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**Relationships between selected personal and family characteristics of Tennessee EFNEP homemakers in extension district one and their increased use of food behavior practices upon graduation**

Deborah Hutton Seward

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To the Graduate Council:

I am submitting herewith a thesis written by Deborah Hutton Seward entitled "Relationships between selected personal and family characteristics of Tennessee EFNEP homemakers in extension district one and their increased use of food behavior practices upon graduation." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agriculture and Extension Education.

Roy R. Lessly, Major Professor

We have read this thesis and recommend its acceptance:

Cecil E. Carter Jr, Ester L. Hatcher

Accepted for the Council:

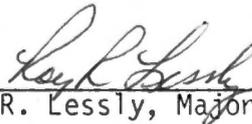
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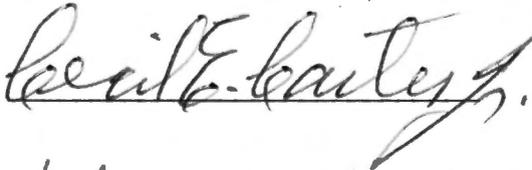
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Accepted for the Council:



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RELATIONSHIPS BETWEEN SELECTED PERSONAL AND FAMILY CHARACTERISTICS  
OF TENNESSEE EFNEP HOMEMAKERS IN EXTENSION DISTRICT ONE AND  
THEIR INCREASED USE OF FOOD BEHAVIOR PRACTICES  
UPON GRADUATION

A Thesis  
Presented for the  
Master of Science  
Degree  
The University of Tennessee, Knoxville

Deborah Hutton Seward

December 1990

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## DEDICATION

Dedicated with love to my dear mother, Mrs. Ruby Lee Hutton. Thank you for the guidance, support, inspiration, and encouragement that you have always given me, in order to make everything in my life possible. The following lyrics from the song "You Are My Hero" just barely touch my feelings and gratefulness to you:

"You are my hero,  
You are everything I wish to be  
You are the wind beneath my wings."

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## ABSTRACT

The purpose of this study was to characterize selected Tennessee EFNEP homemakers as to their personal and family characteristics, their use of selected food behavioral practices, and to determine the relationships among these variables.

The "n<sup>th</sup>" number sampling technique was used to randomly select 200 homemakers for this study. By selecting every eighth homemaker, 50 homemakers from each of the following counties, Dyer, Gibson, Henry, and Shelby Counties, were selected for this study.

The chi square test was used to determine the strength of the relationship between the independent and dependent variables. Chi square values achieving the 0.05 level of probability were judged to be significant.

It was concluded that homemakers who graduated from the program showed increases in all 35 food behavior practices. One year after program exit homemakers continued to maintain and improve behavior practices in all 35 areas. Homemakers not having an adult male present in the home showed significantly higher increases than those with an adult male present in the home in their use of 5 of 35 food behavior practices. In the subsection knowledge of nutrition, homemakers not having an adult male present in the home were more likely to increase in their ability to name food group servings for family members and describe recommended serving size. Homemakers not having an adult male present were also more likely than those with an adult

male in the home to increase their ability to plan before shopping, budget food resources, and use unit pricing and cost per serving. Homemakers with an adult male present in the home were more likely to show an increase in their ability to keep their kitchens clean. The presence of an adult male in the home was not significantly related to the other 29 practices.

Homemakers having four or more children in the home showed significantly higher increases than homemakers with three or less children in 2 of the 35 food behavior practices. Homemakers having four or more children in the home were more likely to increase in their ability to budget food resources and follow a recipe than those with three or less children.

Homemakers having nine years of education or more had significantly higher increases in their use of 2 of the 35 food behavior practices than those with eight or less years of education. Homemakers having nine years of education or more were more likely to increase their ability to use unit price and cost per serving and grow a garden for family use. Homemakers' educational level was not significantly related to the other 33 food behavior practices.

Homemakers living in rural areas had significantly higher increases in 3 of the 35 food behavior practices. Homemakers living in rural areas were more likely to increase in their ability to use unit price and cost per serving, grow a garden, and dispose of garbage properly than homemakers in urban areas. Homemakers' place of residence was not significantly related to the other 32 practices.

Homemakers' monthly income was significantly related to 3 of the 35 food behavior practices. Homemakers with a income under \$315 per month were more likely than those with an income over \$315 per month to increase in their ability to plan before shopping and budget food resources. The homemakers' monthly income was not significantly related to the other 35 practices.

Conclusions, implications, and recommendations were made.

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## CHAPTER I

### BACKGROUND AND PROBLEM

#### I. INTRODUCTION

It was the 1960's and a decade of cognizance. During this time television was making Americans aware of the deplorable conditions in which the poor were forced to live with its graphic footage of poverty and deprivation. However, the most shocking revelation was, that in a land of abundance, millions of its own citizens were going hungry. A nation that provided vast amounts of food for other countries had somehow overlooked the hungry of its citizens. The American people were appalled even more, with the findings of the United States Congress. Through its Citizens Board of Inquiry into Hunger and Malnutrition, they estimated that, fourteen million hungry people resided in this country (10).<sup>\*</sup> Due to public outcry and the findings of the Citizens' Board of Inquiry Into Hunger and Malnutrition, the Federal Extension Service, cooperating with the Alabama Extension Service, initiated a pilot program in November, 1964 to help low income homemakers in four Alabama counties (37:483). The efforts proved to be fruitful. As a result of the Alabama pilot program, the Expanded Food and Nutrition Education Program (EFNEP) was

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<sup>\*</sup>Numbers in parentheses refer to similarly numbered items in the Bibliography; those after the colon are page numbers.

initiated and established in all 50 states, Washington, D.C., Puerto Rico, and the Virgin Island by Executive Order in 1968 (17). The program, most commonly referred to as EFNEP, is charged nationally to assist low income families to acquire knowledge, skills, attitudes, and changed behaviors necessary for nutritionally sound diets. Also, it contributes to their personal development and the improvement of total diet and nutritional welfare. Participation in the Expanded Food and Nutrition Education Program should result in:

1. Improved diets and nutritional welfare for total family,
2. Increased knowledge of the essential of human nutrition,
3. Increased practices in food production, preparation, storage, safety, and sanitation, and
4. Increased ability to manage food budgets and resources such as Food Stamps (18).

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 the knowledge of how to use these available food resources and the importance of nutrition (29).

A key factor of the program is the paraprofessionals who are indigenous in social and economic background with whom they work. Paraprofessionals are hired to teach low income homemakers either individually or in small groups, how to improve the nutritional adequacy of their diets.

EFNEP has been part of Tennessee Agricultural Extension Service since 1969 when it was initiated in 10 pilot counties. Since its inception, a total of 99,692 low income families have received nutrition instruction.

## II. NEED FOR THE STUDY

Tools for evaluating EFNEP accomplishments were built into the programs from its inception. The importance of evaluating nutrition programs was brought out in the reports of the 1969 White House Conference. The Panel of Popular Education and How to Reach Disadvantaged Groups stated:

We need to assign ourselves the task of measuring results, if we are ready to raise the level of nutrition education to the point where our population is no longer in jeopardy from malnutrition. It is worth repeating that the program of education needs to be a continuation over a long period of time; hence the measurements of results, too, will need to be a continual process (49).

Previous national evaluation stated that EFNEP participation has produced a significant improvement in the food and nutrition knowledge, skills, and practices of low income homemakers (24). Since EFNEP is both federally funded and socially oriented, there is a continuous need for evaluation and documentation of its accomplishments to base and justify continued funding (24). At the time of this study, data are collected on each homemaker in order to measure progress toward EFNEP's objectives.

Information is obtained at program entrance and 18 weeks later at program exit regarding socioeconomic characteristics of the families,

their food consumption practices and behaviors, and knowledge of basic nutrition in order to determine the effectiveness of the program. By examining this data over an 18 week period, it is possible to see changes in the following areas: personal and family characteristics; and food behavior changes as a result of the program. The data used to determine dietary adequacy is gathered by personal interview conducted by the program assistants at both program entrance and exit. The adequacy of homemaker's diet is assessed in terms of the number of daily servings of each of the four food groups. According to EFNEP, an adequate diet is described as 2-2-4-4, two servings of meat, two servings of milk, four servings each of breads/cereals, and fruits/vegetables (18). However, limited attempts are made to determine the adequacy of the diet in terms of nutrient content. Also, data are collected on basic nutrition, food behaviors, and practices by the program assistants. Homemakers are asked questions related to food preparation, food storage and sanitation, food purchasing, basic nutrition knowledge, and food preservation. Homemakers are said to have greater or less knowledge of these areas, depending upon how many correct responses she can give related to each area.

This study was undertaken to compare differences in food behaviors and practices and basic nutrition knowledge at program entrance, exit, and one year after graduation, in order to evaluate the effectiveness of EFNEP. Information gained through this study should be useful to EFNEP state specialist for future planning

and program determination and to county staff members to determine program effectiveness, development, and evaluation.

Twenty one years have elapsed since the implementation of Tennessee's Expanded Food and Nutrition Education Program. The program is currently operating in 20 counties within the Extension's five districts of the state. A need exists to study behaviors, and practices of selected EFNEP homemakers. Prior to this study, limited studies have been made to compare information concerning the graduated homemakers' food habits and behaviors.

### III. PURPOSE AND OBJECTIVES OF THE STUDY

The purpose of this study was to characterize selected Tennessee EFNEP homemakers as to their personal and family characteristics, their use of selected food behavioral practices, and to determine the relationships among these variables.

The specific objectives of this study were:

1. To characterize selected Tennessee EFNEP homemakers and their use of food behavior practices at program entrance, exit, and one year after program exit.
2. To determine the relationships between having an adult male present in the home and the homemakers' increased use of food behavior practices upon graduation.
3. To determine the relationships between the number of children and the homemakers' increased use of food behavior practices upon graduation.

4. To determine the relationships between the educational level of the homemakers and their increased use of food behavior practices upon graduation.

5. To determine the relationships between the place of residence and the homemakers' increased use of food behavior practices upon graduation.

6. To determine the relationships between the monthly income and the homemakers' increased use of food behavior practices upon graduation.

#### IV. LIMITATIONS OF THE STUDY

This study was limited to selected homemakers who have graduated from EPNEP in Dyer, Gibson, Henry, and Shelby Counties in West Tennessee prior to October 1, 1987. Data used for the study were obtained through personal interviews by EFNEP program assistants working in these four counties.

#### V. METHODS AND PROCEDURES

This section describes the method and procedures used in obtaining data for this study. The research data used in this study were collected by program assistants as interviewers. The purpose in the selection of this comparative research method was to describe personal and socioeconomic factors, food practices, and food related behaviors of selected graduated homemakers who were enrolled in EFNEP in Dyer, Gibson, Henry, and Shelby Counties in District One of West Tennessee.

This research is seeking to determine if EFNEP homemakers increased their knowledge and skills in 35 food behavioral practices while participating in the program.

### Population and Sample

The population of the study included EFNEP homemakers in four West Tennessee counties who graduated from the program between October 1, 1986 and September 30, 1987. The "n<sup>th</sup>" number sampling technique was used to randomly select the 200 homemakers used for this study. By selecting every eighth homemaker, 50 homemakers from each of the following counties, Dyer, Henry, Gibson, and Shelby, were selected for the study.

### Selection of Instrument

In order to fulfill the objectives of this study, a longitudinal approach was needed. Due to the structure of EFNEP, records were available to meet the needs of this study. The primary instruments used in this study were the EFNEP Family Record Form and the Food Behavior Checklist (Appendix A). The family record is utilized nationally as a source for obtaining pertinent personal and socio-economic information, and a 24-hour food recall from the enrolled homemaker.

### Administration of Instruments

EFNEP program assistants in the four sample counties served as interviewers for this study. They collected necessary personal, socio-economic, food consumption, and food behavior practices data from

enrolled homemakers. They were asked to obtain a third recall and food behavior in order to carry out the first objective of this study.

### Method of Analysis

Following the completion of the surveys by program assistants, the data were coded and processed for computer analysis. Computations were made by the University of Tennessee Computer Center using the SPSS-X package.

Responses to survey questions were summarized using means and frequency counts of homemakers' responses regarding their characteristics and the use of selected practices. The chi square test was used to determine the strength of relationships between dependent and independent variables. Chi square values achieving the 0.05 level of probability were judged to be significant.

## VI. DEFINITION OF TERMS

The following are an explanation of terms used in this study:

1. Adequate Diet. A diet which consists of two or more daily servings from both the meat group and the milk group and four or more servings from the bread and cereal group.

2. Expanded Food and Nutrition Education Program, EFNEP-ENP. A federally funded nutrition education program legislated through Congress to teach nutrition on an individual and group basis to low income homemakers. The overall administration of this program is through federal, state, and county Extension Services.

3. EFNEP Extension Agent. A professionally trained home economist employed by the Agricultural Extension Service to develop and implement the EFNEP program on the given county level. The agent is responsible for the training and supervision of program assistants and volunteer leaders.

4. Family Record-Food Recall. A form for collecting the following information: socioeconomic characteristics, demographic data relating to the homemaker and family members, and the dietary food recall. The food recall is a record of all food consumed within a 24 hour period (includes all meals, snacks, and beverages). This record provides a means of recording and maintaining information which is needed to plan, implement, and evaluate the EFNEP effect on individual families. The form is completed at program entrance and exit.

5. Food Behavior Checklist. A set of statement which represent all of the things the homemakers will be taught to help them provide nutritious foods to their families at minimum costs. The statements are based on the program objectives and relate to the materials used in teaching the homemakers. There are five major categories of instruction identified in the checklist which are: knowledge of nutrition, food purchasing, food storage and sanitation, food and meal planning, and food preparation. Within each of these areas is a list of recommended practices homemakers would learn and perform by program completion.

6. Food Consumption Patterns. The meals and snacks consumed by an individual within a 24 hour period. This information is recorded by the program assistant on the family record form for a 24 hour period.

7. Program Assistant-P.A.-Paraprofessional. The employed non professional from the low income community to work directly with the enrolled homemakers and youth in EFNEP.

8. Program Homemaker. A low income individual female/male enrolled in EFNEP with the responsibility of preparing most of the meals for the family.

9. Graduated Program Homemaker. A homemaker who has successfully completed the Expanded Food and Nutrition Program when criterion performances is achieved: criterion performance is mutually established by the aide and homemaker during the orientation period. The supervising home economist reviews the selected criterion from the food behavior checklist.

10. Type of Instruction. (a) Individual: A teaching session usually held in the home in which the homemaker is taught planned food and nutrition lessons on an individual basis during the 18 week enrollment period. (b) Group: A teaching session in which two or more homemakers are taught planned food and nutrition lessons during the 18 week enrollment period.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

Throughout the universe, America is acknowledged as being a wealthy country with an abundance of wealth, food, and economic opportunities for its citizens. However, many residents of this land of bounty lack sufficient income, knowledge, housing, and food for their general well-being. Due to these circumstances EFNEP was conceived, and since its inception it has been the subject of considerable research. Research related to EFNEP explored its history, the role of the paraprofessional, and evaluation of the program. Since the concern of this study is to determine the effectiveness of EFNEP on graduated homemakers when comparing food behavior scores at program entry, exit, and one year after exit, this review has been limited to the following: (1) factors affecting food consumption practices, (2) working with low income audiences, (3) nutrition education programs and their purposes, (4) adequacy of the 24-hour dietary recall (program evaluation), and (5) the Expanded Food and Nutrition Education Program which includes national and state studies related to this research study.

#### I. FACTORS AFFECTING FOOD CONSUMPTION PRACTICES

Food habits in the United States have undergone change in recent years with an unfavorable cause on the nutritional status of the population. At a time of unprecedented affluence, when most

Americans can afford better food than ever before, there has been a decline in the nutritional quality of the diet. This was documented dramatically by the United States Department of Agriculture in 1968 when it released the results of the 1965-66 household food consumption survey, which was compared to a similar survey conducted in 1955. The comparison results revealed there was a 10 percent decline in the percentage of the United States households having "good diets" according to Kramer (32:23). He further suggested that the percentage having "good diets" (less than two-thirds of the recommended daily allowance) increased from 15 to 20 percent between the surveys. In 1972, the United States Department of Health, Education and Welfare completed its final report of the 1968-70 Ten State Nutrition Survey (TSNS). This was the largest nutrition survey ever conducted and was made in response to a 1967 Congressional directive, which surveyed 10 states with the highest percentage of low income as well as elevated incidence of malnutrition. However, the population in this survey was not representative of the entire United States population because the low income segment was represented to a greater extent than other groups surveyed. Malnutrition was found to be more prevalent among minorities than among whites. Poor food choices and unwise use of money available for food were other factors which resulted in inadequate diets according to Kramer (32:23). Even though enough food is available in America, so that all families can have a "good diet", the 1956 study showed that one-half of the families actually had such a diet noted Spindler and Brown (44:319). According to the

Harvard Physician Task Force on Hunger, there are at least 20 million hungry people in America (28). The true number of the hungry and the extent of their suffering is not fully known. According to Burke, hunger as we know it is a discomfort, weakness, or pain caused by the lack of food (9). Foerster and Hinton indicated that in a family, it may mean going without food so that another can eat; biologically, it is the condition of consuming inadequate amounts of food and nutrients needed to sustain physical health and mental well being (21:1571). These researchers reported that the root cause of hunger is poverty. Unemployment, under employment, homelessness, education, functional illiteracy, economic displacement, age marital breakup, wage discrimination based sex or race, poor health, and mental illness are all factors that contribute to the existence of over 20 million Americans living at or below the poverty threshold and affect the food consumption practices of these individuals. Paynton cited that the usual way of describing the poor and hungry is their income level; families with an annual income of \$6,500 or below are considered poor (39:138). Rudd and Hall revealed that poor families are not alike; differing factors influence their income levels (42). Some characteristic patterns are: (1) the head of the family has a steady, although low paying job that requires few skills, (2) families tend to be receiving Aid to Families with Dependent Children (AFDC) or other public assistance and is headed by a woman who may be employed at a low paying job, (3) the family may be very large where the head may have a steady job with a good income although

inadequate for 10 to 15 people, (4) the head of the family may have steady employment, but his job disappeared because of company closing (43:125). Paynton described these types of poor families as ones having somewhat different lifestyles, attitudes, needs and interest, but the factors in which they are forced to live affect their food consumption practices (39:138).

Another factor that affects food consumption practices is food preferences which is a motivating factor that leads an individual to accept new ideas and to adapt them to their own way of living. Dickins found that cultural, social, personal, and situations determine the individual's food consumption (15:6). Dickins defined culture as the total man-made part of man's environment. The ideas and beliefs of man and the material things he has to work with set limits in what kinds and types of food he will serve his family and how the cooking will be done. Therefore, it seems likely that food preferences are determined early in life by the cultural pattern of the family and remain fairly stable across the life cycle (15:6). Bowering and Lowenberg indicated that food habits vary from one cultural group to another (16:20). Individuals within any culture respond to the approved behavioral pressures by selecting, consuming, and using those foods which are available. This same group incorporates the food habits of their ancestors and of the present environment, since basic habits are passed from generation to generation. Food preferences are also the result of food availability, climate, geographical conditions, and technological development (16:20).

Dickins also reported the age of the homemaker is important in food preferences since the older homemaker is more habit-bound than the middle age homemaker who is more inclined to try new and unfamiliar food and new concepts, where the elderly homemaker is less likely to adopt new ideas, concepts, or practices (15:6). Nolan and Gross found the younger the homemaker the better the diet of the family (36). They suggested that homemakers who are most willing to try new food were younger than those who were less willing. They concluded that for physiological, psychological, and sociological reasons, the tendency to try new foods and products drop sharply with age (36). Gifft pointed out that age may affect the amount and the level of a person's nutrition knowledge (25). Dickins found that homemakers with higher education levels provide better diets for their families than those with fewer years of formal education; therefore, families with more education provide better diets and foods for themselves and the families (15:6). Nolan and Gross also agreed with Dickins and further indicated that the more formal education the homemaker had obtained the more willing she would be to learn, but lower educated and lower income homemakers can be prompted into learning (36).

The results of TSNS, 1968-1970, indicates that the educational attainment of the individual primarily responsible for buying and preparing the food seems to have a major influence on the family's eating habits. Homemakers with 16 or more years of schooling, had a 50 percent optimum consumption increase over homemakers with schooling of 0 to 6 years. Oppenheim agreed with the TSNS and stated that evidence

was generally recognized as follows: people with more education use larger amounts of dairy products, frozen and canned fruit and vegetables, and less flour and cereal products, potatoes, and dried fruits and vegetables (38). Other factors, according to Dickins, which determine the individual's food consumption are social conditions, since fewer decisions concerning food are made without regard for others due to the fact that all persons are members of many social groups (15:6). Wenkam pointed out that the influence of social status, physical status, and the ceremonial role are contributing factors on food consumption patterns and certain foods are associated with the economic level of people (48). Eckstein explained that even the humblest of families share their best foods with guests, since other means are limited, food assumes the greatest importance (16). Economic definitions affect everyone's food choices, especially those individuals with low incomes. According to Peterkin, a represented proportion of the nation's families spend 16 to 18 percent of their overall disposable income for food expenditures (40). The percentage of income a family spends depends on many factors such as family makeup, preference and needs of family members, financial assets, and the demands of those assets. Studies of family expenditures have shown that families with a higher income tend to spend a lesser porportion for food than families with a lower percentage of income for food. A later study, conducted by Peterkin et al. reported that high expenditures for food does not ensure nutritional adequacy, nor does low expenditures for food necessarily mean the diet will be nutritionally

inadequate (41:102). Cleveland noted that some families have to spend 50 percent or more of their income for food (11:11). Davis pointed out that as the amount of dollars spent for food increases, the quality of food consumed at various income levels improves (14:1071). However, Hama suggested that a lot of households still do not have enough food, especially those with low incomes, and much remains to be done to improve this situation (27:4). According to Dickins, income dictates the quality of a family's food consumption and food consumption practices (15:6). The impact of inflation has a cause and effect on the food consumption practices of families. In a report by Barrett and Driscoll, some cited effects of inflation on various population groups were as follows: (a) the unskilled, disadvantaged worker is more likely to become unemployed in a recession than the higher income worker, (b) some workers are better able to seek cost-of-living adjustments as the rate of inflation increases, than do others, and (c) the poor spends a larger proportion of their income on food and fuel, than do affluent families (2).

Walden reports that food prices are important to families because food takes the third largest bite of the consumer's expenditures (46:1). Due to frequent purchases, food prices are highly visible to the consumer. Many consumers base the general price increases of goods around food prices.

## II. WORKING WITH LOW INCOME AUDIENCES

Nutrition educators must be knowledgeable about the background of the low income families they seek to reach. In Fiscal Year 1986,

the Federal Government spent \$53.7 billion on programs that would benefit the needy (19). In spite of federal expenditures for these social programs, the poverty rate for all persons in 1986 was 13.6 percent. For children under 18 years of age, living in all types of families, the rate was 19.8 percent. Of households headed by women, 34.2 percent live in poverty. Within female-headed households, children less than 18 years of age have a poverty rate of 54.4 percent. Out of every five children in 1986 lived in a family whose earned income was below the poverty level established by the Census Bureau.

Beavers indicated that the goals of the low income individual are the same as any other group; however, the approach for working with low-income families is different (3:36). He states that adults must want to learn and will only learn what they need to learn. Furthermore, research shows that lack of confidence and a multitude of barriers may block progress by the learner and the educator must design programs that allow the low income persons access over these barriers. Rudd and Hall pointed out that programs planned especially for people with low incomes are characterized as being taken to the people (42). They further stated, that the basic needs of low income persons differ from those of middle income, because the middle income groups tend to want innovative and creative ways to use new products and the lower class groups want to learn basic principles. They suggested, instead of dividing people into the "haves" and "have-not" we should think in terms of the "know-hows" and the "don't know-hows". Rumps et al found the poor, as a group, do not know how to do many

of the things middle-class homemakers take for granted (43:271). The lower income have a characteristic reluctance to go to a strange place, therefore, the educator should try to take the programs to them. Another important reason for taking programs to the people is the cost of transportation. If there is no money for bus fares or gas, adults cannot attend a program, even though they are interested. When working with people who have a different background, the educator must learn to speak less and listen more, especially if the people are poor and the educator has a desire to understand them and aid them in improving their plight (39:138). Establishing relationships and communicating with people is of utmost importance. Persons working with the low income must always remember that the emphasis is on the people and not on the program. The educator of low income persons must be willing to listen and learn as well. Beavers suggested face to face contact in a personal setting when working with this audience (3:36). For teaching the low income population, Rudd and Hall suggested the "one concept" teaching approach be used on home visits (42). This concept is to effectively convey one constructive idea to the learner. This direct communication effort may be by demonstration, small group cluster meetings or activities, or even home visitation. Wolgamont proposed the use of nonprofessional employees who would extend program endeavors in teaching nutrition to low income individuals in the community (50). Researchers value the role of these employees because they can relate to this audience and be a link between the professional and the low income audience.

Cleveland reiterated that to reach the disadvantaged, we must know the family and the community in which they reside (11:1). First, we must begin with the homemaker's established food behavior patterns. Change in attitude and attainment of knowledge comes gradually as the homemaker tries recommended practices. It is proven that persons learn rapidly when they are involved in the learning process. Suter and Barbour suggested that in order for nutrition education programs to be effective the nutrition educator must learn and develop methods for creating behavioral changes with regard to food selection, preparation, and consumption (45:198). The educator must know how to bring about the changes as well as to recognize the changes that are necessary for low income people to have good dietary habits in order to ensure optimum health. Knowledge of food values can encourage the educator to plan more effectively a program of interest to low income mothers. The educator must not only understand the low income, but understand the goals of nutrition education programs and the need for such programs.

### III. NUTRITION EDUCATION AND ITS PURPOSE

Many may ask what is the purpose and process of nutrition education. Johnson and Johnson stated the process of nutrition education may be defined as the teaching of validated, correct nutrition knowledge to the public in ways to promote the development and maintenance of positive attitudes toward, and actual behavioral habits of eating (within budgetary and cultural restraints) nutritious food that contribute

to the maintenance of personal health, well being, and productivity (30:1228). This process begins with the three goals of nutrition education: (1) knowing what foods one should eat, (2) wanting to make wise food choices and eat the proper foods and liking those foods that are nutritious, and (3) actually consuming nutritious foods. These goals of nutrition education are important to all, but especially the low income who fall victim more often to ill health due to poor nutrition and dietary habits. Amstutz and Dixon stated optimal health through dietary improvements is the ultimate goal of nutrition education programs (1:55). Justification for the continued funding of such programs should be based in large measure on the extent to which learners make needed diet changes using the knowledge and skills gained. They stated four questions should be answered when planning and evaluating nutrition education programs for all individuals but especially the lower income: (1) what was the initial adequacy level of diets, (2) what changes are desirable, (3) to what extent are the changes to be made, and (4) will the change be temporary or permanent (1:55). According to Ford, essential change is the major and determining factor in nutrition education programs (22:562). This type of change involves both a shift in beliefs, behavior and value system in order to ensure good health. Farkas stated when working with low income and ethnic groups that the stated aim of nutrition education should be persuasive communication about nutrition with the intent of changing attitudes, knowledge, and/or behavior with respect to nutrition and food practices (19:99).

The Consumer and Food Economics Institute of the United States Department of Agriculture's Research Service conducted a study on homemakers' food and nutrition knowledge and good practices in 1969 (16). The results implied that homemakers have a fair knowledge of food and nutrition facts, but have little knowledge of how to apply the information to daily food consumption. Over 50 percent of the homemakers studied stated that they obtained nutrition information for relatives and mass media. Walker stated because of these findings nutrition education is greatly needed to help homemakers gain the necessary knowledge and skills to provide a desirable nutrition foundation as well as an adequate diet for their families (47).

#### IV. DIETARY RECALLS USED IN NUTRITION EDUCATION PROGRAMS

With an expansion of food assistance and nutrition education programs sponsored by federal, state, and private agencies, there is growing recognition of the need for appropriate methods with which to evaluate the effectiveness of these programs. A goal for many of these programs is to increase the nutritional adequacy of the diets on the premise that it will result in improved nutritional status and health of the defined population (16). In order to evaluate dietary adequacy of the target audience enrolled in the Expanded Food and Nutrition Education Program (EFNEP), the one day dietary record or the 24-hour dietary recall is used. According to Guthrie and Scheer this was based on the basic four food guides and serves as a simple scoring system for the rapid evaluation of dietary adequacy and as a basic for education and counseling the program participants

(26:240). The dietary score has advantages over other techniques because it is easy to comprehend and little training is required to use it and provide objective measurements of dietary intake of individuals. While some researchers have questioned the recall's validity according to Amstutz and Dixon others have supported it, especially when it is used to analyze diets of groups rather than individuals (1:55). They stated the dietary recall proves to be an appropriate evaluation tool as a total nutrient analysis when program effectiveness is evaluated. A review of literature, describing various methods including more than 120 references, was undertaken by Marr (34:105). Among the methods described were the precise weighing and the weighed inventory methods. The first method involves weighing the raw foods used in composite dishes as well as the cooked portion eaten by the individual. Chemical analysis of samples makes it possible to determine nutrient and caloric values. However, to attain this degree of accuracy, the investigator must spend hours with each subject. This casts some doubts on the degree to which food consumption during the investigation is typical of actual food habits and whether the volunteer subjects are representatives of any class or group. In the weighed inventory method, the subjects weigh their own portions, and standard food tables are used for the nutrient calculations; consequently, less supervision is required.

While some investigators believed that weighing is necessary for accuracy, Burke believed that estimates by subjects can be the basis of useful data (8:1041). The diet history method using estimates

consists of three parts: (1) recalls of past intakes, both usual patterns and the last 24 hours, (2) cross-questioning on food habits, and (3) recording present intake in the form of menus. The cross-questioning was considered an important part of the interview by Burke, who is credited with the development of this method (8:1041). She believed that the recorded menu was the least valuable and useful only as additional means of checking usual intake. A significant reminder in her work is that a dietary history is not a precise measurement and that to evaluate diets obtained in this manner in terms of grams and calories would suggest an accuracy that is not there. Instead, Burke used a rating scale ranging from zero for very poor to four for excellent. Burke's early work with the dietary history laid the foundation for studies by other investigators. Developing an efficient and effective method of dietary assessment that could be used to monitor and evaluate progress in educational programs was the goal of Johnson and Johnson (30:1228). They designed a one-page food record form and a computer program to evaluate adequacy. This method was tested with program assistants employed by the University of Wisconsin. Usable data were obtained from 65 program assistants. The food record form contained 150 food items arranged in 16 groups. The groups were formulated so that foods in each group would contribute major amounts of important nutrients. Amounts were listed in the form and subjects were asked to shade in the spaces to indicate the number of servings consumed. Seven consecutive daily records were gathered from each program assistant, as well as a more traditional memory based 24 hour recall for the day before

the record-keeping began. Food composition tables were used to establish nutrient content of all foods on the record. Nutrient adequacy was estimated by calculating mean daily intakes for 12 nutrients for each individual and comparing those figures to appropriate Recommended Dietary Allowances (RDA). Comparisons were made between record and recall techniques. Data gathered using the 24-hour recall technique and transferred to the 16-group record sheet were generally in good agreement with information obtained by subsequently using the daily food record for seven consecutive days. Although there was some improvement in precision of the estimate with the seven-day record, the investigators believed that from a practical standpoint this improvement was not worth the extra costs in time or dollars. These researchers also reported that the 24-hour recall method was used to obtain dietary data for selected groups of individuals. Researchers justified the use of this method by asserting that the data obtained was sufficient for estimating the dietary adequacy of groups of individuals. They also reported that the 24-hour recall of food consumed, reflected only one day's food intake, but if a large number of individuals had intakes below the standard, it could be assumed the group of individuals was likely to consume diets below the standard over a period of time (30:1228). Karvetti and Knuts pointed out the 24-hour dietary recall had some limitations (31:1437). This study was conducted to determine the validity of the 24-hour recall with a comparison of recalled and observed food and nutrient intake for 140 subjects. The observation was carried

out during one day of recording the amounts of food selected by the subjects at four meals. The following day, 24-hour recalls were obtained. The researchers results showed that some food items eaten were omitted and erroneously recalled since some subjects omitted some foods eaten and included others not consumed. Men, according to this study, tended to overestimate the food amounts consumed, which was seen as positive relative errors in nutrient intake, and women often underestimate the amounts of food consumed which was seen as negative relative errors in nutrient intake. However, according to these researchers, the dietary interview methods in which the 24-hour recall was taken was suitable for direct validation and can be used to assess means and trends in food and nutrient intake of large groups of subjects. While there was agreement in the literature over lack of precise determination of food recall records, the evidence supports that, for less precise or more global evaluation of dietary adequacy, they are acceptable. Therefore, the 24-hour dietary recall appears to be useful and successful instrument for assessing general dietary changes over time for EFNEP participants.

#### V. EXPANDED FOOD AND NUTRITION EDUCATION PROGRAM STUDIES

The Expanded Food and Nutrition Education Program is charged nationally to develop and implement a food and nutrition education program for low-income homemakers in the United States and its territories. Numerous studies have been conducted on the effectiveness

of EFNEP and on various components of the program. The general concern of this study is to compare the differences in adequacy of the diet, food behavior practices, and basic nutrition knowledge at program entrance, exit, and one year after exit in order to evaluate the effectiveness of EFNEP on graduated homemakers in Dyer, Gibson, Henry, and Shelby Counties in West Tennessee.

The first external EFNEP study conducted by Datagraphics indicated that homemakers' participation was high, and that the program was in a position to achieve its goals. Food consumption of the four food groups was inadequate when homemakers entered the program, but changed after six months of participation (12). A follow-up study was conducted by Datagraphics and it showed continual program progress (13). However, the findings indicated a need for homemakers highly knowledgeable in nutrition to be moved more quickly through the program to allow homemakers with greater need more program efforts. An in-depth analysis of low income families enrolled in EFNEP was conducted by Feaster (20). The findings in this study indicated that less than 10 percent of the enrolled families had adequate diets from the basic four food groups at program entrance. Forty percent of the families surveyed reported no daily consumption of food in at least one group upon program entrance. After the homemakers had participated in the program for six months, the families reported adequate diets increased from 4 to 11 percent. Families reported a consumption from at least one serving from each food group increased consumption from 5 to 72 percent.

Leindenfrost conducted an overall study on EFNEP accomplishments and future needs based on statistical reports of the data from reporting systems (33:61). According to Leindenfrost, at the end of 18 months, 79 percent of the families had consumed one serving from each food group with 78 percent of the change occurring during the 6 months, with 93 percent of improvements being made in less than 12 months. The major improvements in the diets was increased consumption in the fruit and vegetable group. Homemakers also increased the consumption of breads and cereals in the diets. In addition, other homemakers grew more food at home and planned and managed their food budgets.

In addition to these studies conducted at the national level, over 400 studies have been conducted in various states and territories to determine the effectiveness of EFNEP on homemakers and on various other components of the program. The program effectiveness can best be determined by the participants' retention of knowledge and continued improved nutrition practices. In two recent studies, conducted by Block, on the effectiveness of the California EFNEP, it was found that participants retained nutrition knowledge and continued their improved nutrition practices (4, 5:185). The EFNEP evaluation study was an analysis of the effectiveness of the program in 15 counties. This study examined the food habits and nutrition knowledge of 685 participants under controlled experimental conditions. The participants were randomly assigned to two groups: EFNEP and EFNEP waiting list groups. The EFNEP group received regular EFNEP instruction for six months. They were tested before instruction began and then again

after instruction was completed. The EFNEP waiting list group was tested when they were initially enrolled and then again six months later when their "waiting" period was over. They received EFNEP instruction following the completion of the study. These results were compared in both the EFNEP and control group. The group that received EFNEP instruction consistently showed improvements in food related-behavior, knowledge, attitudes, and dietary habits. Most improvements observed in the dietary habits (24-hour food recall), especially in the milk and fruit and vegetable consumption, where families were consuming below recommended levels at initial evaluation, had increased below average milk consumption from 37.3 percent to 53.7 percent while fruit and vegetable consumption increased from 28.4 percent to 49.0 percent. In 1983, two to three years following this evaluation study a follow-up investigation was made of the long-term effects of the program in four of the original 15 counties. In this instance, 73 EFNEP participants were studied using the 24-hour recall. Results showed that all improvements seen in the original study were still present in the follow-up study, and families had retained the improved food practices.

The Grand Island County, Nebraska Evaluation Study conducted by Fox indicated that low income homemakers in the program improved both their food consumption habits and food behavior practices (23). The homemakers had sustained these improvements in dietary behavior for 15.5 months after graduation and at a significant level when compared to program entry. Nierman conducted a research study of

the Michigan program in order to determine if EFNEP participants retain their improved food and nutrition knowledge and practices five years after a nine month or less program of instruction (35). The findings revealed that participants retained significant improvements in the Daily Fare and USDA food recall scores over the five year period. A relatively short period of instruction of nine months or less was enough to instill these long term improvements. Minority participants who entered with low USDA scores had the most significant improved scores over time.

Earlier studies verify these Michigan findings. Brown and Kateregga in 1981 also found that dietary improvements sustained one year after graduation from EFNEP (7). Dietary behavior changes could be attributed to education rather than significant differences in age, income, educational level, participation in assistance programs, or family size. They tend to be below 35 years of age at entry into the program, and have less than a twelfth grade education and monthly incomes of \$419 or less.

Findings from these above mentioned studies indicated that EFNEP positively reflects the food behavior of homemakers who participate in the program. Homemakers show an improvement in their food behavior practices from graduation through post graduation and when comparing the overall food behavior checklist scores. These findings also found that the graduates consumed more foods from the basic four food groups at graduation than they did at entry and tend to sustain these improvements after exiting from the program. According to Nierman,

EFNEP is cost-effective, and the more disadvantaged the participant, the greater the program effectiveness of the instruction, hence, the more the potential benefit (35).

## CHAPTER III

### FINDINGS REGARDING PERSONAL AND FAMILY CHARACTERISTICS OF SELECTED TENNESSEE EFNEP HOMEMAKERS IN EXTENSION DISTRICT ONE, THEIR INCREASED USE OF 35 FOOD BEHAVIOR PRACTICES UPON PROGRAM GRADUATION, AND TO DETERMINE RELATIONSHIPS AMONG THESE VARIABLES

The main purposes of this study were to characterize selected Tennessee EFNEP homemakers as to their personal and family characteristics, their increased use of food behavior practices upon program graduation, and to determine the relationships between this increase and the independent variables. The independent variables were: (1) male present in the household, (2) number of children in the family, (3) educational level of homemaker, (4) place of residence, and (5) monthly income.

Program assistants from Dyer, Gibson, Henry, and Shelby Counties in District I in West Tennessee collected data for this study. The tools used in this study were the Expanded Food and Nutrition Education Program Family Record and the Food Behavior Checklist (Appendix A). Information obtained included personal and demographic information, and food behavior checklist scores from the graduated homemakers. The homemakers entrance, exit, and one year later family records were placed together in order to collect perceptible data. The chi square test was used to determine strength of relationships between dependent

and independent variables. Chi square values achieving the 0.05 level of probability were judged to be significant.

Data were summarized into seven major tables. Each table constitutes a section.

Section I presents findings regarding the personal and family characteristics of the graduated homemakers.

Section II presents findings regarding the homemakers use of food behavior practices at program entry, exit, and one year after program exit.

Section III presents findings regarding the relationships between having an adult male present in the home and the homemakers increased use of food behavior practices upon graduation.

Section IV presents findings regarding the relationships between the number of children in the home and the homemakers increased use of food behavior practices upon graduation.

Section V presents findings regarding the relationships between the homemakers educational level and their increased use of food behavior practices upon graduation.

Section VI presents findings regarding the relationships between the homemakers place of residence and their increased use of food behavior practices upon graduation.

Section VII presents findings regarding the relationships between the homemakers monthly income and their increased use of food behavior practices upon graduation.

I. PERSONAL AND FAMILY CHARACTERISTICS OF SELECTED TENNESSEE  
EFNEP HOMEMAKERS IN EXTENSION DISTRICT ONE

Data in Table 1 presents findings regarding the personal and family characteristics of selected graduated EFNEP homemakers. This section was organized into two subsections: (1) personal characteristics, and (2) family characteristics.

Personal Characteristics

Personal characteristics considered in this discussion were adult male present, age of homemaker, educational level of homemaker, and ethnic background of homemaker.

Adult male present. The data indicated that 43.0 percent, or 86 of the graduated homemakers, had an adult present in the home, compared to 57.0 percent who did not have an adult male present.

Age. The age of the respondents was reported in three categories 25 years and under, 26 to 34 years, and 35 years and over. When analyzed, 32.0 percent, or 64 homemakers, were age 25 or under, 33.0 percent, or 66 homemakers, were 26 to 34 years, and 35.0 percent, or 70 homemakers, were 35 years or older.

Educational level. The homemakers educational level was reported in two categories eight years or less, or nine years or beyond. Data indicated that among the 200 homemakers sampled, 42.5 percent, or 85 homemakers, had an eighth grade or less education, and 57.5 percent, or 115 homemakers, had nine years or more of education.

Table 1. Personal and Family Characteristics of Selected EFNEP Homemakers in District I

Personal and Family Characteristics	Number of Homemakers	Percent of Homemakers
<b>PERSONAL CHARACTERISTICS</b>		
Adult Male Present		
No	114	57.0
Yes	86	43.0
TOTAL	200	100.0
Age		
25-Under	64	32.0
26-34	66	33.0
35-Over	70	35.0
TOTAL	200	100.0
Educational Level		
Eighth Grade or Less	85	42.5
Ninth Grade or Beyond	115	57.5
TOTAL	200	100.0
Ethnic Background		
White	107	53.5
Black	84	42.0
Other	9	4.5
TOTAL	200	100.0
<b>FAMILY CHARACTERISTICS</b>		
Public Assistance		
Food Stamps	24	13.6
WIC	37	20.9
Welfare	21	11.8
Food Stamps and WIC	26	14.7
All	69	39.0
TOTAL	200	100.0
Number of Children		
3 or Less	167	83.5
4 or More	33	16.5
TOTAL	200	100.0

Table 1 (Continued)

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Personal and Family Characteristics	Number of Homemakers	Percent of Homemakers
Place of Residence		
Urban	135	67.5
Rural	65	32.5
TOTAL	200	100.0
Monthly Income		
Under \$315	107	53.5
\$315 and Over	93	46.5
TOTAL	200	100.0

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Ethnic background. The ethnic background of the homemaker was reported in three categories: white, black, and other. Data indicated that 53.5 percent, or 107 of the graduated homemakers, were white, 42.0 percent, or 84 homemakers, were black, and 4.5 percent, or 9, were of another ethnic background.

### Family Characteristics

Family characteristics considered in this discussion were public assistance received, number of children in family, place of residence, and monthly income.

Public assistance. Types of public assistance received by the homemakers was reported in five categories: food stamps, WIC (Woman, Infants and Children), Welfare, food stamps and WIC, and all types of public assistance received. When analyzed it was reported that 13.6 percent, or 24 homemakers, received food stamps, 20.9 percent, or 37 homemakers, received WIC, 11.9 percent, or 21 homemakers, received welfare, compared to 14.7 percent, or 26 homemakers, who received both food stamps and WIC, and 39.0 percent, or 69 homemakers, who received all types of public assistance.

Number of children in family. The number of children in the household were studied in two groups: three or less, and four or more. The data indicated that 83.5 percent, or 167 homemakers, had 3 or less children in the home, compared to 16.5 percent, or 33 homemakers, with 4 or more children.

Place of residence. An analysis of urban and rural homemakers indicated that 67.5 percent, or 135 homemakers, lived in an urban area compared to 32.5 percent, or 65 homemakers, who lived in a rural area.

Monthly income. The respondents income was reported in two categories: Under \$315, and \$315 and over. When analyzed 53.5 percent, or 107 homemakers, had incomes under \$315, and 46.5 percent, or 93 homemakers, had incomes over \$315.

## II. COMPARISON OF TENNESSEE EFNEP HOMEMAKERS' USE OF FOOD BEHAVIOR PRACTICES AT PROGRAM ENTRY, EXIT, AND ONE YEAR AFTER GRADUATION

Data in Table 2 presents findings comparing the homemakers food behavior practices at program entry, exit, and one year after graduation. This section was organized into five subsections: (1) knowledge of nutrition, (2) food purchase, (3) food storage and sanitation, (4) food and meal planning, and (5) food preparation.

### Knowledge of Nutrition

The five indicators of knowledge in this subsection are: (1) name food group servings for family members, (2) name two foods from each group, (3) describe recommended serving size, (4) name a Vitamin A, C, and iron food, and (5) name a low/high calorie food.

Name food group servings for family members. At program entry only 39 (19.8 percent) of the homemakers could name the number of

Table 2. Comparison of Homemakers' Use of Food Behavior Practices at Program Entry, Exit, and One Year After Exit

Food Behavior Practices	Homemakers' Responses at Each Level of Program					
	Entry		Exit		One Year After Exit	
	Number Responses**	Percent Responses	Number Responses	Percent Responses	Number Responses	Percent Responses
<b>KNOWLEDGE OF NUTRITION *</b>						
Name Food Group Servings for Family Members						
No	158	80.2	30	15.1	22	11.0
Yes	39	19.8	169	84.9	178	89.0
TOTAL	197	100.0	199	100.0	200	100.0
Name Two Foods From Each Group						
No	82	41.0	5	2.5	1	0.5
Yes	118	59.0	195	97.5	199	99.5
TOTAL	200	100.0	200	100.0	200	100.0
Describe Recommended Serving Size						
No	174	88.2	41	20.6	36	18.0
Yes	23	11.8	158	79.4	164	82.0
TOTAL	197	100.0	199	100.0	200	100.0
Name a Vitamin A, C, Calcium, and Iron Food						
No	121	62.5	38	19.4	19	9.6
Yes	70	37.5	158	80.6	179	90.4
TOTAL	191	100.0	196	100.0	198	100.0
Name a Low/High Calorie Food						
No	99	49.5	8	4.0	5	2.5
Yes	98	50.5	190	96.0	195	97.5
TOTAL	197	100.0	198	100.0	200	100.0
<b>FOOD PURCHASE</b>						
Plans Before Shopping						
No	92	55.1	18	9.1	16	8.0
Yes	75	44.9	179	90.9	184	92.0
TOTAL	177	100.0	197	100.0	200	100.0
Stretches Food Dollars						
No	84	46.7	18	9.2	12	6.0
Yes	96	53.3	177	90.8	188	94.0
TOTAL	180	100.0	195	100.0	200	100.0
Knows How to Obtain Food Stamps						
No	25	13.1	11	5.6	8	4.0
Yes	166	86.9	187	94.4	192	96.0
TOTAL	191	100.0	198	100.0	200	100.0
Budgets Food Resources						
No	80	46.8	23	11.9	21	10.5
Yes	91	53.2	171	88.1	179	90.5
TOTAL	171	100.0	194	100.0	200	100.0
Uses Unit Price Cost Per Serving						
No	158	85.9	73	36.9	50	25.3
Yes	26	14.1	125	63.1	148	74.7
TOTAL	184	100.0	198	100.0	198	100.0
Uses Cheaper Food Sources						
No	66	37.9	51	26.6	28	14.1
Yes	108	62.1	141	73.4	170	85.9
TOTAL	174	100.0	192	100.0	198	100.0
Grows a Garden						
No	130	75.1	104	57.8	80	48.8
Yes	43	24.9	76	42.2	84	51.2
TOTAL	173	100.0	180	100.0	164	100.0

Table 2 (Continued)

Food Behavior Practices	Homemakers' Responses at Each Level of Program					
	Entry		Exit		One Year After Exit	
	Number Responses**	Percent Responses	Number Responses	Percent Responses	Number Responses	Percent Responses
<b>FOOD STORAGE AND SANITATION</b>						
Stores Perishable Food Safely						
No	39	24.2	14	7.4	6	3.0
Yes	122	75.8	176	92.6	194	97.0
TOTAL	161	100.0	190	100.0	200	100.0
Keeps Kitchen Clean						
No	39	22.7	31	15.9	23	11.5
Yes	133	77.3	164	84.1	177	88.5
TOTAL	172	100.0	195	100.0	200	100.0
Stores Non-Perishable Properly						
No	44	27.3	12	6.5	3	1.5
Yes	117	72.7	173	93.5	197	98.5
TOTAL	161	100.0	185	100.0	200	100.0
Disposes Garbage Properly						
No	42	26.9	32	17.5	21	10.6
Yes	114	73.1	151	82.5	177	89.4
TOTAL	156	100.0	183	100.0	198	100.0
Uses Correct Food Preservation Methods						
No	116	80.0	75	42.6	52	28.4
Yes	29	20.0	101	57.4	131	71.6
TOTAL	145	100.0	176	100.0	183	100.0
Controls Pests in Kitchen						
No	55	35.7	49	26.1	29	14.6
Yes	99	64.3	139	73.9	169	85.4
TOTAL	154	100.0	178	100.0	198	100.0
<b>FOOD AND MEAL PLANNING</b>						
Schedules Meals Around Family Activities						
No	63	33.0	31	15.6	11	5.5
Yes	128	67.0	168	84.4	189	94.5
TOTAL	191	100.0	199	100.0	200	100.0
Provide Servings Recommended by Food Guide						
No	161	84.7	53	27.3	37	18.5
Yes	29	15.3	141	72.7	163	81.5
TOTAL	190	100.0	194	100.0	200	100.0
Serves a Variety of Food						
No	132	70.2	31	15.6	21	10.5
Yes	56	29.8	162	84.4	179	89.5
TOTAL	188	100.0	193	100.0	200	100.0
Serves Iron Rich Food						
No	119	74.4	40	22.3	41	21.5
Yes	41	25.6	139	77.7	157	78.5
TOTAL	160	100.0	179	100.0	198	100.0
Provides Nutritious Snacks						
No	110	63.6	43	22.2	32	16.1
Yes	63	36.4	151	77.8	167	83.9
TOTAL	173	100.0	194	100.0	199	100.0
Serves Whole Grains and Cereals						
No	87	45.8	38	19.6	31	15.5
Yes	103	54.2	156	80.4	169	84.5
TOTAL	190	100.0	194	100.0	200	100.0
Serves Vitamin A and C Foods						
No	129	73.3	57	31.0	31	15.7
Yes	47	26.7	127	69.0	166	84.3
TOTAL	176	100.0	184	100.0	197	100.0

Table 2 (Continued)

Food Behavior Practices	Homemakers' Responses at Each Level of Program					
	Entry		Exit		One Year After Exit	
	Number Responses**	Percent Responses	Number Responses	Percent Responses	Number Responses	Percent Responses
Watches Food Intake of Overweight/ Underweight Family Members						
No	107	59.1	51	27.1	52	26.1
Yes	74	40.9	137	72.9	147	73.9
TOTAL	181	100.0	188	100.0	189	100.0
Provides Breakfast						
No	44	24.2	18	9.4	13	6.6
Yes	138	75.8	173	90.6	184	93.4
TOTAL	182	100.0	191	100.0	197	100.0
FOOD PREPARATION						
Conserves Nutrients						
No	120	74.5	36	20.5	15	7.6
Yes	41	25.5	140	79.5	182	92.4
TOTAL	161	100.0	176	100.0	197	100.0
Can Follow Recipe						
No	22	11.2	5	2.5	1	.5
Yes	174	88.8	194	97.5	199	99.5
TOTAL	196	100.0	199	100.0	200	100.0
Provides Nutritious Foods						
No	27	14.5	7	3.6	0	0.0
Yes	159	85.5	189	96.4	200	100.0
TOTAL	186	100.0	196	100.0	200	100.0
Avoids Food Waste						
No	105	66.0	16	8.9	10	5.0
Yes	54	34.0	164	91.1	190	95.0
TOTAL	159	100.0	180	100.0	200	100.0
Conserves Fuel Energy						
No	116	73.9	39	22.7	33	16.8
Yes	41	26.1	133	77.3	164	83.2
TOTAL	157	100.0	172	100.0	197	100.0
Uses Three Methods Cooking Vegetables/Fruits						
No	116	69.6	38	21.2	27	13.7
Yes	51	30.4	141	78.8	170	86.3
TOTAL	167	100.0	179	100.0	197	100.0
Uses Three Methods Preparing Meats						
No	108	65.1	48	27.1	37	18.9
Yes	58	34.9	129	72.9	159	81.1
TOTAL	166	100.0	177	100.0	196	100.0
Uses Three Methods Preparing Dairy Products						
No	119	72.1	49	27.4	32	16.3
Yes	46	27.9	130	72.6	164	83.7
TOTAL	165	100.0	179	100.0	196	100.0

\*Practice descriptions have been shortened. Copy of actual checklist in Appendix.

\*\*Total number of responses may vary due to non-responses.

servings needed by family members compared to 169 (84.9 percent) at program exit. One year after graduation, 89.0 percent of the homemakers could accomplish this practice.

Name two foods from each group. Fifty-nine percent of the homemakers could name two foods from each group at program entry compared to 97.5 percent at program exit. One year after program exit all but one homemaker (99.5 percent) indicated they could name two foods from each good group.

Describe recommended serving size. At program entry only 11.8 percent of the homemakers could describe recommended serving size, compared to 79.4 percent at program exit. The data showed that at one year after graduation 82.0 percent of the homemakers could describe recommended serving size.

Name a Vitamin A and C, calcium, and iron food. At program entry only 70 (37.5 percent) of the homemakers could name a food that contained Vitamin A, C, calcium, and iron compared to 158 (80.6 percent) of the homemakers that could name these foods at program exit. One year after graduation 179 (90.4 percent) of the homemakers indicated they could name a Vitamin A, C, calcium, and iron food.

Name a low/high calorie food. At program entry 50.5 percent of the homemakers could name a low or high calorie food compared to 96.0 percent at program exit. One year later the data pointed out that 97.5 percent of the homemakers could still name a low or high calorie food.

### Food Purchase

The seven indicators of knowledge discussed in this subsection are: (1) plans before shopping, (2) stretched food dollar, (3) knows how to obtain food stamps, (4) budgets food resources, (5) uses unit price/cost per serving, (6) uses cheaper food sources, and (7) grows a garden.

Plans before shopping. At the program entry only 44.9 percent of the homemakers planned before shopping, compared to 90.0 percent of the homemakers at program exit who reported they planned before shopping in at least two of the following ways: make a shopping list, write a menu, check food advertisements, or check food supplies in the house. One year after program completion 92.0 percent of the homemakers reported they planned before shopping.

Stretches food dollar. Only 53.3 percent of the homemakers entering the program stretched their food dollars compared to 90.0 percent of the homemakers who indicated that they stretched their food dollars at program exit. One year after program completion 94.0 percent of these homemakers continued to stretch their food dollars.

Knows how to obtain food stamps. Reported data indicated that 86.9 percent of homemakers entering into program knew how to obtain food stamps compared to 94.4 percent of the homemakers knowing how to obtain food stamps at the time of program exit. One year later 96.0 percent of the homemakers who completed the program knew how to obtain food stamps.

Budgets food resources. At program entry 53.2 percent of the homemakers budgeted their food resources so the family had enough food throughout the pay period. At program exit, 88.1 percent of the homemakers reported that they budgeted their food resources compared to 89.5 percent of the homemakers who were visited one year later and reported they continued to budget their food resources.

Uses unit price/cost per serving. At program entry, 14.1 percent of the homemakers used unit price/cost per serving compared to program exit data which indicated that 63.1 percent of the homemakers utilized unit pricing and cost per serving. One year later when homemakers were visited, 74.7 percent of the homemakers completing the program reported they used unit pricing and cost per serving.

Uses cheaper food sources. At program entry, 62.1 percent of the homemakers used cheaper food sources compared to 73.4 percent of the homemakers who used one or more free or cheaper sources of food such as home grown food, wild game, fresh fish, edible plants and berries, or exchange for food at program exit. One year later 85.9 percent of the homemakers who completed the program indicated that they used one or more of these sources to make food available to the family.

Grows a garden. At program entry, 24.9 percent of the homemakers grew a garden for family use compared to 42.2 percent of homemakers who grew a garden at program exit. One year after graduation, 51.2 percent of the homemakers visited raised vegetables for family use.

### Food Storage and Sanitation

The six indicators of knowledge discussed in this subsection are: (1) stores perishable food safely, (2) keeps kitchen clean, (3) stores non-perishable food properly, (4) disposes garbage properly, (5) uses correct food preservation methods, and (6) controls pest in kitchen.

Stores perishable food safely. The collected data revealed that 75.8 percent of the homemakers entering the program stored perishable food safely in order to protect the family food supply, compared to 92.6 percent of the homemakers exiting the program who reported they stored perishable food safely. One year after graduation, 97.0 percent of the homemakers practiced correct storage methods.

Keeps kitchen clean. At program entry 77.3 percent of the homemakers practiced the habit of keeping their kitchens clean compared to 84.1 percent of homemakers at program exit. One year after program exit, 88.5 percent of these homemakers continued to practice keeping their kitchen clean.

Stores non-perishable food properly. At program entrance, 72.7 percent of the homemakers stored non-perishable foods correctly compared to 93.5 percent exiting the program that practiced the proper storage of non-perishable foods. One year later after program exit, only 1.5 percent completing the program did not store non-perishable food properly.

Disposes garbage properly. At program entrance, 73.1 percent of homemakers enrolled disposed their garbage properly, compared to 82.5 percent at program exit. One year after graduation, 89.4 percent of the homemakers disposed of their garbage properly.

Uses correct food preservation method. Twenty percent of homemakers entering the program reported that they used correct food preservation methods for canning, freezing, or drying foods compared to 57.4 percent at program exit. One year after program exit, 71.6 percent of homemakers used correct food preservation methods.

Controls pests in kitchen. At program entry, 64.3 percent of the homemakers did attempt to control pests in the kitchen compared to 73.9 percent at program exit. On the return visit one year later, 85.4 percent of homemakers controlled pests in the kitchen.

#### Food and Meal Planning

The nine indicators of knowledge discussed in this subsection are: (1) schedules meals around family activities, (2) provides servings recommended by food guide, (4) serves iron rich food, (5) provides nutritious snacks, (6) serves whole grains and cereals, (7) serves Vitamin A and C foods, (8) watches food intake of overweight/underweight family members, and (9) provides breakfast.

Schedules meals around family activities. Sixty-seven percent of homemakers entering the program planned meals around family activities, compared to 84.4 percent at program exit. One year after graduation, 94.5 percent of the homemakers planned meals around family activities.

Provides servings recommended by good guide. At program entry, only 15.3 percent of the homemakers provided servings recommended by the food guide, compared to 72.7 percent at program exit. One year later, 81.5 percent of the homemakers continued to provide recommended serving.

Serves a variety of food. At program entry only 29.8 percent of homemakers served a variety of food to their families, compared to 84.4 percent at program exit. One year after graduation, 89.5 percent of the homemakers continued to serve a variety of food to their families.

Serves iron rich food. At the time of program entrance, the data showed that only 25.6 percent of enrolled homemakers served iron rich food compared to 77.7 percent at program exit. One year later the data showed that 78.5 percent of the homemakers served iron rich food.

Provides nutritious snacks. At program entry, only 36.4 percent of the homemakers enrolled provided nutritious snacks for their families compared to 77.8 percent of the homemakers exiting the program. One year after graduation, 83.9 percent of the homemakers that completed the program provided nutritious snacks.

Serves whole grains and cereals. At program entrance, 54.2 percent of homemakers served whole grain bread and cereals, compared to 80.4 percent at program exit. One year after graduation 84.5 percent of the homemakers served whole grains and cereals to their family.

Serves Vitamin A and C foods. At the time of program entrance, only 26.7 percent of the homemakers served Vitamin A and C rich foods to their family, compared to 69.0 percent exiting the program. One year later 84.3 percent of the homemakers completing the program reported they served Vitamin A and C foods.

Watches food intake of overweight/underweight family members. At the time of entry, 40.9 percent of the homemakers watched food intake of family members compared to 72.9 percent at program exit. One year after program graduation, 73.9 percent of homemakers that were revisited indicated they still watch food intake of family members.

Provides breakfast. Data in Table 2 indicated that at program entry, 75.8 percent of the homemakers provide breakfast for the family compared to 90.6 percent at program exit. One year after program exit 93.4 percent of the homemakers graduating from the program provided breakfast for their families.

#### Food Preparation

The eight indicators of knowledge discussed in this subsection are: (1) conserve nutrients, (2) can follow recipe, (3) provides nutritious food, (4) avoids food waste, (5) conserves fuel energy, (6) uses three methods cooking vegetables/fruits, (7) uses three methods preparing meats, and (8) uses three methods in preparing dairy products.

Conserve nutrients. At the time of program entry only 25.5 percent of the homemakers attempted to conserve nutrients in foods during preparation, compared to 79.5 percent at program completion. One year after program completion, 92.4 percent of the homemakers continued to conserve nutrients in food by using small amounts of liquid, avoid rinsing rice and other foods before and after cooking.

Can follow recipe. At program entry 88.8 percent of the homemakers could follow a recipe which included measuring and mixing according to directions and obtaining an acceptable finished product, compared to 97.5 percent at program exit. One year later after program graduation, 99.5 percent of the homemakers could follow a recipe.

Provides nutritious food. At the time of program entry 85.5 percent of homemakers provided nutritious food for their family members compared to 96.4 percent at program exit. One year later after program completion, 100 percent of the homemakers indicated they made an effort to serve nutritional food that the family enjoyed.

Avoids food waste. Thirty-four percent of the homemakers at program entry reported they used all edible parts in order to avoid food waste compared to 91.1 percent at program exit. Ninety-five percent of the homemakers visited one year after program graduation reported they continued to practice various methods in order to reduce food waste.

Conserves fuel energy. At program entry, 26.1 percent of homemakers attempted to conserve fuel energy by baking several things at once, not letting water run needlessly, and by using the range top efficiently, compared to 77.3 percent at program exit. One year after program completion, 83.2 percent of the homemakers continued this practice.

Use three methods cooking vegetables/fruits. At program entry 30.4 percent of the homemakers practiced methods of serving and cooking fruits and vegetables including a low calorie method, compared to 78.8 percent at program exit. One year after graduation, 86.3 percent of the homemakers indicated they continued this practice.

Use three methods preparing meats. At the time of entry, 34.9 percent of the homemakers practiced at least three methods of preparing meat and meat substitutes, including a low calorie method, compared to 72.9 percent at program exit. One year later 81.1 percent of the homemakers that were revisited practiced these methods.

Use three methods preparing dairy products. At program entry 27.9 percent of the homemakers practiced at least three methods of serving or preparing dairy products, including a low calorie method, compared to 72.6 percent at program exit. One year later 83.7 percent of the homemakers that graduated program reported they practiced these methods.

III. RELATIONSHIPS BETWEEN HAVING AN ADULT MALE PRESENT IN THE  
HOME AND THE HOMEMAKERS' INCREASED USE OF FOOD  
BEHAVIOR PRACTICES UPON GRADUATION

Table 3 summarizes findings regarding relationships between the presence of an adult male in the home and the homemakers' increased ability to use each food behavior practice upon graduation. The purpose of this analysis was to determine what influence, if any, the presence of the adult male in the home had on the homemakers' increased knowledge of the food behavior practice. The chi square test was used to determine the strength of the relationship between the independent and dependent variables. Chi square values which achieved the .05 probability level were considered significant. Findings in this section were organized into five subsections: (1) knowledge of nutrition, (2) food purchase, (3) food storage and sanitation, (4) food and meal planning, and (5) food preparation.

Knowledge of Nutrition

The five indicators of knowledge discussed in this subsection are: (1) name food group servings for family members, (2) name two foods from each group, (3) describe recommended serving size, (4) name a Vitamin A, C, calcium, and iron food, and (5) name a low/high calorie food.

Name food group servings for family members. Data in Table 3 indicated that 71.9 percent of the homemakers without an adult male present in the home increased their ability to name food group servings

Table 3. Relationship Between Having an Adult Male Present in the Home and the Homemakers' Knowledge Increase of Food Behavior Practices Upon Graduation

Food Behavior Practices	Adult Male Present in the Home			
	No		Yes	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
<b>KNOWLEDGE OF NUTRITION</b>				
Name Food Group Serving for Family Members				
No Increase	32	28.1	39	45.9
Increase	82	71.9	46	54.1
TOTAL	114	100.0	85	100.0
Statistical Test	$\chi^2 = 5.978; p = 0.015$			
Name Two Foods From Each Group				
No Increase	68	59.6	54	62.8
Increase	46	40.4	32	37.2
TOTAL	114	100.0	86	100.0
Statistical Test	$\chi^2 = 0.093; p = 0.761$			
Describe Recommended Serving Size				
No Increase	29	25.4	37	43.5
Increase	85	74.6	48	56.5
TOTAL	114	100.0	85	100.0
Statistical Test	$\chi^2 = 6.397; p = 0.011$			
Name a Vitamin A, C, Calcium, and Iron				
No Increase	62	54.4	48	58.5
Increase	52	45.6	34	41.5
TOTAL	117	100.0	82	100.0
Statistical Test	$\chi^2 = 0.186; p = 0.666$			
Name Low/High Calorie Food				
No Increase	62	54.9	43	50.6
Increase	51	45.1	42	49.4
TOTAL	113	100.0	85	100.0
Statistical Test	$\chi^2 = 0.206; p = 0.650$			
<b>FOOD PURCHASE</b>				
Plans Before Shopping				
No Increase	58	51.3	60	71.4
Increase	55	48.7	24	28.6
TOTAL	113	100.0	84	100.0
Statistical Test	$\chi^2 = 7.289; p = 0.007$			
Stretch Food Dollars				
No Increase	63	59.4	49	68.1
Increase	43	40.6	23	31.9
TOTAL	106	100.0	72	100.0
Statistical Test	$\chi^2 = 1.022; p = 0.312$			
Knows How to Obtain Food Stamps				
No Increase	101	90.2	70	90.9
Increase	11	9.8	7	9.1
TOTAL	112	100.0	77	100.0
Statistical Test	$\chi^2 = 0.000; p = 1.00$			
Budgets Food Resources				
No Increase	55	54.5	55	79.7
Increase	46	45.5	14	20.3
TOTAL	101	100.0	69	100.0
Statistical Test	$\chi^2 = 10.36; p = 0.001$			
Uses Unit Price Cost Per Serving				
No Increase	43	40.6	48	61.5
Increase	63	59.4	30	38.5
TOTAL	106	100.0	78	100.0
Statistical Test	$\chi^2 = 7.089; p = 0.008$			

Table 3 (Continued)

Food Behavior Practices	Adult Male Present in the Home			
	No		Yes	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
Uses Cheaper Food Sources				
No Increase	84	82.4	60	85.7
Increase	18	17.6	10	14.3
TOTAL	104	100.0	70	100.0
Statistical Test	$\chi^2 = 0.142$ ; $p = 0.707$			
Grows Garden				
No Increase	71	80.7	58	78.4
Increase	17	19.3	16	21.6
TOTAL	88	100.0	74	100.0
Statistical Test	$\chi^2 = 0.028$ ; $p = 0.868$			
FOOD STORAGE AND SANITATION				
Stores Perishable Food Safely				
No Increase	76	76.8	50	80.6
Increase	23	23.2	12	19.4
TOTAL	99	100.0	62	100.0
Statistical Test	$\chi^2 = 0.148$ ; $p = 0.701$			
Keeps Kitchen Clean				
No Increase	94	92.2	55	78.6
Increase	8	7.8	15	21.4
TOTAL	102	100.0	70	100.0
Statistical Test	$\chi^2 = 5.493$ ; $p = 0.019$			
Stores Non-Perishable Food Properly				
No Increase	77	74.0	45	78.9
Increase	27	26.0	12	21.1
TOTAL	104	100.0	57	100.0
Statistical Test	$\chi^2 = 0.253$ ; $p = 0.615$			
Disposes Garbage Properly				
No Increase	86	86.9	41	74.5
Increase	13	13.1	14	25.5
TOTAL	99	100.0	55	100.0
Statistical Test	$\chi^2 = 2.910$ ; $p = 0.088$			
Uses Correct Food Preservation Methods				
No Increase	49	54.4	26	48.1
Increase	41	45.6	28	51.9
TOTAL	90	100.0	54	100.0
Statistical Test	$\chi^2 = 0.314$ ; $p = 0.576$			
Controls Pests in Kitchen				
No Increase	78	80.4	40	72.7
Increase	19	19.6	15	27.3
TOTAL	97	100.0	55	100.0
Statistical Test	$\chi^2 = 0.792$ ; $p = 0.373$			
FOOD AND MEAL PLANNING				
Schedules Meals Around Family Activities				
No Increase	83	77.6	69	82.1
Increase	24	22.4	15	17.9
TOTAL	107	100.0	84	100.0
Statistical Test	$\chi^2 = 0.357$ ; $p = 0.550$			
Provide Servings Recommended by Food Guide				
No Increase	44	41.1	36	44.4
Increase	63	58.9	45	55.6
TOTAL	107	100.0	81	100.0
Statistical Test	$\chi^2 = 0.094$ ; $p = 0.759$			

Table 3 (Continued)

Food Behavior Practices	Adult Male Present in the Home			
	No		Yes	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
Serves a Variety of Food				
No Increase	46	42.2	38	48.7
Increase	63	57.8	40	51.3
TOTAL	109	100.0	78	100.0
Statistical Test	$\chi^2 = 0.539$ ; $p = 0.462$			
Served Iron Rich Food				
No Increase	44	43.1	24	42.1
Increase	58	56.9	33	57.9
TOTAL	102	100.0	57	100.0
Statistical Test	$\chi^2 = 0.000$ ; $p = 1.000$			
Provided Nutritious Snacks				
No Increase	63	61.2	32	47.8
Increase	40	38.8	35	52.2
TOTAL	103	100.0	67	100.0
Statistical Test	$\chi^2 = 2.439$ ; $p = 0.118$			
Served Whole Grains and Cereals				
No Increase	82	75.2	52	67.5
Increase	27	24.8	25	32.5
TOTAL	109	100.0	77	100.0
Statistical Test	$\chi^2 = 0.973$ ; $p = 0.324$			
Served Vitamin A and C Foods				
No Increase	56	52.8	37	58.7
Increase	50	47.2	26	41.3
TOTAL	106	100.0	63	100.0
Statistical Test	$\chi^2 = 0.343$ ; $p = 0.558$			
Watches Food Intake of Overweight/ Underweight Family Members				
No Increase	65	61.9	45	63.4
Increase	40	38.1	26	36.6
TOTAL	105	100.0	71	100.0
Statistical Test	$\chi^2 = 0.002$ ; $p = 0.968$			
Provides Breakfast				
No Increase	79	79.8	65	83.3
Increase	20	20.2	3	16.7
TOTAL	99	100.0	68	100.0
Statistical Test	$\chi^2 = 0.164$ ; $p = 0.685$			
FOOD PREPARATION				
Conserves Nutrients				
No Increase	44	44.0	24	40.0
Increase	56	56.0	36	60.0
TOTAL	100	100.0	60	100.0
Statistical Test	$\chi^2 = 0.109$ ; $p = 0.741$			
Can Follow A Recipe				
No Increase	101	88.6	76	93.8
Increase	13	11.4	5	6.2
TOTAL	114	100.0	81	100.0
Statistical Test	$\chi^2 = 0.985$ ; $p = 0.321$			
Provides Nutritious Food				
No Increase	94	87.9	67	85.9
Increase	13	12.1	11	14.1
TOTAL	107	100.0	78	100.0
Statistical Test	$\chi^2 = 0.028$ ; $p = 0.866$			

Table 3 (Continued)

Food Behavior Practices	Adult Male Present in the Home			
	No		Yes	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
Avoids Food Waste				
No Increase	44	43.1	19	33.9
Increase	58	56.9	37	66.1
TOTAL	102	100.0	56	100.0
	Statistical Test $\chi^2 = 0.923$ ; $p = 0.337$			
Conserves Fuel Energy				
No Increase	46	45.1	21	38.9
Increase	56	54.9	33	61.1
TOTAL	102	100.0	54	100.0
	Statistical Test $\chi^2 = 0.331$ ; $p = 0.565$			
Use Three Methods Cooking Vegetables/Fruits				
No Increase	50	47.2	36	59.0
Increase	56	52.8	25	41.0
TOTAL	106	100.0	61	100.0
	Statistical Test $\chi^2 = 1.727$ ; $p = 0.189$			
Use Three Methods Preparing Meats				
No Increase	66	62.9	36	60.0
Increase	39	37.1	24	40.0
TOTAL	105	100.0	60	100.0
	Statistical Test $\chi^2 = 0.039$ ; $p = 0.844$			
Uses Three Methods Preparing Dairy Products				
No Increase	64	60.4	29	50.0
Increase	42	39.6	29	50.0
TOTAL	106	100.0	58	100.0
	Statistical Test $\chi^2 = 1.249$ ; $p = 0.263$			

\*Some totals will differ due to non-responses.

for family members compared to 54.1 percent of the homemakers having an adult male present. When tested by the chi square test these differences were significant at the .05 level. Therefore, the homemakers' increased use of this practice was significantly related to the presence of an adult male. Homemakers without an adult male present in the home were more likely to increase their knowledge of this practice than those with an adult male present.

Name two foods from each group. Forty-six (40.4 percent) of the homemakers without an adult male present in the home increased their ability to name two foods from each group compared to 37.2 percent of the homemakers having an adult male present. When tested by the chi square test no significance relationship was found. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers without an adult male in the home were no more or less likely to increase their knowledge than those with a male.

Describe the recommended serving size. Findings indicated that 74.6 percent of the homemakers not having an adult male present in the home increased their ability to describe recommended serving sizes compared to 56.5 percent of the homemakers having an adult male present in the home. When tested by the chi square test these differences were significant at the .05 level. Therefore, the homemakers' increased use of this practice was significantly related to the presence of an adult male. Homemakers without an adult male present

in the home were more likely to increase their knowledge of this practice than those with an adult male present.

Name a Vitamin A, C, calcium, and iron food. When compared, 45.6 percent of the homemakers not having an adult male present in the home increased their ability to name a source of Vitamin A, C, calcium, and iron compared to 41.5 percent having an adult male present. The chi square test indicated that there was not a significant relationship at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers not having an adult male present in the home were no more or less likely to increase their knowledge than those homemakers with an adult male present.

Name a low/high calorie food. Data revealed that 45.1 percent of homemakers not having an adult male present in the home showed increases in their ability to name low and high calorie foods compared to 49.4 percent of the homemakers having an adult male present. The data indicated no significance at the .05 level when tested by the chi square test. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers without an adult male in the home were no more or less likely to increase their knowledge than those with a male.

#### Food Purchase

The seven indicators of knowledge discussed in this subsection are: (1) plans before shopping, (2) stretch food dollars, (3) knows

how to obtain food stamps, (4) budgets food resources, (5) uses unit price and cost per serving, (6) uses cheaper food sources, and (7) grows a garden.

Plans before shopping. According to the data, 48.7 percent of the homemakers not having an adult male present in the home showed an increase in their ability to plan before shopping compared to 28.6 percent of the homemakers with an adult male in the home. When tested by the chi square test these differences were significant at the .05 level. Therefore, the homemakers' increased use of this practice was significantly related to the presence of an adult male. Homemakers without an adult male present in the home were more likely to increase their use of this practice than those with a male present.

Stretch food dollars. Data showed that 40.6 percent of the homemakers not having an adult male present increased their ability to stretch their food dollars compared to 31.6 percent of the homemakers having an adult male present. No significant differences were found at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use than those without a male.

Knows how to obtain food stamps. Eleven (9.8 percent) of the homemakers not having an adult male present in the home increased their knowledge in knowing how to obtain food stamps compared to 9.1

percent with an adult male in the home. The chi square test indicated no significant differences when tested at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male in the home were no more or less likely to increase their use than those without a male in the home.

Budgets food resources. Forty-six (45.5 percent) of the homemakers that did not have an adult male present in the home showed an increase in their ability to budget food resources compared to 20.3 percent with an adult male in the home. The chi square test indicated these differences were significant at the .05 level. Therefore, the homemakers' increased use of this practice was significantly related to the presence of an adult male. Homemakers without an adult male present in the home were more likely to increase their use of this practice than those with an adult male present.

Uses unit price/cost per serving. Data indicated that 59.4 percent of the homemakers without an adult male in the home showed increased ability to purchase food in amounts to meet family needs and to get the best buy in terms of unit price and cost per serving compared to 38.5 percent of the homemakers having an adult male in the home. The chi square test indicated a significant relationship when tested at the .05 level. Therefore, the homemakers' increased use of this practice was significantly related to the presence of an adult male. Homemakers without an adult male present in the home

were more likely to increase their use of this practice than those with an adult male present.

Uses cheaper food source. According to the data 17.6 percent of the homemakers not having an adult male present in the home reported they used one or more free or cheaper sources of food such as home grown food, wild game, fresh fish, edible plants and berries, or exchanged work for food which indicated an increase in this practice compared to 14.3 percent of the homemakers with an adult male present. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without an adult male.

Grows a garden. Data revealed that 19.3 percent of the homemakers without an adult male present in the home increased their ability to grow vegetables for family meals compared to 21.6 percent of the homemakers with an adult male present in the home. No significant relationship was found when tested by the chi square test at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without an adult.

### Food Storage and Sanitation

The six indicators of knowledge discussed in this subsection are: (1) stores perishable food safely, (2) keeps kitchen clean, (3) stores non-perishable food properly, (4) disposes garbage properly, (5) uses correct food preservation methods, and (6) control pests in kitchen.

Stores perishable food safely. Data indicated that 23.2 percent of the homemakers without an adult male present in the home increased their ability to store perishable food safely compared to 19.4 percent of the homemakers with an adult male in the home. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

Keeps kitchen clean. Data showed that 21.4 percent of the homemakers with an adult male in the home increased their ability to keep the kitchen appliances, cabinets, utensils, and dishes clean compared to 7.8 percent of the homemakers without an adult male present in the home. When tested by the chi square test these differences were significant at the .05 level. Therefore, the homemakers' increased use of this practice was significantly related to the presence of an adult male. Homemakers with an adult male in the home were more

likely to increase their use of this practice than those without an adult male present.

Stores non-perishable food properly. Twenty-six percent of the homemakers without an adult male in the home reported they used recommended storage methods for non-perishable food compared to 21.1 percent with an adult male present. No significant relationship was found when tested by the chi square test at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male in the home were no more or less likely to increase their use of this practice than those without an adult male.

Disposes garbage properly. According to the data 13.1 percent of the homemakers without an adult male in the home increased their ability to properly dispose of garbage compared to 25.5 percent of the homemakers with a male in the home. No significant relationship was found when tested by the chi square test at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

Uses correct food preservation methods. Data indicated that 45.6 percent of the homemakers without an adult male in the home showed an increase in their ability to use recommended food preservation methods for canning, freezing, or drying compared to 51.9 percent

with an adult male in the home. No significant relationship was indicated when tested by the chi square test at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

Control pests in kitchen. Data showed that 19.6 percent of the homemakers without an adult male present showed an increase in the proper control methods for insects, rodents, and pests in the kitchen compared to 27.3 percent of the homemakers with an adult male in the home. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

#### Food and Meal Planning

The nine indicators of knowledge discussed in this subsection are: (1) schedules meals around family activities, (2) provide servings recommended by food guide, (3) serves a variety of food, (4) serves iron rich food, (5) provides nutritious snacks, (6) serves whole grains and cereals, (7) serves Vitamin A and C foods, (8) watches food intake of overweight and underweight family members, and (9) provides breakfast.

Schedules meals around family activities. Findings indicated that 22.4 percent of the homemakers without an adult male in the home showed an increase in the practice of scheduling meals around activities of family members compared to 17.9 percent of the homemakers with an adult male in the home. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

Provide servings recommended by food guide. Data showed that 58.9 percent of the homemakers with no adult male in the home increased their ability to provide family members with adequate servings in amounts as recommended by the food guide compared to 55.6 percent of the homemakers with an adult male in the home. The chi square test indicated these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers without an adult male in the home were no more or less likely to increase their use of this practice than those with an adult male present.

Serves a variety of foods. Data revealed that 57.8 percent of the homemakers without an adult male in the home increased their ability to serve a variety of food from each food group daily compared

to 51.3 percent of the homemakers with an adult male in the home. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

Serves iron rich food. Approximately 56.9 percent of the homemakers without an adult male present in the home showed an increase in their ability to serve foods each day that were iron rich compared to 57.9 percent with an adult male. No significant relationship was indicated when tested by the chi square test at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

Provides nutritious snacks. Data indicated that 38.8 percent of the homemakers without an adult male in the home increased their ability to offer and provide nutritious snacks when needed by family members compared to 52.2 percent of the homemakers with an adult male present. No significant relationship was indicated when tested by the chi square test at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present

in the home were no more or less likely to increase their use of this practice than those without a male.

Serves whole grains and cereals. Data showed that 24.8 percent of the homemakers without an adult male present in the home increased their ability to serve whole grains and cereals compared to 32.5 percent with a male in the home. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers without an adult male present in the home were no more or less likely to increase their use of this practice than those with an adult male present.

Serves Vitamin A and C foods. Findings indicated that 47.2 percent of the homemakers with an adult male absent from the home showed an increase in their ability to serve Vitamin A and C foods to meet the needs of family members compared to 41.3 percent with an adult male present in the home. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

Watches food intake of overweight/underweight family members. Forty (38.1 percent) of the homemakers with the adult male missing from the home showed an increase in this practice and watched the

food intake of overweight and underweight family members compared to 36.6 percent of the homemakers with the male present. The chi square test indicated no significant differences at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

Provides breakfast. Findings indicated that 20.2 percent of the homemakers without an adult male present in the home increased their skills by providing breakfast for family members compared to 16.7 percent with an adult male present in the home. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

#### Food Preparation

The eight indicators of knowledge discussed in this subsection are: (1) conserve nutrients, (2) can follow recipe, (3) provides nutritious foods, (4) avoids food waste, (5) conserves fuel energy, (6) uses three methods of cooking vegetables/fruits, (7) used three methods preparing meats, and (8) used three methods preparing dairy products.

Conserves nutrients. Fifty-six percent of the homemakers with an adult male absent from the home showed increases in their ability to conserve the nutrient value of foods compared to 60.0 percent of the homemakers with an adult male present in the home. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

Can follow recipe. Findings indicated that 11.4 percent of the homemakers without an adult male present in the home showed increases in their ability to follow a recipe including the mixing and measuring according to directions compared to 6.2 percent of the homemakers with the male present. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

Provides nutritious food. Data showed that 12.1 percent of the homemakers with an adult male missing from the home made an effort to serve nutritious food that the family enjoyed which indicated an increase in this practice compared to 14.1 percent of the homemakers with an adult male present in the home. When tested by the chi square

test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

Avoids food waste. Collected data indicated that 56.9 percent of the homemakers with an adult male gone from the home increased their ability to avoid food waste compared to 66.1 percent with an adult male in the home. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

Conserves fuel energy. Increase in their ability to conserve fuel energy was indicated by 54.9 percent of the homemakers without an adult male present in the home compared to 61.1 percent of the homemakers with an adult male present. No significant differences were indicated when tested by the chi square test at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

Use three methods cooking vegetables/fruits. Findings indicated that 52.8 percent of the homemakers without an adult male present in the home increased their ability to prepare vegetables and fruits using three preparation methods including a low calorie method compared to 41.0 percent with an adult male in the home. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

Use three methods cooking meats. Approximately 37.1 percent of the homemakers without an adult male present in the home increased their ability to prepare and serve meat using three methods including a low calorie method compared to 40.0 percent with an adult male in the home. No significant differences were indicated when tested by the chi square test at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those without a male.

Uses three methods preparing dairy products. Forty-two (39.6 percent) of the homemakers without the presence of an adult male in the home increased their ability to prepare dairy products using three methods including a low calorie method compared to 40.0 percent with an adult male present in the home. No significant differences were

indicated when tested by the chi square test at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the presence of an adult male. Homemakers with an adult male present in the home were no more or less likely to increase their use of this practice than those with a male.

#### IV. RELATIONSHIPS BETWEEN THE NUMBER OF CHILDREN IN THE HOME AND THE HOMEMAKERS' INCREASED USE OF FOOD BEHAVIOR PRACTICES UPON GRADUATION

Table 4 summarizes findings regarding relationships between the number of children in the home and the homemakers' increased ability to use each food behavior practice upon graduation. The purpose of this analysis was to determine what influence, if any, the number of children in the home had on the homemakers knowledge increase of food behavior practice. The 35 food behavior practices were used as the dependent variables while the number of children in the home was used as the independent variable. The number of children in the home were categorized as: (1) three or less, and (2) four or more. The chi square test was used to determine the strength of the relationship between the independent and dependent variables. Chi square values which achieved the .05 probability level were considered significant. Findings in this section were organized into five subsections: (1) knowledge of nutrition, (2) food purchases, (3) food storage and sanitation, (4) food and meal planning, and (5) food preparation.

Table 4. Relationship Between the Number of Children in the Home and the Homemakers' Increased Use of Food Behavior Practices Upon Graduation

Food Behavior Practices	Number of Children in the Home			
	Three or Less		Four or More	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
<b>KNOWLEDGE OF NUTRITION</b>				
Name Food Group Serving for Family Members				
No Increase	58	34.9	13	39.4
Increase	108	65.1	20	60.6
TOTAL	166	100.0	33	100.0
Statistical Test $\chi^2 = 0.083$ ; $p = 0.773$				
Name Two Foods From Each Group				
No Increase	99	59.3	23	69.7
Increase	68	40.7	10	30.3
TOTAL	167	100.0	33	100.0
Statistical Test $\chi^2 = 0.857$ ; $p = 0.355$				
Describe Recommended Serving Size				
No Increase	56	33.7	10	30.3
Increase	110	66.3	23	69.7
TOTAL	166	100.0	33	100.0
Statistical Test $\chi^2 = 0.032$ ; $p = 0.857$				
Name a Vitamin A, C, Calcium, and Iron				
No Increase	91	55.5	19	59.4
Increase	73	44.5	13	40.6
TOTAL	164	100.0	32	100.0
Statistical Test $\chi^2 = 0.044$ ; $p = 0.833$				
Name Low/High Calorie Food				
No Increase	87	52.7	18	54.5
Increase	78	47.3	13	45.5
TOTAL	165	100.0	31	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				
<b>FOOD PURCHASE</b>				
Plans Before Shopping				
No Increase	98	59.8	20	60.6
Increase	66	40.2	13	39.4
TOTAL	164	100.0	33	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				
Stretch Food Dollar				
No increase	96	64.9	16	53.3
Increase	52	35.1	14	46.7
TOTAL	148	100.0	30	100.0
Statistical Test $\chi^2 = 0.970$ ; $p = 0.325$				
Knows How to Obtain Food Stamps				
No Increase	144	90.6	27	90.0
Increase	15	9.4	3	10.0
TOTAL	159	100.0	30	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				
Budgets Food Resources				
No Increase	99	69.7	11	39.3
Increase	43	30.3	17	60.7
TOTAL	142	100.0	28	100.0
Statistical Test $\chi^2 = 8.199$ ; $p = 0.004$				
Uses Unit Price Cost Per Serving				
No Increase	76	50.3	15	45.5
Increase	75	49.7	18	54.5
TOTAL	151	100.0	33	100.0
Statistical Test $\chi^2 = 0.099$ ; $p = 0.752$				

Table 4 (Continued)

Food Behavior Practices	Number of Children in the Home			
	Three or Less		Four or More	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
<b>Uses Cheaper Food Sources</b>				
No Increase	122	83.9	24	82.8
Increase	23	16.1	5	17.2
TOTAL	145	100.0	29	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				
<b>Grows a Garden</b>				
No Increase	108	81.2	21	72.4
Increase	25	18.8	8	27.6
TOTAL	133	100.0	29	100.0
Statistical Test $\chi^2 = 0.656$ ; $p = 0.418$				
<b>FOOD STORAGE AND SANITATION</b>				
<b>Stores Perishable Food Safely</b>				
No Increase	106	79.1	20	74.1
Increase	28	20.9	7	25.9
TOTAL	134	100.0	27	100.0
Statistical Test $\chi^2 = 0.104$ ; $p = 0.747$				
<b>Keeps Kitchen Clean</b>				
No Increase	121	85.2	28	93.3
Increase	21	14.8	2	6.7
TOTAL	142	100.0	30	100.0
Statistical Test $\chi^2 = 0.796$ ; $p = 0.372$				
<b>Stores Non-Perishable Food Properly</b>				
No Increase	102	75.6	20	76.9
Increase	33	24.4	6	23.1
TOTAL	135	100.0	26	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				
<b>Disposes Garbage Properly</b>				
No Increase	103	81.7	24	85.7
Increase	23	18.3	4	14.3
TOTAL	126	100.0	28	100.0
Statistical Test $\chi^2 = 0.050$ ; $p = 0.822$				
<b>Uses Correct Food Preservation Methods</b>				
No Increase	59	50.9	16	57.1
Increase	57	49.1	12	42.9
TOTAL	116	100.0	28	100.0
Statistical Test $\chi^2 = 0.149$ ; $p = 0.699$				
<b>Controls Pests in Kitchen</b>				
No Increase	98	77.8	20	76.9
Increase	28	22.2	6	23.1
TOTAL	126	100.0	26	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				
<b>FOOD AND MEAL PLANNING</b>				
<b>Schedules Meals Around Family Activities</b>				
No Increase	127	79.9	25	78.1
Increase	32	20.1	7	21.9
TOTAL	159	100.0	32	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				
<b>Provide Servings Recommended by Food Guide</b>				
No Increase	64	41.3	16	48.5
Increase	91	58.7	17	51.5
TOTAL	155	100.0	33	100.0
Statistical Test $\chi^2 = 0.319$ ; $p = 0.572$				

Table 4 (Continued)

Food Behavior Practices	Number of Children in the Home			
	Three or Less		Four or More	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
<b>Serves a Variety of Food</b>				
No Increase	68	43.9	16	50.0
Increase	87	56.1	16	50.0
TOTAL	155	100.0	32	100.0
Statistical Test $\chi^2 = 0.193$ ; $p = 0.660$				
<b>Serves Iron Rich Food</b>				
No Increase	57	43.5	11	39.3
Increase	74	56.5	17	60.7
TOTAL	131	100.0	28	100.0
Statistical Test $\chi^2 = 0.039$ ; $p = 0.842$				
<b>Provides Nutritious Snacks</b>				
No Increase	78	54.2	17	65.4
Increase	66	45.8	9	34.6
TOTAL	144	100.0	26	100.0
Statistical Test $\chi^2 = 0.715$ ; $p = 0.398$				
<b>Serves Whole Grains and Cereals</b>				
No Increase	116	74.8	18	58.1
Increase	39	25.2	13	41.9
TOTAL	155	100.0	31	100.0
Statistical Test $\chi^2 = 2.824$ ; $p = 0.092$				
<b>Serves Vitamin A and C Food</b>				
No Increase	76	53.9	17	60.7
Increase	65	46.1	11	39.3
TOTAL	141	100.0	28	100.0
Statistical Test $\chi^2 = 0.206$ ; $p = 0.649$				
<b>Watches Food Intake of Overweight/ Underweight Family Members</b>				
No Increase	90	60.8	20	71.4
Increase	58	39.2	8	28.6
TOTAL	148	100.0	28	100.0
Statistical Test $\chi^2 = 0.725$ ; $p = 0.395$				
<b>Provides Breakfast</b>				
No Increase	122	83.0	22	73.3
Increase	25	17.0	8	26.7
TOTAL	147	100.0	30	100.0
Statistical Test $\chi^2 = 0.962$ ; $p = 0.327$				
<b>FOOD PREPARATION</b>				
<b>Conserves Nutrients</b>				
No Increase	56	42.4	12	42.9
Increase	76	57.6	16	57.1
TOTAL	132	100.0	28	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				
<b>Can Follow a Recipe</b>				
No Increase	153	93.3	24	77.4
Increase	11	6.7	7	22.6
TOTAL	164	100.0	31	100.0
Statistical Test $\chi^2 = 6.060$ ; $p = 0.014$				
<b>Provides Nutritious Food</b>				
No Increase	134	87.0	27	87.1
Increase	20	13.0	4	12.9
TOTAL	154	100.0	31	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				

Table 4 (Continued)

Food Behavior Practices	Number of Children in the Home			
	Three or Less		Four or More	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
Avoids Food Waste				
No Increase	50	38.5	13	46.4
Increase	80	61.5	15	53.6
TOTAL	130	100.0	28	100.0
Statistical Test	$\chi^2 = 0.323$ ; $p = 0.569$			
Conserves Fuel Energy				
No Increase	51	39.5	16	59.3
Increase	78	60.5	11	40.7
TOTAL	129	100.0	28	100.0
Statistical Test	$\chi^2 = 2.786$ ; $p = 0.095$			
Use Three Methods Cooking Vegetables/Fruits				
No Increase	75	54.0	11	39.3
Increase	64	46.0	17	60.7
TOTAL	139	100.0	28	100.0
Statistical Test	$\chi^2 = 1.464$ ; $p = 0.226$			
Use Three Methods Preparing Meats				
No Increase	86	62.8	16	57.1
Increase	51	37.2	12	42.9
TOTAL	137	100.0	28	100.0
Statistical Test	$\chi^2 = 0.119$ ; $p = 0.729$			
Uses Three Methods Preparing Dairy Products				
No Increase	80	58.8	13	46.4
Increase	56	41.2	15	53.6
TOTAL	136	100.0	28	100.0
Statistical Test	$\chi^2 = 0.992$ ; $p = 0.319$			

\*Some totals will differ due to non-responses.

### Knowledge of Nutrition

The five indicators of knowledge discussed in this subsection are: (1) name food group servings for family members, (2) name two foods from each group, (3) describe recommended serving size, (4) name a Vitamin A, C, calcium, and iron food, and (5) name a low/high calorie food.

Name food group servings for family members. Data in Table 4 indicated that 65.1 percent of the homemakers with three or less children in the home increased their ability to name food group servings for family members compared to 60.6 percent of the homemakers having four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Name two foods from each group. Data in Table 4 indicated that 40.7 percent of the homemakers with three or fewer children increased their ability to name two foods from each group compared to 30.3 percent of the homemakers with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Described recommended serving size. Data indicated that 66.3 percent of the homemakers with three or less children in the home increased their ability to describe the recommended serving size of foods for each group compared to 69.7 percent of the homemakers with four or more children in the home. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Name a Vitamin A, C, calcium, and iron food. Data showed that 44.5 percent of the homemakers that had three or less children in the home increased in their ability to name a food containing Vitamin A, C, calcium, and iron food compared to 40.6 percent of the homemakers with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Name a low/high calorie food. Data revealed that 47.3 percent of homemakers that had three or less children in the home increased in their ability to name a low and high calorie food compared to 45.5 percent of the homemakers with four or more children. The data indicated no significance at the .05 level when tested by the chi

square test. Therefore, the homemakers' increased use of this practice was not significantly related to the number of children in the home. Homemakers with three or less children in the home were no more or less likely to increase their use of this practice than those with four or more children.

### Food Purchase

The seven indicators of knowledge discussed in this subsection are: (1) plans before shopping, (2) stretch food dollars, (3) knows how to obtain food stamps, (4) budgets food resources, (5) uses unit price per serving, (6) uses cheaper food sources, and (7) grows a garden.

Plans before shopping. Findings showed that 40.2 percent of the homemakers with three or less children showed an increase in their ability to plan before shopping by two or more of the following ways: made and used a shopping list, wrote a menu, checked food advertisements, and checked food supplies in the house, compared to 39.4 percent of the homemakers with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Stretches food dollar. Approximately 35.1 percent of the homemakers with three or less children shown an increase in their ability

to stretch their food dollar using at least two of the following: compared food prices, used nonfat dry milk, used store brands or plain label products, bought day-old bread, bought specials, and used free or reduced price food, compared to 46.7 percent of the homemakers with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or more children were no more or less likely to increase their use of this practice than those with four or more children.

Knows how to obtain food stamps. Findings indicated that 15 (9.4 percent) of the homemakers with three or less children showed increases in their ability to obtain food stamps compared to 3 (10 percent) with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children. While few increases were found, it should be noted, as shown in Table 4, that 86.9 percent of the homemakers already possessed the knowledge of this food behavior practice at program entry.

Budgets food resources. Forty-three (30.3 percent) of the homemakers with three or less children who budgeted their food resources

so that the family had enough food throughout the month compared to 17 (60.7 percent) of the homemakers with four or more children. When tested by the chi square test, these differences were significant at the .05 level. Therefore, the homemakers' increased use of this practice was significantly related to the number of children in the home. Homemakers with four or more children were more likely to increase their use of this practice than those with three or more children.

Uses unit price/cost per serving. According to the data, 49.7 percent of the homemakers with three or less children who reported they bought food in amounts to meet needs and to get the best buy in terms of unit price and cost per serving compared to 54.5 percent with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with four or more children were no more or less likely to increase their use of this practice than those with three or less children.

Uses cheaper food sources. Findings showed that 16.1 percent of the homemakers with three or less children increased their ability to use one or more free or cheaper sources of food, such as home grown food, wild game, fresh fish, edible plants and berries, or exchange work for food compared to 17.2 percent of the homemakers with four or more children. When tested by the chi square test these

differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Grows a garden. Data indicated that 18.8 percent of the homemakers with three or less children increased their ability to grow a garden in order to stretch their food dollar, compared to 27.6 percent of the homemakers with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with four or more children were no more or less likely to increase their use of this practice than those with three or less children.

#### Food Storage and Sanitation

The six indicators of knowledge discussed in this subsection are: (1) stores perishable food safely, (2) keeps kitchen clean, (3) stores non-perishable food properly, (4) disposes garbage properly, (5) uses correct food preservation methods, and (6) controls pests in kitchen.

Stores perishable food safely. Findings showed that 20.9 percent of the homemakers with three or less children increased their ability to store perishable food safely compared to 25.9 percent of the homemakers with four or more children. When tested by the chi square

test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Keeps kitchen clean. Approximately 14.8 percent of the homemakers with three or less children increased their ability to keep their kitchen clean compared to 6.7 percent of the homemakers with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Stores non-perishable food properly. Thirty-three (24.4 percent) of the homemakers with three or less children increased their ability to store non-perishable food properly compared to 23.1 percent of the homemakers with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Disposes garbage properly. Findings indicated that 18.3 percent of the homemakers with three or less children present in the home increased their ability to dispose of garbage properly compared to 14.3 percent of the homemakers with four or more children in the home. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Uses correct food preservation methods. According to the data, 49.1 percent of the homemakers with three or less children present in the home increased their ability to use recommended food preservation methods for canning, freezing, or drying food compared to 42.9 percent of the homemakers with four or more children in the home. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Controls pests in the kitchen. Findings showed that 22.2 percent of the homemakers with three or less children increased their ability to control pests in the kitchen, compared to 23.1 percent of the homemakers with four or more children. When tested by the chi square

test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

#### Food and Meal Planning

The nine indicators of knowledge discussed in this subsection are: (1) schedules meals around family activities, (2) provide servings recommended by food guide, (3) serves a variety of food, (4) serves iron rich food, (5) provides nutritious snacks, (6) serves whole grains and cereals, (7) serves Vitamin A and C foods, (8) watches food intake of overweight and underweight family members, and (9) provides breakfast.

Schedules meals around family activities. According to data, 20.1 percent of the homemakers with three or less children in the home increased their ability to schedule meals around family activities compared to 21.9 percent of the homemakers with four or more children. No significant differences were found when tested at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the educational level of the homemaker. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Provides servings recommended by food guide. Ninety-one (58.7 percent) of the homemakers with three or less children increased their ability to provide family with servings recommended by food guide compared to 51.5 percent with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Serves a variety of food. Data indicated that 56.1 percent of the homemakers with three or less children showed an increase in their ability to serve a variety of food from each food group daily compared to 50.0 percent with four or more children in the home. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Serves iron rich food. Seventy-four (56.5 percent) of the homemakers with three or less children showed increases in their ability to serve foods each day which were a good source of iron compared to 60.9 percent with four or more children. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related

to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Provides nutritious snacks. Data showed that 45.8 percent of the homemakers with three or less children increased their ability to provide nutritious snacks compared to 34.6 percent of the homemakers with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Serves whole grains and cereals. Thirty-nine (25.2 percent) of the homemakers with three or less children in the home increased their ability to serve whole grains and cereals to their families compared to 41.9 percent with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Serves Vitamin A and C foods. Data showed that 46.1 percent of the homemakers with three or less children in the home increased their ability to serve Vitamin A and C foods compared to 39.3 percent of the homemakers with four or more children in the home. When tested

by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Watches food intake of overweight/underweight family members.

Findings indicated that 39.2 percent of the homemakers with three or fewer children increased their ability to watch the food intake of overweight and underweight family members compared to 28.6 percent with four or more children. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Provides breakfast. Data indicated that 17.0 percent of the homemakers with three or less children increased their ability to plan ways to provide breakfast to the family compared to 26.7 percent of the homemakers with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

### Food Preparation

The eight indicators of knowledge discussed in this subsection are: (1) conserve nutrients, (2) can follow recipe, (3) provides nutritious food, (4) avoids food waste, (5) conserves fuel energy, (6) use three methods cooking vegetables/fruits, (7) use three methods in preparing meats, and (8) use three methods in preparing dairy products.

Conserves nutrients. Data revealed that 57.6 percent of the homemakers with three or less children increased their skills by conserving nutrient value of foods during food preparation compared to 57.1 percent of the homemakers with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Can follow recipe. Data showed that 6.7 percent of the homemakers with three or less children in the home increased their ability to follow a recipe which included measuring and mixing according to directions and obtaining an acceptable finished product compared to 22.6 percent with four or more children. When tested by the chi square test these differences were significant at the .05 level. Therefore, the homemakers' increased use of this practice was related to the number of children in the home. Homemakers with four or

more children were more likely to increase their use of this practice than those with three or less children.

Provides nutritious food. Thirteen percent of the homemakers with three or less children increased their ability to provide nutritious snacks when needed by family members compared to 12.9 percent of the homemakers with four or more children according to data in Table 4. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Avoids food waste. Findings showed that 61.5 percent of the homemakers with three children increased their ability to avoid food waste when preparing food by using all edible parts compared to 53.6 percent with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Conserves fuel energy. Data indicated that 60.5 percent of the homemakers with three or less children increased their ability to conserve fuel energy during food preparation compared to 40.7 percent

with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Use three methods cooking vegetables/fruits. Forty-six percent of the homemakers with three or less children increased their ability to practice three methods of serving and cooking vegetables and fruits compared to 60.7 percent of the homemakers with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

Uses three methods preparing meat. Fifty-one (37.2 percent) of the homemakers with three or less children increased their ability to practice at least three methods of cooking meat or meat substitutes including a low calorie method compared to 42.9 percent of the homemakers with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with four or more

children were no more or less likely to increase their use of this practice than those with three or less children.

Uses three methods preparing dairy products. Findings showed that 41.2 percent of the homemakers with three or less children increased their ability to practice at least three methods of serving and preparing dairy products, including a low calorie method, compared to 53.6 percent of the homemakers with four or more children. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not related to the number of children in the home. Homemakers with three or less children were no more or less likely to increase their use of this practice than those with four or more children.

V. RELATIONSHIPS BETWEEN THE HOMEMAKERS' EDUCATIONAL LEVEL  
AND THEIR INCREASED USE OF FOOD BEHAVIOR  
PRACTICES UPON GRADUATION

Table 5 summarizes findings regarding relationships between the homemakers' educational level and their increased ability to use each food behavior practice upon program graduation. The purpose of this analysis was to determine what influence, if any, the educational level had on the homemakers' knowledge of the food behavior practices. The 35 food behavior practices were used as the dependent variables while the educational levels of the homemakers were used as the independent variable. The educational level of the homemakers were

Table 5. Relationships Between the Homemakers' Education Level and Their Increased Use of Food Behavior Practices Upon Graduation

Food Behavior Practices	Homemakers' Educational Level			
	Eight or Less		Nine or More	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
<b>KNOWLEDGE OF NUTRITION</b>				
Name Food Group Serving for Family Members				
No Increase	33	38.8	38	33.3
Increase	52	61.2	76	66.7
TOTAL	85	100.0	114	100.0
Statistical Test $\chi^2 = 0.423$ ; $p = 0.516$				
Name Two Foods From Each Group				
No Increase	55	64.7	67	58.3
Increase	30	35.3	48	41.7
TOTAL	85	100.0	115	100.0
Statistical Test $\chi^2 = 0.604$ ; $p = 0.437$				
Describe Recommended Serving Size				
No Increase	27	31.8	39	34.2
Increase	58	68.2	75	65.8
TOTAL	85	100.0	114	100.0
Statistical Test $\chi^2 = 0.044$ ; $p = 0.833$				
Name a Vitamin A, C, Calcium, and Iron				
No Increase	50	59.5	60	53.6
Increase	34	40.5	52	46.4
TOTAL	84	100.0	112	100.0
Statistical Test $\chi^2 = 0.470$ ; $p = 0.493$				
Name Low/High Calorie Food				
No Increase	39	47.0	66	57.4
Increase	44	53.0	49	42.6
TOTAL	83	100.0	115	100.0
Statistical Test $\chi^2 = 1.698$ ; $p = 0.193$				
<b>FOOD PURCHASE</b>				
Plans Before Shopping				
No Increase	54	65.1	64	56.1
Increase	29	34.9	50	43.9
TOTAL	77	100.0	114	100.0
Statistical Test $\chi^2 = 1.241$ ; $p = 0.265$				
Stretch Food Dollars				
No Increase	54	70.1	58	57.4
Increase	23	29.9	43	42.6
TOTAL	77	100.0	101	100.0
Statistical Test $\chi^2 = 2.502$ ; $p = 0.114$				
Knows How to Obtain Food Stamps				
No Increase	77	91.7	94	89.5
Increase	7	8.3	11	10.5
TOTAL	84	100.0	105	100.0
Statistical Test $\chi^2 = 0.062$ ; $p = 0.803$				
Budgets Food Resources				
No Increase	47	71.2	63	60.6
Increase	19	28.8	41	39.4
TOTAL	66	100.0	104	100.0
Statistical Test $\chi^2 = 1.561$ ; $p = 0.212$				
Uses Unit Price/Cost Per Serving				
No Increase	47	62.7	44	40.4
Increase	28	37.3	65	59.6
TOTAL	75	100.0	109	100.0
Statistical Test $\chi^2 = 7.969$ ; $p = 0.005$				

Table 5 (Continued)

Food Behavior Practices	Homemakers' Educational Level			
	Eight or Less		Nine or More	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
<b>Uses Cheaper Food Sources</b>				
No Increase	57	81.4	87	85.3
Increase	13	18.6	15	14.7
TOTAL	70	100.0	102	100.0
Statistical Test $\chi^2 = 0.216$ ; $p = 0.642$				
<b>Grows a Garden</b>				
No Increase	64	87.7	65	73.0
Increase	9	12.3	24	27.0
TOTAL	73	100.0	89	100.0
Statistical Test $\chi^2 = 4.433$ ; $p = 0.035$				
<b>FOOD STORAGE AND SANITATION</b>				
<b>Stores Perishable Food Safely</b>				
No Increase	51	73.9	75	81.5
Increase	18	26.1	17	18.5
TOTAL	69	100.0	92	100.0
Statistical Test $\chi^2 = 0.932$ ; $p = 0.334$				
<b>Keeps Kitchen Clean</b>				
No Increase	57	83.8	92	88.5
Increase	11	16.2	12	11.5
TOTAL	68	100.0	104	100.0
Statistical Test $\chi^2 = 0.416$ ; $p = 0.519$				
<b>Stores Non-Perishable Food Properly</b>				
No Increase	47	72.3	75	78.1
Increase	18	27.7	12	21.9
TOTAL	65	100.0	87	100.0
Statistical Test $\chi^2 = 0.433$ ; $p = 0.511$				
<b>Disposes Garbage Properly</b>				
No Increase	50	82.0	77	82.8
Increase	11	18.0	16	17.2
TOTAL	61	100.0	93	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				
<b>Uses Correct Food Preservation Methods</b>				
No Increase	31	50.0	44	53.7
Increase	31	50.0	38	46.3
TOTAL	62	100.0	82	100.0
Statistical Test $\chi^2 = 0.071$ ; $p = 0.789$				
<b>Controls Pests in Kitchen</b>				
No Increase	46	75.4	72	79.1
Increase	15	24.6	19	20.9
TOTAL	61	100.0	91	100.0
Statistical Test $\chi^2 = 0.115$ ; $p = 0.734$				
<b>FOOD AND MEAL PLANNING</b>				
<b>Schedules Meals Around Family Activities</b>				
No Increase	67	82.7	85	77.3
Increase	14	17.3	25	22.7
TOTAL	81	100.0	110	100.0
Statistical Test $\chi^2 = 0.549$ ; $p = 0.459$				
<b>Provide Servings Recommended by Food Guide</b>				
No Increase	33	41.8	47	43.1
Increase	46	58.2	62	56.9
TOTAL	79	100.0	109	100.0
Statistical Test $\chi^2 = 0.001$ ; $p = 0.972$				

Table 5 (Continued)

Food Behavior Practices	Homemakers' Educational Level			
	Eight or Less		Nine or More	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
Serves a Variety of Food				
No Increase	41	49.4	43	41.3
Increase	42	50.6	61	58.7
TOTAL	83	100.0	104	100.0
Statistical Test	$\chi^2 = 0.906; p = 0.341$			
Serves Iron Rich Food				
No Increase	32	48.5	36	38.7
Increase	34	51.5	57	61.3
TOTAL	66	100.0	93	100.0
Statistical Test	$\chi^2 = 1.134; p = 0.287$			
Provides Nutritious Snacks				
No Increase	38	55.9	57	55.9
Increase	30	44.1	45	44.1
TOTAL	68	100.0	102	100.0
Statistical Test	$\chi^2 = 0.000; p = 1.000$			
Serves Whole Grains and Cereals				
No Increase	58	74.4	76	70.4
Increase	20	25.6	32	29.6
TOTAL	78	100.0	108	100.0
Statistical Test	$\chi^2 = 0.187; p = 0.665$			
Serves Vitamin A and C Foods				
No Increase	37	53.6	56	56.0
Increase	32	46.4	44	44.0
TOTAL	69	100.0	100	100.0
Statistical Test	$\chi^2 = 0.022; p = 0.882$			
Watches Food Intake of Overweight/ Underweight Family Members				
No Increase	42	61.8	68	63.0
Increase	26	38.2	40	37.0
TOTAL	68	100.0	108	100.0
Statistical Test	$\chi^2 = 0.000; p = 1.000$			
Provides Breakfast				
No Increase	55	77.5	89	84.0
Increase	16	22.5	17	16.0
TOTAL	71	100.0	106	100.0
Statistical Test	$\chi^2 = 0.794; p = 0.373$			
FOOD PREPARATION				
Conserves Nutrients				
No Increase	32	48.5	36	38.3
Increase	34	51.5	58	61.7
TOTAL	66	100.0	94	100.0
Statistical Test	$\chi^2 = 1.266; p = 0.262$			
Can Follow a Recipe				
No Increase	74	90.2	103	91.2
Increase	8	9.8	10	8.8
TOTAL	82	100.0	113	100.0
Statistical Test	$\chi^2 = 0.000; p = 1.000$			
Provides Nutritious Food				
No Increase	63	84.0	98	89.1
Increase	12	16.0	12	10.9
TOTAL	75	100.0	110	100.0
Statistical Test	$\chi^2 = 0.622; p = 0.430$			

Table 5 (Continued)

Food Behavior Practices	Homemakers' Educational Level			
	Eight or Less		Nine or More	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
Avoids Food Waste				
No Increase	29	46.0	34	35.8
Increase	34	54.0	61	64.2
TOTAL	63	100.0	95	100.0
Statistical Test $\chi^2 = 1.258$ ; $p = 0.262$				
Conserves Fuel Energy				
No Increase	29	46.0	38	40.9
Increase	34	54.0	55	59.1
TOTAL	63	100.0	93	100.0
Statistical Test $\chi^2 = 0.226$ ; $p = 0.635$				
Use Three Methods Cooking Vegetables/Fruits				
No Increase	36	52.2	50	51.0
Increase	33	47.8	48	49.0
TOTAL	69	100.0	98	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				
Use Three Methods Preparing Meats				
No Increase	43	62.3	59	61.5
Increase	26	37.7	37	38.5
TOTAL	69	100.0	96	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				
Use Three Methods Preparing Dairy Products				
No Increase	40	58.8	53	55.2
Increase	28	41.2	43	44.8
TOTAL	68	100.0	96	100.0
Statistical Test $\chi^2 = 0.090$ ; $p = 0.764$				

\*Some totals will differ due to non-responses.

categorized as: (1) eighth grade or less, or (2) ninth grade or more. The chi square test was used to determine the strength of the relationship between the independent and dependent variables. Chi square values which achieved the .05 probability level were considered significant. Findings in this section were organized into five subsections: (1) knowledge of nutrition, (2) food purchase, (3) food storage and sanitation, (4) food and meal planning, and (5) food preparation.

#### Knowledge of Nutrition

The five indicators of knowledge discussed in this subsection are: (1) name food group servings for family members, (2) name two foods from each group, (3) describe recommended serving size, (4) name a Vitamin A, C, calcium, and iron food, and (5) name a low/high calorie food.

Name food group servings for family members. Approximately 61.2 percent of the homemakers with eight years or less of education increased their ability to name food group servings for family members compared to 66.7 percent of the homemakers having nine years or more of education. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less education were no more or less likely to increase their knowledge than those with nine years or more of education.

Name two foods from each group. Thirty (35.3 percent) of the homemakers with eight years or less of education showed an increase in their ability to name two foods in each food group compared to 41.7 percent of the homemakers with nine years or more of education. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less of education were no more or less likely to increase their knowledge of the practice than those with nine years or more of schooling.

Describe recommended serving size. Fifty-eight (68.2 percent) of the homemakers with an eighth grade education or less increased their ability to describe the recommended serving sizes compared to 65.8 percent of the homemakers with nine years or more. No significant differences were found when tested at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the educational level of the homemaker. Homemakers with eight years or less of education were no more or less likely to increase their knowledge than those with nine years or more of education.

Name a Vitamin A, C, calcium, and iron food. Data in Table 5 showed that 40.5 percent of the homemakers with eight years or less of schooling increased their ability to name a Vitamin A, C, calcium, and iron food compared to 46.4 percent of the homemakers with nine

years or more of schooling. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less of education were no more or less likely to increase their knowledge than those with nine years or more of education.

Name a low/high calorie food. Fifty-three percent of the homemakers with eight years or less of education increased in their ability to name one example of a high and low calorie food compared to 42.6 percent of the homemakers with nine years or more of education. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less of education were no more or less likely to increase their knowledge than those with nine years or more of education.

#### Food Purchase

The seven indicators of knowledge discussed in this subsection are: (1) plans before shopping, (2) stretch food dollar, (3) knows how to obtain food stamps, (4) budgets food resources, (5) uses unit price and cost per serving, (6) uses cheaper food sources, and (7) grows a garden.

Plans before shopping. According to the data 34.9 percent of the homemakers with eight years or less of education increased their

ability to plan before shopping compared to 43.9 percent with nine years or more of education. No significant differences were found when tested at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the educational level of the homemaker. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Stretches food dollars. Data indicated that 29.9 percent of the homemakers with eight years or less of education increased their food purchasing skills by stretching their food dollars compared to 42.6 percent of the homemakers with nine years or more of schooling. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' education level. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of schooling.

Knows how to obtain food stamps. Findings showed that 7 (8.3 percent) homemakers with eight years or less of education show increases in their ability to obtain food stamps when needed by family members compared to 11 (10.5 percent) of the homemakers with nine years or more of education. No significant differences were found when tested by chi square test at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the

education level of the homemakers. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Budgets food resources. According to the data 28.8 percent of the homemakers with eight years of education or less increased their ability to budget food resources compared to 39.4 percent with nine years or more of education. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more education.

Uses unit price/cost per serving. Data showed that 37.3 percent of the homemakers with eight years or less of education increased their ability to use unit price and cost per serving compared to 59.6 percent with nine years or more of schooling. When tested by the chi square test, these differences were significant at the .05 level. Therefore, the homemakers' increased use of this practice was significantly related to the homemakers' educational level. Homemakers with nine years or more of education were more likely to increase their use of the practice than those with eight years or less of schooling.

Uses cheaper food sources. Findings indicated that 18.6 percent of the homemakers with eight years or less of schooling increased their food buying skills by using cheaper food sources compared to 14.7 percent with nine years or more of schooling. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Grows a garden. According to the data 12.3 percent of the homemakers with less than nine years of school increased their use of gardens for the family to stretch the food dollar, compared to 27.0 percent with nine years or more of schooling. When tested by the chi square test these differences were significant at the .05 level. Therefore, the homemakers' increased use of this practice was significantly related to the homemakers' educational level. Homemakers with nine years or more of education were more likely to increase their use of this practice than those with eight years or less of education.

### Food Storage and Sanitation

The six indicators of knowledge discussed in this subsection are: (1) stores perishable food safely, (2) keeps kitchen clean,

(3) stores non-perishable food properly, (4) disposes garbage properly, (5) uses correct food preservation methods, and (6) controls pests in kitchen.

Stores perishable food safely. Data revealed that 26.1 percent of the homemakers with eight years or less of schooling increased their food safety skills by storing perishable foods correctly compared to 18.5 percent with nine years or more of schooling. No significant differences were found when tested by the chi square test. Therefore, the homemakers' increased use of this practice was not significantly related to the educational level of the homemakers. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Keeps kitchen clean. Data showed that 16.2 percent of the homemakers with eight years or less of schooling increased their ability to keep their kitchen's clean compared to 11.5 percent with nine years or more of schooling. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Stores non-perishable food properly. Findings indicated that 27.7 percent of the homemakers with eight years or less of education increased their ability to store non-perishable food properly compared to 21.9 percent with nine years or more of education. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Disposes garbage properly. Eighteen percent of the homemakers with eight years or less of education increased their ability to dispose of the garbage properly compared to 17.2 percent with nine years or more of education. No significant differences were found when tested by the chi square test. Therefore, the homemakers' increased use of this practice was not significantly related to the educational level of the homemakers. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Uses correct food preservation methods. Fifty percent of the homemakers with educational training below the eighth grade increased their ability to use correct food preservation methods for canning, freezing, and drying foods compared to 46.3 percent of the homemakers with educational training above the ninth grade. No significant

differences were found when tested by the chi square test. Therefore, the homemakers' increased use of this practice was not significantly related to the educational level of the homemakers. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Controls pests in kitchen. Data showed that 24.6 percent of the homemakers with eight years or less of education increased their ability to control pests in the kitchen compared to 20.9 percent with nine years or more of education. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

#### Food and Meal Planning

The nine indicators of knowledge discussed in this subsection are: (1) schedules meals around family activities, (2) provides servings recommended by food guide, (3) serves a variety of food, (4) serves iron rich food, (5) provides nutritious snacks, (6) serves whole grains and cereals, (7) serves Vitamin A and C foods, (8) watches food intake of overweight and underweight family members, and (9) provides breakfast.

Schedules meals around family activities. Fourteen (17.3 percent) of the homemakers with eight years or less of schooling increased their ability to schedule meals around family activities compared to 22.7 percent of the homemakers with nine years or more of schooling. No significant differences were found when tested by the chi square test at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the educational level of the homemakers. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Provide servings recommended by food guide. Findings showed that 58.2 percent of the homemakers with eight years or less of education increased their ability to provide servings recommended by the food guide compared to 56.9 percent of the homemakers with nine years or more of education. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Serves a variety of foods. Findings indicated that 50.6 percent of the homemakers having eight years or less of education increased their ability to serve a variety of food compared to 58.7 percent of the homemakers having nine years or more of schooling. When tested

by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Serves iron rich food. Findings revealed that 51.5 percent of the homemakers with eight years or less of education increased their ability to serve iron rich food compared to 61.3 percent of the homemakers with nine years or more of education. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Provides nutritious snacks. According to the data 44.1 percent of the homemakers with eight years or less of schooling increased their ability to provide nutritious snacks for family members compared to 44.9 percent with nine years or more of schooling. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less of education were no more

or less likely to increase their ability to provide nutritious snacks than those with nine years or more of education.

Serves whole grains and cereals. Findings showed that 20 (25.6 percent) of the homemakers with eight years or less of education increased their skills in food and meal planning by serving whole grains and cereals to their families compared to 32 (29.6 percent) of the homemakers with nine years or more of education. No significant differences were found when tested by the chi square test. Therefore, the homemakers' increased use of this practice was not significantly related to the educational level of the homemakers. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Watches food intake of overweight/underweight family members. Findings indicated that 38.2 percent of the homemakers with eight or fewer years of schooling increased their knowledge by watching food intake of overweight and underweight family members compared to 37.0 percent of the homemakers with nine years or above of schooling. No significant differences were found when tested by the chi square test. Therefore, the homemakers' increased use of this practice was not significantly related to the educational level of the homemakers. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Provides breakfast. Data indicated that 22.5 percent of the homemakers with eight years or less of education increased their food and meal planning skills by providing breakfast for family members compared to 16.0 percent with nine years or more of education. When tested by the chi square test, these differences were of no significance at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less of education were no more or less likely to increase their skills by providing breakfast for family members.

#### Food Preparation

The eight indicators of knowledge discussed in this subsection are: (1) conserve nutrients, (2) can follow recipe, (3) provides nutritious food, (4) avoids food waste, (5) conserves fuel energy, (6) uses three methods cooking vegetables/fruits, (7) use three methods in preparing meats, and (8) use three methods in preparing dairy products.

Conserves nutrients. Data in Table 5 indicated that 51.5 percent of the homemakers with eight years or less of education increased their ability to conserve nutrients during food preparation compared to 61.7 percent of the homemakers with nine years or more of education. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers'

educational level. Homemakers with eight years or less of education were no more or less likely to increase their ability to conserve nutrients during food preparation.

Can follow recipe. Eight (9.8 percent) of the homemakers with eight years or less of schooling increased their food preparation ability by following a recipe, using correct mixing and measuring techniques in order to produce a suitable end product, compared to 10 (8.8 percent) of the homemakers with nine years or more of schooling. No significant differences were found when tested by the chi square test. Therefore, the homemakers' increased use of this practice was not significantly related to the educational level of the homemakers. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Provides nutritious food. Sixteen percent of the homemakers with eight years or less of education increased their ability to provide nutritious food for family members, compared to 10.9 percent of the homemakers with nine years or more of education. No significant differences were found when tested by the chi square test. Therefore, the homemakers' increased use of this practice was not significantly related to the educational level of the homemakers. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Avoids food waste. Fifty-four percent of the homemakers with eight years or less of education increased their ability to avoid food waste during food preparation compared to 64.2 percent with nine years or more of education. No significant differences were found when tested by the chi square test. Therefore, the homemakers' increased use of this practice was not significantly related to the educational level of the homemakers. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Conserves fuel energy. Fifty-four percent of the homemakers with eight years or less of education increased their ability to conserve fuel energy during food preparation compared to 59.1 percent of the homemakers with nine years or more of education. When tested by chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less of education were no more or less likely to increase their ability to conserve fuel energy during food preparation than those with nine years or more of education.

Uses three methods cooking vegetables/fruit. Data indicated that 47.8 percent of the homemakers with eight years or less of education increased the food preparation skills by using three methods to cook vegetables and fruits compared to 49.0 percent of the homemakers with nine years or more of education. No significant differences

were found when tested by the chi square test. Therefore, the homemakers' increased use of this practice was not significantly related to the educational level of the homemakers. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Uses three methods preparing meats. Findings indicated that 37.7 percent of the homemakers with eight or less years of education increased their ability to prepare meats using three methods including a low calorie method compared to 38.5 percent of the homemakers with nine or more years of education. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' educational level. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

Uses three methods preparing dairy products. Twenty-eight (41.2 percent) of the homemakers with eight or less years of education increased their ability to prepare dairy products using three methods including a low calorie method compared to 44.8 percent of the homemakers with nine or more years of education. No significant differences were found when tested at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to

the educational level of the homemakers. Homemakers with eight years or less of education were no more or less likely to increase their use of this practice than those with nine years or more of education.

VI. RELATIONSHIPS BETWEEN HOMEMAKERS' PLACE OF RESIDENCE  
AND THEIR INCREASED USE OF FOOD BEHAVIOR  
PRACTICES UPON GRADUATION

Table 6 summarizes findings regarding relationships between the homemakers' place of residence and their increased ability to use food behavior practices upon program graduation. The purpose of this analysis was to determine what influence, if any, homemakers' place of residence had on the homemakers' increased use of food behavior practices. The 35 food behavior practices were used as the dependent variable while the homemakers' place of residence was used as the independent variable. The place of residence was categorized as: (1) urban, or (2) rural. The chi square test was used to determine the strength of the relationship between the independent and dependent variables. Values which achieved the .05 probability level were considered significant. Findings in this section were organized into five subsections: (1) knowledge of education, (2) food purchases, (3) food storage and sanitation, (4) food and meal planning, and (5) food preparation.

Knowledge of Nutrition

The five indicators discussed in this subsection are: (1) name food group servings for family members, (2) name two foods from each

Table 6. Relationships Between the Homemakers' Place of Residence and Their Increased Use of Food Behavior Practices Upon Graduation

Food Behavior Practices	Place of Residence			
	Urban		Rural	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
<b>KNOWLEDGE OF NUTRITION</b>				
Name Food Group Serving for Family Members				
No Increase	51	38.1	20	30.8
Increase	83	61.9	45	69.2
TOTAL	134	100.0	65	100.0
Statistical Test $\chi^2 = 0.721$ ; $p = 0.396$				
Name Two Foods From Each Group				
No Increase	86	63.7	36	55.4
Increase	49	36.3	29	44.6
TOTAL	135	100.0	65	100.0
Statistical Test $\chi^2 = 0.951$ ; $p = 0.329$				
Describe Recommended Serving Size				
No Increase	47	35.1	19	29.2
Increase	87	64.9	46	70.8
TOTAL	134	100.0	65	100.0
Statistical Test $\chi^2 = 0.436$ ; $p = 0.509$				
Name a Vitamin A, C, Calcium, and Iron				
No Increase	81	60.9	29	46.0
Increase	52	39.1	34	54.0
TOTAL	133	100.0	63	100.0
Statistical Test $\chi^2 = 3.259$ ; $p = 0.071$				
Name Low/High Calorie Food				
No Increase	74	55.6	31	47.7
Increase	59	44.4	34	52.3
TOTAL	133	100.0	65	100.0
Statistical Test $\chi^2 = 0.811$ ; $p = 0.368$				
<b>FOOD PURCHASE</b>				
Plans Before Shopping				
No Increase	84	63.6	34	52.3
Increase	48	36.4	31	47.7
TOTAL	132	100.0	65	100.0
Statistical Test $\chi^2 = 1.879$ ; $p = 0.170$				
Stretch Food Dollars				
No Increase	74	63.2	38	62.3
Increase	43	36.8	23	37.7
TOTAL	117	100.0	61	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				
Knows How to Obtain Food Stamps				
No Increase	122	93.1	49	84.5
Increase	9	6.9	9	15.5
TOTAL	131	100.0	58	100.0
Statistical Test $\chi^2 = 2.557$ ; $p = 0.109$				
Budgets Food Resources				
No Increase	71	63.4	39	67.2
Increase	41	36.6	19	32.8
TOTAL	112	100.0	58	100.0
Statistical Test $\chi^2 = 0.108$ ; $p = 0.743$				
Uses Unit Price/Cost Per Serving				
No Increase	71	55.9	20	35.1
Increase	56	44.1	37	64.9
TOTAL	127	100.0	57	100.0
Statistical Test $\chi^2 = 6.014$ ; $p = 0.014$				

Table 6 (Continued)

Food Behavior Practices	Place of Residence			
	Urban		Rural	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
Uses Cheaper Food Sources				
No Increase	100	88.5	44	74.6
Increase	13	11.5	15	25.4
TOTAL	113	100.0	59	100.0
Statistical Test	$\chi^2 = 4.536; p = 0.033$			
Grows a Garden				
No Increase	99	83.9	30	68.2
Increase	19	16.1	14	31.8
TOTAL	118	100.0	44	100.0
Statistical Test	$\chi^2 = 3.959; p = 0.047$			
FOOD STORAGE AND SANITATION				
Stores Perishable Food Safely				
No Increase	80	76.9	46	80.7
Increase	24	23.1	11	19.3
TOTAL	104	100.0	57	100.0
Statistical Test	$\chi^2 = 0.127; p = 0.722$			
Keeps Kitchen Clean				
No Increase	100	88.5	49	83.1
Increase	13	11.5	10	16.9
TOTAL	113	100.0	59	100.0
Statistical Test	$\chi^2 = 0.578; p = 0.447$			
Stores Non-Perishable Food Properly				
No Increase	81	76.4	41	74.5
Increase	25	23.6	14	25.5
TOTAL	106	100.0	55	100.0
Statistical Test	$\chi^2 = 0.005; p = 0.945$			
Disposes Garbage Properly				
No Increase	90	88.2	37	71.2
Increase	12	11.8	15	28.8
TOTAL	102	100.0	52	100.0
Statistical Test	$\chi^2 = 5.819; p = 0.016$			
Uses Correct Food Preservation Methods				
No Increase	56	57.1	19	41.3
Increase	42	42.9	27	58.7
TOTAL	98	100.0	46	100.0
Statistical Test	$\chi^2 = 2.549; p = 0.111$			
Controls Pests in Kitchen				
No Increase	80	79.2	38	74.5
Increase	21	20.8	13	25.5
TOTAL	101	100.0	51	100.0
Statistical Test	$\chi^2 = 0.203; p = 0.653$			
FOOD AND MEAL PLANNING				
Schedules Meals Around Family Activities				
No Increase	102	80.3	50	78.1
Increase	25	19.7	14	21.9
TOTAL	127	100.0	64	100.0
Statistical Test	$\chi^2 = 0.027; p = 0.869$			
Provide Servings Recommended by Food Guide				
No Increase	60	46.5	20	33.9
Increase	69	53.5	39	66.1
TOTAL	129	100.0	59	100.0
Statistical Test	$\chi^2 = 2.144; p = 0.143$			

Table 6 (Continued)

Food Behavior Practices	Place of Residence			
	Urban		Rural	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
<b>Serves a Variety of Food</b>				
No Increase	60	45.8	24	42.9
Increase	71	54.2	32	57.1
TOTAL	131	100.0	56	100.0
Statistical Test $\chi^2 = 0.044$ ; $p = 0.834$				
<b>Serves Iron Rich Food</b>				
No Increase	52	48.1	16	31.4
Increase	56	51.9	35	68.6
TOTAL	108	100.0	51	100.0
Statistical Test $\chi^2 = 3.327$ ; $p = 0.068$				
<b>Provides Nutritious Snacks</b>				
No Increase	67	59.8	28	48.3
Increase	45	40.2	30	51.7
TOTAL	112	100.0	58	100.0
Statistical Test $\chi^2 = 1.624$ ; $p = 0.203$				
<b>Serves Whole Grain Cereals</b>				
No Increase	95	76.6	39	62.9
Increase	29	23.4	23	37.1
TOTAL	124	100.0	62	100.0
Statistical Test $\chi^2 = 3.207$ ; $p = 0.073$				
<b>Serves Vitamin A and C Foods</b>				
No Increase	67	56.8	26	51.0
Increase	51	43.2	25	49.0
TOTAL	118	100.0	51	100.0
Statistical Test $\chi^2 = 0.278$ ; $p = 0.598$				
<b>Watches Food Intake of Overweight/ Underweight Family Members</b>				
No Increase	76	67.9	34	53.1
Increase	36	32.1	30	46.9
TOTAL	112	100.0	64	100.0
Statistical Test $\chi^2 = 3.169$ ; $p = 0.075$				
<b>Provides Breakfast</b>				
No Increase	99	85.3	45	73.8
Increase	17	14.7	16	26.2
TOTAL	116	100.0	61	100.0
Statistical Test $\chi^2 = 2.809$ ; $p = 0.094$				
<b>FOOD PREPARATION</b>				
<b>Conserves Nutrients</b>				
No Increase	43	39.1	25	50.0
Increase	67	60.9	25	50.0
TOTAL	110	100.0	50	100.0
Statistical Test $\chi^2 = 1.260$ ; $p = 0.262$				
<b>Can Follow A Recipe</b>				
No Increase	115	88.5	62	95.4
Increase	15	11.5	3	4.6
TOTAL	130	100.0	65	100.0
Statistical Test $\chi^2 = 1.721$ ; $p = 0.189$				
<b>Provides Nutritious Food</b>				
No Increase	107	88.4	54	84.4
Increase	14	11.6	10	15.6
TOTAL	121	100.0	64	100.0
Statistical Test $\chi^2 = 0.303$ ; $p = 0.582$				

Table 6 (Continued)

Food Behavior Practices	Place of Residence			
	Urban		Rural	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
Avoids Food Waste				
No Increase	49	44.5	14	29.2
Increase	61	55.5	34	70.8
TOTAL	110	100.0	48	100.0
Statistical Test $\chi^2 = 2.686$ ; $p = 0.101$				
Conserves Fuel Energy				
No Increase	48	44.4	19	39.6
Increase	60	55.6	29	60.4
TOTAL	108	100.0	48	100.0
Statistical Test $\chi^2 = 0.153$ ; $p = 0.696$				
Uses Three Methods Cooking Vegetables/Fruits				
No Increase	63	54.3	23	45.1
Increase	53	45.7	28	54.9
TOTAL	116	100.0	51	100.0
Statistical Test $\chi^2 = 0.863$ ; $p = 0.353$				
Use Three Methods Preparing Meats				
No Increase	77	66.4	25	51.0
Increase	39	33.6	21	49.0
TOTAL	116	100.0	46	100.0
Statistical Test $\chi^2 = 2.823$ ; $p = 0.093$				
Use Three Methods Preparing Dairy Products				
No Increase	71	61.2	22	45.8
Increase	45	38.8	26	54.2
TOTAL	116	100.0	48	100.0
Statistical Test $\chi^2 = 2.672$ ; $p = 0.102$				

\*Some totals will differ due to non-responses.

group, (3) describe recommended serving size, (4) name a Vitamin A, C, calcium, and iron food, and (5) name a low/high calorie food.

Name food group servings for family members. Findings in Table 6 indicated that 61.9 percent of the homemakers living in urban areas increased their ability to name food group servings for family members compared to 69.2 percent of the homemakers living in rural areas. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their knowledge than those living in rural areas.

Name two foods from each group. About 36.3 percent of the homemakers living in urban areas increased their ability to name two foods from each group compared to 44.6 percent of the homemakers living in rural areas. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their knowledge than those living in rural areas.

Described recommended serving size. Eighty-seven (64.9 percent) of the homemakers living in urban areas increased their ability to describe recommended serving sizes for family members compared to 70.8 percent of the homemakers living in rural areas. When tested

by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their knowledge than those living in rural areas.

Name a Vitamin A, C, calcium, and iron. Findings showed that 39.1 percent of the homemakers living in urban areas increased their ability to name foods containing the Vitamins A and C and the minerals, calcium, and iron, compared to 54.0 percent of the homemakers living in rural areas. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their knowledge than those living in rural areas.

Name a low/high calorie food. According to this data, 44.4 percent of the homemakers living in urban areas increased their ability to name a low or high calorie food compared to 52.3 percent of the homemakers living in rural areas. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their knowledge than those living in rural areas.

### Food Purchase

The seven indicators of knowledge discussed in this subsection are: (1) plans before shopping, (2) stretched food dollars, (3) knows how to obtain food stamps, (4) budget food resources, (5) uses unit and price cost per serving, (6) uses cheaper food sources, and (7) grows a garden.

Plans before shopping. Data in Table 6 showed that 36.4 percent of the homemakers living in urban areas increased their food buying knowledge by planning before shopping compared to 47.7 percent of the homemakers living in rural areas. No significant differences were found when tested by the chi square test at the .05 level. Therefore, the homemakers' increased use of planning before shopping was not related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Stretches food dollars. Data revealed that 36.8 percent of the homemakers living in urban areas increased their ability to stretch their food dollar compared to 37.7 percent living in rural areas. No significant differences were found when tested by the chi square test at the .05 level. Therefore, the homemakers' increased use of stretching the food dollars was not related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Knows how to obtain food stamps. Data indicated that 6.9 percent of the homemakers living in urban areas showed an increase in their ability to obtain food stamps when needed by the family compared to 15.5 percent of the homemakers living in rural areas. No significant differences were found when tested by the chi square test at the .05 level. Therefore, the homemakers' increased use of food stamps was not related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Budgets food resources. Data indicated that 36.6 percent of the homemakers living in urban areas increased their skills to budget food resources so the family would have enough food to last throughout the pay period compared to 32.8 percent of the homemakers living in rural areas. No significant differences were found when tested by the chi square test at the .05 level. Therefore, the homemakers' increased use of budgeting food resources was not related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Uses unit price/cost per serving. Data showed that 44.1 percent of the homemakers living in urban areas increased their skill by using unit price cost per serving compared to 64.9 percent of the homemakers living in rural areas. When tested by the chi square test, these differences were significant at the .05 level. Therefore, the

homemakers' increased use of this practice was significantly related to the place of residence. Homemakers living in rural areas were more likely to increase their skills in using unit pricing and cost per serving than those living in urban areas.

Uses cheaper food sources. Findings indicated that 11.5 percent of the homemakers living in urban areas increased their skills to purchase cheaper food sources compared to 25.4 percent of the homemakers living in rural areas. When tested by the chi square test, these differences were significant at the .05 level. Therefore, the homemakers' increased use of this practice was significantly related to the place of residence. Homemakers living in rural areas were more likely to increase their skills to use cheaper food sources than those in urban areas.

Grows a garden. Data showed that 31.8 percent of the homemakers living in rural areas increased their ability to grow vegetables for family meals in order to stretch the food dollar, compared to 16.1 percent of the homemakers who lived in urban areas. When tested by the chi square test, these differences were significant at the .05 level. Therefore, the homemakers' increased use of this practice was significantly related to the place of residence. Homemakers living in rural areas were more likely to increase in the practice of growing gardens to stretch the food dollar than those living in urban areas.

### Food Storage and Sanitation

The six indicators of knowledge discussed in this subsection are: (1) stores perishable food safely, (2) keeps kitchen clean, (3) stores non-perishable food properly, (4) disposes of garbage properly, (5) uses correct food preservation methods, and (6) controls pests in kitchen.

Stores perishable food safely. Twenty-four (23.1 percent) of the homemakers that resided in urban areas increased their ability to practice proper storage methods for perishable foods compared to 19.3 percent of the homemakers that resided in rural areas. The chi square test showed no significant differences when tested at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers residing in urban areas were no more or less likely to increase their use of this practice than those dwelling in rural areas.

Keeps kitchen clean. Data indicated that 11.5 percent of the homemakers residing in urban areas increased their ability to keep the kitchen, appliances, and equipment clean compared to 16.9 percent of the homemakers residing in rural areas. The chi square test showed no significant differences when tested at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers dwelling in urban areas were no more or less likely to increase their use of this practice than those dwelling in rural areas.

Stores non-perishable food properly. According to the data, 23.6 percent of the homemakers living in urban areas increased their ability to practice correct food storage methods for non-perishable food compared to 25.5 percent that living in rural areas. The chi square test showed no significant differences when tested at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers dwelling in urban areas were no more or less likely to increase their use of this practice than those dwelling in rural areas.

Disposes garbage properly. Data showed that 28.8 percent of the homemakers living in rural areas increased their ability to dispose the family garbage properly compared to 11.8 percent of the homemakers living in urban areas. The chi square test found these differences to be significant when tested at the .05 level. Therefore, the homemakers' increased use of this practice was significantly related to the place of residence. Homemakers living in rural areas were more likely to increase their ability to dispose of garbage properly than those in urban areas.

Uses correct food preservation methods. Data showed that 42.9 percent of the homemakers residing in urban areas increased their ability to use and follow correct food preservation methods for canning, freezing, and drying foods compared to 58.7 percent of the homemakers living in rural areas. The chi square test showed no significant differences when tested at the .05 level. Therefore,

the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers dwelling in urban areas were no more or less likely to increase their use of this practice than those dwelling in rural areas.

Controls pests in kitchen. Twenty-one (20.8 percent) of the homemakers living in urban areas increased their ability to practice proper control of household pests in the kitchen compared to 25.5 percent of the homemakers living in rural areas. The chi square test showed no significant differences when tested at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers dwelling in urban areas were no more or less likely to increase their use of this practice than those dwelling in rural areas.

#### Food and Meal Planning

The nine indicators of knowledge discussed in this subsection are: (1) schedules meals around family activities, (2) provide servings recommended by food guide, (3) serves a variety of food, (4) serves iron rich food, (5) provides nutritious snacks, (6) serves whole grains and cereals, (7) serves Vitamin A and C foods, (8) watches food intake of overweight/underweight family members, and (9) provides breakfast.

Schedules meals around family activities. Data indicated that 19.7 percent of the homemakers living in urban areas showed an increase in this practice of scheduling meals around activities of

family members, compared to 21.9 percent of the homemakers living in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Provide servings recommended by food guide. Data showed that 53.5 percent of the homemakers living in urban areas showed an increase in their ability to provide the recommended servings for family members according to the food guide compared to 66.1 percent of the homemakers living in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Serves a variety of food. Seventy-one (54.2 percent) of the homemakers living in urban areas increased their skills in food and meal planning by serving a variety of food to family members compared to 57.1 percent living in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living

in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Serves iron rich food. Data showed that 51.9 percent of the homemakers living in urban areas increased their skills in food and meal planning by serving iron rich foods to family members compared to 68.6 percent of the homemakers living in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Provides nutritious snacks. Findings showed that 40.2 percent of the homemakers residing in urban areas increased their skill in food and meal planning by providing nutritious snacks when needed for family members, compared to 51.7 percent of the homemakers residing in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Serves whole grains and cereals. Forty-nine percent of the homemakers residing in rural areas increased their ability to serve whole grains and cereals, compared to 43.2 percent of the homemakers

residing in urban areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Serves Vitamin A and C foods. According to the data, 43.2 percent of the homemakers living in urban areas increased their food and meal planning skills by serving Vitamin A and C foods to family members compared to 49.0 percent of the homemakers living in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their knowledge than those living in rural areas.

Watches food intake of overweight/underweight family members. Data indicated that 32.1 percent of the homemakers residing in urban areas increased their efforts to watch the food intake of overweight and underweight family members compared to 46.9 percent of the homemakers residing in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Provides breakfast. Data showed that 14.7 percent of the homemakers living in urban areas increased their skills by providing breakfast for family members compared to 26.2 percent of the homemakers living in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

#### Food Preparation

The eight indicators of knowledge discussed in this subsection are: (1) conserves nutrients, (2) can follow recipe, (3) provides nutritious food, (4) avoids food waste, (5) conserves fuel energy, (6) uses three methods cooking vegetables/fruits, (7) uses three methods preparing meats, and (8) uses three methods preparing dairy products.

Conserves nutrients. Data revealed that 60.9 percent of the homemakers living in urban areas increased their efforts to conserve nutrients during food preparation compared to 50.0 percent living in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Can follow recipe. Fifteen (11.5 percent) of the homemakers living in urban areas increased their ability to read and follow a recipe compared to 4.6 percent of the homemakers living in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Provides nutritious food. Data indicated that 11.6 percent of the homemakers living in urban areas showed increases in their food preparation efforts by providing nutritious food that the family enjoys compared to 15.6 percent of the homemakers living in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Avoids food waste. Findings showed that 55.5 percent of the homemakers living in urban areas displayed an increase in their food preparation skills by preparing food to use edible parts and to avoid waste compared to 70.8 percent of the homemakers living in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased

use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Conserves fuel energy. Data indicated that 55.6 percent of the homemakers living in urban areas increased their attempts to conserve fuel energy in cooking and food handling, compared to 60.4 percent of the homemakers living in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their knowledge than those living in rural areas.

Uses three methods cooking vegetables/fruits. About 45.7 percent of the homemakers living in urban areas increased their practices of preparing, cooking, and serving vegetables and fruits, including a low calorie method, compared to 54.9 percent of the homemakers living in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Uses three methods preparing meats. Data indicated that 33.6 percent of the homemakers living in urban areas increased their food preparation methods for meats compared to 49.0 percent living in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

Uses three methods preparing dairy products. Findings showed that 38.8 percent of the homemakers living in urban areas increased their food preparation methods for preparing dairy products, including a low calorie method, compared to 54.2 percent living in rural areas. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the place of residence. Homemakers living in urban areas were no more or less likely to increase their use of this practice than those living in rural areas.

VII. RELATIONSHIPS BETWEEN THE HOMEMAKERS' MONTHLY INCOME  
AND THEIR INCREASED USE OF FOOD BEHAVIOR  
PRACTICES UPON GRADUATION

Table 7 summarizes findings regarding relationships between the homemakers' monthly income and their increased ability to use each

Table 7. Relationships Between the Homemakers' Monthly Income and Their Increased Use of Food Behavior Practices Upon Graduation

Food Behavior Practices	Monthly Income			
	Under \$315		Over \$315	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
<b>KNOWLEDGE OF NUTRITION</b>				
Name Food Group Serving for Family Members				
No Increase	34	31.8	37	40.2
Increase	73	68.2	55	59.8
TOTAL	107	100.0	92	100.0
Statistical Test $\chi^2 = 1.190$ ; $p = 0.275$				
Name Two Food From Each Group				
No Increase	62	57.9	60	64.5
Increase	45	42.1	33	35.5
TOTAL	107	100.0	93	100.0
Statistical Test $\chi^2 = 0.648$ ; $p = 0.421$				
Describe Recommended Serving Size				
No Increase	34	31.8	32	34.8
Increase	73	68.2	60	65.2
TOTAL	107	100.0	92	100.0
Statistical Test $\chi^2 = 0.893$ ; $p = 0.766$				
Name a Vitamin A, C, Calcium, and Iron				
No Increase	64	59.8	46	51.7
Increase	43	40.2	43	48.3
TOTAL	107	100.0	89	100.0
Statistical Test $\chi^2 = 0.994$ ; $p = 0.319$				
Name Low/High Calorie Food				
No Increase	52	49.1	53	57.6
Increase	54	50.9	39	42.4
TOTAL	106	100.0	92	100.0
Statistical Test $\chi^2 = 1.123$ ; $p = 0.289$				
<b>FOOD PURCHASE</b>				
Plans Before Shopping				
No Increase	54	51.4	64	69.6
Increase	51	48.6	28	30.4
TOTAL	105	100.0	92	100.0
Statistical Test $\chi^2 = 5.981$ ; $p = 0.015$				
Stretch Food Dollars				
No Increase	61	60.4	51	66.2
Increase	40	39.6	26	33.8
TOTAL	101	100.0	77	100.0
Statistical Test $\chi^2 = 0.413$ ; $p = 0.521$				
Knows How to Obtain Food Stamps				
No Increase	95	90.5	76	90.5
Increase	10	9.5	8	9.5
TOTAL	105	100.0	84	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				
Budgets Food Resources				
No Increase	49	52.7	61	79.2
Increase	44	47.3	16	20.8
TOTAL	93	100.0	77	100.0
Statistical Test $\chi^2 = 11.85$ ; $p = 0.001$				

Table 7 (Continued)

Food Behavior Practices	Monthly Income			
	Under \$315		Over \$315	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
<b>Uses Unit Price Cost Per Serving</b>				
No Increase	48	48.5	43	50.6
Increase	51	51.5	42	49.4
TOTAL	99	100.0	85	100.0
Statistical Test $\chi^2 = 0.019$ ; $p = 0.891$				
<b>Uses Cheaper Food Sources</b>				
No Increase	76	79.2	68	89.5
Increase	20	20.8	8	10.5
TOTAL	96	100.0	76	100.0
Statistical Test $\chi^2 = 2.593$ ; $p = 0.109$				
<b>Grows Garden</b>				
No Increase	72	84.7	57	74.0
Increase	13	15.3	20	26.0
TOTAL	85	100.0	77	100.0
Statistical Test $\chi^2 = 2.221$ ; $p = 0.136$				
<b>FOOD STORAGE AND SANITATION</b>				
<b>Stores Perishable Food Safely</b>				
No Increase	67	72.8	59	85.5
Increase	25	27.2	10	14.5
TOTAL	92	100.0	69	100.0
Statistical Test $\chi^2 = 3.019$ ; $p = 0.082$				
<b>Keeps Kitchen Clean</b>				
No Increase	87	91.6	62	80.5
Increase	8	8.4	15	19.5
TOTAL	95	100.0	77	100.0
Statistical Test $\chi^2 = 3.587$ ; $p = 0.058$				
<b>Stores Non-Perishable Food Properly</b>				
No Increase	69	71.1	53	82.8
Increase	28	28.9	11	17.2
TOTAL	97	100.0	64	100.0
Statistical Test $\chi^2 = 2.264$ ; $p = 0.132$				
<b>Disposes Garbage Properly</b>				
No Increase	77	87.5	50	75.8
Increase	11	12.5	16	24.2
TOTAL	88	100.0	66	100.0
Statistical Test $\chi^2 = 2.830$ ; $p = 0.092$				
<b>Uses Correct Food Preservation Methods</b>				
No Increase	45	52.3	30	51.7
Increase	41	47.7	28	48.3
TOTAL	86	100.0	58	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				
<b>Controls Pests in Kitchen</b>				
No Increase	74	81.3	44	72.1
Increase	17	18.7	17	27.9
TOTAL	91	100.0	61	100.0
Statistical Test $\chi^2 = 1.286$ ; $p = 0.257$				
<b>FOOD AND MEAL PLANNING</b>				
<b>Schedules Meals Around Family Activities</b>				
No Increase	79	79.0	73	80.2
Increase	21	21.0	18	19.8
TOTAL	100	100.0	91	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 0.977$				

Table 7 (Continued)

Food Behavior Practices	Monthly Income			
	Under \$315		Over \$315	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
Provide Servings Recommended by Food Guide				
No Increase	45	44.6	35	40.2
Increase	56	55.4	52	59.8
TOTAL	101	100.0	87	100.0
Statistical Test $\chi^2 = 0.203$ ; $p = 0.653$				
Serves a Variety of Food				
No Increase	46	44.2	38	45.8
Increase	58	55.8	45	54.2
TOTAL	104	100.0	83	100.0
Statistical Test $\chi^2 = 0.004$ ; $p = 0.949$				
Serves Iron Rich Food				
No Increase	42	43.8	26	41.3
Increase	54	56.2	37	58.7
TOTAL	96	100.0	63	100.0
Statistical Test $\chi^2 = 0.021$ ; $p = 0.885$				
Provides Nutritious Snacks				
No Increase	63	66.3	32	42.7
Increase	32	33.7	43	57.3
TOTAL	95	100.0	75	100.0
Statistical Test $\chi^2 = 8.573$ ; $p = 0.004$				
Serves Whole Grains and Cereals				
No Increase	77	77.8	57	65.5
Increase	22	22.2	30	34.5
TOTAL	99	100.0	87	100.0
Statistical Test $\chi^2 = 2.874$ ; $p = 0.090$				
Serves Vitamin A and C Foods				
No Increase	54	54.5	39	55.7
Increase	45	45.5	31	44.3
TOTAL	99	100.0	70	100.0
Statistical Test $\chi^2 = 0.000$ ; $p = 1.000$				
Watches Food Intake of Overweight/ Underweight Family Members				
No Increase	57	60.0	53	65.4
Increase	38	40.0	28	34.6
TOTAL	95	100.0	81	100.0
Statistical Test $\chi^2 = 0.343$ ; $p = 0.558$				
Provides Breakfast				
No Increase	7	78.9	73	83.9
Increase	19	21.1	14	16.1
TOTAL	26	100.0	87	100.0
Statistical Test $\chi^2 = 0.441$ ; $p = 0.507$				
FOOD PREPARATION				
Conserves Nutrients				
No Increase	45	47.4	23	35.4
Increase	50	52.6	42	64.6
TOTAL	95	100.0	65	100.0
Statistical Test $\chi^2 = 1.804$ ; $p = 0.179$				
Can Follow a Recipe				
No Increase	93	87.7	84	94.4
Increase	13	12.3	5	5.6
TOTAL	106	100.0	89	100.0
Statistical Test $\chi^2 = 1.819$ ; $p = 0.177$				

Table 7 (Continued)

Food Behavior Practices	Monthly Income			
	Under \$315		Over \$315	
	Number* Responses	Percent Responses	Number* Responses	Percent Responses
Provides Nutritious Food				
No Increase	85	86.7	76	87.4
Increase	13	13.3	11	12.6
TOTAL	98	100.0	87	100.0
Statistical Test	$\chi^2 = 0.000$ ; $p = 1.000$			
Avoids Food Waste				
No Increase	38	39.6	25	40.3
Increase	58	60.4	37	59.7
TOTAL	96	100.0	62	100.0
Statistical Test	$\chi^2 = 0.000$ ; $p = 1.000$			
Conserves Fuel Energy				
No Increase	43	44.8	24	40.0
Increase	53	55.2	36	60.0
TOTAL	96	100.0	60	100.0
Statistical Test	$\chi^2 = 0.178$ ; $p = 0.673$			
Use Three Methods Cooking Vegetables/Fruits				
No Increase	53	52.0	33	50.8
Increase	49	48.0	32	49.2
TOTAL	102	100.0	65	100.0
Statistical Test	$\chi^2 = 0.000$ ; $p = 1.000$			
Use Three Methods Preparing Meats				
No Increase	65	64.4	37	57.8
Increase	36	35.6	27	42.2
TOTAL	101	100.0	64	100.0
Statistical Test	$\chi^2 = 0.461$ ; $p = 0.497$			
Use Three Methods Preparing Dairy Products				
No Increase	58	56.9	35	56.5
Increase	44	43.1	27	43.5
TOTAL	102	100.0	62	100.0
Statistical Test	$\chi^2 = 0.000$ ; $p = 1.000$			

\*Some totals will differ due to non-responses.

food behavior practice upon graduation. The purpose of this analysis was to determine what influence, if any, the monthly income had on the homemakers' increased use of the food behavior practices. The 35 food behavior practices were used as the dependent variable while the homemakers' monthly income was used as the independent variable. The monthly income was categorized as: (1) under \$315 per month, and (2) over \$315 per month. The chi square test was used to determine the strength of the relationship between the independent and dependent variables. Chi square values which achieved the .05 probability level were considered significant. Findings in this section were organized into five subsections: (1) knowledge of nutrition, (2) food purchase, (3) food storage and sanitation, (4) food and meal planning, and (5) food preparation.

#### Knowledge of Nutrition

The five indicators discussed in this subsection are: (1) name food group servings for family members, (2) name two foods from each group, (3) describe recommended serving size, (4) name a Vitamin A, C, calcium, and iron food, and (5) name a low/high calorie food.

Name food group servings for family members. Data in Table 7 showed that 63.2 percent of the homemakers with a monthly income of less than \$315 increased their ability to name food group servings for family members compared to 59.8 percent of the homemakers having a monthly income over \$315. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related

to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Name two foods from each group. Data showed that 42.1 percent of the homemakers with a monthly income of less than \$315 increased their ability to name two foods from each group compared to 35.5 percent of the homemakers having a monthly income over \$315. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Described recommended serving size. Findings indicated that 68.2 percent of the homemakers with a monthly income of less than \$315 increased their ability to describe recommended serving sizes for family members compared to 65.2 percent of the homemakers having a monthly income over \$315. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their knowledge than those with a higher income.

Name a Vitamin A, C, calcium, and iron food. Forty-three (40.2 percent) of the homemakers with a monthly income of less than \$315 increased their ability to name a Vitamin A, C, calcium, and iron rich food compared to 48.3 percent of the homemakers having a monthly income over \$315. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Name a low/high calorie food. According to the data 50.9 percent of the homemakers with a monthly income of less than \$315 increased their ability to name a low and high calorie food compared to 42.9 percent of the homemakers having a monthly income over \$315. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

### Food Purchase

The seven indicators of knowledge discussed in this subsection are: (1) plans before shopping, (2) stretches food dollars, (3) knows how to obtain food stamps, (4) budget food resources, (5) uses unit price and cost per serving, (6) uses cheaper food sources, and (7) grows a garden.

Plans before shopping. Data showed that 48.6 percent of the homemakers with monthly incomes under \$315 increased their food buying knowledge by planning before shopping compared to 30.4 percent with incomes over \$315. When tested by the chi square test, these differences were significant at the .05 level. Therefore, the homemakers' increased use of this practice was significantly related to the homemakers' monthly income. Homemakers with a lower income level were more likely to increase their use of this practice than those with a higher income.

Stretches food dollars. Findings indicated that 39.6 percent of the homemakers increased their ability and skills to stretch the food dollar compared to 33.8 percent of the homemakers with incomes over \$315. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Knows how to obtain food stamps. Ten (9.5 percent) of the homemakers with monthly incomes that were both over and under \$315 increased their knowledge on how to obtain food stamps. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly

income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Budgets food resources. Data revealed that 47.3 percent of the homemakers with incomes under \$315 per month increased their ability to budget their food resources compared to 20.8 percent of the homemakers with incomes over \$315. When tested by the chi square test, these differences were significant at the .05 level. Therefore, the homemakers' increased use of this practice was significantly related to the homemakers' monthly income. Homemakers with the lower monthly income were more likely to increase their use of this practice than those with the higher monthly income.

Uses unit price/cost per serving. Findings showed that 51.5 percent of the homemakers having monthly incomes under \$315 per month increased their skills of using unit price and cost per serving in order to stretch their food dollar compared to 49.4 percent of the homemakers having monthly incomes over \$315. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Uses cheaper food sources. Findings revealed that 20.8 percent of the homemakers with an income under \$315 per month increased their

usage of cheaper food sources by using wild game, plants, and berries, home grown food and fish, compared to 10.5 percent of the homemakers having monthly incomes over \$315. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Grows a garden. Data showed that 15.3 percent of the homemakers that had incomes of less than \$315 per month increased their skills in gardening by growing vegetables for family use compared to 26.0 percent with incomes over \$315. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

#### Food Storage and Sanitation

The six indicators of knowledge discussed in this subsection are: (1) stores perishable food safely, (2) keeps kitchen clean, (3) stores non-perishable food properly, (4) disposes of garbage properly, (5) uses correct food preservation methods, and (6) controls pests in kitchen.

Stores perishable food safely. According to data 27.2 percent of the homemakers with incomes under \$315 per month improved their food storage practices by increasing their knowledge of storing perishable food safely compared to 14.5 percent of the homemakers with incomes over \$315. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Keeps kitchen clean. Findings showed that 8.4 percent of the homemakers with incomes under \$315 per month showed increases in their ability to keep their kitchen clean compared to 19.5 percent of the homemakers with incomes over \$315 per month. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Stores non-perishable food properly. Data indicated that 28.9 percent of the homemakers whose monthly incomes were less than \$315 per month showed an increase in their ability to store non-perishable food properly compared to 17.2 percent of the homemakers whose monthly incomes were over \$315. When tested by the chi square test, these

differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Disposes garbage properly. Eleven (12.5 percent) of the homemakers with monthly incomes of less than \$315 increased their efforts to dispose of garbage properly compared to 24.2 percent with monthly incomes over \$315. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Uses correct food preservation methods. Findings indicated that 47.7 percent of the homemakers with monthly incomes below \$315 per month increased their food preservation skills by using the correct food preservation methods for canning, freezing, and drying compared to 48.3 percent of the homemakers with monthly incomes over \$315. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Controls pests in kitchen. Data in Table 7 showed that 18.7 percent of the homemakers with a monthly income below \$315 increased in their ability to implement proper control methods for insects, rodents, and pests compared to 27.9 percent of the homemakers with a monthly income above \$315. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

#### Food and Meal Planning

The nine indicators of knowledge discussed in this subsection are: (1) schedules meals around family activities, (2) provides servings recommended by food guide, (3) serves a variety of food, (4) serves iron rich food, (5) provides nutritious snacks, (6) serves whole grains and cereals, (7) serves Vitamin A and C foods, (8) watches food intake of overweight/underweight family members, and (9) provides breakfast.

Schedules meals around family activities. Twenty-one percent of the homemakers with monthly incomes of less than \$315 increased their ability to schedule meals around family activities, according to data in Table 7, compared to 19.8 percent of the homemakers with monthly incomes over \$315. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly

related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Provides servings recommended by food guide. Data indicated that 55.4 percent of the homemakers with an income of less than \$315 per month increased their ability to provide servings recommended by the food guide compared to 59.8 percent of the homemakers with an income over \$315. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Serves a variety of food. Data revealed that 55.8 percent of the homemakers with a monthly income under \$315 per month increased their ability to serve a variety of food for their family compared to 54.2 percent of the homemakers with a monthly income over \$315. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Serves iron rich food. Fifty-four (56.2 percent) of the homemakers with monthly incomes below \$315 increased their ability to serve iron rich food for family members compared to 58.7 percent of the homemakers with a monthly income over \$315. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Provides nutritious snacks. Findings showed that 57.3 percent of the homemakers whose monthly incomes were over \$315 per month increased their ability to provide nutritious snacks for family members compared to 33.7 percent of the homemakers whose monthly incomes were less than \$315 per month. When tested by the chi square test, these differences were significant at the .05 level. Therefore, the homemakers' increased use of this practice was significantly related to the homemakers' monthly income. Homemakers with the higher monthly income were more likely to increase their use of this practice than those with the lower monthly income.

Serves whole grains and cereals. Twenty-two (22.2 percent) of the homemakers with monthly incomes of \$315 or less increased their food and meal planning practices by serving whole grains and cereals to their family compared to 34.5 percent of the homemakers with monthly incomes over \$315. When tested by the chi square test these differences

were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Watches food intake of overweight/underweight family members.

Forty percent of the homemakers with monthly incomes under \$315 per month increased their ability to watch food intake of overweight and underweight family members compared to 34.6 percent of the homemakers with incomes over \$315 per month. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Provides breakfast. Nineteen (21.1 percent) of the homemakers with incomes under \$315 per month increased their ability to provide breakfast for their families compared to 16.1 percent of the homemakers with incomes over \$315. When tested by the chi square test, these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

### Food Preparation

The eight indicators of knowledge discussed in this subsection are: (1) conserves nutrients, (2) can follow recipe, (3) provides nutritious food, (4) avoids food waste, (5) conserves fuel energy, (6) uses three methods cooking vegetables/fruits, (7) uses three methods preparing meats, and (8) uses three methods preparing dairy products.

Conserves nutrients. Fifty (52.6 percent) of the homemakers that had monthly incomes lower than \$315 per month increased their ability to conserve nutrients when preparing food compared to 64.6 percent of the homemakers that had monthly incomes higher than \$315. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Can follow recipe. According to the data, 12.3 percent of the homemakers whose monthly incomes were below \$315 per month improved their ability to follow a recipe compared to 5.6 percent of the homemakers whose monthly incomes were above \$315. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income.

Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Provides nutritious food. Data showed that 13.3 percent of the homemakers that had monthly incomes under \$315 per month increased their ability to provide nutritious food for family members compared to 12.6 percent of the homemakers that had monthly incomes over \$315. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Avoids food waste. Data indicated that 60.4 percent of the homemakers whose monthly incomes were less than \$315 increased their ability to avoid food waste compared to 59.7 percent whose monthly incomes were over \$315 per month. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Conserves fuel energy. Findings revealed that 55.2 percent of the homemakers that had a monthly income of less than \$315 per month increased their ability to conserve fuel energy during food preparation

compared to 60.0 percent of the homemakers that had a monthly income over \$315. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Uses three methods cooking vegetables/fruits. Forty-eight percent of the homemakers whose monthly incomes were less than \$315 per month increased their ability to use three methods for cooking vegetables and fruits compared to 49.2 percent of the homemakers whose monthly incomes were greater than \$315 per month. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Uses three methods preparing meats. Data showed that 35.6 percent of the homemakers with monthly incomes below \$315 per month increased their ability to use three methods for preparing meats including a low calorie method compared to 42.2 percent of the homemakers with monthly incomes above \$315 per month. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not

significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

Uses three methods preparing dairy products. Forty-four (43.1 percent) of the homemakers having a monthly income under \$315 per month increased their ability to prepare dairy products using three methods including a low calorie method compared to 43.5 percent of the homemakers having monthly incomes over \$315. When tested by the chi square test these differences were not significant at the .05 level. Therefore, the homemakers' increased use of this practice was not significantly related to the homemakers' monthly income. Homemakers with a lower income level were no more or less likely to increase their use of this practice than those with a higher income.

## CHAPTER IV

### SUMMARY OF MAJOR FINDINGS, IMPLICATIONS, AND RECOMMENDATIONS

#### I. PURPOSE AND SPECIFIC OBJECTIVES

##### Purpose

The purpose of this study was to characterize selected Tennessee EFNEP homemakers as to their personal and family characteristics, their use of selected food behavioral food practices, and to determine the relationships among the variables.

The specific objectives of the study were:

1. To characterize selected Tennessee EFNEP homemakers and their use of food behavior practices at program entrance, exit, and one year after program exit.
2. To determine the relationships between having an adult male present in the home and the homemakers' increased use of food behavior practices upon graduation.
3. To determine the relationships between the number of children in the home and the homemakers' increased use of food behavior practices upon graduation.
4. To determine the relationships between the educational level of the homemakers and the homemakers' increased use upon graduation.
5. To determine the relationships the place of residence and the homemakers' increased use of food behavior practices upon graduation.

6. To determine the relationships between the monthly income and the homemakers increased use of food behavior practices upon graduation.

## II. METHODS AND PROCEDURES

This section describes the methods and procedures used in obtaining data for this study. The research data used in this study were collected by program assistants as interviewers. The purpose in the selection of this comparative research method was to describe personal and socioeconomic factors, food practices, and food related behaviors of selected graduated homemakers who were enrolled in EFNEP in Dyer, Gibson, Henry, and Shelby Counties in District One of West Tennessee. This research was seeking to determine if EFNEP homemakers increased their use of 35 food behavioral practices while participating in the program.

The primary instruments used in the study were the EFNEP Family Record and the Food Behavior Checklist. Data from the Family Record Form and the Food Behavior Checklist were recorded on code sheets and processed for computer analysis. Computations were made by the University of Tennessee Computer Center using the SPSS-X package.

Responses to survey questions were summarized using means and frequency counts of homemakers' responses regarding their characteristics and the use of selected practices. The chi square test was used to determine the strength of relationships between dependent and independent variables. Chi square values achieving the 0.05 level of probability level were judged to be significant.

### III. MAJOR FINDINGS

#### Personal and Family Characteristics of Selected Tennessee EFNEP Homemakers in District One

Findings indicated that 57 percent of the homemakers had an adult male present in the home and 43 percent were without an adult male in the home.

Of the homemakers surveyed 35 percent were over 35 years of age, 33 percent were between the ages of 26 and 34 years, and 32 percent were 25 years and under.

Data revealed that 57.5 percent of the homemakers had nine years or more of education and 42.5 percent had eight years or less.

Findings indicated that 42 percent of the homemakers were black, 53.5 percent were white, and 4.5 percent were of another ethnic background.

Data indicated that 20.9 percent of the homemakers received WIC and 39 percent of the homemakers received all types of public assistance.

Data pointed out that over 83 percent of the homemakers had three or less children.

The data revealed that over 67 percent of the homemakers lived in urban areas.

Of the homemakers surveyed, over 53.5 percent had monthly incomes of less than \$315.

Comparison of Homemakers' Use of Food Behavior Practices  
at Program Entry, Exit, and One Year After Program Exit

Homemakers who graduated from the program showed increases in all 35 food behavior practices. One year after program exit homemakers continued to maintain and improve behavior practices in all 35 areas.

Relationships Between Having an Adult Male Present in  
the Home and the Homemakers' Increased Use of Food  
Behavior Practices Upon Graduation

Homemakers not having an adult male present in the home had a significantly higher increase than those with a male present in their ability to name food group servings for family members, describe recommended serving size, plan before shopping, budget food resources, and use unit price and cost per serving.

Homemakers with an adult male present in the home had a significantly higher increase in their ability to keep their kitchens clean than those with an adult male present. The presence of an adult male in the home was not significantly related to the other 29 practices.

Relationships Between the Number of Children in the  
Home and the Homemakers' Increased Use of Food  
Behavior Practices Upon Graduation

Homemakers having four or more children in the home had significantly higher increases in their ability to budget food resources than those with three or less children.

Homemakers having four or more children in the home had significantly higher increases in their ability to follow a recipe. The number of children in the home was not significantly related to the other 33 practices.

Relationships Between the Homemakers' Educational Level and Their Increased Use of Food Behavior Practices Upon Graduation

Homemakers having nine years of education or more had significantly higher increases in their ability to use unit price and cost per serving and grow a garden to reduce food costs. The educational level reached by the homemakers was not significantly related to the other 33 practices.

Relationships Between the Homemakers' Place of Residence and Their Increased Use of Food Behavior Practices Upon Graduation

Homemakers living in rural areas had significantly higher increases in their ability to use unit price and cost per serving, grow a garden to help reduce food costs, and dispose of garbage properly. The homemakers' place of residence was not significantly related to the other 32 practices.

Relationships Between the Homemakers' Monthly Income and Their Increased Use of Food Behavior Practices Upon Graduation

Homemakers having a monthly income under \$315 per month had significantly higher increases in their ability to budget food

resources and plan before shopping. Homemakers having a monthly income over \$315 per month had significantly higher increases in their ability to provide nutritious snacks. The homemakers' monthly income was not significantly related to the other 32 practices.

#### IV. IMPLICATIONS, CONCLUSIONS, AND RECOMMENDATIONS

Homemakers enrolled in EFNEP showed increases in their knowledge and food behavior practices at program exit and even one year after program exit. Based on study findings family and personal characteristics had little relationship on the homemakers' increased use of food behavior practices upon graduation. It would seem that due to EFNEP's sound selection process use for recruiting low income clientele the variables having an adult male present in the home, the number of children, the homemakers' educational level, the place of residence, and the homemakers' monthly income had little or no relationship upon the knowledge and/or use increases of food behavior practices upon graduation. Since the family and personal characteristics of the homemakers tended to have little or no affect on their knowledge and/or use increase, than the researcher concludes that EFNEP itself is what brings about the changes in food behavior practice use for homemakers enrolled and graduated from the program. Much consideration should be given by Extension to the recruitment methods used in order to continue the enhancement of this program. EFNEP can and will work for its participants.

Data presented in this study seem to indicate a continued need among homemakers in EFNEP to continue to improve their behaviors and diets. Therefore it is recommended that Extension increase efforts to include EFNEP graduates in its ongoing health and nutrition programs.

#### V. RECOMMENDATIONS FOR FURTHER STUDY

1. Further studies should be conducted with all districts in the state to determine the influence of family and personal characteristics of homemakers on the homemakers' knowledge increases upon graduation.

2. A study should be conducted to determine the long range effects of the program after graduation over a five year period.

3. A further study should be done to determine what affect the program itself has on the homemakers' knowledge increases upon graduation.

4. A comparison study should be done to determine nutrition knowledge gains of EFNEP homemakers and Extension homemakers after they stop program participation.

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HOMEMAKER NAME	NUMBER	AIDE	DATE OF ENROLLMENT
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**FOOD BEHAVIOR CHECKLIST**

**INSTRUCTIONS**

1. For each question put a check (✓) in the appropriate block indicating Homemaker's behavior.
2. Count the number of checks (✓) in each column (NA, DK, YES, NO) and enter totals below.
3. Add the "YES" scores to the "NO" scores and enter the sum on the appropriate line.
4. Refer to SEA Form 173 (SCORING TABLE) and enter the scores on the bottom line of this form.
5. Copy the dates and scores onto the bottom two lines of the FOOD AND NUTRITION PROGRESSION RECORD (SEA Form 271) under the appropriate months in program time.

	DATE				DATE				DATE				DATE								
	FIRST				SECOND				THIRD				FOURTH				FIFTH				
NA = Not applicable YES = Homemaker does this	DK = Don't know NO = Homemaker doesn't do this	NA	DK	YES	NO	NA	DK	YES	NO	NA	DK	YES	NO	NA	DK	YES	NO	NA	DK	YES	NO
<b>KNOWLEDGE OF NUTRITION</b>																					
1. Can name the number of servings from each food group appropriate for his/her needs and those of each family member. (For example, adults need 2 servings of milk; children need 3-4 servings.)																					
2. Can name two foods from each of the food groups.																					
3. Can describe the recommended serving size of a food in each food group. (For example, one slice of bread, 8 oz. of milk, 2-3 oz. of meat, 1/2 cup cooked vegetables.)																					
4. Can name at least one good source each of Vitamin A, Vitamin C, Calcium and Iron.																					
5. Can name at least one example of a high and low calorie food in each food group.																					
<b>FOOD PURCHASE</b>																					
6. Plans before food shopping in at least two of the following ways: makes a list; writes a menu; checks food advertisements for store specials; checks supply of food in the house.																					
7. Stretches the food dollar using at least two of the following: compares food prices; uses nonfat dry milk; uses store brands or plain-label products when they are cheaper; buys day-old bread; buys specials; uses free or reduced price food.																					
8. Knows how to obtain food stamps and does so when family needs them.																					
9. Budgets food money and/or food stamps so the family has enough food throughout pay period.																					
10. Buys food in amounts to meet needs and gets the best buy in terms of unit price and cost per serving.																					
11. Uses one or more free or cheaper sources of food such as home grown food, wild game, fresh fish, edible plants and berries or exchanges work for food (barter system).																					
12. Grows vegetables for family use.																					
<b>FOOD STORAGE AND SANITATION</b>																					
13. Stores perishable foods safely and keeps hot food hot and cold food cold.																					
14. Keeps dishes, utensils, appliances and cabinets clean.																					
15. Stores non-perishable foods properly.																					
16. Disposes of garbage promptly.																					
17. Uses recommended food preservation methods for canning, freezing and drying.																					
18. Practices proper control methods for insects, rodents and pets in the kitchen.																					
<b>FOOD AND MEAL PLANNING</b>																					
19. Schedules meals around activities of family members.																					
20. Provides family members with servings and amounts as recommended by the food guide.																					
21. Serves a variety of foods from each food group daily.																					
22. Serves food each day which are good sources of iron.																					
23. Provides nutritious snacks when needed.																					
24. Serves whole grain bread and cereals daily.																					
25. Serves Vitamin A and C food to meet needs.																					
26. Watches food intake of overweight and underweight family members.																					
27. Plans ways to provide breakfast to family.																					
<b>FOOD PREPARATION</b>																					
28. Conserves nutrient value of food in three of the following ways: uses small amounts of liquid for fruit/vegetable cookery; uses appropriate cooking times and temperatures; retains cooking liquid for future uses; avoids rinsing rice and noodle products before and after cooking.																					
29. Can follow recipe. (Can measure and mix according to directions and obtain an acceptable finished product.)																					
30. Makes an effort to serve nutritional food that family enjoys.																					
31. Prepares food to use edible parts and avoid waste. (For example, removes a minimum of flesh when peeling; prepares amount family will eat or plans for and uses leftovers.)																					
32. Conserves fuel energy in cooking practices and food handling. (For example, bakes several things at once, does not let water run needlessly; efficiently uses range top burners.)																					
33. Practices at least three methods of serving/cooking vegetables and fruits, including a low calorie method.																					
34. Practices at least three methods of cooking meat or meat substitutes, including a low calorie method.																					
35. Practices at least three methods of serving/preparing dairy products, including a low calorie method.																					
<b>TOTAL</b>																					
<b>YES + NO</b>																					
<b>SCORE</b>																					



8. HOMEMAKER FOOD CONSUMPTION, FAMILY INCOME, AND EXPENDITURE				
1. HOW MANY FOOD RECALL RECORDS HAVE YOU TAKEN ON THIS FAMILY (including this one)?			2. DATE	
3. WHAT DID HOMEMAKER EAT AND DRINK IN THE LAST 24 HOURS?			TO BE FILLED OUT BY TRAINER AGENT	
To be filled out by Aide on Homemaker Kind of food and drink (Enter main foods in mixed dishes)			Milk	Meat
			Veg./Fruit	Bread/Cereal
Morning:				
Midmorning:				
Noon:				
Afternoon:				
Evening:				
Before bed:				
4. TOTAL ACTUAL INCOME FOR FAMILY LAST MONTH?			(5)	(6)
\$ _____ (Include wages and salaries, social security, welfare and insurance payments, pensions and cash support from others. If family has income from farming, include 1/12th of last year's income after expenses.) Check one:			TOTAL NO. OF SERVINGS	
<input type="checkbox"/> Under \$215 <input type="checkbox"/> \$216 - \$418 <input type="checkbox"/> \$419 - \$519 <input type="checkbox"/> \$520 - \$621			9. TOTALS 1 OR MORE SERVINGS OF EACH OF FOUR FOOD GROUPS.	
<input type="checkbox"/> \$622 - \$723 <input type="checkbox"/> \$724 - \$824 <input type="checkbox"/> \$825 - \$917 <input type="checkbox"/> \$918 and over			<input type="checkbox"/> YES <input type="checkbox"/> NO	
			10. TOTALS 2 OR MORE SERVINGS MILK/MEAT; 4 OR MORE VEG/FRUIT AND BREAD/CEREALS	
			<input type="checkbox"/> YES <input type="checkbox"/> NO	



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 The University of Tennessee, U.S. Department of Agriculture, and county governments cooperating in furtherance of Acts of May 8 and June 30, 1914.  
 Agricultural Extension Service Billy G. Hicks, Dean

## VITA

Deborah Hutton Seward was born November 19, 1954 to Mrs. Ruby Lee Hutton and the late Mr. William Cecil Hutton in Memphis, Tennessee. She attended the public schools of Memphis and graduated from Central High School of that city. She attended Shelby State Community College and transferred to Memphis State University where she received a Bachelor of Science Degree in Education with a major in Vocational Home Economics in May, 1976.

She was employed by the University of Tennessee Agricultural Extension Service in Gibson County with responsibility for Adult Youth audiences in the Expanded Food and Nutrition Education Program in 1978.

In January, 1986, she entered graduate school at The University of Tennessee, Knoxville in order to pursue and earn a Master of Science Degree in Extension Education.

She is an active member of the National Association of Extension Home Economist, American Home Economics Association, Tennessee Association of Extension Home Economists, and the Tennessee Home Economics Association, Epsilon Sigma Phi; she is also a Certified Home Economist. She is a member of Bethel Baptist Church. She is also active in many social and civic organizations and projects.

She is married to Frederick Oliver Seward, and they have two children; a daughter, Andrea Nicole, and a son, Adrian Oliver.