ASSESSMENT OF TYPES OF INVOLVEMENT ON PROGRESS OF EFNEP HOMEMAKERS

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CHAPTER I

INTRODUCTION

The goal of Extension Service's Expanded Food and Nutrition Education Program (EFNEP) is to teach low-income homemakers skills and knowledge necessary to improve the nutritional status of their families. This instruction is accomplished through paraprofessionals working with the homemakers individually in their homes or in small groups.

Much that has been written concerning educational programs for the low-income focuses on the characteristics resulting from poverty that make this group different from other Americans. Among these characteristics which are thought to influence acceptance of and success in educational programs are: less education; distrust of outsiders; and tendency to not be involved in community groups (Cavanagh and Price, 1968).

It is suggested that because of these characteristics:

> The most critical audience, the hard-to-reach poor and near poor, require person-to-person intensive education efforts--often for extended periods of time--before behavioral changes are effected (White House Conference on Food, Nutrition and Health, 1970, p. 32).

Kopel (1970, p. 21) points out that: "A great danger of injustice prevails when overgeneralizations are made---relative to negative characteristics of the poor." Effects of limited resources vary and there are studies which show that the low-income essentially value the same kinds of things as other Americans.

Within the EFNEP program a suggested mode of operation is for an aide to begin working with a homemaker on an individual basis, then at some point involve the homemaker in a group of other homemakers with whom the aide is working. In actuality some homemakers become involved directly into the group without individual help from the aide. There is need to know if these homemakers involved only in groups progress as successfully as homemakers who are taught on an individual basis or a combination of the two.

It is necessary for officials who are responsible for policy and leadership to continually evaluate factors which influence the effectiveness of the program (Feaster, 1972). This policy of one aide and one low-income homemaker working on a one-to-one basis is time consuming for the aide in number of homemakers served. It is also limiting as a cost effective method. There is a void in the research on the most effective way, individual versus group involvement, to teach low-income homemakers information relating to nutrition.

Aides, working with homemakers on a one-to-one basis have the advantage of being able to concentrate on the individual needs of the homemaker. But it is important to recognize that low-income homemakers, even though often isolated socially from others, do not operate in a vacuum. They are influenced by those around them and if there is no reinforcement for changing habits relating to nutritional status, there may be failure to adopt these practices.

> If a person is asked to change behavior that is not supported or reinforced by those significant others, behavior change is unlikely to occur, or at least unlikely to be maintained (Zaltman and Duncan, 1977, p. 21).

Support from others involved in the group may be a very positive influence on the adoption of change by the EFNEP homemaker. There is

need to know if possible positive influences of group involvement balance the teaching based on individual needs of one-to-one involvement.

Purpose and Objectives

The purpose of this study is to evaluate whether EFNEP homemakers involved only in a group progress as successfully as those homemakers who receive one-to-one attention. Successful progress is measured in terms of improved food recall scores related to diet adequacy. The following objectives guide this study. They are:

1. To compare food recall scores of EFNEP homemakers grouped according to type of involvement: 1. group only; 2. individual only; and 3. individual and group to determine if there is significant difference in gains in food recall scores between groupings.
2. To determine if homemaker characteristics such as race, education level reached, age, number of children in the home, or rural, non-rural influence the progress within groupings.
3. To determine if homemaker characteristics influence the type of involvement the homemaker chooses.

Hypotheses

The following hypotheses are postulated for this study. They are:

H_1: EFNEP homemaker food recall scores will not differ significantly between groupings of homemakers due to type of involvement.

H_2: Homemaker characteristics will not significantly influence the progress within groupings.

H_3: Homemaker characteristics will not significantly influence

the type of involvement the homemaker chooses.

Assumptions and Limitations

The following assumptions for this study are made. They are:

1. The food recall, as taken by EFNEP aides, is an effective measure for assessing progress in dietary adequacy of homemakers.
2. Homemakers provide reliable answers to the questions involved on the food recall form as asked by the aide.

This study is limited by the following factors. They are:

1. Difference in aide ability is not controlled.
2. Frequency of visits by aide during the six month period is not controlled.
3. Differences in homemaker characteristics such as education, previous experience and motivation which might influence the progress of the homemaker are not controlled.
4. There is no set pattern to combination type of involvement. It is a situation in which the aide works with the homemaker both individually and in groups. The balance is not controlled.

Definitions

It is necessary to define certain terms used in the study so that a clear understanding results from the use of the terms. The following definitions are used in this study:

1. Program families--refer to families of homemakers enrolled in the EFNEP program. They are often "those families not

motivated to seek educational assistance and not currently served through programs of other agencies" (Wang and Ephross, 1970, p. 2).

2. EFNEP homemaker--is "the person most responsible for meeting the food and nutrition needs of family members" (Wang and Ephross, 1970, p. 3).

3. Paraprofessional, EFNEP aide, or aide--is an employee of Cooperative Extension working with the Expanded Food and Nutrition Education Program. This person is trained to work with low-income families in areas relating to food and nutrition. "Most often the individual is indigenous to the target audience" (Extension Service, 1977, p. ii).

4. 24-Hour food recall--

> provides information about the different items of food consumed in a 24-hour period. They could be categorized into the basic four food groups and expressed in terms of numbers of servings (Verma and Jones, 1973, p. 96).

5. Individual or home visit--refers to "one aide working with one homemaker in the home on food, nutrition, and related subject matter" (Feaster and Perkins, 1976, p. 15).

6. Group visit--refers to the setting in which "a homemaker meets in a cluster group (two or more homemakers), studies only food and nutrition, and related subject matter" (Feaster and Perkins, 1976, p. 15).

CHAPTER II

REVIEW OF LITERATURE

A review of the literature reveals that nutrition education for low-income families has been the subject of various studies in recent years. Since the early 1960's evidence has been accumulating which focuses on malnutrition among less fortunate Americans.

By the end of the decade this concern resulted in the creation of programs designed to improve the dietary adequacy of the low-income. It was in November, 1968 that Extension's Expanded Food and Nutrition Education Program was organized and initiated. Operations of the program began in early 1969. "EFNEP was designed to attack particularly insidious problems of hunger in America" (Science and Education Administration--Extension, 1979, p. 3).

In reviewing the literature particular attention has been given to nutrition education as it relates to the following: (1) the need for nutrition education programs; (2) characteristics of low-income families; and (3) factors relating to nutrition education programs for the low-income.

The Need for Nutrition Education Programs

Nutritional surveys culminating in the 1969 White House Conference on Food, Nutrition and Health showed that:

One of the most dramatic and embarrassing socio-economic

> problems rediscovered in this country in recent years is that of malnutrition, even starvation, in some 'forgotten' segments of the population. The rural poor, in particular, were found to be suffering from a variety of food and nutrition deficiencies, some of which were clearly preventable. Consequently, food stamp programs were initiated and improved, welfare reforms were instituted in selected localities, and new ways of reaching the rural poor with health education programs were explored (Wang, Green, and Ephross, 1972, p. 6).

> Today the primary focus of health care is the control of cost escalation. At this same time it becomes increasingly apparent to both the public and private sector that improvements in the nutritional status of people will have a direct effect on the level of health and the resulting need for health care services (Winterfeldt, 1979, p. 2).

Policymakers concerned about the cost of health care for low-income families have reasoned that if improved nutrition could result in improved health for poor families, a cost benefit could be realized from nutrition education programs for the low-income.

The Cooperative Extension Service, long known for its "grass roots" philosophy of meeting the needs of people

> Saw the opportunity to provide leadership. It mobilized its network of rural and urban Extension workers in support of a national effort to reach low-income families with nutrition education (Wang et al., 1972, p. 6).

> The Expanded Food and Nutrition Education Program began with a more or less exclusive emphasis upon changing nutrition-related behavior. As the program continued to operate, it became more and more clear that what and how people eat is part and parcel of who they are and how they live (Wang et al., 1972, p. 28).

Characteristics of Low-Income Families

> As a result of the recent attention focused on social and economic problems related to poverty, efforts to improve services to the disadvantaged have increased. From these efforts has come a large amount of literature describing characteristics of the disadvantaged and methods of reaching and working with them. However, there are large gaps in research-based knowledge. Furthermore, many of the methods which have been employed to communicate with the disadvantaged have evolved more or less haphazardly

> without being based on an integration of what is known about the disadvantaged and the subject to be communicated (Cavanagh and Price, 1968, p. 337).

Programs designed to improve the quality of life for low-income families must include a consideration of the characteristics that tend to set the poor apart from the rest of society. "Economic deprivation is a fundamental limitation which permeates all of life, including the nutritional well-being of families" (Kopel, 1970, p. 17).

Kopel (1970) has cautioned about an overgeneralization regarding negative characteristics of low-income families because:

> Effects of limited economic resources vary from family to family, and most certainly, consideration of only the negative factors of poverty tends to distort the humanistic attitude and approach when attempting to communicate and help the low-income individuals (pp. 22-23).

Factors Relating to Nutrition Education Programs

Planning and Pilot Studies

Careful pre-planning is important if nutrition education programs for the poor are to achieve their desired objectives (Berg and Muscat, 1972).

> It is highly desirable that expressed nutrition information needs of the target audience be considered in nutrition education program planning. By examining data from nutritional status studies and investigating the expressed nutrition needs of the audience, nutrition educators may be able to develop new approaches that will be more successful in changing people's food habits (Ikeda, 1975, p. 106).

The Cooperative Extension Service (CES) initiated pilot studies to identify "productive approaches for establishing and maintaining an educational program with low-income families" (Science and Education Administration--Extension, 1979, p. 4).

The most comprehensive of the studies was a five-year pilot program conducted in Alabama.

> Paraprofessional Aides contacted families on a one-to-one basis and taught the homemakers food and nutrition and other homemaking skills. The lessons were participatory; the paraprofessionals worked with homemakers in their own homes, demonstrating new principles and techniques and guiding the homemakers into sound nutritional practices. As the project progressed, increasing numbers of low-income families participated in and benefited from the education. The results of the project were encouraging: almost three-quarters of the homemakers involved improved the eating habits of their families; two-thirds improved their food preparation skills; over half increased the amount of milk consumed by their families, served more balanced meals, and used better food buying practices; and more than a third improved methods of storing, canning, and freezing foods. Overall, this pilot effort showed that:
>
> > An educational program tailored to the interests, needs, competencies, and economic and educational levels of homemakers could be effective in changing their eating habits.
> >
> > Paraprofessionals, under the supervision of professional Home Economists, could be trained to teach low-income homemakers effectively (Science and Education Administration--Extension, 1979, p. 4).

Four other studies had impact on the evolution of Cooperative Extension's EFNEP Program. They were:

The South Providence, Rhode Island, Project which "indicated the feasibility of modifying traditionally rural Cooperative Extension Service (CES) home economics progams for use in urban slum settings" (Science and Education Administration--Extension, 1979, p. 4).

The Texas CES Project which examined methods for reaching low-income Mexican-American families. The study "showed that a successful education program with low-income families must consider the cultural values of the people and the economic circumstances in which they find themselves" (Science and Education Administration--Extension, 1979, p. 5). This study employed the use of the home visit to bring about

change and circular letters to bring about awareness.

The Boston, Massachusetts, CES Study explored "the feasibility of tailoring nutrition education programs to the needs of families in a large urban housing development" (Science and Education Administration --Extension, 1979, p. 5).

The Missouri CES Project "showed the viability of CES techniques in working with families living in urban slum neighborhoods" (Science and Education Administration--Extension, 1979, p. 5).

The Paraprofessional

As the need for a concentrated effort to reach low-income families with food and nutrition education information, was recognized it was also apparent that professional manpower was in short supply. It was thought that nonprofessional personnel trained and supervised by professional home economists would help solve this problem (White House Conference on Food, Nutrition and Health, 1970).

There are other reasons that the paraprofessional has been utilized in attempts to provide low-income homemakers with knowledge and skills necessary for good nutrition. Many of the reasons relate to the paraprofessional's ability to communicate with the intended audience.

"The distrust exhibited toward outsiders by many of the disadvantaged implies that before any method of service may be initiated, rapport and trust must be established" (Cavanagh and Price, 1968, p. 338). Use of paraprofessionals in the EFNEP program helps to establish this rapport and trust needed due to the fact that paraprofessionals are individuals usually indigenous to the community in which they work. "Realizing that professionals might be viewed with suspicion and

apprehension, paraprofessionals (program aides) who are members of the target community were chosen to work directly with families" (Ikeda, 1975, p. 104). They also work with the homemakers on a regular basis which allows the needed time to form this necessary relationship.

EFNEP aides have had a positive effect on the nutritional status of homemakers as shown in a number of studies. These studies have measured effectiveness of the aides' teaching (Bowering, Morrison, Lowenberg, and Tirado, 1976; Verma and Jones, 1973; and Nease, 1975). There has been some skepticism as to the effective use of paraprofessionals. "But to the extent that a negative conclusion is reached about program assistants in Extension teaching, that conclusion clearly contradicts the research on effectiveness" (Ramsey and Cloyd, 1975, p. 14).

Group vs. One-to-One Involvement

As with most comparisons there are advantages and disadvantages to both group and individual type involvement. One method of reaching low-income families is for the EFNEP aide to make regular visits based on individual teaching in a one-to-one situation. Some authors seem convinced of the need for this individual attention.

> Voluntary group membership is not common among the disadvantaged. It is unlikely that members of disadvantaged families would attend group meetings without encouragement; therefore methods of communicating which do not require groups might be more effective, at least in the beginning (Cavanagh and Price, 1968, p. 334).

"Since some of the homemakers belong to few, if any, organizations, they must be reached individually rather than in group meetings" (Cook, 1969, p. 10).

> Much of the success of the program has been attributed to the approach being used to reach families. Instead of expecting the poor to go to community centers or agencies for help, the program has gone to them. Homemakers have been taught on a one-to-one basis within the secure environment of their own homes (Ikeda, 1975, p. 104).

It is thought that when an EFNEP homemaker becomes ready to move into a group situation, a measure of progress is accomplished. Aides are encouraged to work with homemakers in groups. Sometimes homemakers are involved in group work exclusively. There can be no doubt that group work is more cost effective (Nease, 1975) and according to Winterfeldt (1979) this is a major consideration. With groups there is also the element of reinforcement by others in the group which should be considered (Zaltman and Duncan, 1977).

One study compared groups of EFNEP homemakers. One group was visited only on an individual basis. A second group was involved only in group work and a third group was visited individually and in groups. Results showed that there was not a significant difference in homemaker progress due to the type of learning environment (Verma and Jones, 1973).

> However, in terms of efficient use of agent time, more people can be contacted through group meetings than home visits. On the other hand, home visits are important from the standpoint of maintaining client relationships and helping to solve problems. Both methods should continue to be used, supported by other methods that can reach more people (Verma and Jones, 1973, p. 103).

Evaluation

Evaluation is necessary to an effective program although "Evaluation is the element of the nutrition planning process that generally receives the least amount of effort" (Berg and Muscat, 1972, p. 952).

> The Expanded Food and Nutrition Education Program (EFNEP), since its inception in 1968, had undertaken regular evaluation of the diets of homemakers visited by paraprofessional nutrition aides. This dietary evaluation has been limited in scope because of the problems inherent in obtaining accurate dietary recall data and because the 24-hour recall has been perceived more frequently as a teaching tool than as an evaluation mechanism (Bowering et al., 1976, p. 111).

> The 24-hour food recall originated in the sphere of dietary research where the concern was with aggregate data for a community or subpopulation. Even in the research sphere, the validity of resultant data is the subject of much controversy. There is among experts, however, general agreement that the technique is the best cost-to-benefit tradeoff among available methods for measuring food intake in non-institutional settings (Munger and Jones, 1976, p. 21).

In addition, the 24-hour food recall is used as an evaluation tool for the EFNEP program because it is a method which paraprofessionals are able to manage and one which the homemaker will tolerate (Science and Education Administration--Extension, 1979). Its limitations are not considered serious enough to interfere with the validity of the recall upon which partial evaluation of EFNEP is based (Verma and Jones, 1973; Bowering et al., 1976).

Summary

As the initial reaction to the White House Conference on Food, Nutrition and Health has subsided there has been a gradual dismantling of the poverty program and EFNEP funding has been on the decline at times even though the program has shown considerable evidence that program goals of improving dietary adequacy of low-income families is being met. Considering the very expensive cost of health care for the poor,

> Decision-making arenas at federal, state, and local levels must rethink the policy of limited scope for EFNEP. Very early, a substantial body of literature supported the

> relationship between under-nourishment and job absenteeism, and more recently, the relationship between malnutrition and mental retardation. Limited funds for EFNEP may be a false economy (Ramsey and Cloyd, 1975, p. 20).
>
> The principal of an elementary school thinks that EFNEP has done more for families in the community than any other person or organization. He said 'More children now are eating breakfast before they come to school. Mothers take more interest in their children's diets and activities. People are communicating better and sharing more ideas with others' (Cook, 1969, p. 11).

There is evidence in the literature that nutrition education programs work. Continued support and evaluation of programs is needed to attain the intended goals for which the programs were designed.

CHAPTER III

RESEARCH DESIGN

This study was conducted to determine if homemakers involved in Cooperative Extension's Expanded Food and Nutrition Education Program progress as successfully when involved only in a group as do homemakers who receive one-to-one attention or a combination of the two. The improvement of dietary adequacy as determined by the 24-hour food recall score, of homemakers worked with in groups only is compared with homemakers worked with individually and homemakers who are worked with both in groups and individually.

Homemaker characteristics of race, age, level of education, number of children and place of residence are examined to determine if there is any relationship between homemaker characteristic and food recall score. Characteristics are also examined to determine if they are predictors of which type involvement the homemaker chooses.

Population and Sample

> The target audience for EFNEP must be low-income families throughout the United States. While CES (Cooperative Extension Service) had traditionally focused on rural areas and all income levels, EFNEP was designed to include only poor families in both rural and urban settings. Including city dwellers in the target audience was essential because of the large proportion of poverty-stricken families residing in urban areas. Approximately five and one-half million families were in poverty when the program was initiated (Science and Education Administration--Extension, 1979, p.6).

There are twelve EFNEP counties in Oklahoma. Six of the counties are included in this study. Location of these counties is shown on a map in Appendix A. EFNEP counties are established based on the percentage of low-income families and availability of qualified professional staff (Science and Education Administration--Extension, 1979).

Within the counties the primary consideration for recruitment to the EFNEP program is low income based upon Community Services Administration information on poverty guidelines. Aides are each assigned to a specific area in the county in which to work. They recruit their EFNEP homemakers by making contact visits in the area. Most often they simply knock on doors in neighborhoods they observe to be low-income, contacting homemakers in this way or contacting homemakers to whom they have been referred.

The sample in this study is drawn from EFNEP counties in Oklahoma in which aides enroll homemakers involved only in groups. Personal contact was made with each Extension home economist supervising an EFNEP unit to determine if they had aides who worked with homemakers only in groups. It was established that it is the policy in some counties not to enroll a homemaker unless it is possible for the aide to involve her on a one-to-one basis. Six of the home economists indicated they had aides working with some homemakers only in groups. These home economists were sent letters (Appendix B) asking for the specific information needed about the homemakers. Information needed included the Family Record Form (Appendix C) from which the homemaker characteristics were obtained and the first and second food recalls of the homemaker which is located on the reverse side of the Family Record Form (Appendix D). Oklahoma counties from which participants

in the study were involved include Coal, Comanche, Muskogee, Oklahoma, Okmulgee, and Pottawatomie.

Further the sample is limited to aides who work with homemakers in groups and who had some homemakers involved in groups in the time period sampled. The final sampling limitation was the time period from which homemakers were drawn. Homemakers enrolled between April 1, 1978, and September 30, 1978, were included. These homemakers were ones on which a second food recall was taken between October 1, 1978, and March 31, 1979. As was stated earlier, only homemakers working with an aide involved in group work were included. Not only was the aide involved in group work but had homemakers in groups from the stated time frame.

The sampling procedure resulted in 29 homemakers involved in groups only; 75 homemakers involved individually only; and 38 homemakers involved in a combination of the two.

Instrumentation

The instrument of evaluation for the EFNEP program used for the pretest, posttest in this study is the 24-hour food recall (Appendix D). The food recall is discussed in Chapter II of this study. Its validity has been demonstrated in the literature. The instrument is considered to be a tool for evaluation and planning.

The food recall is taken from the homemaker by the aide in a prescribed manner (Appendix E). The information obtained reveals what the homemaker has eaten in the preceeding 24 hours. The EFNEP aide is instructed as to how to obtain the food recall. The method calls for the aide to begin with the most recent meal and ask the homemaker

what was eaten, then going backwards the aide proceeds to ask if anything was eaten between that meal and the preceeding meal. The paraprofessional continues until everything eaten the previous 24-hour period has been recalled by the homemaker. All the food that the homemaker has recalled is recorded.

The homemaker's diet is rated by the aide "according to 2-2-4-4--two servings of meat and milk and four servings of bread/cereal and fruit/vegetables" (Science and Education Administration--Extension, 1979, p. 40). Based upon this information the aide is able to score the homemaker's diet. The score is obtained from A Scoring Table for the 24-Hour Food Recall (Appendix F), which provides a quantification of the 24-hour food recall. The scoring table was developed to assimulate food recall information into a set of "numerical scores ranging from 0-100 and descriptive of the reported diet" (Munger and Jones, 1976, p. 21). The score of 100 is based on two servings each of milk and milk products and meat or meat substitutes; and four servings each of fruits and vegetables and breads and cereals. The method for the derivation of food recall scores is included in Appendix G.

The food recall is taken as the homemaker enters the program before teaching is begun. After a period of six months the homemaker is interviewed again with the same instrument. The difference between the first and second recall scores is the measurement of progress used in this study.

Collection of Data

The first and second Family Record and Food Recall of each EFNEP homemaker included in the study was obtained from supervising home

economists who had gathered the information from aides in their units. The cooperation of every EFNEP home economist was received therefore every unit having homemakers as defined by the sampling techniques was included.

Information concerning characteristics of homemakers and food recall scores were punched on cards for computer analysis. This information was then used for the data analysis.

Analysis of Data

The analysis of data is based upon determining if there is significant difference between improvement of the mean of dietary food recall scores of EFNEP homemakers involved in a group situation as compared to homemakers involved on a one-to-one basis, or a combination of the two. The mean difference from pretest to posttest is the measure of improvement tested.

Analysis of covariance is the statistical design used to measure for significance of difference in Hypotheses One and Two. "The analysis of covariance represents an extension of analysis of variance, particularly appropriate when it has not been possible to compare randomly selected and randomly assigned samples" (Best, 1977, p. 288). Analysis of variance makes it possible to make this determination with one test.

> The analysis of covariance is used most often by researchers to compare group means on a dependent variable, after these group means have been adjusted for differences between the groups on some relevant covariate (noncomitant) variable (Huck, Cormier, and Bounds, 1974, p. 134).

The first food recall score acts as the covariate and the second food recall score acts as the dependent variable. The analysis of

covariance adjusts the second food recall score means on the basis of the covariate (first food recall) means and compares these adjusted second food recall means to determine if there is significant difference between the two. "It is important to note that the adjustment is on the dependent variable means. The covariate means are never adjusted" (Huck et al., 1974, p. 134).

Percentage frequencies are compared to determine significance for Hypothesis Three. Frequency counts alone have limitations when groups are unequal in size. "Converting to percentage responses enable the researcher to compare subgroups of unequal size meaningful" (Best, 1977, p. 199).

CHAPTER IV

REPORT OF FINDINGS

Information gained from the study is included in this chapter. General information and findings resulting from the analysis of data are discussed. Throughout this chapter percentages are rounded therefore totals may not result in exactly 100.0 percent.

General Information

Type of Involvement

There were 142 EFNEP homemakers included in the study. Of these homemakers 29 or 20.4 percent were involved in the EFNEP program only in groups; 75 or 52.8 percent were involved only in a one-to-one basis; and 38 or 26.8 percent were involved both individually and in groups.

Characteristics of Homemakers

Race. Of the homemakers included in the study, 71 or 50.0 percent were white; 30 or 21.1 percent were black; 9 or 6.3 percent were Hispanic; 26 or 18.3 percent were American Indian; and 6 or 4.2 percent were Asian.

Education. There were 34 or 23.9 percent of the homemakers reported that had less than an eighth grade education; 101 or 71.1 percent had between a ninth and twelth grade education; and 7 or 4.9

percent had some schooling beyond twelth grade.

Age of Homemaker. Homemakers were divided into three groups by age. There were 30 or 21.1 percent of the homemakers under the age of 21; 75 or 52.8 percent were between the ages of 21 and 35; and 37 or 26.1 percent were over 35 years of age. The oldest homemaker reported was 66 and the youngest was 15. The median age of the total number of homemakers was 29.7 years.

Number of Children. Of the homemakers reported, 22 or 15.5 percent had no children; 74 or 52.1 percent had one or two children; and 46 or 32.4 percent had three or more children under the age of 19 living at home. The highest number of children per homemaker reported was six and there were two homemakers reporting that number of children. The median number of children per homemaker was 1.9 children.

Place of Residence. There were 110 or 77.5 percent of the EFNEP homemakers living in urban areas with population of 2,500 or more. And there were 32 or 22.5 percent living in rural areas with population of less than 2,500.

Analysis of Data

Hypothesis 1

This hypothesis deals with the question of whether the type of involvement for the EFNEP homemakers significantly influences the progress made in food recall scores. Mean scores for type of involvement are given in Table I. Although the difference in means, as will be shown, is not statistically significant, it is interesting to note

that the largest difference between means of pretest and posttest scores is indicated for homemakers in a combination of group and individual type of involvement. Least difference is shown for homemakers involved only in groups although attention should be given to the fact that the pretest score mean of this group was greater to begin with and the posttest score mean was also higher though not as much difference from pretest to posttest resulted.

TABLE I

PRETEST POSTTEST MEANS: TYPE OF INVOLVEMENT

	Group Mean	Individual Mean	Combination Mean
Pretest	65.1	56.2	56.8
Posttest	71.5	67.8	70.9
Difference	6.4	11.6	14.1

Pretest Grand Mean	58.2
Posttest Grand Mean	69.4
Difference	11.2

It is noteworthy to observe that all types of involvement show a gain in posttest score means from pretest score means. The pretest grand mean for the total population is 58.2 and the posttest grand mean is 69.4. There is a difference of 11.2 between grand means.

Results of the analysis of covariance used to determine level of significance are shown in Table II. The critical F-ratio for treatments

with 2 and 138 degrees of freedom is 3.06 (Ferguson, 1971). As is noted in Table II the F value for this analysis is 1.79 therefore the null hypothesis is not rejected.

TABLE II

ONE-WAY ANALYSIS OF COVARIANCE: TYPE OF INVOLVEMENT

Source of Variation	df	SS	MS	F
Between	2	1524.13	762.06	1.79
Within	138	58642.00	424.94	

Hypothesis 2

An attempt is made in the second hypothesis to determine if homemaker characteristics relate to progress the homemaker achieves within the EFNEP program. Homemaker characteristics examined are race, level of education, age, number of children and place of residence.

Race. Mean scores of homemakers according to race are shown in Table III. Results indicate that difference in mean scores for the total number of whites is 9.9; 12.1 for blacks; 16.0 for Hispanics; 10.0 for American Indians; and 19.2 for Asians. The range of mean score differences extends from a -15.0 for American Indians in group involvement to 27.7 for Asians in a combination type of involvement.

TABLE III

PRETEST POSTTEST MEANS: RACE

Race	Group Mean	Type of Involvement Individual Mean	Combination Mean	Total Mean
White				
Pretest	63.8	60.2	56.3	60.3
Posttest	72.5	68.4	71.7	70.2
Difference	8.7	8.2	15.4	9.9
Number in Cell	21	32	18	71
Black				
Pretest	64.3	51.5	64.4	56.2
Posttest	74.0	64.6	75.1	68.3
Difference	9.7	13.1	10.7	12.1
Number in Cell	3	19	8	30
Hispanic				
Pretest	63.0	42.3	57.2	53.5
Posttest	71.5	62.3	74.0	69.5
Difference	8.5	20.0	16.8	16.0
Number in Cell	2	3	4	9
American Indian				
Pretest	77.0	56.3	58.0	59.0
Posttest	62.0	70.6	67.4	69.0
Difference	-15	14.3	9.4	10.0
Number in Cell	3	18	5	26
Asian				
Pretest	0.0	60.7	35.5	48.0
Posttest	0.0	71.3	63.0	67.2
Difference	0.0	10.6	27.7	19.2
Number in Cell	0	3	3	6

The cells showing both extremes each contain three homemakers. There is only one other cell which has a mean score difference of 20.0 or better and that is Hispanics in individual type of involvement with a mean score difference of 20.0. Again the cell size is three. Three

cells; whites (21 cell size) in group; whites (32 cell size) in individual type of involvement and Hispanics (cell size 2) in groups have mean difference scores of less than 10.0. These scores are 8.7, 8.2, and 8.5 respectively.

It is interesting to note that the American Indians in group involvement have a relatively high pretest mean score although the posttest shows a rather drastic reduction in mean score. At the same time the cell showing the greatest increase in mean score difference is the one with Asians in a combination involvement and they show a relatively low pretest mean score. Resulting difference in posttest score means between the two cells is just 1.0.

Table IV reveals that the null hypothesis regarding the influence of race is supported by the two-way analysis of covariance. There is no significance due to the influence of race, type of involvement, or their interaction on EFNEP homemaker progress.

TABLE IV

TWO-WAY ANALYSIS OF COVARIANCE: RACE

Source	df	Adjusted SS	MS	F
Type of Involvement (A)	2	152.22	76.11	0.16
Race (B)	4	5.53	1.38	0.00
A X B	7	953.76	121.96	0.29
Within	127	58998.52	464.56	
Total	140			

Education Level. Mean scores for homemakers grouped according to education level are shown in Table V. Totals for difference in mean scores with regard to homemaker education level are: 15.1 for less than eight years; 9.1 for nine to twelve years and 20.6 for more than twelve years. The difference in mean scores between cells extends from -3.0 (cell size 1) for more than twelve years and individual type involvement to 27.0 (cell size 3) for more than twelve years and group involvement.

TABLE V

PRETEST POSTTEST MEANS: EDUCATION LEVEL

Education Level	Group Mean	Type of Involvement Individual Mean	Combination Mean	Total Mean
Less than 8 Years				
Pretest	64.7	48.4	53.2	53.3
Posttest	73.2	66.7	68.1	68.4
Difference	8.5	18.3	14.9	15.1
Number in Cell	6	14	14	34
9-12 Years				
Pretest	66.2	57.7	57.8	59.4
Posttest	68.8	67.7	70.5	68.5
Difference	2.6	10.0	12.7	9.1
Number in Cell	20	60	21	101
Over 12 Years				
Pretest	59.0	91.0	65.0	66.1
Posttest	86.0	88.0	87.0	86.7
Difference	27.0	- 3.0	22.0	20.6
Number in Cell	3	1	3	7

Attention is drawn to the fact that the cell producing a negative mean score difference only has one homemaker and also the pretest score is quite high; the posttest score is actually higher than the cell producing the greatest difference in mean scores. It is interesting to note that both extremes are in the twelve years and over grouping. In addition to the -3.0 cell, cells with mean score differences of 10.0 or less include eight years or less in groups, mean score difference of 8.5 (cell size 6); nine to twelve years both group with a mean score difference of 2.6 (cell size 20) and individual with a mean score difference of 10.0 (cell size 60). Mean score differences of 20.0 or more occur only in twelve years or over with a mean score difference of 22.0 (cell size 3) for the combination cell and as mentioned previously 27.0 (cell size 3) for the group cell.

Data in Table VI reveal that there is no significant difference due to education level. The null hypothesis is supported.

TABLE VI

TWO-WAY ANALYSIS OF COVARIANCE: EDUCATION LEVEL

Source	df	Adjusted SS	MS	F
Type of Involvement (A)	2	41.65	20.82	0.05
Education Level (B)	2	1211.87	605.93	1.37
A X B	4	128.34	32.08	0.07
Within	132	58178.04	440.74	
Total	140			

There is no significance due to education level, type of involvement or their interaction. Table VI shows that homemaker education does not influence progress in the EFNEP program.

Age. In Table VII pretest, posttest mean scores for homemakers grouped according to age are shown. Mean score difference totals for homemakers grouped according to age are: 8.7 for homemakers less than 21 years; 10.8 for homemakers between the ages of 21 and 34; and 13.7 for homemakers 35 years or over.

TABLE VII

PRETEST POSTTEST MEANS: AGE

Age	Group Mean	Type of Involvement Individual Mean	Combination Mean	Total Mean
20 Years or Less				
Pretest	65.0	56.3	50.0	56.1
Posttest	69.0	64.7	62.3	64.8
Difference	4.0	8.4	12.3	8.7
Number in Cell	6	12	9	27
21-35 Years				
Pretest	68.2	57.3	60.2	60.3
Posttest	68.1	69.5	77.7	71.1
Difference	- 0.1	12.2	17.5	10.8
Number in Cell	16	42	19	77
35 Years or More				
Pretest	58.1	54.6	56.0	55.6
Posttest	81.3	66.3	67.0	69.3
Difference	23.2	11.7	11.0	13.7
Number in Cell	7	21	10	38

The range of mean score differences extends from -0.1 in the 21-34 years and group cell (cell size 6) to 23.2 in the 35 years and group cell (cell size 7). The only other cells not having mean score differences between 10.0 and 20.0 both occur in the less than 21 years in group and individual type involvement which have mean score differences of 4.0 and 8.4 (cell size 6 and 12) respectively.

Data in Table VIII support the null hypothesis that the age of the EFNEP homemaker does not significantly influence the progress the homemaker attains. The F values of the type of involvement, the age of homemaker and their interaction are not significant. The null hypothesis is not rejected.

TABLE VIII

TWO-WAY ANALYSIS OF COVARIANCE: AGE

Source	df	Adjusted SS	MS	F
Type of Involvement (A)	2	306.26	153.13	0.36
Age (B)	2	1112.71	556.35	1.30
A X B	4	2391.07	597.76	1.40
Within	132	56444.67	427.61	
Total	140			

Number of Children. Table IX reveals the pretest, posttest mean scores of homemakers grouped according to number of children. Mean

score difference totals are -0.4 for homemakers with no children; 9.9 for homemakers with one or two children; and 18.6 for homemakers with three or more children.

TABLE IX

PRETEST POSTTEST MEANS: NUMBER OF CHILDREN

Number of Children	Type of Involvement			
	Group Mean	Individual Mean	Combination Mean	Total Mean
None				
Pretest	71.4	59.7	50.8	60.3
Posttest	65.8	58.3	58.2	59.9
Difference	- 5.6	- 1.4	7.4	- 0.4
Number in Cell	5	12	5	22
One-Two				
Pretest	63.7	53.6	61.8	58.1
Posttest	72.3	67.2	65.5	68.0
Difference	8.6	13.6	3.7	9.9
Number in Cell	18	38	18	74
Three or More				
Pretest	64.1	58.9	52.5	57.5
Posttest	73.7	73.4	81.8	76.1
Difference	9.6	14.5	29.3	18.6
Number in Cell	6	25	15	46

Mean score differences range from -5.6 (cell size 5) for homemakers in groups and no children to 29.3 (cell size 15) for homemakers in a combination type of involvement who have three or more children. Of the nine cells in Table IX six have mean score differences of 10.0

or less. These six cells have a total of 64 homemakers. Only the cell with homemaker having three or more children and combination type involvement have a mean score difference of 20.0 or more.

Table X reveals that there is significant difference in the progress of EFNEP homemakers due to the number of children in the family. The F value of number of children is 3.92 and the critical F-ratio is 3.07 with 2 and 132 degrees of freedom (Ferguson, 1971).

TABLE X

TWO-WAY ANALYSIS OF COVARIANCE: NUMBER OF CHILDREN

Source	df	Adjusted SS	MS	F
Type of Involvement (A)	2	171.28	85.64	0.21
Number of Children (B)	2	3217.08	1608.54	3.92*
A X B	4	1271.83	317.96	0.77
Within	132	54223.94	410.79	
Total	140			

* Significant at .05

Neither the type of involvement nor its interaction with the number of children produce a significant F value. Therefore the null hypothesis regarding the influence of number of children on homemaker progress is rejected.

Residence. Mean scores of homemakers according to residence are shown in Table XI. Totals for difference in mean scores are 13.6 for

homemakers in urban areas and 2.5 for the homemakers in rural areas.

TABLE XI

PRETEST POSTTEST MEANS: RESIDENCE

Residence	Group Mean	Type of Involvement Individual Mean	Combination Mean	Total Mean
Urban				
Pretest	65.6	55.7	54.8	57.6
Posttest	72.5	69.1	74.5	71.2
Difference	6.9	13.4	19.7	13.6
Number in Cell	23	58	29	110
Rural				
Pretest	63.5	58.4	62.9	60.6
Posttest	67.7	63.5	59.4	63.1
Difference	4.2	5.1	- 3.5	2.5
Number in Cell	6	17	9	32

Range among cells is from -3.5 (cell size 9) for rural homemakers in combination type of involvement to 19.7 (cell size 29) for urban homemakers in combination type of involvement. Urban cell mean scores are consistently higher than their rural counterpart cells.

According to Table XII, place of residence is significant. The critical F-ratio is 3.92 for treatments with 1 and 135 degrees of freedom (Ferguson, 1971). Place of residence F value is 4.15. F values for type of involvement and its interaction with residence are not significant. The null hypothesis regarding the influence of homemaker

residence on progress is rejected.

TABLE XII

TWO-WAY ANALYSIS OF COVARIANCE: RESIDENCE

Source	df	Adjusted SS	MS	F
Type of Involvement (A)	2	53.29	26.64	0.06
Residence (B)	1	1763.85	1763.85	4.15*
A X B	2	641.15	320.57	0.75
Within	135	57384.21	425.07	
Total	140			

* Significant at .05

Hypothesis 3

The third hypothesis examines homemaker characteristics to determine if there is any relationship between them and the type of involvement the homemaker chooses.

Race. Percentage frequencies for distribution of homemakers by race are shown in Table XIII. Total racial composition of the study participants is 50.0 percent white, 21.1 percent black, 6.3 percent Hispanic, 18.3 percent American Indian, and 4.2 percent Asian. This compares with the composition of group only type involvement homemakers which are 72.4 percent white; 10.3 percent black; 6.9 percent Hispanic; 10.3 percent American Indian; and 0.0 percent Asian. Composition of

one-to-one type of involvement homemakers is 42.7 percent white; 25.3 percent black; 4.0 percent Hispanic; 24.0 percent American Indian; and 4.0 percent Asian. The combination type of involvement is comprised of 47.3 percent white; 21.0 percent black; 10.5 percent Hispanic; 13.2 percent American Indian; and 7.9 percent Asian.

TABLE XIII

DISTRIBUTION OF HOMEMAKERS BY RACE

Race	Type of Involvement							
	Group		Individual		Combination		Total	
	F	%	F	%	F	%	F	%
White	21	72.4	32	42.7	18	47.3	71	50.0
Black	13	10.3	19	13.3	8	21.0	30	21.1
Hispanic	2	6.9	3	4.0	4	10.5	9	6.3
Am. Ind.	3	10.3	18	24.0	5	13.1	26	18.3
Asian	0	0.0	3	4.0	3	7.9	6	4.2
Total	38	20.4	75	52.8	38	26.8	142	100.0

Attention is drawn to the percentage of homemakers involved in group only who are white; 72.4 percent while only 50.0 percent of total homemakers are white. Blacks make up 18.3 percent of the total homemakers but only 10.3 percent of the homemakers involved only in groups.

Education. Percentage frequencies for distribution of homemakers by education are shown in Table XIV. Of the total, 23.9 percent of the homemakers have an eighth grade education or less; 71.1 percent have a ninth to twelth grade education and 4.9 percent have education beyond the twelth grade.

TABLE XIV

DISTRIBUTION OF HOMEMAKERS BY LEVEL OF EDUCATION

Education	Type of Involvement							
	Group		Individual		Combination		Total	
	F	%	F	%	F	%	F	%
8th Grade or Less	6	20.7	14	18.7	14	36.8	34	23.9
9th-12th Grades	20	69.0	60	80.0	21	55.2	101	71.1
12th Grade or More	3	10.3	1	1.3	3	7.9	7	4.9
Total	29	20.4	75	52.8	38	26.8	142	100.0

It is interesting to note that of the seven homemakers with education beyond the twelth grade, six are involved in some type of group work. Three are enrolled in group only and three are in a combination type involvement.

Age of Homemaker. Percentage frequencies for distribution of homemakers by age are listed in Table XV. Homemakers are grouped according to age at the time of the first food recall. Groupings used are less than 21 years; 21-34 years; and 35 years and older.

TABLE XV

DISTRIBUTION OF HOMEMAKERS BY AGE

Age	Type of Involvement							
	Group		Individual		Combination		Total	
	F	%	F	%	F	%	F	%
Less than 21 Years	7	24.1	14	18.7	9	23.7	30	21.1
21-34 Years	15	51.7	41	54.7	19	50.0	75	52.8
35 Years and Older	7	24.1	20	26.7	10	26.3	37	26.0
Total	29	20.4	75	52.8	38	26.8	142	100.0

Of the homemakers studied, 21.1 percent are less than 21 years old 52.8 percent are between the ages of 21 and 35; and 26.1 percent are 35 years or older. Distribution of homemakers according to age very closely matches the distribution of homemakers between types of involvement.

Number of Children. Percentage frequencies for distribution of homemakers by number of children are listed in Table XVI. Homemakers are grouped according to the number of children in the home at the time of the first food recall. Groupings used are no children; one or two children; and three or more children.

TABLE XVI

DISTRIBUTION OF HOMEMAKERS BY NUMBER OF CHILDREN

Number of Children	Type of Involvement							
	Group		Individual		Combination		Total	
	F	%	F	%	F	%	F	%
None	5	17.2	12	16.0	5	13.1	22	15.5
1-2	18	62.1	38	50.7	18	47.4	74	52.1
3 or More	6	20.7	25	33.3	15	39.5	46	32.4
Total	29	20.4	75	52.8	38	26.8	142	100.0

Homemakers with no children make up 15.5 percent of the total; 52.1 percent have one or two children; and 32.4 percent have three or more children. Percentage of homemakers grouped according to number is much like the percentage of homemakers grouped according to the type of involvement.

Place of Residence. Percentage frequencies for distribution of homemakers by place of residence are listed in Table XVII. Homemakers are grouped according to urban and rural. Urban refers to areas of population over 2,500 residents.

TABLE XVII

DISTRIBUTION OF HOMEMAKERS BY RESIDENCE

Place of Residence Group	Type of Involvement: Individual		Combination		Total	
	F	%	F	%	F	%
Urban	23	79.3	58	77.3	29	76.3	110	77.5
Rural	6	20.7	17	22.7	9	23.7	32	22.5
Total	29	20.4	75	52.8	38	26.8	142	100.0

There are 77.5 percent of the homemakers residing in urban areas while 22.5 percent of the homemakers reside in rural areas. As with age of homemaker and number of children distribution of homemakers according to residence is very close to distribution of type of involvement.

Data from this chapter are summarized in Chapter V. Resulting conclusions and implications are discussed.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

An important facet of nutrition programs designed to improve dietary status of low-income families is exploration of effective methods to achieve these goals. In considering factors relating to effectiveness it is necessary to include cost benefit of methods.

Cost effectiveness importance in the Expanded Food and Nutrition Education Program is demonstrated by the fact that leaders involved with direction for EFNEP are constantly reviewing efficiency of the program. Group involvement is thought to be more efficient because EFNEP aides are able to reach more homemakers during the time available. Although it is generally thought that low-income homemaker characteristics require individual attention. On the other hand, group involvement has certain advantages that could possibly offset advantages of individual involvement.

The purpose of this study was to evaluate whether group only type involvement proves to be a detriment to effective progress of EFNEP homemakers towards the program goals. It was thought that results regarding group only type involvement would be valuable toward decision making concerning involvement of EFNEP homemakers in groups only.

Of the 12 counties in Oklahoma with EFNEP units, six enroll homemakers in group only type of involvement. Six counties do not program a homemaker unless she can be involved on some type of individual basis.

There were 142 homemakers who made up the population of the sample. In addition to comparing the homemakers in group only type of involvement with individual and combination type of involvement, characteristics of homemakers were analyzed to determine their influence on homemaker progress. In addition to type of involvement, homemaker characteristics were also analyzed to determine if characteristics would be beneficial in predicting the type of involvement the homemaker would prefer.

Summary of Findings

The statistical analysis of data relating to progress of EFNEP homemakers in groups as compared to homemakers individually involved and in a combination type of involvement revealed that there was no significant difference in the progress of homemakers due to type of involvement. All types of involvement produced a positive change from pretest to posttest means. This difference from pretest to posttest was used to measure homemaker progress. The largest difference in mean scores was achieved by homemakers in a combination type of involvement while the least difference was recorded by homemakers in group only type involvement although it should be noted that homemakers in group only had higher pretest scores and their posttest scores were also higher.

Homemaker characteristics were examined to determine whether any significant differences existed due to the characteristics. They were also examined in interaction with type of involvement to determine any significant differences in homemaker progress.

Race produced no significant statistical differences in homemaker

achievement with the three types of involvement although it is noted that the three American Indians in group involvement had a negative difference in mean scores. It was the only cell which had a negative difference in the distribution of homemakers according to race. Attention is drawn to the fact that this cell had a higher pretest score also.

Education level in combination with type of involvement produced no significant statistical difference in homemaker mean scores. Highest and lowest extremes in differences both occurred among homemakers with education beyond twelth grade. The highest score change was recorded for group and the lowest for individual involvement.

There was no statistical significant difference in score means of homemakers distributed by age. Both the highest and lowest differences in means were achieved by homemakers in groups. The lowest score difference was for homemakers over 35 years of age.

A significant difference was shown statistically in differences in homemaker mean scores due to number of children. An overall negative mean score difference was shown for homemakers with no children. The positive mean score difference for homemakers with three or more children was nearly twice the score difference for homemakers with one or two children. This is consistent with a study by Feaster (1972) which showed most improvement in dietary adequacy among homemakers with three or more children.

Place of residence also produced a statistically significant difference in the mean scores of homemakers. Urban homemakers achieved higher mean score differences. Feaster (1972) reported a similiar positive influence of urban residence although the results were varied.

With regard to relationship between homemaker characteristic and type of involvement the homemaker prefers, Table XIII figures indicate that white homemakers might be more easily involved in group only situations than either blacks or American Indians.

Distribution of homemakers according to age and number of children very closely matches distribution of the total population among types of involvement. Therefore little can be said about the influence of these two factors on type of involvement preference.

Only seven of the homemakers have education beyond twelth grade. But, of these only one is involved in individual type involvement. The fact that most of these homemakers with a higher level of education are involved in some kind of group may indicate that they are easier to involve in groups.

It had been thought that the percentage of urban homemakers involved in groups might be higher due to close proximity of homemakers. This is not supported by the data regarding distribution of homemakers due to place of residence. They actually are distributed according to residence very much like distribution according to type of involvement.

Conclusions

It is difficult to draw definite conclusions when statistical significance does not exist but the difference in mean scores of homemakers due to type of involvement indicates a more positive change for homemakers involved both individually and in groups. This is consistent with findings of Verma and Jones (1973). Again it is pointed out that pretest scores for homemakers in group only were higher to begin with. An explanation for this finding might be that homemakers

experience all the positive factors of both individual and group type involvement. In addition they avoid the negative influences of only one type of involvement.

With regard to homemaker characteristics having statistically significant influence on difference of mean scores the influence of number of children is consistent with the thinking that homemakers with a larger number of children are more receptive to information that will help them provide more adequately for their children's health through better nutrition. At the same time their own dietary adequacy is improved (Feaster, 1976; and Nolan and Gross, 1972).

It is more difficult to explain the statistically significant influence of residence on homemaker progress. One explanation might be that the urban homemaker is visited more often due to the fact that aides might be able to attempt more visits when a scheduled visit has been missed simply because she is nearby. Another possible explanation is that rural homemakers are more isolated and lack the opportunity for reinforcement emphasized as necessary toward changing habits (Zaltman and Duncan, 1977).

It is thought that relationship between homemaker characteristics and type of involvement might depend on more than just homemaker preference. Ability and disposition of the EFNEP aide toward group work might be a factor to be considered. The data reveal that a higher percentage of white homemakers are involved in some type of group work. This is also true of homemakers having more education.

Recommendations

An anslysis of the data involved in this study leads to the

following recommendations.

1. All three types of involvement, group, individual and a combination of the two, have a positive influence on EFNEP homemaker dietary adequacy. If possible the homemaker should be involved in a combination type of environment so that positive benefits of both group and individual attention may be brought to bear. If this type of involvement is not practical it is important to remember that both of the other types of involvement produce positive results toward homemaker dietary adequacy.
2. Of the two homemaker characteristics producing influence on homemaker progress as measured by the difference in mean scores from first food recall to the second food recall a recommendation concerning number of children can be made. An effort should be made to involve homemakers having children in the home.
3. Recommendations for further study would be a consideration of effects of number and frequency of visits; a determination of the influences difference in aides might have on the progress of homemakers in the three types of involvement and a further investigation of place of residence as a significant influence on the progress of the homemaker.

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APPENDIX A

MAP SHOWING EFNEP COUNTIES INCLUDED IN THE STUDY

* EFNEP Counties Included in Study

0 50 100
MILES

APPENDIX B

CORRESPONDENCE FOR OBTAINING DATA

COOPERATIVE EXTENSION SERVICE

OKLAHOMA STATE UNIVERSITY — DIVISION OF AGRICULTURE

1500 N. Kickapoo
Shawnee, Oklahoma 74801

April 16, 1979

Dear Co-worker:

At our recent EFNEP meeting I had the opportunity to ask you if you had any EFNEP homemakers who are worked with only in groups. You indicated that you did and that you would be willing to help me compare 1. homemakers involved only in groups with 2. homemakers involved only individually and 3. homemakers involved both in groups and individually.

I would need you to:

1. select all homemakers who you included in the second food recall portion of the March, 1979 six-month report.
2. obtain their first food recall also.
3. indicate in some way which group (group only, individually only, or both) the homemaker belongs in.
4. relay information to me in one of the following ways:
   - A. send food recalls to me and I shall take information from them and return immediately.
   - B. copy food recalls and send me copies.
   - C. bring food recalls to our May meeting and I shall be prepared to take information from them and return to you at that time.

This information is to be used as the basis for my master's thesis and I hope it will be of benefit to us all in determining whether the type of involvement the homemaker experiences makes a difference. I will share my results with you as soon as they are analyzed.

Thanks very much.

Sincerely,

Margaret Callsen
Dr. Margaret Callsen, Advisor

Kay Barrick
Kay Barrick

Irma Manning
Irma Manning
Special Programs, Hm. Ec.

APPENDIX C

EXPANDED FOOD AND NUTRITION EDUCATION

PROGRAM FAMILY RECORD

EXPANDED FOOD AND NUTRITION EDUCATION PROGRAM
FAMILY RECORD

A. DESCRIPTION

1. Aide's Name	2. State Number	3. Unit Number

Fill Out For Each Family in Unit As Soon As Possible and Every 6 Months Thereafter. Keep in Family File After Review by Trainer - Agent.

4. Family ID Number _____

a. Name _____

b. Street _____

c. City _____ d. State _____

e. Urban _____ Rural Nonfarm _____ Farm _____

5. Date Family Enrolled

6. Family Received (some time during year):

a. USDA Food Stamps _____ d. Welfare _____

b. USDA Family Food Donation _____

c. USDA/FHA Assistance _____

Family Members (First Name) (7)	Age Yrs. (8)	Sex: Male (9)	Sex: Female (10)	Check If "Yes": Now In School (11)	Check If "Yes": Participated In School Lunch Program Last Week (12)
(Number of Members _____) Totals					

13. Highest Grade in School Completed by Homemaker

8th Grade or Less _____ 9th Thru 12th _____ Beyond High School _____

14. Check for Homemaker

a. White _____

b. Negro or Black _____

c. Spanish Surname _____

d. American Indian _____

e. Oriental _____

f. Other _____

15. Date Record Completed or Updated

OMB Approved
42R1610

APPENDIX D

EXPANDED FOOD AND NUTRITION EDUCATION

PROGRAM FOOD RECALL

B. HOMEMAKER FOOD CONSUMPTION, FAMILY INCOME, AND FOOD EXPENDITURE

1. Food Record Number

2. Date Taken

3. What Did Homemaker Eat and Drink in the Last 24 Hours?

To Be Filled Out by Aide on Homemaker

Kind of Food and Drink (Enter Main Foods in Mixed Dishes)	To Be Filled Out By Trainer Agent: Milk	Meat	Veg./ Fruit	Bread Cereal
Morning				
Midmorning				
Noon				
Afternoon				
Evening				
Before Bed				
Total Number of Servings	(7)	(8)	(9)	(10)
11. Totals 1 or more servings of each of four food groups	1	1	1	1
	Yes ___		No ___	
12. Totals 2 or more servings milk/meat; 4 or more veg/ fruit and bread/cereals	2	2	4	4
	Yes ___		No ___	

4. Total actual income for family last month $ _____. (Include wages & salaries, social security, welfare & insurance payments, pensions and cash support from others. If family has income from farming, include 1/12 of last year's income after expenses.)

Check one:

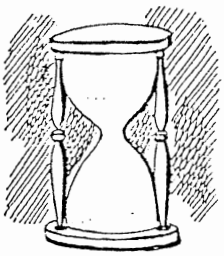
Under $84 ____ $251 - $333 ____
$ 84 - $167 ____ $334 - $417 ____
$168 - $250 ____ $418 and Over ____

5. How much did homemaker spend for food last month, including cash and credit? $ _____
(Do not include value of foods received under Family Food Donation or other food assistance programs. If in the Food Stamp Program, include only amount spent to purchase food stamps or coupons.)

6. If in the Food Stamp Program, what was the value of bonus stamps received? $ _____

APPENDIX E

METHOD FOR TAKING A 24-HOUR FOOD RECALL



Lesson 15: HOW TO TAKE A TWENTY-FOUR HOUR DIETARY RECALL*

PURPOSE

Trainer agent to help aides:

1. Know the meaning of a 24-hour dietary recall.
2. Understand the purpose of the 24-hour dietary recall.
3. Learn the basic steps in taking 24-hour dietary recall.
4. Develop effective interview techniques which can result in accurate reports.

PRESENTATION

- Discuss the reasons why a 24-hour dietary recall is needed.
  - -- To identify individual food practices which will later contribute towards providing important information on group food practices.
  - -- To establish a benchmark for future teaching.
  - -- To measure progress with families.

Define the 24-hour dietary recall.

- -- It is a record of the foods eaten by the person being interviewed during the previous 24 hours. This includes all meals, snacks and beverages and the recall begins with the meal eaten prior to the interview.

* From Extension Service. Food and Nutrition---Basic Lessons for Training Extension Aides, 1970.

Stress need for obtaining first recall as soon as possible after family enters program--before much teaching has been done.

Emphasize need for establishing good communication with family before attempting recall.

Explain the basic steps required to get a 24-hour dietary recall.

-- Aide should ask homemaker to tell what she has eaten during the last 24 hours, starting with the meal before the interview. Answers should be written down in a note pad, not on an official form.

-- All meals, snacks and beverages eaten at home or elsewhere, are to be reported.

-- Example: An aide is getting recall information in the afternoon. She begins by asking, "What did you have to eat and drink at noon today?" Then she asks, "Did you have anything between breakfast and lunch?" Next she finds out what the homemaker ate for breakfast. Then, she asks, "Did you eat or drink anything between the time you ate supper last night and the time you went to bed?" Following this, she asks, "What did you eat and drink for supper last night?" And then she asks what the homemaker had between supper and lunchtime yesterday.

-- Questions such as, "What did you drink with your lunch?" or "What kind of sandwich or soup did you have?" help to provide a complete recall.

-- Questions that suggest answers, such as "Did you have a dark green or yellow vegetable today? should be avoided.

-- When taking the recall, aides should not show, by their expressions or comments, any approval or disapproval of the foods reported.

-- If, for religious or ethnic reasons, a family's food habits are different on holidays or at other times, the 24-hour dietary recall should not be taken at this time.

-- Some factors affecting accuracy of the recall.

Number of times a 24-hour dietary recall has been taken.

People eat differently at different times.

Different interviewers have different effects on people.

Aide's ability to write down what the homemaker tells her--not what she thinks the homemaker means.

Demonstrate and practice 24-hour dietary recall interviews.

-- Trainer agent and aide show other aides the basic technique.

-- Aides practice with each other. Trainer agent should evaluate records obtained.

APPLICATION OF LESSON BY AIDES

Aides understand how to get a 24-hour dietary recall from homemakers and how to apply this information to a teaching situation.

REFERENCES FOR TRAINER AGENT

1. Training Home Economics Program Assistants to Work with Low-Income Families, PA-681, USDA.

2. Instruction Guide For Family Record and Aides List of Families reports.

APPENDIX F

SCORING TABLE FOR TWENTY-FOUR HOUR DIET

SCORING TABLE FOR TWENTY-FOUR HOUR DIET*

To find the Twenty-four Hour Diet score:

1. Select the appropriate table (below) on the basis of the number of *milk* servings reported in Item 7, FAMILY RECORD-B (0, 1, (2) or more). NOTE: Circled numbers ((2), (4)) are the highest score possible in a food group. For number of servings larger than the circled number, use the circled number. Example, for 3 servings of milk, use the (2) MILK SERVINGS table.
2. Select the proper column of the table on the basis of the number of *meat* servings reported in Item 8.
3. Select the proper area of the table on the basis of the number of *vegetable/fruit* servings reported in Item 9 (0, 1, 2, 3, (4) or more).
4. Find the proper line of the table on the basis of the number of *bread/cereal* servings reported in Item 10.

The number to the right of this (in type style "77") is the Twenty-four Hour Diet score. Enter the diet score at the appropriate "months in program" time on the homemaker's FOOD AND NUTRITION PROGRESSION RECORD.

0 MILK SERVINGS

0 MEAT SERVINGS			1 MEAT SERVING			(2) MEAT SERVINGS		
Veg. Fruit	Bread Cereal	Score	Veg. Fruit	Bread Cereal	Score	Veg. Fruit	Bread Cereal	Score
0	0	0	0	0	3	0	0	6
	1	2		1	10		1	14
	2	4		2	12		2	17
	3	6		3	15		3	25
	(4)	8		(4)	23		(4)	29
1	0	2	1	0	10	1	0	14
	1	9		1	22		1	27
	2	11		2	25		2	35
	3	13		3	33		3	39
	(4)	21		(4)	37		(4)	43
2	0	4	2	0	12	2	0	17
	1	11		1	25		1	35
	2	13		2	33		2	39
	3	21		3	37		3	43
	(4)	25		(4)	41		(4)	47
3	0	6	3	0	15	3	0	25
	1	13		1	33		1	39
	2	21		2	37		2	43
	3	25		3	41		3	47
	(4)	29		(4)	45		(4)	60
(4)	0	8	(4)	0	23	(4)	0	29
	1	21		1	37		1	43
	2	25		2	41		2	47
	3	29		3	45		3	60
	(4)	33		(4)	58		(4)	65

1 MILK SERVING

0 MEAT SERVINGS			1 MEAT SERVING			(2) MEAT SERVINGS		
Veg. Fruit	Bread Cereal	Score	Veg. Fruit	Bread Cereal	Score	Veg. Fruit	Bread Cereal	Score
0	0	3	0	0	11	0	0	16
	1	10		1	24		1	29
	2	12		2	27		2	37
	3	15		3	35		3	41
	(4)	23		(4)	39		(4)	45
1	0	10	1	0	24	1	0	29
	1	22		1	42		1	52
	2	25		2	50		2	56
	3	33		3	54		3	60
	(4)	37		(4)	58		(4)	64
2	0	12	2	0	27	2	0	37
	1	25		1	50		1	56
	2	33		2	56		2	62
	3	37		3	60		3	66
	(4)	41		(4)	64		(4)	79
3	0	15	3	0	35	3	0	41
	1	33		1	54		1	60
	2	37		2	60		2	66
	3	41		3	64		3	79
	(4)	45		(4)	77		(4)	85
(4)	0	23	(4)	0	39	(4)	0	45
	1	37		1	58		1	64
	2	41		2	64		2	79
	3	45		3	77		3	85
	(4)	58		(4)	82		(4)	91

(2) MILK SERVINGS

0 MEAT SERVINGS			1 MEAT SERVING			(2) MEAT SERVINGS		
Veg. Fruit	Bread Cereal	Score	Veg. Fruit	Bread Cereal	Score	Veg. Fruit	Bread Cereal	Score
0	0	6	0	0	16	0	0	21
	1	14		1	29		1	39
	2	17		2	37		2	43
	3	25		3	41		3	47
	(4)	29		(4)	45		(4)	51
1	0	14	1	0	29	1	0	39
	1	27		1	52		1	68
	2	35		2	56		2	62
	3	39		3	60		3	66
	(4)	43		(4)	64		(4)	80
2	0	17	2	0	37	2	0	43
	1	35		1	56		1	62
	2	39		2	62		2	68
	3	43		3	66		3	82
	(4)	47		(4)	79		(4)	88
3	0	25	3	0	41	3	0	47
	1	39		1	60		1	66
	2	43		2	66		2	82
	3	47		3	79		3	88
	(4)	60		(4)	85		(4)	94
(4)	0	29	(4)	0	45	(4)	0	51
	1	43		1	64		1	80
	2	47		2	79		2	88
	3	60		3	85		3	94
	(4)	65		(4)	91		(4)	100

* From Munger and Jones. A Progression Model for the Expanded Food and Nutrition Education Program, 1976.

APPENDIX G

QUANTIFICATION OF THE 24-HOUR FOOD RECALL

Quantification of the 24-Hour Food Recall*

The 24-hour food recall originated in the sphere of dietary research where the concern was with aggregate data for a community or subpopulation. Even in the research sphere, the validity of resultant data is the subject of much controversy. There is among experts, however, general agreement that the technique is the best cost-to-benefit tradeoff among available methods for measuring food intake in noninstitutional settings.[3]

A 24-hour food recall procedure has been implemented in EFNEP since its inception and ways were explored to assimilate this information into the progression methodology to provide scores comparable to those achieved through application of the Food Behavior Checklist. That is, to arrive at a set of numerical scores ranging from 0 - 100 and descriptive of the reported diet.

The "objective" or target diet established for the program is:

✓ 2 servings of milk or milk products.

✓ 2 servings of meat or meat substitutes.

✓ 4 servings of fruits and vegetables.

✓ 4 servings of breads and cereals.

The number of possible dietary patterns which might be elicited within this framework is calculated by:

$$C = d_{mi} \times d_{me} \times d_{fv} \times d_{bc}$$

where: C is the number of combinations,

d_{mi} is the number of servings which discriminate quality of diet in terms of the milk category,

d_{me} is the number of servings which discriminate quality of diet in terms of the meat category,

d_{fv} is the number of servings which discriminate quality of diet in terms of the fruit and vegetable category, and

d_{bc} is the number of servings which discriminate quality of diet in terms of the bread and cereal category.

* From Munger and Jones. A Progression Model for the Expanded Food and Nutrition Education Program, 1976.

Within the milk and meat categories there are three discriminators (0, 1, 2); within the fruit/vegetable and bread/cereal categories there are a possible five discriminators (0, 1, 2, 3, 4). Thus, the number of possible combinations is calculated by:

$$C = 3 \times 3 \times 5 \times 5 = 225 \text{ combinations}$$

Derivation of Food Recall Scores

A quantification scheme which takes into account several nutrition-related factors was devised. The basic assumption is that any one food group, while it contributes in a unique way, has importance in the diet equal to that of any other food group. The factors entering into the scoring scheme and the method of quantification are described below.

✓ Total Number of Servings of Food. Intake of food is essential to life. This factor is included in the quantification with incrementally weighted scores for the number of servings, irrespective of food categories. The weighted scores are:

- 1 to 4 servings = a weight of "1" (number of servings x 1)
- 5 to 8 servings = a weight of "2" (number of servings x 2)
- 9 to 12 servings = a weight of "3" (number of servings x 3)

Any servings beyond 12 are ignored.

✓ Number of Food Groups Included. Variety of food in the diet is essential to good health. This factor is included in the quantification with incrementally weighted scores for the number of food groups, irrespective of number of servings. The weighted scores are:

- 1 food group = 0
- 2 food groups = 5
- 3 food groups = 15
- 4 food groups = 30

✓ Percent of Target Diet Achieved. The target diet is: 2 servings in the milk group, 2 servings in the meat group, 4 servings in the fruit/vegetable group, and 4 servings in the bread/cereal group. By examining each food category separately for "percent of achievement of target" and combining across all four food groups, a composite "percent of achievement of the target" of "2-2-4-4" is derived. This factor is included in the quantification by establishing incremental scores for composite percent of target diets, as follows:

25% = 1 point	175% = 10 points	325% = 23 points
50% = 2 points	200% = 12 points	350% = 26 points
75% = 3 points	225% = 14 points	375% = 29 points
100% = 4 points	250% = 16 points	400% = 32 points
125% = 6 points	275% = 18 points	
150% = 8 points	300% = 20 points	

✓ Bonus Points. Since it is possible to have a rather high cumulative composite percentage on the preceding component score basis, but to be severely deficient in one of the food groups, two (2) bonus points are awarded when at least 50% of the required number of daily servings is achieved for each food group.

Figure 6 illustrates the derivation of each component score and the resultant diet score for two food recalls.

The quantification technique described above was applied to all possible diet patterns derivable, from 0-0-0-0 to 2-2-4-4. The result was 52 categories of diet patterns and of related scores ordered from 0 to 100. Table 2 presents the scores for each of the 225 possible dietary patterns.

Example A Food Recall = 0-0-2-1		Example B Food Recall = 2-2-3-4	
Score Component	Weighted Score	Score Component	Weighted Score
Number of Servings 0 + 0 + 2 + 1 = 3 3 x 1 weight = 3	3	Number of Servings 2 + 2 + 3 + 4 = 11 11 x 3 weight of 3 =	33
Number of Food Groups 0 + 0 + 1 + 1 = 2	5	Number of Food Groups 1 + 1 + 1 + 1 = 4	30
Percent of Target Diet (0÷2)+(0÷2)+(2÷4)+(1÷4) = 0% + 0% + 50% + 25% = 75%	3	Percent of Target Diet (2÷2)+(2÷2)+(3÷4)+(4÷4) = 100% + 100% + 75% + 100% = 375%	29
Bonus Only 1 of 4 categories at 50% or greater	0	Bonus 4 of 4 categories at 50% or greater	2
Composite Score Total	11	Composite Score Total	94

Figure 6. Examples of derivation of food recall scores.

Table 2

Summary of Scores for Twenty-four Hour Diet Patterns

(Based on 2-2-4-4 minimum number of daily serving requirements. Order is milk, meat, vegetables and fruit, bread and cereal.)

CATEGORY	SCORE	DIET PATTERNS	NO. OF DIET PATTERNS
A	0	0000	1
B	2	0001, 0010	2
C	3	0100, 1000	2
D	4	0002, 0020	2
E	6	0003, 0030, 0200, 2000	4
F	8	0004, 0040	2
G	9	0011	1
H	10	0101, 0110, 1001, 1010	4
I	11	0012, 0021, 1100	3
J	12	0102, 0120, 1002, 1020	4
K	13	0013, 0022, 0031	3
L	14	0201, 0210, 2001, 2010	4
M	15	0103, 0130, 1003, 1030	4
N	16	1200, 2100	2
O	17	0202, 0220, 2002, 2020	4
P	21	0014, 0023, 0032, 0041, 2200	5
Q	22	0111, 1011	2
R	23	0104, 0140, 1004, 1040	4
S	24	1101, 1110	2
T	25	0024, 0033, 0042, 0112, 0121, 0203, 0230, 1012, 1021, 2003, 2030	11
U	27	0211, 1102, 1120, 2011	4
V	29	0034, 0043, 0204, 0240, 1201, 1210, 2004, 2040, 2101, 2110	10
W	33	0044, 0113, 0122, 0131, 1013, 1022, 1031	7
X	35	0212, 0221, 1103, 1130, 2012, 2021	6
Y	37	0114, 0123, 0132, 0141, 1014, 1023, 1032, 1041, 1202, 1220, 2102, 2120	12
Z	39	0213, 0222, 0231, 1104, 1140, 2013, 2022, 2031, 2201, 2210	10
AA	41	0124, 0133, 0142, 1024, 1033, 1042, 1203, 1230, 2103, 2130	10
BB	42	1111	1
CC	43	0214, 0223, 0232, 0241, 2014, 2023, 2032, 2041, 2202, 2220	10
DD	45	0134, 0143, 1034, 1043, 1204, 1240, 2104, 2140	8
EE	47	0224, 0233, 0242, 2024, 2033, 2042, 2203, 2230	8
FF	50	1112, 1121	2
GG	51	2204, 2240	2
HH	52	1211, 2111	2
II	54	1113, 1131	2
JJ	56	1122, 1212, 1221, 2112, 2121	5
KK	58	0144, 1044, 1114, 1141, 2211	5
LL	60	0234, 0243, 1123, 1132, 1213, 1231, 2034, 2043, 2113, 2131	10
MM	62	1222, 2122, 2212, 2221	4
NN	64	1124, 1133, 1142, 1214, 1241, 2114, 2141	7
OO	65	0244, 2044	2
PP	66	1223, 1232, 2123, 2132, 2213, 2231	6
QQ	68	2222	1
RR	77	1134, 1143	2
SS	79	1224, 1233, 1242, 2124, 2133, 2142	6
TT	80	2214, 2241	2
UU	82	1144, 2223, 2232	3
VV	85	1234, 1243, 2134, 2143	4
WW	88	2224, 2233, 2242	3
XX	91	1244, 2144	2
YY	94	2234, 2243	2
ZZ	100	2244	1
		TOTAL	225

The Scoring Table for Food Recalls

Look-up of a diet score is simplified by design of a scoring table directly related to the information the aide has in the existing program record. The food recall record gives the information in the following pattern:

	Milk	Meat	Fruit Vegetable	Bread & Cereal
Total Number of Servings				

The scoring table is shown in Figure 7.[4] Each food group, in the order in which it appears to the aide, sequentially reduces the area of search. The number of servings in the milk group tells her whether the score is in the right, left, or middle block of the scoring table. For example, if the food recall shows 1 milk serving, the diet score is in the middle block of scores. The number of servings in the second food group tells the aide whether the score is in the first, second, or third column of the larger block. For example, if the food recall shows 1 milk serving and 1 meat serving, the score is somewhere in the middle column of the middle block. The scoring table is further subdivided so that the number of servings of fruit/vegetable and bread/cereal sequentially delimit the area of search and identifies the correct score.

The Food and Nutrition Progression Record

The function of the Food and Nutrition Progression Record within the progression model is to assemble in one place the essentials of the history of a homemaker's participation in the program. Only those elements of information of importance to ultimate decisions about the homemaker are included. The record is created incrementally from scores derived by use of the other progression tools--the Scoring Table for the 24-Hour Diet and the Scoring Table for the Food Behavior Checklist--and at the time of the sequential six-month assessments of progress.

Information about the history of the homemaker's progress is presented against a background designed to enhance its quantitative and qualitative

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[4]The scoring table used in the field demonstration was laminated with heavy plastic and served also as handy ruler for plotting scores on the Progression Record.

VITA[2]

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Master of Science

Thesis: AN ASSESSMENT OF TYPES OF INVOLVEMENT ON EFNEP HOMEMAKERS

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