean with both groups of residence.

### **Behavior Change and Income**

Respondents reported their weekly income. For the purpose of analysis, income was organized into incomes of less than \$100, \$100 to \$299 and over \$300. The results of means behavior change and income are presented in Table 4.37.



**Table 4.37** Difference in Means Behavior for Income for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Income</b>				
<u>EFNEP</u>				
<b>Pre &lt; \$100.</b>	23.85			
		7.04	27	-4.372*
<b>Post &lt;\$100</b>	29.78			
<b>Pre \$100-\$299.</b>	22.00			
		6.91	49	-7.628*
<b>Post \$100-\$299</b>	29.53			
<b>Pre \$300.+</b>	21.68			
		4.67	12	-5.590*
<b>Post \$300.+</b>	29.25			
<b>Income</b>				
<u>OFL</u>				
<b>Pre &lt; \$100.</b>	24.25			
		7.38	28	-.973
<b>Post &lt;\$100</b>	25.61			
<b>Pre \$100-\$299.</b>	22.87			
		6.65	47	-3.227*
<b>Post \$100-\$299.</b>	26.00			
<b>Pre \$300.+</b>	23.92			
		6.05	39	-4.683*
<b>Post \$300.+</b>	28.46			

\*Significant at p value <.05

Respondents in EFNEP with weekly incomes less than \$100. had a pre mean of 23.85 and a post of 29.78 which was statistically significant at p <.05 level of significance. Respondents who earned from \$100-\$299 demonstrated a significant difference with a pre mean of 22.00 and a post mean of 29.53. This was statistically significant at p<.05 level of significance. Individuals in EFNEP making over \$300. a week had a pre mean of 21.68 and a post of 29.25. This was significant at p <.05 level of significance.

In OFL respondents earning less than \$100. demonstrated a pre mean of 24.25 and a post of 25.61 which was not significant. For the other two groups, \$100-\$299, and

\$300 plus there was a significant difference with both categories with a pre mean of 22.87 and a post 26.00, and pre mean of 23.92 and post of 28.46 respectively. EFNEP respondents in the \$100-\$299 group exhibited the most behavior change by income. All three groups for EFNEP changed in behavior significantly, and two groups in OFL demonstrated a significant change. The less than \$100. for weekly income in OFL was the only group that did not exhibit a significant change.

### **Behavior Change and Employment Status**

Respondents reported employment status by Full time, Part time and Unemployed. The results of means behavior by employment status are reported in Table 4.38.

**Table 4.38** Difference in Means Behavior for Employment Status for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Employment Status</b>				
<u>EFNEP</u>				
<b>Pre Full time</b>	20.56			
<b>Post full time</b>	31.81	2.77	16	-16.252*
<b>Pre- Part time</b>	21.62			
<b>Post Part time</b>	27.48	6.42	-21	4.175*
<b>Pre Unemployed</b>	23.69			
<b>Post unemployed</b>	29.94	7.27	48	-5.957*
<u>OFL</u>				
<b>Pre Full time</b>	24.00			
<b>Post Full time</b>	27.26	7.70	23	-2.031
<b>Pre- Part time</b>	22.83			
<b>Post Part time</b>	27.30	6.36	23	-3.377*
<b>Pre Unemployed</b>	23.65			
<b>Post unemployed</b>	26.43	6.40	75	-3.753*

\*Significant at p value < .05

There was a significant difference between the pre mean (20.56) and the higher post mean (31.81) for EFNEP participants employed full time. EFNEP respondents who worked part time had a pre mean of 21.62 and a post of 27.48. This was statistically significant at p < .05 level of significance. The pre mean for EFNEP respondents who were unemployed was 23.69 and the post mean was 29.94, which was statistically significant at p < .05 level of significance.

Respondents employed full time with OFL had a pre mean of 24.00 and a post of 27.26. This did not prove to be statistically significant. However, participants employed

part time demonstrated a mean of 22.83 and a post of 27.30, and unemployed participants had a pre mean of 23.65 and a post of 26.43. Both results were statistically significant at  $p < .05$  level of significance. EFNEP participants employed full time exhibited the greatest change where as OFL respondents who were employed full time had results that were not significant.

**Mean differences in Barriers to Healthy Meals for Gender, Race, Age, Education, Marital Status, Number of Adults in the Household, Area of Residence Income and Employment**

Differences in means barriers to healthy meals and demographic, familial and social variables for gender, race, age, education, marital status, number of adults in household, area of residence, income and employment were computed. The results are presented on Table 4.39-4.47.

**Barriers to Healthy Meals and Gender**

Respondents in EFNEP and OFL indicated if they were male or female. The responses with the dependent variable barriers to healthy meals is presented in Table 4.39.

**Table 4.39** Difference in Means Barriers to Healthy Meals for Gender for EFNEP and OFL Respondents

<b>Factor</b>		<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<u>Gender</u>					
<u>EFNEP</u>					
<b>Pre</b>	<b>Female</b>	9.08			
			7.37	103	.535
<b>Post</b>	<b>Female</b>	8.69			
<u>EFNEP</u>					
<b>Pre</b>	<b>Male</b>	8.91			
			6.31	24	2.589*
<b>Post</b>	<b>Male</b>	5.58			
<u>OFL</u>					
<b>Pre</b>	<b>Female</b>	7.41			
			10.07	112	-2.551
<b>Post</b>	<b>Female</b>	9.83			
<u>OFL</u>					
<b>Pre</b>	<b>Male</b>	9.07			
			7.47	29	-1.313
<b>Post</b>	<b>Male</b>	10.89			

\*Significant at the p value <.05

The respondents mean score for females in EFNEP for the pre was 9.08 and post was 8.69. With males, the pre mean was 8.91 and the post was 5.58 which was significant a  $p < .05$  level of significance. Females in OFL had a pre mean of 7.41 and a post of 9.83. The males in OFL had a pre mean of 9.07 and a post of 10.89. OFL had no significant changes with gender.

### **Barriers to Healthy Meals and Race**

For the purpose of analysis, race was grouped by African-Americans and White/Others. The results are presented in Table 4.40.

**Table 4.40** Difference in Means Barriers to Healthy Meals for Race for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<u>EFNEP</u>				
<b>Pre African American</b>	9.10			
<b>Post African American</b>	8.67	6.83	49	.439
<b>Pre White/Others</b>	9.02			
<b>Post White/Others</b>	9.28	9.92	53	-.906
<u>OFL</u>				
<b>Pre African American</b>	7.75			
<b>Post African American</b>	10.70	7.73	76	-2.286*
<b>Pre White/Others</b>	7.73			
<b>Post White/Others</b>	10.01	9.44	64	-1.908

\*Significant at p value <.05

There was not a significant difference in the pre mean (9.10) and post mean (8.67) for African-American respondents in EFNEP and with Whites/Others the pre mean was 9.02 and the post was 9.28. This was not significant.

With the OFL respondents the pre mean for African-Americans was 7.75 and the post was 10.70, and White/Others respondents had a pre mean of 7.73 and a post of 10.01. There was a significant difference with African-American respondent with OFL.

### **Barriers to Healthy Meals and Age**

For purposes of analysis, ages were grouped by 30 and less years of age and 31 plus years of age. The results are presented in Table 4.41.

**Table 4.41** Difference in Means Barriers to Healthy Meals for Age for EFNEP and OFL Respondents

<b>Factor</b>		<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Age</b>					
N=38					
<u>EFNEP</u>					
<b>Pre</b>	<b>age&lt;30</b>	9.10	6.69	38	-2.132*
<b>Post</b>	<b>age&lt;30</b>	11.42			
<b>Pre</b>	<b>age&gt;31+</b>	7.51	7.09	64	-2.799
<b>Post</b>	<b>age&gt;31+</b>	9.65			
<u>OFL</u>					
<b>Pre</b>	<b>age&lt;30</b>	8.11	12.63	54	-1.605
<b>Post</b>	<b>age&lt;30</b>	10.78			
<b>Pre</b>	<b>age&gt;31</b>	7.51	7.09	88	-2.799*
<b>Post</b>	<b>age&gt;31</b>	9.67			

\*Significant at the p value<.05

In EFNEP the pre mean for age 30 years or less was 9.10 and the post was 11.42. The 31+ age group had a pre mean (7.51) and post mean (9.65) for barriers to preparing healthy meals. The age group 30 and less indicated a significant change with barriers and age with EFNEP.

The age 30 or less with OFL with a pre of 8.11 and a post mean of 10.78, and the age group of 31 had a pre mean of 7.51 and post of 9.67. In OFL the age group of 30+ demonstrated a significant difference at the p<.05 level of significance.

### **Barriers to Healthy Meals and Education**

For purpose of analysis, education was grouped with less than a high school and some high school education in one group and high school graduates, some college and college graduates in another group. The results are presented on Table 4.42.

**Table 4.42** Difference in Means Barriers to Healthy Meals for Education for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Education</b>				
<u>EFNEP</u>				
<b>Pre &lt; high school</b>	9.02			
		7.08	59	-1.029
<b>Post &lt;high school</b>	9.97			
<b>Pre&gt; &gt; high school</b>	9.12			
		7.01	43	.631
<b>Post &gt;high school</b>	8.44			
<u>OFL</u>				
<b>Pre &lt; high school</b>	7.22			
		7.19	76	-2.838*
<b>Post &lt;high school</b>	9.57			
<b>Pre&gt; &gt; high school</b>	8.35			
		11.86	64	-1.634
<b>Post &gt;high school</b>	10.78			

\*Significant at the p value <.05

EFNEP respondents for barriers to healthy meals with less than a high school education did not demonstrate a significant difference for education with a pre mean of 9.02 and a post of 9.97. Respondents in the group with a high school education had a pre mean of 9.12 and post of 8.44, which was not significant.

Respondents for OFL with less than a high school education had a pre mean of 7.22 and a post of 9.57 which was significant at p <.05 level of significance. Individuals with a high school education demonstrated a pre mean of 8.35 and a post of 10.78 which was not significant.

### **Barriers to Healthy Meals and Marital Status**

For the purpose of analysis, marital status was grouped into singles, married and others. Others includes separated, divorced and widowed. The results are presented in Table 4.43



**Table 4.43** Difference in Means Barriers to Healthy Meals for Marital Status for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Marital Status</b>				
<u>EFNEP</u>				
<b>Pre single</b>	9.23			
<b>Post single</b>	9.66	6.94	35	.487
<b>Pre married</b>	8.97			
<b>Post married</b>	9.70	7.19	47	-.822
<b>Pre Others</b>	6.50			
<b>Post Others</b>	9.21	6.29	19	-.564
<u>OFL</u>				
<b>Pre single</b>	7.86			
<b>Post single</b>	11.66	13.36	50	-2.010*
<b>Pre married</b>	7.68			
<b>Post married</b>	7.27	6.56	65	-2.298*
<b>Pre Others</b>	8.31			
<b>Post Others</b>	9.83	7.50	26	-2.060*

\*Significant at p value <.05

Respondents in the EFNEP group for singles had a pre mean of 9.23 and a post of 9.66, and married respondents had a pre of 8.97 and a post of 9.70. The others group indicated a mean of 6.50 and a post of 9.21. The marital groups were not significant with barriers to healthy meals for EFNEP.

OFL respondent's pre mean (7.86) for single and post mean (11.66), and married with a pre mean (7.68) and post mean (7.27). Others reported a pre of 8.31 and a post of 9.83. There were significant changes with all three groups with OFL and marital status.

### Barriers to Healthy Meals and Number of Adults in Household

For analysis purpose, number of adults in the household was grouped into one, two and three or more adults in the household. The results are presented in Table 4.44

**Table 4.44** Difference in Means Barriers to Healthy Meals for Number of Adults in the Household for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Number of adults in household</b>				
<u>EFNEP</u>				
<b>Pre One adult</b>	9.08			
		7.98	13	-278
<b>Post One adult</b>	9.69			
<b>Pre Two adults</b>	9.24			
		4.41	17	5.667
<b>Post Two adults</b>	3.18			
<b>Pre Three adults or more</b>	9.01			
		7.19	95	.414*
<b>Post Three adults or more</b>	8.71			
<u>OFL</u>				
N=21				
<b>Pre One adult</b>	5.24			
		8.16	21	-1.951
<b>Post One adult</b>	8.71			
N=30				
<b>Pre Two adult</b>	7.67			
		15.77	30	-1.828
<b>Post Two adults</b>	13.03			
N=71				
<b>Pre Three adults or more</b>	8.16			
		6.94	71	-.855
<b>Post Three adults or more</b>	9.80			

\*Significant at p value <.05

Respondents in EFNEP with one adult in the household had a pre mean of 9.08 and a post of 9.69, and with two adults in the household with a pre of 9.24 and a post of 3.18 which was not significant. With three adults in the household, there was a significant difference with a pre mean of 9.01 and a post mean of 8.71.

OFL respondents did not have significant changes with barriers with all three categories for the number of adults living in the household.

### **Barriers to Healthy Meals and Residence**

For the purpose of analysis, residence was grouped into farms, towns with a population of less than 10,000 and individuals living in rural non-farm areas in one group and towns and cities with a population over 10,000. The results are presented on Table 4.45.

**Table 4.45** Difference in Means Barriers to Healthy Meals for Residence for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Residence</b>				
<u>EFNEP</u>				
<b>Pre towns &lt;10,000/rural</b>	9.30			
		6.05	20	2.181*
<b>Post towns &lt;10,000/rural</b>	9.35			
<b>Pre 10,000+</b>	9.00			
		7.38	105	.860
<b>Post 10,000+</b>	8.38			
<u>OFL</u>				
<b>Pre towns &lt;10,000/rural</b>	7.68			
		10.61	96	-1.510
<b>Post towns &lt;10,00/rural</b>	9.31			
<b>Pre 10,000+</b>	7.11			
		7.73	26	3.145*
<b>Post 10,000+</b>	11.88			

\*Significant at p value <.05

Respondents in EFNEP living in towns less than 10,000 and rural areas had a pre mean of 9.30 and a post mean of 9.35 which was significant at p<.05 level. Participants living in larger cities reported a pre mean of 9.00 and a post mean of 8.38. This was not significant at p<.05 level of significance.

OFL respondents reported a pre mean of 7.68 for smaller cities and rural areas and a post of 9.31 which was not significant. OFL individuals living in cities over 10,000 had a mean of 7.11 and a post of 11.88. This was significant at  $p < .05$  level of significance.

### **Barriers to Healthy Meals and Income**

Respondents reported weekly incomes by three amounts, less than \$100.00, 100-\$299.00, and \$300.00 plus. The results are presented on Table 4.46.

**Table 4.46** Difference in Means Barriers to Healthy Meals for Income for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<u>EFNEP</u>				
<b>Pre &lt; \$100.</b>	9.29			
<b>Post &lt;\$100</b>	6.57	5.9	21	2.108*
<b>Pre \$100-\$299.</b>	8.75			
<b>Post \$100-\$299.</b>	8.98	7.25	51	-.232
<b>Pre \$300.+</b>	9.23			
<b>Post \$300.+</b>	7.38	7.17	52	1.856
<u>OFL</u>				
<b>Pre &lt; \$100.</b>	6.20			
<b>Post &lt;\$100</b>	13.33	15.14	30	-2.058*
<b>Pre \$100-\$299.</b>	7.88			
<b>Post \$100-\$299.</b>	9.33	8.09	43	-1.169
<b>Pre \$300.+</b>	8.10			
<b>Post \$300.+</b>	8.20	6.51	49	-1.10

\* Significant at the p value  $< .05$

EFNEP participants earning less than \$100. on a weekly bases reported a mean score of 9.29 and a post of 6.57 which was significant at the  $p < .05$  level of significance.

Respondents who made between \$100-\$299. demonstrated a mean of 8.75 and a post mean of 8.98, and individuals in the \$300+ income group reported a pre mean of 9.23 and a post of 7.38. which was not significant for barriers and income.

With the OFL respondents the less than \$100 range had a pre mean of 6.20 and a post of 13.33 which was significant at  $p < .05$  level of significance. There were no significant changes with the \$100-\$299 range and the 300+ with a pre mean of 7.88 and a post 9.33, and a pre of 8.10 and post of 8.20 respectively.

### **Barriers to Healthy Meals and Employment Status**

Respondents reported employment status by three categories which included full time, part time and unemployed. The results are presented on Table 4.47.

**Table 4.47** Difference in Means Barriers to Healthy Meals for Employment for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Employment Status</b>				
<u>EFNEP</u>				
Pre Full-time	9.00			
Post Full-time	6.75	2.25	8	.832
Pre Part-time	9.38			
Post Part-time	9.03	7.44	26	.237
Pre Unemployed	8.94			
Post Unemployed	6.68	6.95	90	1.728
<u>OFL</u>				
Pre Full-time	5.57			
Post Full-time	13.14	5.77	7	-3.472*
Pre Part-time	6.98			
Post Part-time	10.65	7.42	40	-3.130*
Pre Unemployed	8.05			
Post Unemployed	9.13	11.43	75	-.818

\*Significant at p value <.05

With EFNEP respondents, working full time results indicated a pre mean of 9.00 and a post of 6.75. With respondent working part time, the pre was 9.38 and the post was 9.03. The unemployed respondents reported a pre mean of 8.94 and a post mean of 6.68. With employment and barriers there were no significant changes with EFNEP.

Respondents in OFL working full time had a pre mean of 5.57 and a post of 13.14 which was significant at p<.05 level of significance. With part time employment the pre mean reported was 6.98 and the post at 10.65 which indicated a significant change at p<.05 level of significance. The unemployed respondents did not indicate a significant change with a pre mean of 8.05 and post mean of 9.13.

**Mean Differences in Quality of Life for Gender, Race, Age, Education, Marital Status, Number of Adults in Household, Residence, Income and Employment**

Differences in means quality of life and demographic, familial and social variables for gender, race, age, education, marital status, number of adults in the household, area of residence, income and employment were computed . The results are presented on Tables 4.48-4.57.

**Quality of Life and Gender**

Differences in Mean Behavior and Quality of Life are reported in Table 4.48.

**Table 4.48** Difference in Means Quality of Life for Gender for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Gender</b>				
<u>EFNEP</u>				
<b>Pre</b> <b>Female</b>	6.23	2.0375	101	-7.228*
<b>Post</b> <b>Female</b>	7.69			
<b>Pre</b> <b>Male</b>	5.96	1.95	22	-3.027*
<b>Post</b> <b>Male</b>	7.16			
<u>OFL</u>				
<b>Pre</b> <b>Female</b>	5.96	2.50	93	-6.163*
<b>Post</b> <b>Female</b>	7.56			
<b>Pre</b> <b>Male</b>	7.00	1.82	22	-1.172
<b>Post</b> <b>Male</b>	7.45			

\*Significant at p value of <.05

For the mean quality of life by gender females and males in EFNEP reported a significant difference at p<.05 level of significance. The pre mean for females was 6.23 and the post was 7.69. With males, the pre mean was 5.96 and the post was 7.16.

OFL female respondents had a pre mean of 5.96 and a post mean of 7.56. This was significant at  $p < .05$  level of significance. Males in OFL did not indicate a significant difference with a pre of 7.00 and a post mean of 7.45.

### Quality of Life and Race

For the purpose of analysis race was grouped into African Americans and White/Others. The results are presented on Table 4.49.

**Table 4.49** Difference in Means Quality of Life for Race for EFNEP and OFL Respondents

Factor		Mean	sd	N	t –test
<b>Race</b>					
<u>EFNEP</u>					
Pre	African American	6.24			
			2.01	87	-6.911*
Post	African American	7.74			
Pre	White/Others	6.03			
			3.02	38	-3.751*
Post	White/Others	7.26			
<u>OFL</u>					
Pre	African American	6.51			
			2.72	41	-3.674*
Post	African American	8.07			
Pre	White/Others	5.96			
			2.26	74	-4.885*
Post	White/Others	7.24			

\*Significant at p value  $< .05$

African-Americans in EFNEP had a pre mean of 6.24 and a post mean of 7.74. This was significant at  $p < .05$  level of significance. White/Others also demonstrated a significant change with a pre mean of 6.03 and a post of 7.26.

With OFL both groups demonstrated a significant change with race. African Americans had a pre mean of 6.51 and a post of 8.07. White/Others had a pre mean of 5.96 and a post of 7.24. With the two categories of race both programs demonstrated a significant change at  $p < .05$  level of significance.



## Quality of Life and Age

For the purpose of analysis age was grouped by 30 and less years of age and 31 plus years of age. The results are presented in Table 4.50.

**Table 4.50** Difference in Means Quality of Life for Age for EFNEP and OFL Respondents

<b>Factor</b>		<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<u>Age</u>					
N=37					
<u>EFNEP</u>					
<b>Pre</b>	<b>age&lt;30</b>	6.46			
			1.99	37	-4.868*
<b>Post</b>	<b>age&lt;30</b>	8.05			
<b>Pre</b>	<b>age&gt;31</b>	6.33			
			1.94	63	-5.387*
<b>Post</b>	<b>age&gt;31</b>	7.65			
<u>OFL</u>					
<b>Pre</b>	<b>age&lt;30</b>	6.32			
			2.69	41	-4.179*
<b>Post</b>	<b>age&lt;30</b>	8.07			
<b>Pre</b>	<b>age&gt;31</b>	6.12			
			2.16	73	-4.319*
<b>Post</b>	<b>age&gt;31</b>	7.22			

Significant at p <.05 value

EFNEP participants 30 and under had a pre mean of 6.46 and a post of 8.05 for quality of life. This was significant at p<.05 level of significance. Respondents at the age of 31 and over in EFNEP also demonstrated a significant change with a pre mean of 6.33 and a post at 7.65.

OFL participants 30 years of age and less had a pre mean of 6.32 and a post of 8.07. This was significant at p<.05 level of significance. Respondents over the age of 31 in OFL indicated a mean of 6.12 and a post of 7.22. This was also significant.

## Quality of Life and Education

For the purpose of analysis, education was grouped with less than a high school education and some high school in one group, and high school graduates some college and college graduates in another group. The results are presented in Table 4.51.

**Table 4.51** Difference in Means Quality of Life for Education for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Education</b>				
<u>EFNEP</u>				
Pre < high school	6.41			
Post <high school	8.00	1.91	58	-6.323*
Pre > high school	6.33			
Post >high school	7.52	2.01	42	-3.829*
<u>OFL</u>				
Pre < high school	5.97			
Post <high school	7.59	2.45	64	-5.300*
Pre > high school	6.48			
Post >high school	7.44	2.25	58	-3.018*

\*Significant at p level <.05

EFNEP respondents with less than a high school education had a pre mean of 6.41 and a post mean of 8.00. This was significant at p<.05 level of significance.

Respondents in EFNEP with a high school education or greater also demonstrated a significant difference with a pre mean of 6.33 and a post of 7.52.

OFL respondents with less than a high school education reported a significant change with a pre mean of 5.97 and a post of 7.59. Participants with a high school education also indicated a significant change at the p<.05 level of significance with a pre mean of 6.48 and a post mean of 7.44.

## Quality of Life and Marital Status

For the purpose of analysis, marital status was grouped single, married and others. Others contained separated, divorced and widowed responses. The results are shown in Table 4.52.

**Table 4.52** Difference in Means Quality of Life for Marital Status for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Marital Status</b>				
<u>EFNEP</u>				
<b>Pre single</b>	5.96			
<b>Post single</b>	7.50	1.99	28	-4.083*
<b>Pre married</b>	5.89			
<b>Post married</b>	7.21	2.03	38	-3.999*
<b>Pre Others</b>	5.89			
<b>Post Others</b>	7.21	2.03	38	-3.999*
<u>OFL</u>				
<b>Pre single</b>	5.77			
<b>Post single</b>	7.20	2.21	45	-4.316*
<b>Pre married</b>	6.53			
<b>Post married</b>	7.58	2.25	45	-3.120*
<b>Pre Others</b>	6.00			
<b>Post Others</b>	8.18	2.90	22	-4.522*

\*Significant at p value <.05

In EFNEP with marital status the three groupings single, married and others there was a significant difference at the  $p < .05$  level of significance. The pre mean for single was 5.96 with a post at 7.50. For married the pre mean was 5.89, the post was 7.21, and for others the pre mean was 5.89 with a post at 7.21.

In OFL for married, the pre mean for single was 5.77 with a post of 7.20, and married had a pre mean of 6.53 with a post of 7.58. The others group reported a pre mean of 6.00 and a post of 8.18. All three groups demonstrated a significant difference at the  $p < .05$  level of significance. Both EFNEP and OFL had a significant difference in all three groups with marital status.

### Quality of Life and Number of Adults in Household

For analysis purpose, number of adults in family was grouped into one, two and three or more adults in the household. The results are presented in Table 4.53.

**Table 4.53** Difference in Means Quality of Life for Number of Adults in the Household for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Number of adults in household</b>				
<u>EFNEP</u>				
<b>Pre One adult</b>	6.61			
<b>Post One adult</b>	8.15	1.66	13	-3.333*
<b>Pre Two adults</b>	6.24			
<b>Post Two adults</b>	7.41	2.27	17	-2.137*
<b>Pre Three adults or more</b>	6.11			
<b>Post Three adults or more</b>	7.55	2.03	95	-6.923*
<u>OFL</u>				
<b>Pre One adult</b>	6.31			
<b>Post One adult</b>	7.00	1.97	19	-1.511
<b>Pre Two adult</b>	6.34			
<b>Post Two adults</b>	7.72	1.99	29	-3.733*
<b>Pre Three adults or more</b>	6.03			
<b>Post Three adults or more</b>	7.61	2.69	74	-4.811*

\*Significant at  $p$  value  $< .05$

Respondents in EFNEP indicated a significant difference in quality of life in all three categories of number of adults in household. The most significant difference was with three or more adults in the household with a pre mean of 6.11 and a post of 7.55 which was significant at p value  $<.05$  level of significance. One adult in the household had a pre mean of 6.61 and a post of 8.15 and two adults in the household had a pre of 6.24 and a post of 7.41.

With OFL respondents and quality of life by number on household one adult in the household was not significant with a pre of 6.31 and a post of 7.00. The other two categories were significant with two adult with a pre mean of 6.34 and a post of 7.72, and with three or more adults with a pre of 6.03 and a post at 7.61. Both were significant at p value  $<.05$  level of significance.

### **Quality of Life and Area of Residence**

For purpose of analysis, area of residence was grouped into towns with a population of less than 10,000 and individuals living in rural non-farm areas in one group, and towns with cities with a population over 10,000 as another grouping. The results are presented in Table 4.54.

**Table 4.54** Difference in Means Quality of Life for Area of Residence for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Residence</b>				
<u>EFNEP</u>				
<b>Pre towns &lt;10,000/rural</b>	5.95			
		1.84	20	-4.48*
<b>Post towns &lt;10,000/rural</b>	7.80			
<b>Pre 10,000+</b>	6.22			
		2.05	105	-6.678*
<b>Post 10,000+</b>	7.55			
<u>OFL</u>				
<b>Pre towns &lt;10,000/rural</b>	6.19			
		2.38	26	-1.814
<b>Post towns &lt;10,00/rural</b>	7.04			
<b>Pre 10,000+</b>	6.15			
		2.43	89	-5.973*
<b>Post 10,000+</b>	7.69			

Significant at p value <.05

EFNEP participants living in rural areas and towns under 10,000 had a pre mean of 5.95 and a post of 7.80. This was significant at  $p < .05$  level of significance.

Participants living in towns over 10,000 had a pre mean of 6.22 and a post of 7.55. This was also significant at  $p < .05$  level of significance.

OFL participants indicated a significant difference with respondents living in towns over 10,000 with a pre mean of 6.19 and a post of 7.04, which was significant at  $p < .05$  level of significance. Residence living in towns under 10,000 had pre mean of 6.15 and a post of 7.69. This was not significant at  $p < .05$  level of significance.

### **Quality of Life and Income**

For the purpose of analysis weekly income was grouped by respondents making less than \$100, \$100 to \$299 and over \$300. The results are presented on Table 4.55.

**Table 4.55** Difference in Means Quality of Life for Income for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Income</b>				
<u>EFNEP</u>				
<b>Pre &lt; \$100.</b>	5.92			
		2.38	21	-3.948*
<b>Post &lt;\$100</b>	8.00			
<b>Pre \$100-\$299.</b>	6.14			
		1.89	51	-5.338*
<b>Post \$100-\$299.</b>	7.55			
<b>Pre \$300.+</b>	6.29			
		1.98	52	-4.341*
<b>Post \$300.+</b>	7.48			
<u>OFL</u>				
<b>Pre &lt; \$100.</b>	5.96			
		2.65	29	-3.078*
<b>Post &lt;\$100</b>	7.48			
<b>Pre \$100-\$299.</b>	6.12			
		2.10	42	-3.158*
<b>Post \$100-\$299.</b>	7.15			
<b>Pre \$300.+</b>	6.32			
		2.57	44	-4.222*
<b>Post \$300.+</b>	7.95			

\*Significant at p value <.05

EFNEP participants indicated a significant change with the three categories of income. Respondents with an income less than \$100 a week reported a pre mean of 5.92 and a post of 8.00; respondents with an income from \$100-\$299 reported a pre mean of 6.14 and a post of 7.55; respondents making over \$300 a week had a pre mean of 6.29 and a post of 7.48. All were significant at p<.05 level of significance.

OFL respondents making less than a \$100 a week reported a pre mean of 5.96 and a post at 7.48, which was significant. Respondents earning from \$100 to \$299 a week demonstrated a significant difference with a pre of 6.12 and a post of 7.15. With incomes

over \$300, there was also a significant change with a pre mean of 6.32 and a post of 7.95 which was significant at  $p < .05$  level of significance.

### Quality of Life and Employment

Respondents reported employment status by three categories, which included full employment, part-time employment and unemployed. The results are presented on Table 4.56.

**Table 4.56** Difference in Means Quality of Life for Employment Status for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<u>Employment Status</u>				
<u>EFNEP</u>				
<b>Pre Full-time</b>	6.06			
<b>Post Full-time</b>	7.31	1.61	16	-3.101*
<b>Pre Part-time</b>	5.53			
<b>Post Part-time</b>	7.38	2.18	21	-3.914*
<b>Pre Unemployed</b>	6.25			
<b>Post unemployed</b>	7.46	1.75	48	-4.784*
<u>OFL</u>				
<b>Pre Full-time</b>	6.73			
<b>Post Full-time</b>	7.68	2.63	22	-1.704
<b>Pre Part-time</b>	7.05			
<b>Post Part-time</b>	8.09	2.18	21	-2.203*
<b>Pre Unemployed</b>	5.77			
<b>Post Unemployed</b>	7.34	2.42	71	-5.447*

\*Significant at  $p$  value  $< .05$

Respondents in EFNEP employed full time had a pre mean of 6.06 and a post mean of 7.31, and for respondents employed part-time the pre mean was 5.53 and a post



of 7.38. Respondents who were unemployed reported pre mean of 6.25 and post of 7.46. The three groups for employment in EFNEP demonstrated a significant difference at  $p < .05$  level of significance.

OFL respondents had a pre mean of 6.73 and a post mean of 7.68 for full-time employment, which was not significant. However, part-time respondents reported a pre mean of 7.05 and a post mean of 8.09, and unemployed respondents indicated a pre mean at 5.77 and a post of 7.34. Both of these were significant at  $p < .05$  level of significance. With the two programs, all reported a significant change with quality of life and employment, with one exception that was respondents in OFL employed full time.

#### **Mean Difference in Locus of Control for Gender, Race Age, Education, Marital Status, Number of Adults in Household, Residence, Income and Employment**

Difference in means locus of control for gender, race, age, education, marital status, number of adults in the household, residence, income and employment were computed. The results are shown on Tables 4.57-4.65.

#### **Locus of Control and Gender**

Respondents were asked to select their gender when collecting demographic information for EFNEP and OFL participants. The results are presented on Table 4.57.

**Table 4.57** Difference in Means Locus of Control for Gender for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Gender</b>				
<u>EFNEP</u>				
<b>Pre Female</b>	35.08			
<b>Post Female</b>	34.54	4.33	95	1.209
<b>Pre Male</b>	32.24			
<b>Post Male</b>	33.48	3.66	20	-1.305
<u>OFL</u>				
<b>Pre Female</b>	36.83			
<b>Post Female</b>	37.07	4.57	98	-.486
<b>Pre Male</b>	34.95			
<b>Post Male</b>	39.93	3.17	23	-1.943

\*Significant at p value<.05

EFNEP female response to the dependent variable locus of control by gender was a pre mean of 35.08 and a post mean of 34.54. This was not significant. For males in EFNEP the response was not quite as high with a pre mean of 32.24 and a post of 33.48, which was not significant.

OFL pre mean for females was similar to EFNEP at 36.83 with a post of 37.07, however this was not significant at p <.05 level of significance. For males the difference between the pre (34.95) and the post (39.93) was not significant at the <.05 level of significance. Neither programs reported a significant change with Locus of control by gender.

### **Locus of Control and Race**

For purpose of analysis, respondents were grouped into African-Americans and White/Others for race. The results are shown on Table 4.58.

**Table 4.58** Difference in Means Locus of Control for Race for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Race</b>				
<u>EFNEP</u>				
<b>Pre African American</b>	35.44			
<b>Post African American</b>	35.39	4.50	80	.099
<b>Pre White/Others</b>	33.89			
<b>Post White/Others</b>	32.09	3.19	36	3.340*
<u>OFL</u>				
<b>Pre African American</b>	36.11			
<b>Post African American</b>	37.27	2.74	45	-2.831*
<b>Pre White/Others</b>	36.26			
<b>Post White/Others</b>	36.36	4.78	76	-.168

\*Significant at p value at <.05

African-American EFNEP respondents had a group pre mean score of 35.44 and a post score of 35.39. White/Others EFNEP respondents had a pre mean score of 33.89 and a post of 32.09. This was significant at the  $p < .05$  level of significance.

With the OFL respondents, the mean group score for pre was 36.11 for African-Americans and 37.27 for the post mean. This was significant at  $p < .05$  level of significance. White/Others responded with a pre mean of 36.26 and a post mean of 36.36. OFL respondents indicated a significant difference from pre to post with African-Americans, and EFNEP with White/Others indicated a significant difference at the  $p < .05$  level of significance.

### **Locus of Control and Age**

For purpose of analysis, age was grouped into respondents at age of 30 and below and age 31 and above in years. The results are presented on Table 4.59.

**Table 4.59** Difference in Means Locus of Control by Age for EFNEP and OFL Respondents

<b>Factor</b>		<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<u>Age</u>					
<u>EFNEP</u>					
<b>Pre</b>	<b>age&lt;30</b>	34.68			
<b>Post</b>	<b>age&lt;30</b>	34.78	3.49	37	-.188
<b>Pre</b>	<b>age&gt;31</b>	37.92			
<b>Post</b>	<b>age&gt;31</b>	33.58	4.52	63	2.062*
<u>OFL</u>					
<b>Pre</b>	<b>age&lt;30</b>	35.06			
<b>Post</b>	<b>age&lt;30</b>	36.13	3.52	46	-2.054*
<b>Pre</b>	<b>age&gt;31</b>	36.90			
<b>Post</b>	<b>age&gt;31</b>	37.04	4.50	75	-.257

\*Significant at p value <.05

Respondents for EFNEP in the 30 and less age had a pre mean group score of 34.68 and a post mean score of 34.78. Respondents over 31 years of age reported a pre group score of 37.92, and a post at 33.58. This was significant at  $p < .05$  level of significance.

Respondents from OFL reported a group mean score for the age 30 and below with a pre mean at 35.06 and a post of 36.13. This was significant at  $p < .05$  level of significance. Respondents in the 31 or older group reported a group mean score for pre at 36.90 and a post of 37.04. OFL respondents at the age of 30 or less reported a significant change, but with EFNEP there was a significant difference for the age of 31 or greater.

### Locus of Control and Education

For the purpose of analysis, education was grouped into less than high school and some high school, and high school graduates, some college and college graduates. The results are presented in Table 4.60.

**Table 4.60** Difference in Means Locus of Control for Education for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Education</b>				
N=59				
<u>EFNEP</u>				
<b>Pre &lt; high school</b>	33.69			
		4.05	59	.546
<b>Post &lt;high school</b>	33.40			
N=56				
<b>Pre &gt; high school</b>	36.30			
		4.38	56	1.525
<b>Post &gt;high school</b>	35.41			
<u>OFL</u>				
<b>Pre &lt; high school</b>	35.96			
		4.79	61	-.080
<b>Post &lt;high school</b>	36.02			
<b>Pre &gt; high school</b>	36.45			
		3.39	60	-2.130*
<b>Post &gt;high school</b>	37.38			

Significant at p value <.05

Respondents in EFNEP with who had not completed high school had a pre mean of 33.69 and a post of 33.40, and respondents who had completed high school had a pre of 36.30 and a post of 35.41. Neither of these was significant.

With OFL, the response was a mean of 35.96 for a pre mean and 36.02 for a post mean for participants with less than a high school education. Respondents with a high school education or greater had results that indicated a significant change with a pre mean of 36.45 and a post mean of 37.38. This was significant at the p<.05 level of significance.

## Locus of Control and Marital Status

For the purpose of analysis marital status was grouped by single, married and others. Others included separated, divorced and widowed respondents. The results are reported on Table 4.61.

**Table 4.61** Difference in Means Locus of Control for Marital Status for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>N=45</b>				
<u>EFNEP</u>				
<b>Pre single</b>	31.56			
		3.80	45	1.632
<b>Post single</b>	30.32			
<b>N=47</b>				
<b>Pre married</b>	33.67			
		4.24	47	1.948
<b>Post married</b>	32.19			
<b>N=26</b>				
<b>Pre other</b>	37.29			
		2.80	26	1.128
<b>Post other</b>	36.53			
<u>OFL</u>				
<b>Pre single</b>	35.13			
		5.15	45	-.603
<b>Post single</b>	35.60			
<b>Pre married</b>	36.70			
		3.53	47	-1.486
<b>Post married</b>	37.47			
<b>Pre other</b>	37.19			
		3.48	26	-.282
<b>Post other</b>	37.38			

\*Significant at p value <.05

Single respondents in EFNEP had a pre mean of 31.56 and a higher post mean of 30.32. The pre mean for married was 33.67 and a slightly lower post mean of 32.19. With the others category the pre mean was 37.29 and the post was 36.53. There were no significant changes in any of the marital status groups for EFNEP.

In OFL the pre mean for single was 35.13 and the post was similar at 35.60. With married respondents the pre mean was 36.70 and the post was slightly higher at 37.47. The others groups had a pre mean of 37.19 and a post mean of 37.38. None of the categories for marital status with locus of control were significant.

### **Locus of Control and Number and Adults in Household**

For analysis purpose, number of adults in family was grouped into one, two and three or more adults in the household. The results are presented in Table 4.62.

**Table 4.62** Difference in Means Locus of Control for Number of Adults in the Household for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Number of adults in household</b>				
<u>EFNEP</u>				
<b>Pre One adult</b>	33.15			
<b>Post One adult</b>	33.69	5.14	13	-.378
<b>Pre Two adults</b>	30.93			
<b>Post Two adults</b>	30.40	3.55	15	.583
<b>Pre Three adults +</b>	35.93			
<b>Post Three adults +</b>	35.17	4.18	87	1.691
<u>OFL</u>				
<b>Pre One adult</b>	36.19			
<b>Post One adult</b>	36.38	3.33	21	-.262
<b>Pre Two adult</b>	36.27			
<b>Post Two adults</b>	36.03	3.28	30	.390
<b>Pre Three adults +</b>	36.19			
<b>Post Three adults +</b>	37.07	4.69	70	-1.580

\*Significant at p value <.05

Respondents in EFNEP with locus of control indicated no significant changes in any category with number of adults in household. The pre for one adult was 33.15, the post was 33.69, the pre for two adults was 30.93, and the post was 30.40. Three or more adults suggested the greatest change with a pre mean of 35.93 and a post of 35.17 but this was not significant.

OFL respondents were similar to EFNEP in that no categories in the number of adults in the household for locus of control indicated a significant change. With one adult in the household the pre mean was 36.19 and the post was 36.38, and with two or more adults the pre mean was 36.27 and a post of 36.03. Three or more adults indicated the greatest change but this was not significant with a pre of 36.19 and a post of 37.07.

### **Locus on Control and Residence**

For purposes of analysis residence was grouped into farms, towns with populations under 10,000 and rural non-farm areas, and towns and cities with populations over 10,000. The results are shown on Table 4.63.



**Table 4.63** Difference in Means Locus of Control for Residence for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Residence</b>				
<u>EFNEP</u>				
<b>Pre towns &lt;10,000/rural</b>	32.70			
		4.66	20	-.096
<b>Post towns &lt;10,000/rural</b>	32.80			
<b>Pre 10,000+</b>	35.44			
		4.12	95	1.719
<b>Post 10,000+</b>	34.72			
<u>OFL</u>				
<b>Pre towns &lt;10,000/Farm</b>	35.65			
		3.12	26	-1.104
<b>Post towns &lt;10,00/Farm</b>	36.35			
<b>Pre 10,000+</b>	36.36			
		4.40	95	-.956
<b>Post 10,000+</b>	36.79			

\*Significant at the p value <.05

EFNEP respondent living in cities under a population of 10,000 or in a rural area had a pre mean of 32.70 and a similar post mean at 32.80. With respondents in cities over 10,000, the pre mean was 35.44 and the post mean was slightly lower at 34.72. Neither of the residence groups resulted in a significant change.

There was not a significant difference between the OFL pre mean (35.65) and the post mean (36.35) with respondents living in cities under 10,000 or in a rural area. In cities over 10,000, the pre mean was 36.36 and the post was similar at 36.79. Neither of the residence categories were significant with locus on control with OFL.

### **Locus of Control and Income**

Respondents indicted their weekly income with three categories, less than \$100, \$100-\$299 and more than \$300. The results are presented on Table 4.64.

**Table 4.64** Difference in Means Locus of Control for Income for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Income</b>				
N=20				
<u>EFNEP</u>				
	<b>Pre &lt; \$100.</b>	34.76		
			4.50	
			20	.554
	<b>Post &lt;\$100</b>	35.12		
N=48				
	<b>Pre \$100-\$299</b>	34.54		
			4.76	
			48	-.243
	<b>Post \$100-\$299.</b>	34.37		
N=46				
	<b>Pre \$300.+</b>	36.15		
			3.41	
			46	2.509*
	<b>Post \$300.+</b>	34.89		
<u>OFL</u>				
N=30				
	<b>Pre &lt; \$100.</b>	35.93		
			6.22	
			30	.675
	<b>Post &lt;\$100</b>	35.17		
N=43				
	<b>Pre \$100-\$299.</b>	36.26		
			3.14	
			43	-.971
	<b>Post \$100-\$299.</b>	36.72		
N=48				
	<b>Pre \$300.+</b>	36.33		
			3.14	
			48	-2.855*
	<b>Post \$300.+</b>	37.63		

Significant at p value <.05

Respondents in EFNEP making less than \$100 weekly reported a pre mean of 34.76 and a post mean of 35.12. Respondents making \$100-\$299 had a pre mean of 34.54 and a lower post mean of 34.37. In the income of 300 or greater, the pre mean was 36.15 and the post was lower at 34.89. This was significant at p<.05 level of significance.

With the OFL respondents, there was a pre mean in the less than \$100 range of 35.93 and a similar post mean of 35.17. With the weekly income range from \$100-\$299

the pre was 36.26 and the post was 36.72. The pre mean for the \$300 or greater was 36.33 and the post mean was 37.63. This was significant at  $p < .05$  level of significance.

### **Locus of control and Employment Status**

Respondents reported three areas of employment, full-time, part-time and unemployed. The results are presented in Table 4.65.

**Table 4.65** Difference in Means Locus of Control for employment for EFNEP and OFL Respondents

<b>Factor</b>	<b>Mean</b>	<b>sd</b>	<b>N</b>	<b>t –test</b>
<b>Employment Status</b>				
<u>EFNEP</u>				
<b>Pre Full time</b>	36.55			
<b>Post full time</b>	33.55	3.58	11	2.781*
<b>Pre- Part time</b>	30.68			
<b>Post Part time</b>	29.21	4.02	19	1.598
<b>Pre Unemployed</b>	34.40			
<b>Post unemployed</b>	33.76	3.54	45	1.222
<u>OFL</u>				
<b>Pre Full time</b>	36.13			
<b>Post Full time</b>	37.39	2.60	23	-2.328*
<b>Pre- Part time</b>	36.77			
<b>Post Part time</b>	37.06	2.93	22	-.436
<b>Pre Unemployed</b>	36.04			
<b>Post Unemployed</b>	36.41	4.81	75	-.672

\*Significant at the  $p$  value  $< .05$

EFNEP respondents working full time had a pre mean of 36.55 and a post of 33.55. This was significant at  $p < .05$  level of significance. Respondents working part time had a pre mean of 30.68 and a post mean of 29.21, and unemployed respondents had

a pre mean of 34.40 and a post mean of 33.76. This was not a significant change for either part-time or unemployed with locus of control.

Respondents in OFL had similar results with full-time employment with a pre mean of 36.13 and a post of 37.39. The results were significant at  $p < .05$  level of significance. With the part-time the pre mean was 36.77 and the post mean was 37.06. The unemployed pre mean was 36.04 and the post mean was 36.41. Both part-time and unemployed were not significant. EFNEP and OFL results indicated significant changes with the full time employment for Locus on Control.

### **Summary**

The purpose of this study was to measure the impact of two nutrition education programs, EFNEP and OFL, for (1) changes in behavior (2) barriers to preparing healthy meals (3) changes in quality of life and (4) increase in internal locus of control. The means of the nine independent variables: gender, race, age, level of education, marital status, number of adults in household, area of residence, weekly income and employment were analyzed with a t-test.

### **Respondents**

One hundred and forty-one OFL participants and 127 EFNEP participants for a total of 268 respondents completed pre and post-questionnaires while participating in the nutrition education programs.

A majority of the participants were female (80.2 percent) and over fifty percent were African-American. The largest majorities were in the age range of 21-30 and 31-40.

A majority of participants had some high school or had completed high school, however, a small percentage of participants received some college credits or received a four-year degree. Most of the participants (90 percent) were married and more of them had children in the 5-12 years of age or age range of less than four years of age. Over one third of the participants were the only adult in their household, and almost half were located in towns under 10,000 or in towns up to 10,000. About two-thirds of the participants earned a weekly income of \$100-\$299, and the more that half of the participants were unemployed.

### **Behavior Change**

To measure behavior change respondents answered 10 questions with a Likert scale from seldom to almost always. There was a significant change for the individual programs for EFNEP and OFL and for total respondents participating in the program. Behavior change was calculated for all respondents in each category of the independent demographic, familial and social variables. Change in behavior was significant for gender, race, age, level of education, marital status, area of residence. The variables that were not significant were number in household with one adult and two adults in the household for OFL, income with respondents in the less than a \$100 weekly income category for OFL and with full time employment for OFL, there were no significant changes.

### **Barriers to Preparing Healthy Meals**

Participants responded to a list of barriers to preparing healthy meals before and after participating in nutrition education classes. There was not a significant change from

the pre and post means for the perceived barriers for preparing healthy meals for EFNEP and for total respondents. There was a significant difference for barriers to preparing healthy meals for respondents for the OFL Program. Barriers to healthy meals were computed for all respondents in each category of the independent variables for demographic, familial and social variables. Respondents did not indicate significant changes with the independent variables.

### **Quality of Life**

Respondents designated their quality of life by placing themselves on a self-anchoring scale that represented their interpretation of their quality of life. There was a significant change from the pre and post means for quality of life for both programs and for total respondents. Quality of life was calculated for all respondents in each category of the independent demographic, familial and social variables. The five variables that were significantly different with all categories included race, age, level of education, marital status, and income. With the variable gender, males was not significant for OFL, with area of residence, towns under 10,000 was not significant for OFL, with number of adults in household one adult was not significant for OFL, and with employment, full-time was not significant for OFL.

### **Locus of Control**

Respondents answered twenty-two questions with a yes or no to measure Locus of Control. Total scores for locus of control for total respondents increased slightly for external control and remained constant for internal control after participation in the program. With the EFNEP program external control decreased, and with OFL external

control increased in the post-questionnaire. There was no significant change for pre and post means for total respondents in the two programs. Locus of control was computed for all respondents in each category of the independent demographic, familial and social variables. The four variables gender, marital status number of adults in household and area of residence had no significant changes with all categories in both programs. Significant changes were made in the areas of the following: race with white/others in EFNEP and African-Americans with OFL, age with greater than 31years in EFNEP and 30 years and less with OFL, education with high school and greater with OFL, and with weekly income greater than \$300 for both programs demonstrated significant changes.

## **CHAPTER 5**

### **SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS**

The two Extension programs, EFNEP and OFL, provide nutrition education for low-income participants to help them improve their dietary intake that research suggests will lead to improved health for this population. This study was designed and conducted to evaluate changes in behavior, barriers to preparing healthy meals, improvement in quality of life and changes in internal locus of control among limited-resource individuals in North Carolina participating in the Expanded Food and Nutrition Education Program (EFNEP) and the Out For Lunch (OFL) Programs. Differences in group means for changes in knowledge, barriers to preparing healthy meals, quality of life and locus of control for all categories in the demographic, social and familial variables were evaluated. In addition, this study evaluated the impact of the delivery of the two programs.

A descriptive analysis of the data was completed. This chapter provides conclusions from the findings of this research along with the implications and the recommendations for future studies.

#### **Purpose of the Study**

The following five research questions guided the study:

1. Do participants change their behavior after participating in EFNEP or OFL Programs?



2. Do participants overcome barriers that prevent them from preparing healthy meals after participating in EFNEP and OFL Programs?
3. Do participants demonstrate an increase in their quality of life after participating in EFNEP and OFL Programs?
4. Do participants increase their internal locus of control after participating in EFNEP and OFL Programs?
5. What effect, if any, does the method of program delivery have on changes in behavior, overcoming barriers to healthy meals, an increase in internal locus of control and quality of life after participating in EFNEP or OFL Programs?

### **Conclusions and Implications**

The conclusions and implications based on the findings of this study are provided in this section, and are relevant to the population from which it was drawn.

#### **Conclusion 1: Participation in EFNEP and OFL nutrition education programs influences behavior change with low-income clients.**

The results of this study advocate that there is a role for nutrition education for low-income clients with programs such as EFNEP and OFL. Both of these programs were effective in implementing significant positive dietary changes with their graduates. This study found that participants had a moderate level of nutrition knowledge and were making behavior changes in areas of food management, purchasing and budgeting. These findings are also supported by Del Tredici, (1988), Contento, (1995), Cason

(2000), Burney, (2002) and Cason (2002) who found significant changes in food budgeting, food preparation and management skills. Block (1985) and Fidalgo (1988) found significant changes in behavior, knowledge and attitudes with low-income participants. Other studies by Anding, (2001) and Campbell, (2004) suggested that nutrition education influences behavior change in low-income individuals.

With the increase in predicted likelihood of obesity with this population, the necessity for nutrition education programs that reduce obesity is more evident. The consequences of being overweight leads to long-term chronic diseases, which is already stressing our already burden health care system. It has been established that poor health and low-income individuals are at greater risk for poor health than higher income people. Even though there are more prevention strategies available related to nutrition, obesity and diabetes, there continues to be inequalities for the lower socioeconomic group. These findings are supported by Townsend (2001), Kuchler (2002), Drewnowski (2003) and Gibson (2003). Improving the dietary intake of this population and continued support of EFNEP and food stamp nutrition education programs such as the Out For Lunch Program is necessary for improving the dietary intake of low-income individuals. Enhancing the nutritional status of low-income clients will lessen food insecurity and tackle the increasing rate of obesity evident for individuals from a lower socioeconomic status.

Participation in the economic benefits provided by the food stamp program may not change client's dietary intake. However, programs that support nutrition education and help participants to make more informed food choices provide participants with the

skills and tactics necessary to make healthy choices. Cason (2002) suggest that nutrition education improved dietary intake of food stamp participants.

The demographic, familial and social independent variables supported the significant difference for the two programs demonstrating that behavior change was due to the intervention of EFNEP and OFL. The three exceptions for the independent variables that were not significant included males, Laforge (1994) found the male gender was more at risk for fruit and vegetable consumption, age of 31 or greater, Crayton (1991) found similar results in the age group of 25-50, which showed little behavior change from participation in a nutrition education program. One or two adults in the household for OFL was not significant. Possibly the social support of another adult, such as a grandmother, in the household may encourage participants in the program. When working with the low-income population, educators should be attentive to individuals that may come single households and provide additional attention and resources, and encourage social interaction within the group.

**Conclusion 2 Participating in EFNEP and OFL Programs did not impact clients to overcome barriers to preparing healthy meals after participating in EFNEP and OFL Programs**

There was little evidence to suggest that participants in EFNEP and OFL were able to overcome barriers after participation in EFNEP and OFL. Some of the barriers respondents perceived before participating in the programs were time, the cost of healthy foods, not making healthy food choices and not knowing how to cook. The nutrition education programs did not lessen the barriers for this population. While intervention

provided definite skills and tools to overcome the obstacles there was a small decrease in perceived barriers. By overcoming barriers to preparing healthy meals, participants in EFNEP and OFL can make better food choices within their economic means, which will ultimately lead to overall healthier life styles. They also gained confidence in the meals and snacks they prepared and served to their children, which may promote healthier life-long habits for their children. The programs had a definite effect with helping heads of households with the difficulties of balancing the family and children's food preferences. The knowledge of the Program Assistant who experienced many of the barriers of the participants was influential in encouraging clients to develop this proficiency. Randall and Brink (Randall 1995) and Arnold and Sobal (Arnold 2000) support that trained paraprofessionals living in the community are invaluable when working with low-income populations. Educational efforts to reduce barriers for low-income clients through programs such as EFNEP and OFL are essential for low-income clients to help them surmount the perceived barriers to healthy meals.

Time as a barrier to preparing healthy meals, was suggested in the research by Hartman, (1994), Reicks, (1994), Treiman, (1996), Bradbard (1997) and Elkenberry (2004). Bradbard (1997) Shanker and Klassen (2001), and Hoisington. (2002) also confirmed children would not eat healthy foods as a barrier. Other studies indicate that children's preferences were important in food selection for mothers in low-income families; and Hampl and Sass (2001) suggested that children influenced purchases at the grocery store. Healthy food costs too much money was also a barrier for participants. These findings are congruent with the findings of other studies. Macario (1998), Nestle,

(1998), Quan (2000), Shankar (2001) and Birmingham (2004) all reported cost as a barrier to preparing healthy meals.

The variables for demographic, familial and social variables did not support a significant difference in barriers to preparing healthy meals for respondents from the two programs. An explanation for this difference in the findings may have been due to the instrument used to collect the post responses. This is explained more fully later in this chapter in the recommendations for future research.

Educators working with low-income clients need to help clients identify barriers to preparing healthy meals and develop strategies to rise above these barriers. Educators may be able to lessen barriers by focusing on easy, quick meal preparation, providing opportunities to develop cooking skills, and providing nutrition education where the child is involved in similar educational activities with food tasting by both the parent and the child. Shankar (2001) supported activities that included mother and child eating meals together.

### **Conclusion 3 Perceived quality of life improved for respondents after participating in the EFNEP and OFL programs.**

There was a significant difference in respondent's quality of life after participating in the programs. This study found that participants in the two programs reported an increase in food and nutrition scores along with the way they perceived how they felt about themselves. After participating in the program, participants indicated a better impression of their quality of life. This could be explained by gaining self-confidence after participating in the programs, and developing the skills for preparing

healthy meals for their families. Participants reported they shopped with a grocery list and compared prices suggesting the programs encouraged clients become more resourceful providing more disposable income for their families. Respondent's families may have also demonstrated better health due to the homemakers increased nutrition knowledge. Although weight loss was not a major focus of the programs, participants made changes such as not super sizing portions from restaurants, using low-fat milk and eating low-fat foods, which promoted weight loss.

For a majority of the participants this was the first educational program they had completed (52% did not finish high school). The assurance they received from EFNEP and OFL could have empowered some of them to seek employment. Arnold and Sobal (2000) suggested similar results with an EFNEP population. The certificate they received on completion of EFNEP or OFL was proof of this achievement. The accomplishments they experienced in the programs may have been the enforcer for them to continue their education. Research with similar findings from Brink and Sobal (1994) reported changes with education, employment, health and community involvement, along with changes in food and nutrition when participating in EFNEP.

Significant differences for improvement in quality of life of the program continued to be the stimulus for change. Variables that were not significant included males in OFL, towns under 10,000, one adult in the household and full-time employment with OFL. An explanation for this could be that males and individuals employed full time perceived they already had a higher quality of life indicating no significant change from the pre to post questionnaire. Other adults in the household supported an improved sense of quality of life for participants in this study. Educators need to be sensitive to the

needs and concerns of single-parent households and provide social stimulation and interactions for this participant.

**Conclusion 4 Participating in EFNEP and OFL did not seem to have an influence on the internal locus of control for individuals in the programs.**

There were significant differences in locus of control for EFNEP and OFL respondents before and after participating in the program. There was not a significant difference in locus of control for all respondents. However, OFL respondents perceived greater external control of their lives than EFNEP after participating in the program.

AbuSabha (1997) observed that locus of control is but one of the constructs that affects behavior and when used with other constructs its effect may add significantly to the overall outcome. She also suggest that locus of control is another factor influencing health and nutrition behavior, however when used alone, the relationship is weak.

Wallston (1992) concluded few studies have included an assessment of the value that people place on their health, (also called health value). When forecasting on health behavior, Wallston (1992) stressed the need to look at the relationship between health locus of control and health value.

Demographic, familial and social variables indicated some significant changes in both programs with specific categories for race, age, education, income and employment. With race, there was a significant difference with white/others for EFNEP and in OFL with African-Americans. Riggs (1984) suggested that African-American youth exhibited control that is more external than whites, and Weitzel (1990) reported that whites scored significantly higher than blacks did on the Internal Health Locus of Control. EFNEP

respondents reported a significant difference with age greater than 31, and OFL reported a significant difference for age 30 and less. There was a significant difference in education with OFL with high school and greater. Encouraging low-income clients to complete their high school degree or seek additional education might be one way to promote internal control with this population. Robinson (2001) found that the greater the participant's educational attainment, the more they expect to reach their occupational expectations. Both EFNEP and OFL respondents indicated a significant difference in the income group of \$300 or greater. With the variable employment, there was a significant difference for respondents who were employed full-time. Providing the skills necessary for participants to obtain employment and increase their earning ability might be one way for nutrition education programs to help their clients move from externals to internals. Robinson (2001) suggests women who believe in their own ability to influence outcomes in their lives perceived themselves as more effectual in achieving their occupational hopes.

Even though locus of control is not a variable to be used alone, educators need to develop interventions to increase external locus of control with the low-income population. Professionals and paraprofessionals should attempt to strengthen the low-income individual's beliefs in him or herself, and the capability to control outcomes in their own lives. On the other hand, educators also need to be practical about what control clients have over their personal lives. It is important to understand the limitations of being poor, but it is also beneficial to enhance the participant's perception of the control he/she does have. By supporting successes and reframing present levels of



accomplishments, educators can work in areas where the participant can have success with internal control of their lives.

**Conclusion 5 Changes in behavior were not dependent on the method of delivery.**

Significant differences in changes in behavior were identified with all low-income respondents. Both programs, EFNEP and OFL, were effective in implementing significant positive dietary changes with their graduates. Comparison of EFNEP and FSNEP Programs by Cason, (2000) found that the two programs were equally effective in bringing about significant improvements in nearly all food groups with both food stamp and non food stamp recipients. These findings are congruent with Arnold's, (2001) research that suggested nutrition education programs for low-income clients should provide self-directed learning activities and build support among participants.

Changes in behavior were evident with both programs with all independent variables with the exception of OFL respondents making less than a weekly income of \$100, participants with one adult in the household and participants employed full time. Food stamps programs, such as OFL, working with clients that were employed full-time may need to consider looking at non-traditional times and the length of class to encourage behavior change. Participants working full-time might have difficulty completing classes or attending on regular bases. Clients with an income less than \$100 might have many other complications such as housing or financial problems that hindered their ability to change behavior. Damron (1999) observed that focus on making changes that will be beneficial in the future might not seem important or even feasible for low-income clients who are struggling to live on a day-to-day bases. Offering nutrition education classes for

a shorter length of time might be a better choice for this population. Torisky (1969) suggest that length of time spent in the program did not affect the dietary improvement.

Barriers that were evident before participating in EFNEP and OFL were not overcome after participating in both programs. Educators should continue to provide the skills and hands-on activities to encourage clients to identify and overcome obstacles to making good dietary choices. Although respondents were already aware of creative ways to feed their families there are opportunities for education in helping participants overcome these barriers.

Method of delivery for EFNEP and OFL respondents was related to the programs except in the male gender, towns fewer than 10,000 and full-time employment for OFL. Food stamp education programs, such as OFL, may need to provide classes that are specific for males and address their individual needs and goals. Males did not denote a significant difference in OFL with behavior change and quality of life. Educators may need to plan nutrition education that includes classes on weekends and at night when working with clients employed full-time. Similar results by Meloy (1998) suggest food stamp clients prefer weekend classes; evenings were the preferred time and six-two hour classes were the preferred length.

Method of delivery for both programs was not significant for locus of control. Programs, encouraging clients to be more internal, should be a focus for EFNEP and food stamp programs such as OFL. This suggestion is a challenge for nutrition educators since the majority of lessons focus on nutrition information, food management, food safety and food resourcefulness. Encouraging this population to overcome the obstacles in their life

to become more internal would require some changes in the curriculum and additional training for the Program Assistants.

While health food choices are a personal decision, dietary behavior reflects and relates to the socioeconomic background particularly income, education and employment. Individuals who are less educated and who are from low-income households are more likely to engage in poorer dietary behavior than individuals from a higher socioeconomic standard. Results of this study suggest that programs such as EFNEP and OFL are providing significant changes in the lives of the participants in their programs. Not only are the changes evident in their nutritional intake but also in their quality of life.

To make healthier food choices, low-income individuals need research-based information. They may not always make the right decision, but they deserve the opportunity to make informed choices based on sound knowledge of the nutritional content of foods, food safety and food buying practice and how these relate to healthy promotion and chronic disease. Federally sponsored programs, such as EFNEP and OFL, with the support of Cooperative Extension can help low-income clients make healthier choices and improve their dietary intake

### **Recommendations for Future Research**

The study should be replicated with a control group of low-income individuals who did not participate in nutrition education sessions to evaluate changes in behavior. Studies with a control group could provide additional research to determine the strengths

and weaknesses of EFNEP and the OFL program. A study drawn from participants who were not exposed to nutrition education would provide additional insights into the factors affecting behavior changes, barriers to preparing healthy meals, quality of life and changes in internal locus of control. More consistent results for data analysis and interpretation might be provided from such a study, as well as strengthen the capability to generalize the results to a larger population. Insight might also be gained on demographic and social variables

Another consideration is to modify the instrument for collection of the barriers. Participants were asked to check any of the statements that they considered a barrier before and after participating in the program. The instrument did not determine in the post-questionnaire if the statement was not a barrier or if the respondent elected not to answer the question. A ranking of the barriers in the pre and post questionnaire may have eliminated this concern.

The instrument for locus of control needs to include the original 40 questions. Locus on control was a variable that did not demonstrate a significant difference. Additional questions might have changed the results of this construct. Educators may need to evaluate their methods of teaching or their curriculum to determine if internal locus of control can be improved for low-incomes clients through nutrition education.

### **Recommendations for Nutrition Education Programs**

More time and effort needs to be devoted to training and administering of the instruments with Program Assistants. Program Assistants needed additional training to explain the instruments and completion of the instruments for the participants. The

training for implementation of the instruments would have been more effective if were face-to-face with Program Assistants. This would have provided a clearer explanation of the process and answered any anticipated problems with the delivery of the instruments.

Studies to develop the best way to that meet the educational needs of low-income clients with different demographic and social needs would be beneficial. Perceptions about dietary changes are different for men and women. Educators may also want to look at the stage of readiness, ethnic subgroups or other characteristics and determine the best approach to meet the educational needs.

Educational programs should address socio-economic issues such as encouraging participants to carpool, partner with friend for cooking and eating together. Adapting these skills will be beneficial for the single parents struggling with young children.

Using the paraprofessional, indigenous to the community, has proven to be a successful model for delivering nutrition education. Health care agencies could adopt this model to teach disease prevention to low-income clients. Prevention of chronic disease could be implemented into the curriculums of nutrition education programs working with this population.

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## APPENDICES



## Appendix A

### North Carolina State University INFORMED CONSENT FORM for RESEARCH

Evaluation of two Nutrition Education Programs: Expanded Food and Nutrition Education Program (EFNEP) and Out for Lunch (OFL)

Principal Investigator: Doris Sargent

Faculty Sponsor: Dr. David Mustian

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We are asking you to participate in a research study. The purpose of this study is evaluate the EFNEP and Out for Lunch Program. We would like to know how this program has helped you and what part of the program has been beneficial to you.

#### **INFORMATION**

If you agree to participate in this study, you will be asked to complete three surveys at the beginning of the program. The surveys will collect information about your demographics (race, age, income, etc.), quality of life, certain beliefs, and food habits. At the end of the program, you will be asked to complete similar surveys to see what you've learned and to look at changes. Each set of surveys should not take more than 30 minutes to complete.

#### **RISKS**

There should be no risks to you for participating. However, if any question makes you uncomfortable, you are free to skip it.

#### **BENEFITS**

While you will not benefit directly from this study, what we learn may help us teach others about nutrition.

#### **CONFIDENTIALITY**

The information in the study records will be kept strictly confidential. Data will be stored securely in a locked filing cabinet in the researcher's office. No reference will be made in oral or written reports which could link you to the study.

#### **COMPENSATION**

For participating in this study you will receive a small kitchen utensil or small calculator. If you withdraw from the study prior to its completion, you will still receive compensation.

## Appendix A (continued)

### CONTACT

If you have questions at any time about the study or the procedures, you may contact the researcher, Doris Sargent, at 919/715-8116. If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Dr. Matthew Zingraff, Chair of the NCSU IRB for the Use of Human Subjects in Research Committee, Box 7514, NCSU Campus (919/513-1834) or Mr. Matthew Ronning, Assistant Vice Chancellor, Research Administration, Box 7514, NCSU Campus (919/513-2148)

### PARTICIPATION

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be returned to you or destroyed at your request.

### CONSENT

**“If you have read and understand the above information and agree to participate, please sign below, and complete and submit the attached surveys. If you do not wish to participate, thank you for your time. If you would like a copy of this signed form for your records, the researcher will provide you with one.**

**Subject's signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Researcher's signature** \_\_\_\_\_ **Date** \_\_\_\_\_

## Appendix B

### Before We Begin

Name \_\_\_\_\_

Street/Route \_\_\_\_\_

City \_\_\_\_\_, NC, Zip \_\_\_\_\_

**Circle the response that best answers the question.**

1. How often do you plan meals ahead of time?	Seldom	Some-times	Most of the Time	Almost Always
2. How often do you shop with a grocery list?	Seldom	Some-times	Most of the Time	Almost Always
3. How often do you compare prices before you buy food?	Seldom	Some-times	Most of the Time	Almost Always
4. How often do you use low-fat (2%), very low-fat (1%) or nonfat milk?	Seldom	Some-times	Most of the Time	Almost Always
5. How often do you make meals that include a variety of foods from the food guide pyramid?	Seldom	Some-times	Most of the Time	Almost Always
6. How often do you eat low-fat foods instead of high-fat foods?	Seldom	Some-times	Most of the Time	Almost Always

**Appendix B (continued)**

**Circle the response that best answers the question.**

7. How often do you wash your hands in warm, soapy water before preparing food?	Seldom	Some-times	Most of the Time	Almost Always
8. How often do you thaw frozen food at room temperature?	Seldom	Some-times	Most of the Time	Almost Always
9. How often do you use the "Nutrition Facts" label to make food choices?	Seldom	Some-times	Most of the Time	Almost Always
-C 10. When you have the option of getting a "super-sized" portion of food, how often do you order it?	Seldom	Some-times	Most of the Time	Almost Always

## Appendix C

**Sometimes it is difficult to fix healthy meals for our families.**

**Place a check next to the sentence below if it is a reason you cannot prepare healthy meals for your family.**

- \_\_\_\_\_ 1. I do not have enough time to cook healthy meals
- \_\_\_\_\_ 2. I cannot cook.
- \_\_\_\_\_ 3. I do not have a grocery store near my house.
- \_\_\_\_\_ 4. My children won't eat healthy foods.
- \_\_\_\_\_ 5. Healthy foods cost too much money.
- \_\_\_\_\_ 6. I do not like to cook.
- \_\_\_\_\_ 7. I do not have a refrigerator to store food.
- \_\_\_\_\_ 8. I do not have a stove to cook meals.
- \_\_\_\_\_ 9. I do not have a car to get to the grocery store
- \_\_\_\_\_ 10. I don't know what foods are good for me and my family.
- \_\_\_\_\_ 11. I do not have enough kitchen equipment to prepare food to eat.
- \_\_\_\_\_ 12. No one in the family likes to eat what I cook.
- \_\_\_\_\_ 13. I don't know how to follow a recipe.
- \_\_\_\_\_ 14. Other reasons \_\_\_\_\_

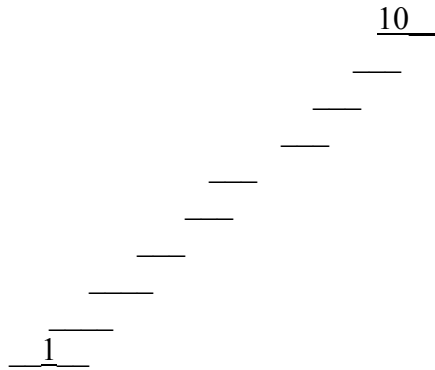


## Appendix D

### Self-Anchoring Assessment

Think about your quality of life. Think about someone you know that has the poorest quality of life possible. Place that person on step 1. Now think about the person that has the best quality of life and place that person on step 10.

Now put an X on the step where you would place yourself.



## Appendix E

Name \_\_\_\_\_ County \_\_\_\_\_

Please read the questions and circle YES if you agree with the statement and NO if you do not agree. There are no right or wrong answers.

1. Do you believe that most problems will solve themselves if you just don't fool with them? YES NO
2. Do you believe you can stop yourself from catching a cold? YES NO
3. Are some people just born lucky? YES NO
4. Are you often blamed for things that are not your fault? YES NO
5. Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway? YES NO
6. Do you feel that if things start out well in the morning, it is going to be a good day no matter what you do? YES NO
7. Do you believe that wishing can make good things happen? YES NO
8. Do you feel when you do something wrong, there is very little you can do to make it right? YES NO
9. Do you feel that one of the best ways to handle most problems is to just not think about them? YES NO
10. Do you feel that you have a lot of choices in deciding who your friends are? YES NO
11. If you find a four-leaf clover, do you believe that it might bring you good luck? YES NO
12. Do you feel that when a person your age is angry with you, there is little you can do to stop him or her? YES NO
13. Have you ever had a good luck charm? YES NO
14. Do you believe that whether or not people like you depends on how you act? YES NO
15. Have you ever felt that when people were angry with you it was usually for no reason at all? YES NO

**Appendix E (continued)**

- |   |     |    |
|---|-----|----|
| 16. Most of the time do you feel that you can change what might happen tomorrow by what you do today?                                 | YES | NO |
| 17. Do you believe that when bad things are going to happen, they just are going to happen no matter what you try to do to stop them? | YES | NO |
| 18. Do you think people can get their own way if they just keep trying?   | YES | NO |
| 19. Do you feel that when good things happen, they happen because of hard work.   | YES | NO |
| 20. Do you feel that when someone does not like you, there is little you can do about it?   | YES | NO |
| 21. Are you the kind of person that believes that planning ahead makes things turn out better?  | YES | NO |
| 22. Do you think it is better to be smart than lucky?   | YES | NO |



**Appendix F**

Name \_\_\_\_\_ County \_\_\_\_\_

**Please tell us about yourself:**

1. I am a \_\_\_\_\_ Female \_\_\_\_\_ Male
2. My race is \_\_\_\_\_ African American  
\_\_\_\_\_ Hispanic  
\_\_\_\_\_ Native American/Alaskan  
\_\_\_\_\_ White (Non-Hispanic)  
\_\_\_\_\_ Asian or Pacific Islander
3. My age is \_\_\_\_\_ Under 20  
\_\_\_\_\_ 21-30  
\_\_\_\_\_ 31-40  
\_\_\_\_\_ 41-50  
\_\_\_\_\_ Over 51
4. Number of years of education \_\_\_\_\_ Less than high school  
\_\_\_\_\_ Some high school  
\_\_\_\_\_ High school graduate  
\_\_\_\_\_ Technical or vocational school  
\_\_\_\_\_ Some college  
\_\_\_\_\_ College graduate
5. I am \_\_\_\_\_ Single  
\_\_\_\_\_ Married  
\_\_\_\_\_ Separated  
\_\_\_\_\_ Divorced  
\_\_\_\_\_ Widowed
6. Number of children who are \_\_\_\_\_ under 4 years  
\_\_\_\_\_ 5-12 years  
\_\_\_\_\_ 13-18 years  
\_\_\_\_\_ over 19 years
- I do not have any children \_\_\_\_\_
7. How many adults, counting yourself, live with you? \_\_\_\_\_

**Appendix F (continued)**

8. Where do you live?

- Farm
- Towns under 10,000 and rural non-farm
- Towns & cities 10,000-50,000
- Suburbs of cities over 50,000
- Central cities over 50,000

9. My total **weekly** family income is

- Less than \$100
- \$100 to \$199
- \$200 to \$299
- over \$300

10. I am employed

- Full time
- Part time
- I do not have a job