Chapter 1. Introduction

An adequate and balanced diet is important for growth, wellness, and the prevention of chronic disease. Dietary factors are associated with five of the ten leading causes of death in the United States: coronary heart disease, certain types of cancer, stroke, non-insulin dependent diabetes mellitus, and atherosclerosis. These diseases have a substantial economic impact as well, resulting in avoidable medical bills and lost productivity to society. The cost to the nation attributable to cardiovascular disease is more than 135 billion dollars per year, diabetes treatment costs 20 billion, stroke patient care over 11 billion, and cancer treatment over 70 billion. In Virginia, these five diet-related diseases accounted for 64% of all deaths in 1994, and cost residents and the health care system (for treatment of any one disease) an average of $27,000 per individual.

While the overall death rates in the United States have declined since 1960, the disparity in mortality between socioeconomic groups has increased. Individuals with low incomes and low education levels die at higher rates than those with higher incomes and more education. Low socioeconomic status is considered a special risk factor for diet related diseases. The risk of death from heart disease is more than 25% higher for low-income people than for the overall population. The incidence of lung, oral, stomach, cervical and prostate cancers are inversely related to economic status, and survival rates for low-income cancer patients are lower. Low-income status has also been directly linked with above average rates of obesity and high blood pressure, which are considered major risk factors for heart disease and stroke.

In Virginia, ten percent of the population and over seven percent of all families live in poverty. The poverty rate is considerably higher for families with very young children and for older adults than for other families. Female headed households have a poverty rate of 36.4%; and households with children less than five years of age have a poverty rate of 50.3%. Among adults aged 65 years and over, 14.1% have poverty incomes. The majority of those living in poverty are African Americans and non-Hispanic whites, comprising 52% and 46% respectively.

Several food assistance programs have been designed to increase the food purchasing power of low-income individuals. The largest of these programs is the Food Stamp Program (FSP), which distributed more than 22 billion dollars in benefits in Fiscal Year 1995. In 1994, the average monthly participation in the Virginia FSP was 232,289 households. The increase in food purchasing power through food stamp benefits, however, must be combined with a nutrition education program to empower individuals to make informed food choices.

In addition to food insecurity, poor food management and budgeting skills, lack of nutrition knowledge, and other lifestyle practices place low-income families at risk for poor nutrition. Data from the United States Department of Agriculture’s (USDA) 1989-91 Diet and Health Knowledge Survey (DHKS), indicated that low-income homemakers were less aware of diet-health relationships than homemakers of higher income groups. Awareness of diet and health relationships was also found to increase as education level increased. Many low-income
individuals have less education and limited literacy skills.\textsuperscript{13,14} As a result, they may be less able to critically evaluate misleading advertisements and interpret nutrition labels.\textsuperscript{15-17} According to the DHKS, \textsuperscript{12} 20 percent of female homemakers in households with incomes <131\% of poverty reported that they never used the nutrition panel on food labels, compared with only 3\% in households with incomes >350\% of poverty. One-fourth of female homemakers, with an eighth grade education or less, reported never using the nutrition panel on food labels.

While income level is often closely correlated with educational level, education generally has a greater influence on the knowledge of diet and health relationships than does income.\textsuperscript{18} For this reason, programs designed to educate low-income individuals about nutrition, meal management and food preparation are needed to reduce the risk of chronic disease and illness in this population group. The majority of nutrition education currently targeting low-income families is conducted by the Expanded Food and Nutrition Education Program (EFNEP), operated by the Cooperative Extension, and the Women, Infants and Children (WIC) Program, operated by the Department of Health’s Public Health Nutrition Division. EFNEP focuses on all areas of basic and preventive nutrition (meal planning, food buying and food safety) and emphasizes food intake for the entire family.\textsuperscript{19} WIC focuses on specific health problems and risks of individual family members, such as diet for pregnant and post-partum women, breast feeding, infant feeding guidelines, and management of anemia and problem pregnancies.

EFNEP was initiated in Virginia in 1968 and currently operates in 26 counties and cities (Appendix A). This program targets families with young children or pregnant women who meet income eligibility requirements. Families are eligible for the program if their income is 125\% or less of the poverty level, or if they are currently a participant in other government assistance programs that use the poverty guidelines for eligibility.\textsuperscript{20} For example, participants of the FSP are automatically eligible to join the EFNEP program if they have young children. In fact, many families are recruited via referrals from other agencies. Additional families may be recruited through door-to-door visits. During the 1995 fiscal year, the Virginia EFNEP program reached 7,138 families.\textsuperscript{21} Seventy percent of the families were WIC recipients and 57\% were on food stamps.\textsuperscript{21} African Americans made up 48\% of the families reached, while whites, Hispanic, and Asians made up 45\%, 4\% and 2\% respectively.\textsuperscript{21}

EFNEP is delivered as a series of ten or more lessons designed to help homemakers acquire skills in food production, preparation, storage, safety and sanitation, and management of their food budgets and related resources such as food stamps.\textsuperscript{22} Program Assistants (PAs), trained and supervised by Family and Consumer Science Agents, teach homemakers through home visits or in small groups.\textsuperscript{22} The PAs are typically indigenous to the community in which they work in order to facilitate rapport with the homemaker.

EFNEP does not, however, reach all food stamp recipients in Virginia. Homemakers, in food stamp households that do not meet EFNEP eligibility criteria or who live in an area where there is no EFNEP, do not receive nutrition education via this program. In Virginia, during any particular month there are approximately 230,000 households on food stamps.\textsuperscript{23} It has been estimated that, through all of Extension’s programming efforts before 1996, less than 5\% of all
food stamp recipients in Virginia were reached per year. Recognizing the growing need for nutrition education programs targeting recipients of federal assistance programs, the Virginia Cooperative Extension (VCE), in collaboration with the Virginia Department of Social Services and the Food and Consumer Service division of the USDA, initiated the Food Stamp Nutrition Education Plan (FSNEP). The FSNEP was titled the Smart Choices Nutrition Education Program (SCNEP) in 1996. This program employs 53 PAs to operate out of 46 VCE offices designated as Food Stamp Nutrition Education Centers. SCNEP PAs target food stamp households not targeted by EFNEP so as to avoid any duplication of efforts. Whereas EFNEP emphasizes the needs of pregnancy, infancy and early childhood, SCNEP emphasizes health promotion and disease prevention among middle and older aged individuals. Food stamp recipients who fit EFNEP guidelines are referred to EFNEP PAs. Duplication of efforts is also avoided in that many of the SCNEP units operate in areas where there is no current EFNEP program.

The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 changed cash and food welfare programs. Under the guidelines of this welfare reform, able-bodied recipients must participate in either job readiness training or active job searches after 90 days of unemployment or risk losing benefits. The purpose of job readiness training is to provide participants with the pre-employment information and skills that will enable them to be competitive in the labor market and more self-sufficient. Job readiness training may include, but is not limited to training on: life skills, communication skills, motivational, problem solving skills, assertiveness, nutrition, money management, parenting skills and time management. Through its association with disease and its impact upon one's ability to be self-sufficient, nutrition has been noted as a vital component of the educational programming outlined in current welfare reform legislation.

In Virginia, changes to the Aid for Families with Dependent Children (AFDC) and the Employment Services (JOBS) programs for welfare recipients began in 1995 with the implementation of the Virginia Independence Program (VIP). VIP included employment related changes through the Virginia Initiative for Employment not Welfare (VIEW) which included the basic work requirement for all able-bodied parents receiving AFDC except for those caring for children under 18 months. All VIEW participants that are unable to find either subsidized or unsubsidized employment are required to be placed in community work experience. The VCE has formed a partnership with the Department of Social Services in 14 of the 39 jurisdictions in Virginia to provide education related to job readiness that includes: time management, problem solving, money management, parenting, health and nutrition skills. It has been suggested that the adoption of model Extension programs, such as EFNEP, will maximize Extension's efforts in addressing welfare reform initiatives. As a result of the recent welfare reform, there may be an increased demand placed upon EFNEP and SCNEP for nutrition education. In addition, work requirements and additional job readiness training may result in more homemakers being unavailable for educational programming during the usual workday of PAs.
Statement of the Problem

Low-income individuals that are working or engaged in job readiness training during the day may be hard to reach through traditional face-to-face home visits. Rural locations and the crime-rate associated with certain neighborhoods make nighttime visits to homes difficult if not undesirable. Cost-effective means of delivering nutrition education to food stamp recipients in either EFNEP or SCNEP need to be investigated in order to maximize the numbers reached through these programs while providing effective lessons. In a conversations with PAs at training sessions held in southwest Virginia (Jo Combs, Carol Greear, Patricia Harden and Dorothy O'Quinn), central Virginia (Wanda Evans and Brenda Seamster), and southeast Virginia (Leslie Staley, Janice Davis, Iris Miller and Mary Warren), PAs reported occasionally using mailed lessons for “hard-to-reach” clients (August 1996). Mailed lessons were described by the PAs as typically consisting of written lesson materials. These written materials may not be the most effective means for providing lessons to low-literacy clients. In addition, they lack the “hands-on” activities, social interaction and support, and demonstrations that have been reported to contribute to the success of nutrition education programs. The influence of the home environment upon the "mail-out" method also needs to be evaluated as well as their effectiveness in facilitating behavior change.

Considering the number of food stamp recipients to be targeted via EFNEP and SCNEP efforts with recent welfare reform, there is an obvious need for new innovative ways to deliver nutrition education to “hard-to-reach” individuals. The present study evaluated the effectiveness of self-administered video lessons combined with follow-up telephone discussions and intermittent home visits as a means of delivering food and nutrition lessons to low-income homemakers. The objectives of the study were:

1. To compare the effectiveness of self-administered video lessons combined with phone discussions and intermittent home visits with traditional face-to-face and small group lessons in bringing about changes in food behaviors and the dietary intake of low-income homemakers.

2. To assess the feasibility and cost of using video instruction relative to traditional instruction methods.

3. To determine low-income homemakers’ perceptions of video lessons and to provide insight for the future development and use of video lessons.

4. To identify organizational and technical problems associated with the distribution and retrieval of video lessons.
Research Questions

1. Does traditional instruction and video instruction significantly improve the Behavior Checklist scores and food/nutrient intakes of low-income homemakers?

2. Is the amount of change in Behavior Checklist scores and food/nutrient intakes similar for Traditional Instruction and Video Instruction groups?

3. Is there a difference in the amount of change in nutrient/food intake and Behavior Checklist scores between rural and urban homemakers?

4. Is there a difference in the amount of change in nutrient/food intakes and Behavior Checklist scores between African Americans and non-Hispanic whites?

5. Do certain mediating variables affect the amount of change in Behavior Checklist scores and nutrient/food intakes following either traditional or video instruction?

Variables

The independent variables in this study were:

1. Method of instruction
2. Residence
3. Race
4. Locus of Control
5. Reinforcement Values (RVs)
6. Age

The dependent variables were:

1. Food Behavior Checklist scores
2. Dietary Intake
   a. Percentage of calories from carbohydrate, fat, and protein
   b. Intake of vitamin A, vitamin B₆, iron, calcium and fiber
   c. Total caloric intake
   d. Number of meals/snacks
   e. Number of Food Group Servings (based on the USDA’s Food Guide Pyramid)

Definition of Terms

Diagnostic Report- A report generated by the Evaluating and Reporting System (ERS) based upon data collected from homemakers using the Family Record. The diagnostic report provides demographic information, an analysis of nutrient intake, and analysis of the Food Behavior
Checklist for each homemaker.

**Evaluating Reporting System (ERS)**- A computer system developed to capture the positive impacts of the EFNEP. The system provides a variety of reports that are useful for management purposes, provides diagnostic assessment of participant needs (generates a Diagnostic Report), and exports summary data for State and National assessment of EFNEP's impact. The Family Record is used to collect data that is then entered into the computer system. Important features of this system include: a dietary analysis component, a behavior checklist component, maintenance of basic data about the program assistants and volunteers that deliver the program, and the ability to record information addressing interagency cooperation.

**Food Group Serving**- Serving, as defined by the USDA, of a food item which is categorized into one of the five food groups of the Food Guide Pyramid. A serving from the Fats/Sweets group is calculated in the EFNEP ERS as approximately one teaspoon of fat (4.5 g) or two teaspoons of sugar (8.5 g).

**Homemaker**- The adult in the family who is the primary food preparer and meal planner and who is the recipient of EFNEP lessons.

**Locus of Control**- An individual's perceived ability to control events or behavior outcomes.

**Participant (Study Participant)**- A homemaker newly enrolled in EFNEP or SCNEP, who has signed the Informed Consent form, and is participating in this study.

**Pennsylvania State Food Behavior Checklist**- An instrument developed by Pennsylvania State Cooperative Extension in 1995. Includes questions that are on the nationwide Food Behavior Checklist as well as questions to assess locus of control and RVs about cooking.

**Program Assistant (PA)**- An individual employed by the Virginia EFNEP or SCNEP to deliver lessons to enrolled adult homemakers and youth. PAs are often indigenous to the target population and are trained and supervised by agents trained in Family and Consumer Sciences.

**Reinforcement Value (RV)**- An individual's perceived value of a particular reinforcement.

**Rural**- Locales with a population under 10,000 as defined by the EFNEP Family Record.

**Smart Choices Nutrition Education Program (SCNEP)**- Virginia’s special name for the Food Stamp Nutrition Education Plan, a joint effort between the Virginia Cooperative Extension and the Department of Social Services.

**Twenty-four Hour Recall**- A list of all foods and beverages, including their quantity and method of preparation, consumed by the homemaker during the past 24 hours based on memory recall.

**Traditional EFNEP Instruction**- Face-to-face instruction with the homemaker, in the home or in
small groups at a community setting, that typically employs a flip chart as a visual aid. Handouts and optional activities generally accompany the lesson series.

**Urban**- A locality with a population greater than 10,000 as defined by the EFNEP Family Record.

**Video Lessons**- Lessons presented on VHS videocassette tapes that are left with the homemaker for future viewing. Each lesson is packaged with handouts that accompany the lesson series.

### Importance of the Study

The identification of an effective alternative means of delivering nutrition education to low-income homemakers will potentially increase the reach of EFNEP and SCNEP. Video lessons may enable homemakers who previously could not participate due to scheduling difficulties or geographical location to receive lessons. Evaluation of alternative lessons will also allow these programs to set recommendations and guidelines for the continued use or disuse of video lessons. This research may also identify characteristics of homemakers that respond positively to video lessons. In turn, this information could be used to improve the video lessons and predict homemakers that may best respond to this method of lesson delivery.

### Limitations

1. This study was limited to generally healthy, non-pregnant, homemakers of childbearing age or those with young children, who were eligible to receive food stamps, owned a working VCR, and had access to a telephone. Pregnant participants were not included since lessons pertaining to prenatal nutrition were not included in the intervention. Participants were selected from five rural and five urban areas in Virginia. Consequently, results obtained during this study can not be generalized to all EFNEP/ SCNEP homemakers, all low-income persons or all food stamp recipients.

2. The food intake of participants was not actually observed by the PA. Food intakes and changes in dietary components were assessed through the collection of 24-hour recalls (collected pre and post intervention). These recalls may not be representative of the usual, year-round intake of the participants.

3. Measures of compliance were often based upon records kept by the homemaker and did not always include actual observation of the behavior by the PA or investigator.

4. It is assumed that all PAs followed the protocol as outlined in the training sessions.