



Development and evaluation of a title VII nutrition education program for the elderly in Whitehall, Montana
by Vicki Wagner Hawkinson

A thesis submitted in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE
in Home Economics
Montana State University
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Abstract:

The purpose of this project was to develop and evaluate a Title VII nutrition education program for the elderly in Montana. Eight nutrition education modules were presented to a sample of 17 Title VII participants in Whitehall, Montana; 13 female and 4 male.

A pre-post-test to determine behavioral changes in food preparation and eating and shopping habits revealed no significant differences for means and variances for each question and individual. Analysis of number of positive and negative responses showed a significant improvement, but the magnitude of differences was trivial.

A mini-test, covering material presented, was administered at the end of each module to evaluate immediate cognitive learning. A high percentage of correct responses was recorded indicating that although the elderly had learned, or had prior knowledge of, the material, the post-test did not reflect a change in behavior.

Specific weekly food consumption patterns, especially milk and milk products, was compared before and after the program. A mean increase was noted for consumption of milk, cheese, and ice cream.

A mean increase was noted for poultry. A decrease in mean consumption was found for eggs and fish. A follow-up interview revealed an overall positive attitude toward the program. Participants were responsive to the teaching strategies used, particularly food demonstrations and distribution of new recipes.

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DEVELOPMENT AND EVALUATION OF A TITLE VII NUTRITION
EDUCATION PROGRAM FOR THE ELDERLY IN WHITEHALL, MONTANA

by

VICKI WAGNER HAWKINSON

A thesis submitted in partial fulfillment
of the requirements for the degree

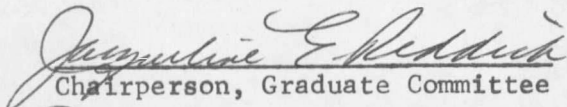
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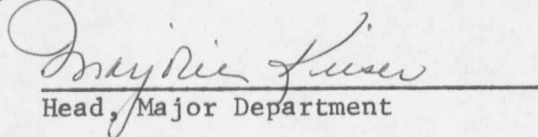
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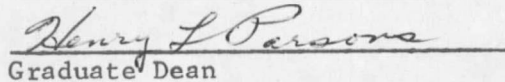
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Approved:


Chairperson, Graduate Committee


Head, Major Department


Graduate Dean

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ABSTRACT

The purpose of this project was to develop and evaluate a Title VII nutrition education program for the elderly in Montana. Eight nutrition education modules were presented to a sample of 17 Title VII participants in Whitehall, Montana; 13 female and 4 male.

A pre-post-test to determine behavioral changes in food preparation and eating and shopping habits revealed no significant differences for means and variances for each question and individual. Analysis of number of positive and negative responses showed a significant improvement, but the magnitude of differences was trivial.

A mini-test, covering material presented, was administered at the end of each module to evaluate immediate cognitive learning. A high percentage of correct responses was recorded indicating that although the elderly had learned, or had prior knowledge of, the material, the post-test did not reflect a change in behavior.

Specific weekly food consumption patterns, especially milk and milk products, was compared before and after the program. A mean increase was noted for consumption of milk, cheese, and ice cream. A mean increase was noted for poultry. A decrease in mean consumption was found for eggs and fish.

A follow-up interview revealed an overall positive attitude toward the program. Participants were responsive to the teaching strategies used, particularly food demonstrations and distribution of new recipes.

CHAPTER I

Introduction

A longer life expectancy in the United States has increased the number of people over the age of 65 years. Between 1900 and 1960, the number of people over the age of 65 quadrupled because of a higher death age; 67.8 years for males and 75.1 years for females (Shook, 1970). Of the 26 million older Americans, one fourth live alone and three out of ten live below poverty level (Anon., 1971). In Montana, there were 67,000 people over the age of 65 in 1968 and it is projected to rise to 82,000 by 1980 (Aging, 1970).

People with low or fixed incomes need to maximize purchasing power of their dollar. A majority of the elderly fit into this income group. Food is a necessary item in the budget and can require a large portion of the disposable income. With food costs rising, it is important that elderly people know how to economically obtain and prepare sufficient and nutritionally adequate food for their food money.

Nutrition education for the elderly has been a recent concern in America (New Hampshire Council on Aging). In 1972, Congress amended the Older Americans Act and added Title VII, National Nutrition Program for the Elderly (National Nutrition Program for the Elderly, Policies and Procedures Manual, 1972). The amendment requires each recipient of a grant to provide nutrition education and shopping assistance.

Need for the Study

Fifty projects in Montana currently receive Title VII funds.

Total project participation is 3500 elderly with an average of 2000 meals served daily (White, 1977). Nutrition education programs are being offered to the elderly, but the programs are not uniform. The topics, methods, and frequency of sessions are left to the discretion of the nutritionist at each project. Very brief nutrition education lesson plans, developed by the project nutritionist, are submitted to the Aging Services Bureau in Helena. These plans are not distributed to the other sites for use by the nutritionists at these projects. In addition, limited teaching resources are available for the program in Montana.

Purpose of the Study

Learning is a continuous process throughout the entire life span. The elderly should not be disregarded on the assumption that it is too late to change their purchasing and eating habits. Many settings offer opportunity to teach good nutrition to the elderly (Fleming, 1973). For example, programs to coincide with walk-in meals such as cooking classes for a recreational activity, can be devised. What elderly people need is motivation to learn (Fleming, 1973). If one can help elderly people become more aware of their needs and help them to find their own solution, long-term effects will be produced (Williams, 1973).

The purpose of this study was to develop nutrition education modules and evaluate their effectiveness with a group of elderly people who are participating in the Title VII program.

Assumptions

The following assumptions undergird this study:

1. It is assumed that the elderly are receptive and willing to learn more about basic principles of food and nutrition.
2. It is assumed that the elderly in this particular study, similar to many other elderly, are low in calcium and have a need to increase their intake of milk products.

Hypothesis

Elderly people will become more aware of basic principles of food selection and preparation through a planned nutrition education program.

Elderly people can increase their consumption of the milk group in the Basic Four food groups.

Limitations

This study assumes a fixed model being limited to one project in Montana; therefore, the findings cannot be applied to a universal study.

The Title VII program is on-going and, therefore, can deal with more nutrition education topics than was possible in this study. This study was only a minor portion of the Title VII program. Its evaluation is not applicable to the entire program.

Definition of Terms

For the purpose of this study, the following terms are defined.

Elderly People. Individuals who were aged 60 and over based on

Title VII eligibility (National Nutrition Program for the Elderly, Policies and Procedures Manual, 1972).

Nutrition Education Program. A series of educational experiences which will increase awareness of nutritional needs by providing food selection and preparation information.

Nutrition Project. "A project providing the nutrition services financed with Title VII funds and meeting the requirements and standards set forth by Public Law 92-258" (National Nutrition Program for the Elderly, Policies and Procedures Manual, 1972).

Project Director. "The project director must be employed by, and responsible to the recipient of the award, and must be empowered with necessary authority to conduct the day-to-day management and administrative functions of the project. The director must be hired on a full-time basis and meet the qualification standards as required by the State agency" (National Nutrition Program for the Elderly, Policies and Procedures Manual, 1972).

Project Nutritionist. A dietitian/nutritionist responsible for the nutrition education program under Title VII.

Walk-in Meals (Congregate Meals). A meal program under Title VII which provides elderly people at least one hot meal a day, five days a week for a nominal price.

Low Income. Monetary income of \$1,852 per year received by one person aged 65 and over according to the 1970 poverty index level (Butler, 1973).

Fixed Income. Income from sources such as social security, pension, annuities, and retirement benefits where monthly allotments are not tied to a changing cost of living index.

Strategies for Teaching. Those learning activities used to impart nutrition education. This includes illustrated talks, demonstrations, and group discussion as well as instructional aids and printed materials used.

Group Discussion Questions. Questions presented to the group to stimulate discussion and feedback.

Nutrition Education Module. An instructional package dealing with a single conceptual unit of subject matter in nutrition education (Russell, 1974).

CHAPTER II

LITERATURE REVIEW

Food is a fundamental need for existence and also plays an important role in psychological and sociological development of man. The basic concept of nutrition concerns the food one eats and how the body utilizes it (Hill, 1966). All persons throughout life have the need for the same nutrients but in varying amounts.

How adequately one's nutritional needs are met is influenced by physiological state as well as psychological attitudes and sociological values towards food. Attempting to change food habits in the elderly is a difficult task as dietary patterns of the older adult are built upon life-long experiences and habits. An awareness of influencing factors is necessary for the educator.

This search of the literature deals with several essential nutrients that are frequently low in the diet of the elderly.

Nutritional Needs

Nutritional needs and nutritional balance of the older adult are not based solely on dietary intake. Nutritional imbalance may result from interference with intake, absorption, storage, utilization, and/or increased excretion (Howell, 1969).

Interference with Absorption

Biological aging or the presence of a disease may commonly interfere with absorption. A number of physiological changes which occur with aging affect the digestive system.

Atrophy of the salivary glands with a loss of an enzyme found here will retard digestion of starches (Howell, 1969). There is also a decrease in production and delivery of digestive enzymes in the stomach, pancreas, and small intestine (Morgan, 1962). Bile production in the liver is also decreased (Howell, 1969). Constipation may be a problem due to reduced motility of the stomach and reduced peristalsis (Lamy, 1971).

Interference with Storage, Utilization and Excretion

A loss of cells involved with storage and utilization of nutrients occurs with the biological aging process. Diminished endocrine function leads to decreased metabolism (Howell, 1969). In addition, an increase of fibrous tissues in the organs will decrease the efficiency of delivery of nutrients by the vascular system (Howell, 1969).

There is little evidence indicating an increased loss of essential nutrients because of interference with digestion and absorption (Howell, 1969). There may be an increased loss through the passage of undigested food through the bowel (Howell, 1969). An increased loss of cellular potassium and intracellular water occurs, but there is no evidence that this is due to increased excretion (Howell, 1969). Increased protein loss in the urine can occur because of kidney disease (Howell, 1969). Renal ability to concentrate the urine is retarded when fluid intake is decreased (Cole, 1970).

Nutritional Requirements

Nutritional requirements for all individuals are derived from

basic needs for growth and repair of normal structure and the production of energy to provide functional needs. Caloric needs are supplied by energy-producing nutrients such as carbohydrates, fats, and protein not required for maintenance.

Caloric Requirements

Caloric needs for all individuals are influenced by basal metabolism, sleep, physical activity, and specific dynamic action. Since these factors differ among individuals, caloric needs will also differ.

As a person ages, there is a gradual decrease in the basal metabolic rate (BMR). There is also a tendency to decrease physical activity as age increases. Because of the reductions in BMR and activity, caloric intake needs to be decreased. It is recommended that total energy needs be lowered by a limited consumption of carbohydrates and fats while maintaining the same amount of advised protein (DeCosta, 1969).

The National Research Council (NRC, 1974) advises in the Recommended Daily Allowances (RDA), that persons above the age of 50 reduce their caloric need to 90% of the amount required as a mature adult. A standard of ideal weight for the elderly is not available so the standards set for the younger population must be used. Desirable weight maintenance can be achieved by eating an adequate variety of foods in amounts that will keep weight stable (Pollack, 1957).

The frequency of obesity in the elderly is due to unchanged eating habits while energy expenditure has been reduced. The excess

weight does not mean the individual is adequately nourished. It is common among overweight people to find nutritional inadequacies (Howell, 1969). If the overweight individual is advised to lose weight, careful diet planning is needed to provide sufficient amounts of essential nutrients with the decreased caloric need resulting from the aging process.

Protein Requirements

Protein is a component of all cells and provides nitrogen and amino acids for building and maintaining body tissues. It is necessary to consume adequate amounts of essential amino acids since the human body is unable to synthesize these amino acids..

There is evidence to indicate that older people who have an adequate protein intake have fewer complications with most illnesses (Howell, 1969). Many elderly people on self-selected diets are deficient in the protein food group of the Basic Four (Howell, 1969). Inadequate protein nutrition may be caused by poor absorption, excess loss of nitrogen, or inadequate intake. Protein intake is influenced by economics, endentulous problems, and/or cultural and traditional restrictions.

Protein requirements for the elderly are not clearly established. There is some controversy concerning requirements because of the influence of digestion and absorption efficiency in the aged individual (Watkin, 1971).

Some researchers recommend an increase in protein is needed

because of decreased absorption (Chinn, 1956; Kountz, 1951; Stare, 1955; Taylor, 1973; Tuttle, 1965). They suggested that the efficiency of protein digestion is decreased because digestive enzyme secretion is reduced (Watkin, 1971).

Watts (1964), DeCosta (1969), and Horwitt (1953) recommended no increase in protein requirements. Excessive intake of protein can be harmful to individuals with kidney or liver disease (Howell, 1969). The National Research Council (1974) recommend that 0.8 gm protein/kg of body weight be ingested daily.

Increased protein for the elderly is recommended for several, justifiable reasons. Medications may interfere with protein utilization and, therefore, intake would need to be increased (Basley, 1971). Use of protein supplements is justified for replacement of tissue loss during illness or from burns, surgery, or injury (Basley, 1971; Albanese, 1952).

Carbohydrate Requirements

Carbohydrates are needed in the diet to provide energy and fiber. Although there are no specific daily requirements, it is suggested that approximately 50% of the day's total energy needs come from carbohydrates (NRC, 1974).

Elderly people may have a larger intake of carbohydrates for various reasons. Many foods that require little or no preparation, and are easy to chew, are high in carbohydrates. These foods may also be inexpensive.

Maturity onset diabetes may occur since the aging process impairs glucose tolerance (Morgan, 1962). Glucose tolerance tests should be conducted routinely. Hormone levels and alterations in fat and protein metabolism may also affect carbohydrate metabolism (Eckerstrom, 1966).

Fat Requirements

Fats or lipids provide the body with essential fatty acids and serve as a vehicle for the fat-soluble vitamins A, D, E, and K. Fats also enhance foods by making them more palatable, facilitate preparation, and provide satiety.

The amount of fat in the diet is determined by total caloric content. Since caloric need is different for each individual, the amount of fat in the diet will vary. The recommended amount of required intake of essential fatty acids is within the range of 1-2% of total calories (NRC, 1974). Since the fat consumption in the American diet is so high, 45% of total caloric intake, it is believed that most people receive sufficient amounts of essential fatty acids (NRC, 1974).

The relationships between fat intake, blood serum cholesterol, and the development of atherosclerosis is controversial (Howell, 1969). The Council of Foods and Nutrition of the American Medical Association (1972) stated that no direct relationship between dietary fat, serum lipid concentration, and atherosclerosis has been proved. Watkin (1971) suggests that the elderly may need to substitute polyunsaturated fatty acids for saturated fatty acids if there are abnormal blood lipid levels, obesity, and risk of coronary heart disease.

Vitamin C Requirements

Vitamin C (ascorbic acid) is essential in the development and maintenance of walls of capillary tissues, the dentine of teeth, and bone cartilage and connective tissue. It is necessary in the production of intracellular materials and aids in iron absorption.

Vitamin C deficiency is common among the elderly (Eddy, 1974; Exton-Smith, 1972; Brink, 1968; Chope, 1956). A major factor of this deficiency is inadequate dietary intake due to economics or chewing difficulties (Chope, 1956). Poor nutritional knowledge of economic Vitamin C-rich foods will result in their elimination from the diet. Low consumption of fresh fruits and vegetables, which are excellent sources of Vitamin C, will occur if an individual has poor fitting dentures (Anderson, 1971).

For normal individuals there is no evidence that suggests an increased Vitamin C requirement (Stephen, 1973). The elderly may need to increase their intake under certain conditions of continued stress and during drug therapy (Howell, 1969).

Iron Requirements

Iron deficiency anemia occurs frequently in the elderly, particularly those people with low incomes (Howell, 1969; Mayer, 1974). The deficiency may be the result of inadequate intake alone or low intake coupled with chronic blood loss, poor absorption, and/or inadequate utilization by the body (Howell, 1969). Low consumption of iron-rich foods can be caused by poor appetite, little knowledge of

iron-rich foods, or poor selection of foods with limited income (Howell, 1969).

There is evidence that indicates that the elderly have a decreased absorption of iron than younger people (Eckerstrom, 1966). Freiman (1963) in a study with 45 subjects over the age of 65, found that the elderly absorbed less iron than the younger control group. Mayer (1974) stated that poor iron absorption is a result of decreased stomach acidity.

Calcium Requirements

Calcium is one of the chief minerals in building the skeletal structure of the body. The calcium ion aids in the coagulation of the blood and in body fluids it helps regulate the heartbeat and may aid the absorption of Vitabin B₁₂ from the intestinal tract (Chany, 1971).

Calcium is deficient in many elderly who are on self-selected diets (Howell, 1969; Lutwak, 1969). Many elderly frequently believe that calcium-rich foods cause constipation, are unnecessary for health, and, therefore, are avoided (Howell, 1969). Calcium deficiency may be caused by factors other than inadequate dietary intake. During the aging process there is some reduction in the ability of the intestine to absorb calcium (Lutwak, 1969). Ability of the kidney to reabsorb calcium may be impaired (Howell, 1969). A relationship has also been found between protein intake and calcium excretion (NRC, 1974). A high protein intake will cause calcium excretion to be increased (NRC, 1974).

A high incidence of osteoporosis in the elderly can be related

to long-term low calcium intake, hormonal changes, inactivity, and low protein intake (Chaney, 1971). Osteoporosis develops over a period of years increasing with advancing age. The deficiency appears to be a manifestation of the aging process (Dallas, 1962). Calcium balance tends to become negative during aging, and many individuals who have osteoporosis are in negative calcium balance (Howell, 1969). Eckerstrom (1966) found that negative balance may be due to inadequate intake, malabsorption, or excessive excretion. Increased calcium intake will restore the balance if total protein intake is sufficient, but will not retard development or prevent osteoporosis (Howell, 1969).

Low calcium intake contributes to a high percentage of fractures in the elderly (Brink, 1968). The deficiency is more prevalent in women than men and is usually symptomatic after physiological menopause (Lutwak, 1969). A three year study of 2100 women over the age of 45 was conducted by Iskrant (1969) to examine the relationship between fractures and osteoporosis. He found that women with Osteoporosis had a fracture rate twice as high as those women who did not have osteoporosis.

Calcium requirements for the aged individual are at least equivalent to those of younger adults (NRC, 1974). Lutwak (1969) advises the intake amount of gm/day with adequate amounts of Vitamin D for women who have osteoporosis.

Personal Factors Influencing Food Intake

The length of one's life span is not determined by nutrition

alone. Nutritional adequacy also influences quality of life. "The quality of the remaining life of the aged person greatly depends upon what he chooses to eat" (Rao, 1973, p. 362). There are many individual variables which affect a person's food intake.

Income

The limited income of many elderly restricts the purchase of food and is the major factor influencing their food intake (Rao, 1973; Giffit, 1972; Wells, 1975; Howell, 1969; New Hampshire Council on Aging). The elderly person spends an average of 30% of his income on food (Elwood, 1975). A direct relationship between income and a healthful diet has been found (Jackson, 1973; Watkin, 1973). When the cost of living increases, food and medical expenses are curtailed first by the elderly (Jackson, 1973).

"They (the elderly) receive from pensions, annuities, investments, and social security scarcely enough to survive, let alone live in comfort, health, and good nutrition" (Watkin, 1973, p. 1590). The 1970 poverty index level for people over 65 was \$1,852 per year per person (Butler, 1973). Using this level, more than one out of four people over 65 are included in this category (Butler, 1973). Old people represent 10% of the total population and 20% of the poor in the U.S. (Butler, 1973).

The average income of the elderly is broken down as follows; 29% from continuing income, 52% from retirement and welfare programs, and the remainder from investments and relatives (Butler, 1973). The

elderly living in rural communities have a greater handicap because social security benefits are lower than urban areas due to a higher rate of self-employment in rural areas (Butler, 1973).

Many of the elderly are eligible for food stamps but are not participating in the program (Giff, 1972; Howell, 1969). A cash outlay is required to receive food stamps. This is difficult for the low income elderly who have little or no savings (Howell, 1969). The individual may feel he is losing control over his affairs and may be more secure if the stamps could be purchased in small amounts (Giff, 1972). The food stores that participate in the food stamp program may not be acceptable to the elderly consumer (Howell, 1969).

It can, thus, be presumed that a substantial number of elderly who are currently living alone do not have the cash resources to avail themselves freely of foods, granted even that their motivation, dietary information, and levels of health allowed for optimum selection and consumption. The recent attempts of several congressional families to stimulate the diet patterns of low income people have given "credibility" to this fact. (Howell, 1969, p. 8).

Residence

Substandard housing is a way of life for 30% of the elderly (Butler, 1973). One fourth of America's elderly population lives alone (Aging, 1970). This isolation will affect food preparation and intake (Beeuwkes, 1960; Woodruff, 1975). People in urban areas are

more prone than people in rural areas to isolated living or living in one room (Davidson, 1962; Rao, 1973). A study conducted by Davidson (1962) found elderly who were in a solitary living arrangement, living alone in one room, ate food with less variety, were heavier, and had a lower nutrient intake.

Elderly women are three times more likely to live alone than men (Butler, 1973). This can be attributed to the longer life span of the female. Women who are accustomed to cooking for a family are faced with solitude and often lose interest in cooking (Nutrition Reviews, 1966).

Lack of cooking and refrigeration facilities are detrimental to nutrient intake (Howell, 1969; Nutrition Reviews, 1966; Rao, 1973; Wells, 1975). Limited facilities will restrict the kinds of food that can be purchased, stored, and prepared.

Rural elderly comprise 35% of the total elderly population (Butler, 1973). Lack of urban congestion, long-time friends, and opportunities for more outdoor activities are benefits of this environment (Butler, 1973). Lack of transportation and inadequate medical facilities are disadvantages that must be coped with by these elderly (Butler, 1973).

Eating Habits

Living alone can cause a loss of appetite and lack of interest in food. There is little motivation to prepare meals for one person, thus, foods that require little or no preparation are consumed most

frequently (Jackson, 1973; Rao, 1973). The elderly can also be poorly motivated to eat properly if they do not have any facts on food and nutrition (Geriatrics, 1970; Wells, 1975).

A large part of an individual's eating habits are determined before old age is reached. Poor eating habits are not likely to improve with increasing age (Beeuwkes, 1960; Goodman, 1957).

Dietary studies to examine eating habits of institutionalized and non-institutionalized elderly have been conducted. Brogdon (1973) and Swanson (1964) found a high consumption of sweets and desserts in both groups. Brogdon (1973) found the institutionalized elderly consumed vegetables in least amounts compared to other foods. Swanson (1964) found fruit and vegetable intake of elderly women similar to eating patterns before old age, but the fruits and vegetables that were consumed were not rich sources of nutrients.

A 24-hour recall study was conducted with 3,500 elderly under the Older Americans Act (Pelcovits, 1972). The study revealed that one fourth of the subjects ate less than three meals a day. An analysis of the diet showed 34% ate no fruit, 18% no vegetables, and 20% no milk or milk products.

Shopping Habits

The methods and ease of which food can be obtained will influence consumption (Davidson, 1962; Howell, 1969; New Hampshire Council on Aging; Wells, 1975). Marketing can be more than a chore for the elderly. It is also a social happening, where the elderly can get out

of the house and be with other people (New Hampshire Council on Aging). It is not uncommon for the elderly to shop on weekends when stores are generally more crowded (Howell, 1969).

The primary food store for shopping is selected because of location (Howell, 1969). Lack of transportation will dictate which market is most accessible (Howell, 1969).

Beeuwkes (1960) found many elderly choose food in relation to cost, not nutritional content, though the lowest cost item is not necessarily always purchased. There is a resistance among the elderly to try unfamiliar food brands (Howell, 1969). Newspaper advertisements displaying food specials were found to have little influence on shopping habits of the elderly (Howell, 1969).

Shopping habits differ depending on marital status. Older married couples have well-established shopping patterns based on years of interaction and the tendency to shop together (Howell, 1969). Retired couples are more apt to have a car which increases the number of markets available (Howell, 1969). Widows tend to cling to shopping habits that were well-established when the spouse was alive (Howell, 1969).

It is often believed that many elderly have their groceries delivered. Davidson (1962) found that over half of his 104 subjects did their own shopping and transported food home.

Physical Condition

Limited physical mobility or poor health will have a direct

influence on shopping (New Hampshire Council on Aging; Nutrition Reviews, 1966; Wells, 1975). Greater difficulty in obtaining food is encountered if the elderly person has to be dependent on another individual (Howell, 1969).

The older person's state of health influences food intake. Chronic alcoholism and invalidism can contribute to lack of appetite and poor nutrition (Rao, 1973).

Poor dental health is a factor in unsatisfactory eating habits of the elderly (Anderson, 1971; Burton, 1976; Beeuwkes, 1960; Goodman, 1957; Rao, 1973). Many individuals do not reach old age with all their own teeth.

Diet restrictions are frequently needed for the elderly diet (LeBovit, 1965). In a study conducted by LeBovit (1965) of 283 elderly it was found that 80% had some diet restriction linked to health and 30% had some disease which required dietary modification.

Cultural Influences

The society or culture in which one lives defines which foods are acceptable and the roles that food plays. Each culture has its own unique foodway which is a part of the heritage of the group (Gifft, 1972; Lee, 1957).

How a food is acquired, which foods selected for consumption, how they are prepared for eating, who eats them, with whom, when, how, and in what quantity they are eaten--all develop throughout the history of a society as a result of the adapt-

atations the society makes to physical and sociocultural milieu (Gifft, 1972, p. 27).

Food habits are characteristic and repetitive acts which are performed by an individual (Gifft, 1972; Howell, 1969; Zetterstrom, 1962). Human behavior, such as indulgence or self-denial, can be controlled by the individual through his food habits.

Socialization

Food serves as a symbol of security, a medium of socialization, and represents friendliness, sociability, and warmth (Weinberg, 1972; Zetterstrom, 1962). There is a direct relationship between eating and friendship. Food can dictate the degree of acceptance and compatibility between individuals. People will accept food more readily from people who are considered friends.

To a large degree, eating habits of the aged depend upon with whom the person dines at mealtime (Pelcovits, 1971; Weinberg, 1972). Social isolation of the aged individual creates problems in obtaining, preparing, and consuming food (Swanson, 1964). Howell (1969) states the degree of socialization provided by a meal depends on four factors: 1) the person sharing the meal, 2) length of time involved, 3) emotional atmosphere, and 4) topics of conversation during mealtime.

Value and Prestige of Food

Food has deep significance or emotional influence. Food represents many symbols, both positive and negative, and specific associations can be detrimental to an adequate food intake.

Food can be a multi-purpose tool. Interpersonal communications can be achieved through food by defining the occasion and setting the limits of interpersonal relationships. Food can also be used for currency, social and kinship responsibilities, recreational activity, and religious beliefs. Personal independence can be asserted through food choices.

Emotional response to food is generally related to the taste of food and the sense of well-being that is derived more than the nutritional value and/or caloric content (Zetterstrom, 1962).

A danger of the unknown confronts people when an unfamiliar food is presented. New foods, for example, will be accepted more readily if the food is introduced in familiar surroundings by a trusted friend or member of the family. The introduction of new foods to the elderly can be accomplished through the walk-in meals program.

A prestige or status factor is present in the budgeting and selection of food. Foods are assigned a value by society and can be rated according to cost, availability, preparation, and/or superior quality.

Traditions

Satiety and frequency of meals depend on the culture. The number of meals eaten in a day is based on custom, not physiological need. A feeling of hunger is learned in relation to cultural needs.

Food is culturally conditioned to specific occasions. Turkey is associated with Thanksgiving, champagne with celebrations, and cake

with candles for a birthday. Breaking cultural traditions by serving ham for Thanksgiving instead of turkey, can upset an individual's sense of security. Foods which upset the routine or present the unknown are not as acceptable as the traditional ones. Often elderly people adhere to traditions. A change of the tradition can upset the elderly person emotionally.

Food Taboos and Preferences

Differences in food preferences and taboos need not be related to the cost or availability of the food. Strict prohibitions or pleasurable experiences are associated with foods and affect nutritional intake.

Food taboos usually are related to preventing or curing illnesses. Those related to religion can be extremely prohibitive and tend to be adhered to by elderly people in the United States (Howell, 1969).

The foods one likes to eat affect food acceptance and health status. Food preferences are usually related to familiarity with food or a doctor's recommendation. A well-liked food may be eaten even in that food is not permitted by the doctor. (Boykin, 1975). The elderly person on a low sodium diet may eat luncheon meats even though they are prohibited, if they are a well-liked food.

An elderly person who resides with his family must usually eat what is served. The older adult may try to retain his old habits and be criticized by his children or grandchildren which may affect his emotional state. Food may be prepared differently and without familiar

spices in this type of living arrangement.

Food Faddism

The limited income of most elderly needs to be utilized as effectively as possible. Elderly people are extremely vulnerable to food fads due to concern about their bodies and health. The faddists offer false promises of superior health and freedom from disease. The elderly are led to believe that specific foods will bring back health and vitality.

Iron additives are consumed by large numbers of elderly people (Howell, 1969). Through mass media advertising, the older adults are led to believe that a high iron level in the blood will reduce fatigue. What is seldom mentioned in the advertisement is that the fatigue may be due to depression or some real disease.

The elderly as a group are likely to be easy prey for a faddist, but the poor, sick, and uneducated older adult is even more susceptible (Bruch, 1970). "Health" foods and cures are expensive investments with little return for the aged person. Low income, isolation, and little knowledge of food values are contributing factors in the faddism rip-off.

Changing Dietary Habits Through Nutrition Education

Elderly people are less informed about good nutrition practices than are younger people (Sherwood, 1973). Nutrition education programs for the elderly have potential value in changing food habits.

The needs of the elderly population have been ignored to a large

extent by nutrition educators (New Hampshire Council on Aging). The best method of involvement of the elderly in nutrition education experiences and the make-up of the audience have not been established. "Nutritionists have not thought through the what, who, where, and when issues of nutrition education for this particular group" (New Hampshire Council on Aging).

Physical Changes in Adults Which Affect Learning

Nutrition educators working with the elderly should be aware of certain physiological changes in the adult which affect learning. As the individual ages, hearing and visual impairments increase and speed, intensity, and endurance of neuromuscular reactions decrease (Kidd, 1973). These factors must be taken into consideration when planning an effective nutrition education program for the elderly.

Visual function is a measure of physiological age (Kidd, 1973). An increase in age is accompanied by a decline in general visual function. Also, a decreased efficiency in specific visual functions occurs.

People over 60 years of age have an increase in auditory disabilities. Elderly people are slower to translate sounds and may find it difficult to translate rapid speech without any actual hearing loss (Martin, 1963). A loss of hearing occurs at high and low frequencies (Martin, 1963).

Hearing losses can create psychological problems. A loss of self-confidence, one's attitude towards learning new things, the ability to

cope with new situations, and stress on interpersonal relationships can be manifested by hearing loss.

"People slow down as they get older" (Kidd, 1973, p. 61). The learning rate may decrease, that is, the older adult may comprehend, perceive, act, and think at a decreased rate. Given sufficient time to respond, the elderly may have the same number of correct responses as younger persons. Learning efficiency can remain the same even though learning rate may decline (Kidd, 1973).

Long and short term memory is affected by age. The short-term memory function remains stable, but rate of retrieval declines with age (Woodruff, 1975). Long-term memory steadily declines with increasing age (Woodruff, 1975). These physiological changes must be taken into account when planning nutrition education programs for the elderly.

An appropriate environment should be constructed to help learning take place. To compensate for decreased visual functions, good lighting is essential. Seating should be close to the speaker for those who may read lips. Glare should be reduced as much as possible; participants of the program should not be facing into direct light (Martin, 1963).

Visual aids can be used as a supplement to a talk and should be large enough to be seen easily. A neutral background with sharp contrast in colors for the message is recommended. Simple words and phrases should be used, with no abbreviations if possible. Materials

should be printed with large type for ease in reading (Martin, 1963).

Auditory disabilities require the instructor to face the group and speak slowly and distinctly. Use of simple words will help the elderly to translate the message. Small groups will make it easier for the elderly to hear the speaker.

Learning and Behavior Change

Learning and behavior changes can occur at any age provided an effective method of teaching is applied. "Learning means change" (Kidd, 1973, p. 15). This involves behavior and may not always be a positive change.

Lowenberg (1968) states there are four steps to bring about dietary changes.

- 1) Those who possess the knowledge must want to bring about a change.
- 2) The group needs to be helped to be made aware they need a change.
- 3) The group members must be motivated to make the change.
- 4) The food must be available when the change is made.

Basic theories of adult education are applicable when helping the elderly to improve food habits.

Awareness of a need for change is necessary before any change can be made. People tend to seek out information that supports their own views. Information is more likely to be accepted if it is relevant to

the needs and interests of the learner (Kidd, 1973). Emphasis can be placed on the learner by having the student relate to previous experiences (Gifft, 1972). Thus, already accepted foods and well-established eating patterns should be used as a foundation (Howell, 1969). This can be used as a point of contact to overlap new experiences and habits. Persuading the older adult to adopt and maintain new behaviors can be a difficult task.

An evaluation of learning progress and behavior change should be conducted. In evaluating, there is a need to differentiate between changes in opinion or knowledge and actual changes in behavior (Howell, 1969). Measures taken before and after nutrition education do not necessarily show changes in behavior. The desire for approval may motivate the student to learn facts without changing daily behavior.

A change in behavior can be brought about through a change in attitudes (Kidd, 1973). Gifft (1972) defines an attitude as "positive or negative dispositions towards stimuli, whether these be objects, situations, actions, or ideas" (p. 281). Attitudes are difficult to change and are necessarily altered by knowledge alone (Gifft, 1972). Attitude changes accompany the acceptance of responsibility or obligation to oneself and to others (Kidd, 1973). The responsibility can be delegated through small group learning situations.

Conducting Nutrition Education for the Elderly

"The most successful nutrition education program is one that creates, for both site personnel and participants, a high degree of

awareness of what good nutrition practices are, how they can be achieved, and some daily personal incentives" (Lofton, 1975, p. 19). The success of a program depends on the cooperation of the resource person and participants, and the degree of communication on success and failures (New Hampshire Council on Aging).

An effective nutrition education program for the elderly depends on various factors. The relationship between adequate food and maintenance of health should be stressed (Gifft, 1972). The psychological and sociological importance of food should be recognized by both the educator and learners. The positive aspects of existing habits should be incorporated as the foundation for change (Gifft, 1972). Limited resources; time, money, and facilities, are a reality and must be taken into consideration.

"Resistance to nutrition education is not unusual" (Lofton, 1975, p. 7). The elderly are often apprehensive of their ability to learn and participate in a class-room type setting. The material needs to be presented differently for the elderly than for the young.

The program needs to be based on the interests and needs of the elderly. Every group of elderly will be different and the educator should not make generalizations about this population. It is up to the nutrition educator to determine the needs of the group. This can be achieved by several different methods. The teacher can visit with the participants and ask them what they want. "The best ideas for topics come from the elderly themselves" (New Hampshire Council

on Aging). The site or program director can offer suggestions. Participants can complete a questionnaire but this would be the least effective method since often times the elderly do not wish to cooperate in filling out forms (Lofton, 1975).

Good participation in a program will depend on the interest that is aroused. The educator needs to create interest or sell the idea of nutrition education to the elderly involved. The program should be well-publicized through posters, radio, or newspaper. Sessions should be scheduled on a regular basis and announced the day before. A comfortable atmosphere should be created to make the participants feel at ease. Door prizes can be used to motivate the elderly to attend (Lofton, 1975).

Basic goals for nutrition education for the elderly are: to convince the elderly that food makes a difference in health, money for food is well-spent, how to buy and prepare food, and how to recognize food fads (Gifft, 1972; LeBovit, 1965). A combination of teaching methods is the best way to achieve these goals (New Hampshire Council on Aging).

Howell (1969) and Martin (1963) state the following suggestions will increase effectiveness of nutrition education.

- 1) Start with the familiar, something the participant can relate to.
- 2) Sessions should be short, 15-20 minutes at the maximum.
- 3) Different instructors will keep up interest.

- 4) Use as many senses as possible in each session.
- 5) Instruction before meals are served can serve as an appetite arouser. Learning and recall of food associated words has been shown to be better before meals (Howell, 1969).
- 6) Help participants to recognize their successes and stress the positive.
- 7) Encourage all to share in the activity and avoid competition.
- 8) Real learning to daily occurrences, life experiences, and personal objectives.
- 9) Vary the frequency or repetition of the same information.
- 10) Summarize often during the session and relate previous sessions to the current topic.
- 11) Follow-up teaching or one-to-one teaching will reinforce long-term behavior change.
- 12) Create interaction among the learners. Use peer influence as a positive thing and have peers function in the teacher role.
- 13) Guide the learner to information and let him find it himself. Self-discovery improves understanding, retention, and application of knowledge.
- 14) Discriminate use of teaching supports can supplement the effectiveness of the teacher. Guest speakers, films, slides, posters, real life objects, and audio-visual tapes can increase enthusiasm as well as teach.

The learning activity selected for use will depend on available

resources. The nature of the problem, time, money, and facilities are all determinants of the type of activity to be used.

The lecture method, a passive activity, is not desirable. Active participation will promote learning and encourage change for the elderly; therefore, group discussion is more successful (Howell, 1969). The group takes on responsibility of what it wants to change and degree of change desired (Lowenberg, 1968). An unstructured informal discussion stimulates learning by asking questions of each other. The group as a whole may influence each other in behavioral change (Lofton, 1975). The sharing of experiences can create an atmosphere of trust and may aid self-confidence.

These benefits of group discussion are a very effective strategy for teaching the elderly population (Holmes, 1972; Lofton, 1975); Lowenberg, 1968; New Hampshire Council on Aging; Pelcovits, 1972).

Other learning activities which encourage participation of the elderly are:

- 1) Encourage the elderly to help plan the menus and serve the meal if the program coincides with congregate meals.
- 2) Demonstrations with samples conducted by the teacher or students will create interest.
- 3) Written materials and handouts are welcome, particularly new recipes.
- 4) Skits and role playing can be used to introduce new topics.
- 5) Problem solving with case studies will encourage cooperation

among the group.

6) Group projects can be undertaken such as recipe collection for a cookbook, the planting and up-keep of a garden, or development of audio-visual aids.

Success of a nutrition education program among the elderly is measured in small ways (Huiatt, 1971). The expectation of drastic behavioral changes among the elderly is unrealistic. More realistic are small changes of the participants such as, asking more questions, or trying new recipes that have been distributed.

National Nutrition Program for the Elderly

Adequate nutrition and the need for social interaction are underlying needs of the elderly. To meet these needs, a developmental program to provide nutritious meals in a setting that offered the elderly companionship was designed.

The Older American Act (Public Law 92-258) was amended in 1972 and to it was added Title VII, National Nutrition Program for the Elderly.

In Section 706, reference is made to provision of supportive services. These services include nutrition education, shopping assistance, health and welfare counseling, information and referral services, and recreational activities related to the project (Older Americans Act, Title VII, 1973).

Recipients of Title VII grants must provide at least one hot meal a day, five days a week. The location for these congregate meals may be schools, churches, senior citizens centers, or other public

facilities. The meals must meet one third of the Recommended Daily Allowances and be low cost.

Each state participating in the program must meet certain requirements. The state's agency on aging must develop an annual operating plan. Funding for operation and cost of the program comes from two sources: 90% from federal funds, 10% from non-federal funds.

Basically designed for low-income elderly; individuals over 60 years of age and their spouses are eligible who meet the following criteria:

- 1) cannot afford to eat adequately
- 2) a lack of skills and/or knowledge to select and prepare nourishing meals
- 3) limited mobility which may impair their capacity to shop and cook for themselves
- 4) have feelings of loneliness or rejection that inhibits the incentive necessary to prepare and eat a meal alone

(National Nutrition Program for the Elderly, Policies and Procedures Manual, 1972).

"One of the primary purposes of Title VII is to establish, maintain, operate, and expand nutrition training and education projects" (New Hampshire Council on Aging). The meals serve as a model for a nutritionally adequate meal (Lofton, 1975). Consumer and health-related information on foods and nutrition are also presented.

The policy requirements for nutrition education state that regu-

larily scheduled meetings be conducted by dietitians/nutritionists who have experience in informal nutrition education, preferably with low-income people and/or the elderly (National Nutrition Program for the Elderly, Policies and Procedures Manual, 1972). The activities are an extension of the meal served and should aid in improving eating habits and make the elderly more aware of nutritional food values.

Since elderly people are so diverse in their needs, nutrition educators must be sensitive to the individual. "One of the goals of the group meals program is to meet some of the social and psychological needs of the elderly and thus, help them maintain their self-esteem, dignity, and independence. Nutrition education should respond to these same needs and also point toward those goals" (Lofton, 1975, p. 2).

CHAPTER III

PROCEDURES

Nutrition education for the elderly is a concern in America (New Hampshire Council on Aging). Elderly people are often in the low-income category and do not have sufficient money to eat adequately (Gifft, 1972; Howell, 1969; Rao, 1973; Wells, 1975). For the majority of elderly people, skill and/or motivation for proper nutritional intake is lacking. A planned nutrition education program can increase awareness of basic principles of food preparation and selection.

Population

In order to help the elderly improve their nutritional status, it was necessary to aid them on a face-to-face basis. The population in this study was elderly people who participate in Title VII, National Nutrition Program for the Elderly, in Whitehall, Montana. To be eligible for Title VII programs, a person must be over 60 years of age and meet the Title VII criteria:

Whitehall is a small town, 1,035 people (U.S. Department of Commerce, 1973). There are approximately 50 participants in the walk-in meals program and not all participants were expected to remain for the classes which were conducted after the meal.

Major reasons for selecting the Whitehall project were:

- 1) A research grant from Montana Aging Services Bureau was received to pay for the cost of materials and foods for the sessions.
- 2) The Aging Services Bureau in Helena is responsible for the operation of Title VII projects in Montana.

- 3) It was necessary to select a Title VII project because of the funding source.
- 4) Accessibility and the cooperativeness of the project director were also determining factors.

Sample

The data producing sample consisted of 25 elderly persons; the majority of those participating were females. The sample of elderly persons ate one hot meal a day, five days a week, at the Whitehall Seniors Center. Several have participated in previous nutrition education sessions in conjunction with Title VII which may have influenced their prior level of nutritional knowledge.

Instrumentation

A form to stratify the sample, a pre- and post-test, and mini-tests were developed for the study (see Appendices A, B, and C). All questionnaires and mini-tests were coded by birthdates. Birthdates were used instead of names so the respondents' anonymity could be maintained yet the researcher would be able to coordinate the data for each individual. This coding system was also selected because it was easy for the elderly to remember.

A form to identify characteristics of the participants was used to collect data to aid in stratifying the sample (see Appendix A). Shopping and eating habits, living conditions, and personal data such as income level, educational level, sex, and marital status were collected.

A questionnaire to determine behavioral change, especially shopping and eating habits, was developed and administered as a pre- and post-test. It was designed to be non-threatening, that is, the questionnaire had no right or wrong answer. A one to four response was available to those elderly completing the pre-post form to measure degree of change in shopping, cooking, and eating habits. The descriptive counterpart, in the same order was: never, sometimes, occasionally, always (see Appendix B).

Two to four questions were asked from each of the eight sessions. Each question was explained individually to the participants by the researcher with the aid of an overhead projector and transparencies for the questions.

In order to cope with inconsistent participation, a mini-test was given at the end of each session so that immediate cognitive learning could be evaluated. Multiple choice questions and brief completion questions were used. The two questions presented on each mini-test covered material that was included in that session (see Appendix C).

To motivate the elderly to attend the program and complete the forms, a door prize was given at the close of each session. Most of the door prizes were food items, especially milk or milk products, since emphasis was placed on increased consumption of these foods.

Instructional Materials

In order to present material which would increase nutritional modules were developed and presented. A list of twenty possible

topics was formulated. Nutrition education needs of the Whitehall group were discussed and identified with the project director at Whitehall and eight topics were chosen from the list.

The topics focused primarily on basic principles of food selection and preparation. Basic nutrition concepts, with particular attention to the milk group of the Basic Four food groups, were interjected into each session. Several of the participants were on low sodium diets and this dietary restriction was considered in the instructional modules.

Actual instructional modules included objectives, illustrated talk outline, follow-up questions, materials needed, and resources (see Appendix D). Topics, sequence and objectives follow.

1) Rules to shop by:

The participant will develop skills to shop economically for one person.

The participant will recognize the different forms of milk available.

2) Cooking for one:

The participant will select economical foods that can be bought when cooking for one person.

The participant will identify ways to make mealtime more pleasant when eating alone.

3) Thrifty use of leftovers:

The participant will develop ability to incorporate small quantities of various kinds of foods into palatable menu items.

The participant will comprehend proper storage techniques

and treatment of cooked foods to maintain optimum quality and freedom from food-borne illnesses.

4) Between meal snacks:

The participant will develop ability to indentify and choose nutritious between meal snacks.

The participant will develop ability to choose economical snacks.

5) Meals in a single skillet:

The participant will develop ability to prepare entrees with limited time and equipment.

The participant will recognize principles of proper vegetable cookery.

6) Economy protein sources:

The participant will develop ability to select economy protein sources.

The participant will identify alternative protein source foods.

7) Meals with limited equipment:

The participant will develop ability to prepare nutritious meals with limited equipment and facilities.

The participant will recognize the availability of convenience foods and possibilities to individualize foods to suit personal taste.

8. Food fads and fashions:

The participant will analyze common food misconceptions.

The participant will recognize the influence of common food fads on food buying habits and intake.

A brief illustrated talk, no more than ten minutes in length introduced the session. Posters, slides, and demonstrations were

utilized in the instructional module. Recipes were distributed to the participants. Two types of recipe handouts were utilized, those assembled by the researcher containing only recipes, and published pamphlets containing recipes and nutrition information. Active participation by the elderly was incorporated so that each participant could be involved. Strategies included group discussion, actual food preparation, and tasting new menu items.

Procedures

A pilot study was conducted at the Bozeman Senior Social Center prior to the actual instruction at Whitehall. Validity and reliability of questionnaires and mini-tests were determined through the pilot program. All eight instructional modules were presented in their entirety to provide an opportunity to evaluate content and effectiveness of teaching aides for each module. Reactions of the participants in the pilot program were observed and served as the evaluation of the program. Verbal and non-verbal reactions, such as degree of participation and attentiveness to illustrated talks, visual aides, demonstrations, recipes, new menu items, the questionnaires, and mini-tests provided the researcher with feedback for changes, primarily teaching methods that were made.

Eight nutrition education modules were presented at the Whitehall Seniors Center during a four week time period. Sessions were held twice a week, on Tuesday and Thursday afternoons, from 2:00-2:30 p.m. Afternoon sessions which created minimum interference with other

center activities were selected. An attendance card was used to maintain a record of the number of sessions each participant attended.

A personal follow-up interview was conducted two weeks after the last module by the researcher. The purpose was to evaluate success of the program as well as determine if any needs were not met. Four standard questions were asked of each participant and the frequency to each response was recorded (see Appendix E).

Analysis of Data

Responses to questions for the total study on the pre- and post-tests were statistically analyzed using standard methodology. Answers to all questions were converted to a numeric score (1 to 4). The descriptive counterpart of the numeric scale, in the same order, was: never, sometimes, occasionally, always.

To provide insight into the change in response and the variance in response, the mean and variance of pre- and post-test answers were estimated for each question and individual.

Redundancy of questions was determined through simple pair-wise correlation. An approximate t-test was utilized to determine whether or not the correlation coefficient was significant.

A mini-test was administered at the close of each session. Results from these tests have been summarized but not subjected to statistical analysis since most responses were subjective.

CHAPTER IV

RESULTS AND DISCUSSION

The purpose of this study was to develop and evaluate nutrition education modules for the elderly participating in Title VII in Whitehall, Montana.

Sample Characteristics

General Characteristics

The population consisted of 25 elderly people in Whitehall, Montana. A total of 17 participated in at least part of the study. The maximum number of people attending any one class was 13; the minimum 8. The mean age of the participants was 72 years and 6 months; the age range was 64 years and 4 months to 82 years and 7 months.

There were 13 females and four males who participated in the study. Three of the men attended the sessions with their wives, one without his wife. Marital status for all participants was seven married and ten widowed.

A majority of the respondents had completed part of grammar school or high school. Seven participants had completed a portion of grammar school and eight had a formal educational background involving high school. Only two had attended college; one had graduated.

Over half, nine, of the participants had an income range of \$2760-5000. Four participants were lower than this range and four had incomes greater than \$5000. One elderly individual had an income in the \$7000-10,000 range. Only one person was receiving food stamps.

Five people were on diets, other than weight control, that were prescribed by physicians. Three of the participants had some previous nutrition education. Two of the three that had nutrition education were on modified diets. The source of their nutrition education was not determined (Figure 1).

Life Style

Ten of the participants resided in houses; five lived in mobile homes, and two in apartments. All respondents had a range and a refrigerator; eight had a freezer. Over half, ten, of the participants did some home gardening.

Fourteen of the elderly people participated in the walk-in meals program. The frequency of participation ranged from two people attending one time per week to ten people attending five times per week. The mean for participation of the 14 people was four times per week.

One person ate at a restaurant on a regular basis, once a week. Three people ate with friends or family once a week. About half, eight, had children that lived locally.

The most common method of transportation for group members was by car, 14 had automobiles. Six reported walking as the major mode of transportation (Figure 2).

Shopping Habits

Thirteen of the total participants did most of their grocery shopping in Whitehall. Six of the participants shopped in Butte

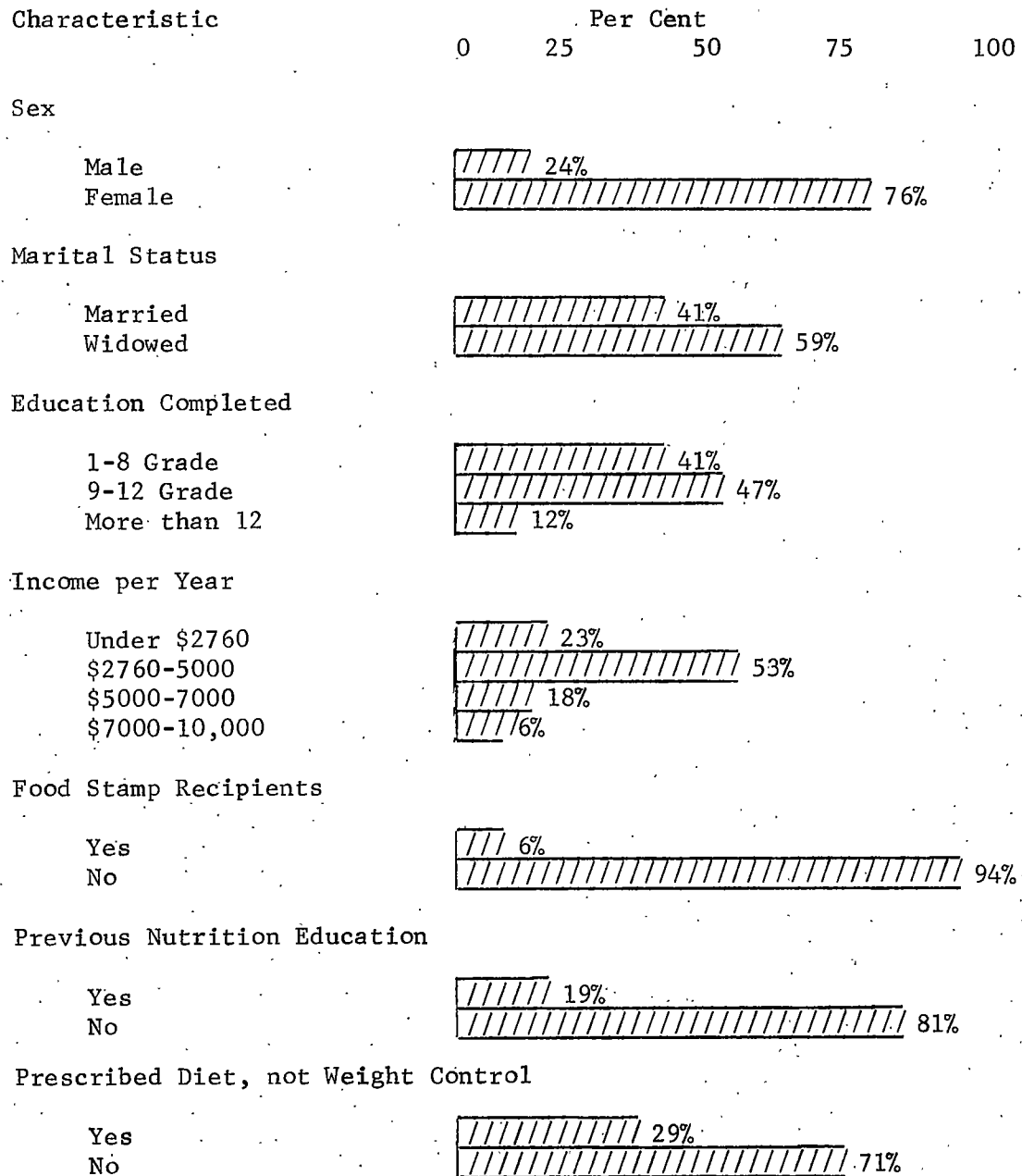


Figure 1. General characteristics of the sample.

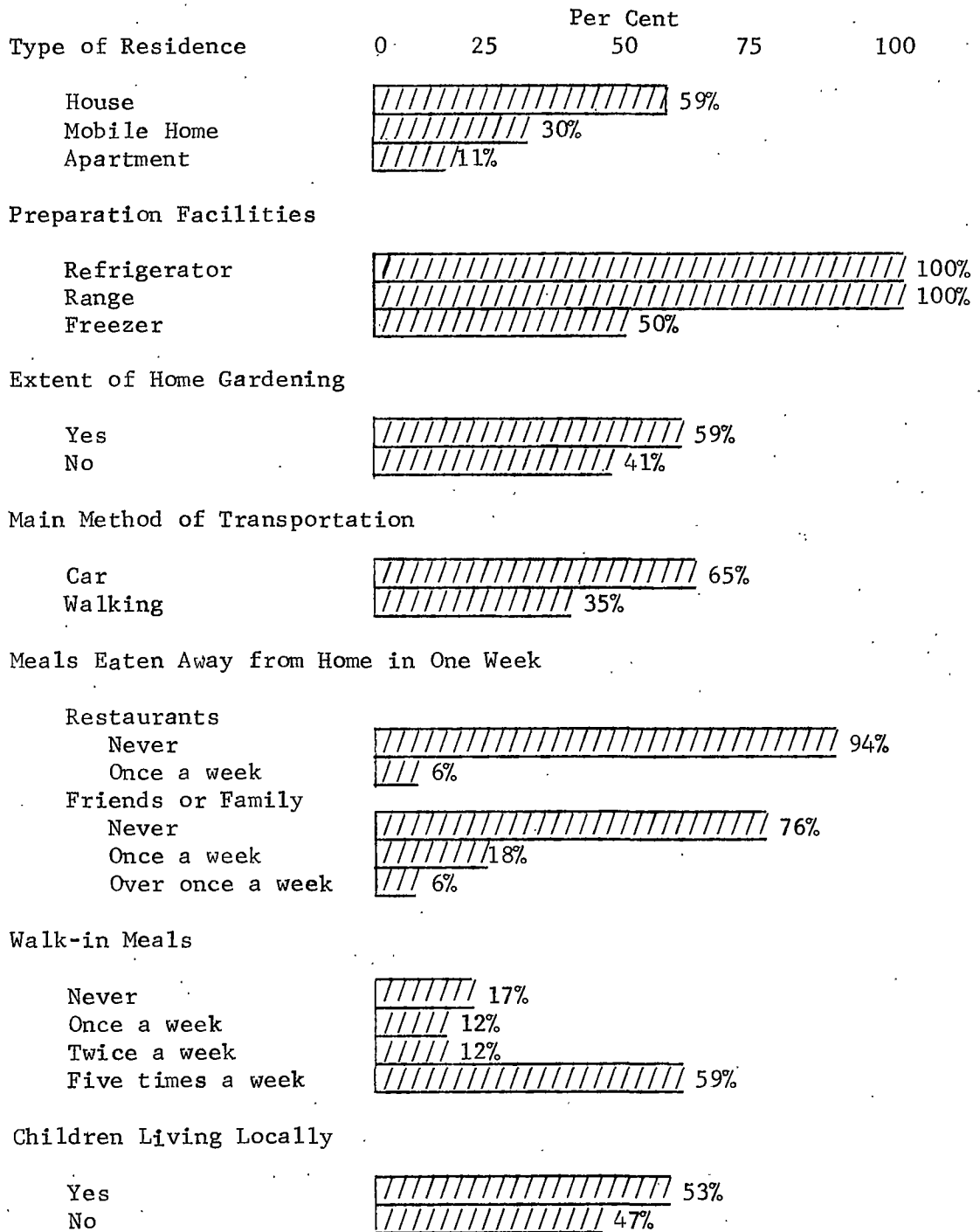


Figure 2. Life style.

indicating that several people shopped in both towns. Those who shopped in Whitehall had access only to a small grocery store. Of the six who shopped in Butte, three shopped at a large supermarket. Results indicated that three of the people who shopped in Butte did so at a small store, comparable to the one in Whitehall.

A total of nine participants shopped only once a week. Five went to the store twice a week; one three times a week and one daily. All but one of the participants shopped by themselves and carried their groceries home. One individual had the groceries delivered.

Advertised grocery specials influenced the shopping habits of ten people. Seven people paid little attention to grocery specials published in the newspaper (Figure 3). This disagreed with information revealed in the literature search. The elderly people in Whitehall were more influenced by advertised grocery specials than elderly people in general.

Results and Discussion

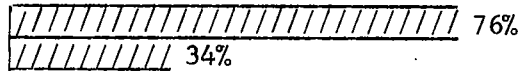
Pre- and Post-test

Analysis, following standard methods of comparing pre- versus post-test mean scores revealed no significant difference (NSD) for the total study (Table 1). Of the 27 questions, a zero difference was detected for two questions referring to food preparation and eating habits. There were seven questions, four preparation (12, 16, 18, 19), two eating habits (7, 26), and one shopping habits (5) for which the difference was negative, indicating an undesirable response to the pro-

Location of Store*

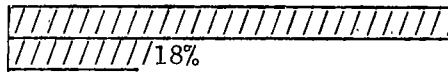
0 25 50 75 100
Per Cent

Whitehall
Butte



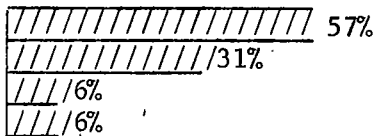
Type of Store*

Small store
Supermarket



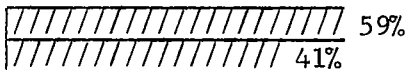
Number of Shopping Trips per Week

One
Two
Three
Over three



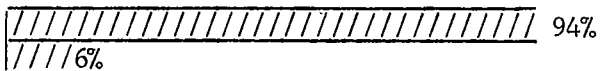
Use of Advertised Specials

Yes
No



Method of Shopping

Shop by Self
Groceries delivered



* Does not equal 100% since some people answered yet to both choices.

Figure 3. Shopping habits.

TABLE 1

Pre- and Post- Differences for Each Question

Question	N	$\bar{X}$	Pre s^2	$\bar{X}$	Post s^2	Change in $\bar{X}$
1	14	2.50	.88	2.57	.57	+.07
2	17	3.32	.32	3.47	.51	+.24
3	16	2.94	.73	3.00	.68	+.06
4	16	2.13	.92	2.31	.76	+.18
5	15	2.60	.69	2.13	.41	-.47
6	16	1.94	.06	2.12	.38	+.18
7	15	2.27	.49	2.00	.57	-.27
8	15	1.33	.24	1.67	.67	+.34
9	17	3.76	.57	4.00	0	+.24
10	17	3.94	.06	3.94	.06	0
11	17	2.42	.26	2.53	.39	+.11
12	15	3.33	.24	3.27	.49	-.06
13	17	2.12	.23	2.18	.53	+.06
14	16	2.75	.33	2.81	.56	+.06
15	17	2.42	.51	2.47	.64	+.05
16	17	2.23	.19	2.00	.37	-.23
17	16	2.25	.60	2.50	.27	+.25
18	15	2.33	.67	2.20	.74	-.13
19	15	2.00	.29	1.80	.46	-.20
20	15	2.20	.46	2.20	.31	0
21	15	1.93	.92	2.53	.84	+.60
22	16	2.25	.47	2.31	.36	+.06
23	16	2.37	.38	2.44	.53	+.07
24	16	2.37	.25	2.69	.50	+.32
25	15	2.53	1.23	2.80	1.03	+.27
26	16	2.94	1.00	2.81	.70	-.13
27	16	3.56	.40	3.81	.16	+.35

gram. The change in the remaining ten questions was positive. For seven, however, the difference was less than 0.1 units. The greatest change was +0.6 units, detected in Question 21, relating to food preparation.

Five questions; three preparation (9, 10, 12) and two shopping habits (2, 27), had a higher pre-test score than post-test score. This could have occurred because the group had a high level of prior knowledge or it may have been that these were poor questions.

A separate t-test was calculated based on pre- and post-test scores for the 17 respondents; the value of 1.76 was statistically nonsignificant. The greatest negative difference, -.47, Question 5 (shopping habits) was also tested separately; the difference is nonsignificant. Based on these data, the conclusion must be that the program did not significantly alter behavior.

Twelve questions had a decrease in variance between pre- and post-tests; 14 had an increase, one remained unchanged. These data are inconclusive. There appeared to be no apparent association between an increased or decreased mean and an increased or decreased variance. This could be due to a high level of prior knowledge.

A lack of trend was apparent when the pattern of variance was expressed as coefficient of variation (C.V.), $C.V. = \frac{100s}{\bar{X}}$ (Steel, 1960). A majority of the C.V. ranged from 20-40%. The greatest C.V. for the pre-test was Question 21, relating to food preparation, which was 60%. The greatest C.V., 49% for the post-test was Question 8,

relating to shopping habits. As a guideline, a C.V. of greater than 20% was determined to be on the high side. The C.V. range for the study suggested the sample size was inadequate.

Differences between pre- and post-tests for each individual were determined (Table 2). A negative change was evidenced between pre- and post-tests for four individuals, the greatest change was $-.51$. Results from eleven of the respondents indicated a positive change; the greatest positive change was $+.40$. Five of the respondents had a positive change of less than 0.1 units while two respondents showed none.

The sign test was utilized to determine significance of change in responses for the sample that may have not been detected in the t-test. The pre- and post-test for each individual summed across all questions did show a significant increase. The sign test did not measure the magnitude of the means, only the number of positives and negatives.

Eight participants had a decrease in variance in response to questions; nine had an increase. There appeared to be no apparent association between an increased mean and an increased or decreased variance. When analyzed for female and male responses, there was no apparent association between sex and changes in mean and variance.

Pair-wise correlation was conducted to determine redundancy of questions. The number of estimates calculated was 702. At the .05 level of significance, 35 are expected to be apparently significant

TABLE 2

Mean, Variance, and Difference for Each
Respondent on the Pre- (X) and Post- (Y) Test

Birthdate	Sex	N	$\bar{X}$	$\bar{Y}$	Diff	S_x^2	S_y^2
2-25-94	F	27	2.11	2.22	+.11	1.42	1.69
6-1-94	F	27	2.26	2.26	-.08	.77	.79
2-25-95	M	27	2.66	2.74	+.08	.40	.68
4-27-97	F	25	2.68	3.08	+.40	.75	1.36
7-19-00	F	26	2.54	2.58	+.04	.74	.87
1-8-01	M	27	3.03	2.52	-.51	1.28	.75
1-21-03	F	27	2.44	2.44	0	.33	.34
10-24-03	F	21	2.81	2.76	-.05	.75	.56
10-28-04	F	21	2.71	2.57	-.14	.93	.85
7-1-05	F	17	2.47	2.65	+.18	1.01	.75
3-4-07	F	26	2.54	2.61	+.07	.93	.86
8-13-07	F	25	2.44	2.64	+.20	.84	.56
12-29-09	M	25	2.68	2.80	+.12	.54	.82
9-19-10	M	27	2.52	2.62	+.10	.56	.71
12-16-10	F	26	2.65	2.69	+.04	.97	.81
8-6-11	F	27	2.81	2.85	+.04	.85	.83
5-5-12	F	26	2.46	2.46	0	.58	.77

due to sampling error. The questionnaire revealed 44 correlations to be significant at the .05 level. Significant correlations were equally divided between pre- and post-test. Approximately 50% of the total significant correlations involved Questions 3, 5, 6, 7, and 13.

The maximum number of significant correlations for any one question was six with Question 3. Significant correlations for Question 3 were found in both the pre- and post- test. Question 3 refers to shopping for grocery sale specials. Responses to Question 3 were significantly correlated with responses to Questions 6, 8, 9, 13, and 17 which are concerned with economical food spending. If a person is concerned with economy in food shopping the consistency of his reply will be evident, as was true in this study.

There were three instances, or six correlations, where correlation coefficients were significant for the pre- and post-tests. Significant correlations were; Questions 6 and 7, 6 and 13, and 13 and 23. Questions 6 and 7 both relate to location of eating. Question 7 asks if the individual usually eats in the same place. This could be misinterpreted as the same place meaning the home, instead of the same place within the home as it was intended. Misinterpretation of the questions would explain its significant correlation with Question 6 which asks if the individual invites company over for meals.

There is no apparent logical explanation for the significant correlation of Questions 9 (eating habits) and 19, (food preparation). Question 13 pertains to the purchasing of special treats. Question 23

relates to the use of convenience foods. In this case, convenience foods may be a special treat to the individual, or the correlation be due to sampling error.

Consumption Patterns.

Questions to determine the consumption of specific foods were located at the end of the questionnaire. One of the objectives of this study was to encourage an increase in the consumption of milk and milk products; therefore, emphasis was placed on the use of milk and milk products. Not all participants responded to both pre- and post-test questions, therefore, total responses may not equal.

Respondents were asked how much milk, cheese, and ice cream they purchased and consumed in one week. The purchase of milk remained the same for six people, two increased consumption, and two decreased consumption. The pre-test mean consumption of milk per week was .54 gallons; post-test was .69 gallons. The two individuals who increased milk consumption did so by a substantial amount. The amount of cheese purchased remained the same for three people, three increased, and two decreased. The pre-test mean consumption of cheese per week was .50 pounds; post-test was .78 pounds. Ice cream consumption remained the same for six individuals, two increased, and two decreased. Pre-test mean consumption of ice cream per week was .27 gallons; post-test mean was .44 gallons.

Respondents were asked how many meals they ate in one day. The most frequent response was three times a day. Nine people did not

change their meal eating habits, one increased the number of meals, and four decreased. The instructional modules could have made the participants more weight conscious. A decrease in number of meals eaten per day could have been used as a method of weight control.

One module dealt with economy protein sources. Three subjective questions relating to extent of use of economy protein sources were asked of the participants.

Participants were asked how often they ate poultry in one week. The mean increased from pre- to post-test: 1.16 to 1.50. Four of the individuals increased consumption, three decreased, and five remained unchanged. All respondents who increased consumption did so from once to twice a week.

Since Whitehall is a rural area, it seemed possible that wild game could be a potential protein source for the group. For this reason a question on the extent of wild game use was included. Only three of the 17 responded positively to the use of wild game. Only one of these three had a positive response on the pre-test. The increase could have been due to the dates for the program. The program began before hunting season and ended during hunting season.

Use of fish, eggs, and cheese in one week was asked. The mean decreased from pre- to post-test; 3.50 to 3.16. Four individuals increased consumption, four decreased and consumption for four individuals remained unchanged. The decrease is inconsistent with the increase in cheese consumption in the previous question. The three

individuals that increased cheese consumption in the previous question, did not show an increased consumption of fish, eggs, and cheese for this question. This could be explained by a greater decrease in use of fish and eggs than in increase in use of cheese.

Mini-tests

Mini-tests were administered only at the end of each module, therefore, no change in response could be noted (Table 3). The main objective of the mini-test was to determine immediate cognitive learning. All questions were asked on material presented in the illustrated talk. Number of correct responses was also used to measure attitude toward the class, method of teaching, and material presented.

The last module which dealt with food fads and misconceptions was presented using an alternative teaching-learning strategy. Participants were given a true-false test of nine questions at the beginning of class. Participants were allowed a few minutes to complete the questionnaire. Each question was then discussed in the group. The test was used as a teaching tool, not as an evaluation device. Correct responses were not measured since the material had not yet been presented. The tests were collected only to determine who had attended the session.

Table 3 expresses a high number of correct responses for all questions. This would be interpreted as a positive attitude toward the program with cognitive learning taking place, or participants had a high level of prior knowledge.

TABLE 3

Responses to Mini-tests

Session	Number of Participants	Number of Questions	Responses		
			% correct	% wrong	% no answer
1	8	6	100	0	0
2	12	3	97	0	3
3	9	2	77	17	6
4	11	2	95	5	0
5	9	3	93	0	7
6	11	2	95	5	0
7	13	2	65	27	8
8	8	-	--	-	-

Module 7, meals with limited equipment, resulted in the most incorrect responses. Incorrect responses were given for the same question which asked participants if it was always more costly to buy convenience foods. Seven of the 13 participants responded that convenience foods always cost more than items made from scratch. An explanation for this could be that these people had a negative attitude toward convenience foods, something not uncommon in this age group.

Follow-up Interview

Results of the personal follow-up interview yielded 15 actual interviews. The researcher was unable to locate two participants. All the respondents stated they had learned something from the program. A 100% positive response could have been due to the fact that the researcher conducted both the classes and the follow-up. Interviewees could have responded positively to tell the researcher the desired response.

Participants were asked what was the most beneficial thing in the program for them. Most participants had more than one response (Table 4).

The recipes that were distributed were well-received. Two types of handouts were used. The researcher used recipes taken from various sources and distributed appropriate selections at almost every class. These handouts (see Appendix D) included only recipes and kitchen hints. Printed materials were well-received and almost every participant took

TABLE 4

Frequency of Responses Elicited During the
Follow-up Interviews

Response	Frequency
Main dishes that can be prepared in 10 minutes or less	10
Found distributed recipes helpful	9
Shop for private brands	2
Meals to be made in one pan	2
New snack items	1
Cooking for one	1
Vitamin supplements unnecessary if well-balanced diet is consumed	1
Reminder of previous learned material	1

them home.

Published materials from various organizations were purchased with grant funds and distributed. Most of this material contained recipes and basic nutrition within one pamphlet. These commercially published materials were not successful, apparently because of the nutritional information. Only a few of the participants showed sufficient interest to take them home.

The success of each type of handout can be explained through the attitude of these elderly towards nutrition. The knowledge of nutrient functions was not important to them; new recipes were more relevant and meaningful.

Participants were asked what they liked best about the program. The two most common responses were the demonstrations and the new recipes. These responses would indicate a high level of interest in cooking. Several of the participants stated that they had tried some of the new recipes that were distributed or had shared them with friends or family.

The most frequent response to dislike of the program was completing the forms. This was expected since the elderly had at least one form to complete at every session. The influence of having to complete the forms on attendance was not determined and was not reflected in attendance.

To determine adequacy of the program participants were asked what else they would have wanted included in the program. Only one

individual had a response; more information on home food preservation. Since the program was conducted during the garden harvest, this could explain the response. Only about half of the participants had home gardens, so the applicability of food preservation would be questionable for all participants.

Overall response to the program was positive. The participants were receptive and cooperative. The group was eager to try new foods which were demonstrated in the class. The group discussions were informal and almost all individuals participated in group discussion. The people were very open and readily shared experiences with the others in the program.

Participants asked many questions during the sessions indicating a high level of interest in the topics presented. Some of the equipment used in the demonstrations was unfamiliar to the participants, and the elderly were enthusiastic about learning usage and ways to obtain some of these for themselves.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The number of people over the age of 65 in the U. S. has increased due to a longer life expectancy. A majority of this age group is a part of the low-income population. Economical food shopping is a necessity for those people with a low or fixed income. Nutrition education for the elderly can help them deal with the problems of food selection and preparation with a limited income. A planned program can also help improve nutritional status of the elderly individual.

Montana receives funds from Title VII of the Older Americans Act, National Nutrition Program for the Elderly. The purpose of this study was to develop and evaluate a nutrition education program for use in Montana by Title VII projects.

The participants of the Title VII project in Whitehall served as the population. An instrument was developed to serve as a pre- and post-test and was used to determine behavioral change for the total program. Nutrition education modules were developed that included objectives, illustrated talk outline, discussion questions, instructional materials, and resources. Posters, slides, and demonstrations were utilized as well as strategies incorporating participation by the elderly. A mini-test was administered immediately after each of the eight sessions to determine cognitive learning. A follow-up interview with the participants was used to determine the comprehensive

attitude toward the program.

The mean and variance of pre- and post-test using standard methodology, for each question and each individual, were determined. No significant differences were found in the statistical analysis of results. Pair-wise correlations revealed little redundancy in the questionnaire. Mini-test responses were summarized and a high percentage of correct responses for each session was noted. The follow-up interview revealed a positive attitude towards the program by all participants.

Conclusions

The following conclusions have been determined and can only be applied to the population in this study.

No significant differences were found for the total program using the t-test to compare mean and variance of pre- and post-test scores. Results indicate that the population may have had a high level of prior knowledge on the material presented or the questions may have been misunderstood. The sign test indicated improved scores, but the magnitude of change was trivial.

No significant differences were noted on pre- and post-test scores for each individual using the paired t-test. A change in response from always to never by one individual could conceivably alter the mean and variance significantly. The conclusion here must be that the program did not significantly alter behavior. The program may have been too short to measure behavior change which can be a long-term process, or

the sample size was too small.

It was suggested through coefficient of variation that the sample size of the study was inadequate.

The program encouraged an increase in consumption of milk and milk products. The mean weekly consumption increased from pre-test to post-test for milk, cheese, and ice cream. Results would indicate that the program was successful in increasing milk consumption.

Other amounts of specific foods consumed were determined. The group mean score indicated an increase in weekly consumption of poultry and wild game. Variety in the diet was stressed and poultry and wild game were acceptable foods that increased in use.

A decreased mean score in weekly consumption of fish, eggs, and cheese was noted for the total sample. Since Montana is a beef-producing state, consumption of beef was high. Alternative protein foods may not have been acceptable as a protein source for the population.

Mini-test scores indicated a high percentage of correct responses. This does not coincide with data collected on the pre- and post-test. Mini-test measured cognitive learning or prior knowledge and pre-post-tests were intended to measure behavioral change. The conclusion here would be that the population previously knew or had become more aware of basic principles for food selection and preparation, but did not apply the knowledge in every day life.

A positive response to the program was determined by the researcher on a subjective basis of degree of participation and receptiveness

of the participants. Responses indicate that the program was beneficial but the questionnaire did not test the learning that had taken place.

Desirable response to the follow-up interview could have been given to win approval or please the researcher. This would bias the results of the follow-up interview.

Recommendations

Based on the conclusions and observations drawn by the researcher, the following are suggested.

The sample size should be larger to obtain valid and repeatable results applicable to a wider population. This would mean the population and sample need to be drawn from a larger town or city than the one used in this study.

The program time was too short to measure a behavioral change. If behavioral change is to be measured, the program should be increased in length to eight weeks or 16 modules. A longer time span would give the educator more time to develop rapport with the participants and also reemphasize important concept.

Based on the two preceding recommendations, it is suggested that the study, designed as it was, be used as a pilot model for Title VII nutrition education programs.

For future studies, the follow-up interview should be conducted by someone who is trusted by the participants but not connected with the nutrition education program. This may eliminate the bias that

occurs when the researcher conducts the follow-up interview.

The teaching strategies used and materials presented were well-received by the participants. Informal group discussions were relaxed and encouraged the elderly to interact with each other and the researcher.

Use of a door prize was successful in motivating the elderly to complete the questionnaires. Therefore, it is suggested that a door prize, or a comparable technique, be used to motivate the elderly to attend class.

The nutrition education modules designed for this study could be used for other nutrition education programs for the elderly. Modules were designed for flexibility and could easily be adapted for other groups.

Further investigation needs to be conducted in the area of nutrition education for the elderly. The Title VII program needs to measure and evaluate the success of nutrition education efforts. The modules developed could be used at several projects and the results compared. A continuation of this study could be conducted using the preceding recommendations.

The researcher recommends that the number of quality nutrition education programs for the elderly be increased. Good health and adequate nutrition can help the elderly person achieve satisfaction during the remainder of his life.

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APPENDICES

APPENDIX A
FORM TO DETERMINE
POPULATION CHARACTERISTICS

POPULATION STRATIFICATION FORM

THIS INFORMATION IS TO BE USED FOR A GRADUATE THESIS AND IS INTENDED
FOR NO OTHER PURPOSE.

1. BIRTHDATE

MONTH

DAY

YEAR

2. SEX

FEMALE

MALE

3. MARITAL STATUS

SINGLE

MARRIED

WIDOWED

DIVORCED

4. WHAT IS THE HIGHEST LEVEL OF EDUCATION YOU HAVE COMPLETED?

GRAMMAR SCHOOL

HIGH SCHOOL

COLLEGE

5. WHAT IS YOUR TOTAL YEARLY INCOME

UNDER \$2760

\$2760-5000

\$5000-7000

\$7000-10,000

OVER \$10,000

6. DO YOU RECEIVE FOOD STAMPS?

YES

NO

7. DO YOU LIVE IN A

_____ HOUSE
_____ TRAILER
_____ APARTMENT
_____ ROOM

8. IN YOUR HOME, DO YOU HAVE A

_____ REFRIGERATOR
_____ STOVE
_____ FREEZER
_____ DINING ROOM
_____ BREAKFAST BAR

9. HOW MANY MEALS DO YOU EAT OUTSIDE YOUR HOME?

_____ RESTAURANTS
_____ WITH FRIENDS OR
FAMILY
_____ WALK-IN MEALS

10. HAS YOUR DOCTOR PRESCRIBED A SPECIAL DIET FOR YOU?

_____ YES
_____ NO

11. DO ADS IN THE NEWSPAPER OR ON TELEVISION OR RADIO HELP YOU WITH
YOUR FOOD SHOPPING?

_____ YES
_____ NO

12. DO YOU DO ANY HOME GARDENING?

_____ YES

_____ NO

13. WHERE DO YOU BUY MOST OF YOUR GROCERIES?

_____ HOMETOWN

_____ NEARBY TOWN OR

CITY

_____ SUPERMARKET

_____ SMALL STORE

14. HOW OFTEN DO YOU BUY GROCERIES IN A WEEK?

15. HAVE YOU TAKEN PART IN ANY FOOD OR NUTRITION CLASSES BEFORE THIS ONE?

_____ YES

_____ NO

16. WHAT IS YOUR MAIN METHOD OF TRANSPORTATION?

_____ WALKING

_____ BICYCLE

_____ CAR

_____ OTHER, PLEASE

SPECIFY

17. DO YOU HAVE YOUR GROCERIES DELIVERED OR SHOP YOURSELF?

_____ DELIVERED

_____ SHOP BY SELF

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18. DO YOU HAVE ANY CHILDREN OR GRANDCHILDREN THAT LIVE LOCALLY?

_____ YES

_____ NO

APPENDIX B

PRE- AND POST-TEST

PRE- AND POST-TEST

	ALWAYS	USUALLY	SOMETIMES	NEVER
1. I SHOP BY UNIT PRICING.	_____	_____	_____	_____
2. WHEN I GO GROCERY SHOPPING, I MAKE OUT A SHOPPING LIST.	_____	_____	_____	_____
3. I SHOP GROCERY SALE SPECIALS.	_____	_____	_____	_____
4. I PLAN MENUS FOR MOST MEALS.	_____	_____	_____	_____
5. I BUY LARGER PACKAGES OF FOOD AND FREEZE OR STORE THEM.	_____	_____	_____	_____
6. I INVITE COMPANY OR SHARE MEALS.	_____	_____	_____	_____
7. I EAT IN THE SAME GENERAL PLACE.	_____	_____	_____	_____
8. I SHOP AND SPLIT PACKAGES OF FOOD WITH FRIENDS OR FAMILY.	_____	_____	_____	_____
BIRTHDATE	_____	_____	_____	
	MONTH	DAY	YEAR	

	ALWAYS	USUALLY	SOMETIMES	NEVER
9. BEFORE USING LEFTOVERS, I CHECK FOR BAD ODOR OR COLOR	_____	_____	_____	_____
10. I COVER CONTAINERS OF STORED OR REFRIGERATED FOODS	_____	_____	_____	_____
11. WHEN PREPARING FOOD, I PREPARE MORE THAN ONE SERVING AND STORE THE REST.	_____	_____	_____	_____
12. I BUY MEALS I ONLY HAVE TO HEAT UP.	_____	_____	_____	_____
13. I BUY MYSELF SPECIAL TREATS	_____	_____	_____	_____
14. I EAT FRUITS OR VEGETABLES FOR SNACKS.	_____	_____	_____	_____
15. I EAT SNACKS AT MY HOME.	_____	_____	_____	_____
16. I USE CANNED AND PACKAGED FOODS FOR MAIN DISHES.	_____	_____	_____	_____

	ALWAYS	USUALLY	SOMETIMES	NEVER
17. WHEN I USE CANNED OR PACKAGED FOODS, I ADD INGREDIENTS TO THEM.	_____	_____	_____	_____
18. I PREPARE FRESH OR FROZEN FISH SEVERAL DIFFERENT WAYS.	_____	_____	_____	_____
19. I USE DRY MILK FOR COOKING.	_____	_____	_____	_____
20. I EAT DRIED PEAS, BEANS, OR NUTS.	_____	_____	_____	_____
21. I USE COOKING LIQUID FROM VEGETABLES FOR SOUPS, GRAVIES, ETC.	_____	_____	_____	_____
22. I TRY TO USE OR COOK VEGETABLES WITH THE PEELINGS LEFT ON.	_____	_____	_____	_____
23. I TRY TO COOK MEALS THAT CAN BE MADE IN ONE PAN.	_____	_____	_____	_____

ALWAYS USUALLY SOMETIMES NEVER

24. I FIX MEALS THAT TAKE A SMALL
AMOUNT OF TIME TO PREPARE. _____

25. I TAKE VITAMIN SUPPLEMENTS. _____

26. I TRY TO ADJUST MY DIET TO
KEEP MY WEIGHT UNDER CONTROL _____

27. I PURCHASE "ORGANIC" OR "HEALTH"
FOODS _____

28. HOW MUCH MILK, CHEESE, OR ICE CREAM DO YOU PURCHASE IN ONE WEEK?

_____ MILK

_____ CHEESE

_____ ICE CREAM

29. I EAT _____ MEALS A DAY.

30. I EAT POULTRY _____ TIMES A WEEK.

31. I EAT WILD GAME _____ TIMES A WEEK.

32. I EAT FISH, EGGS, OR CHEESE _____ TIMES A WEEK.

·APPENDIX C

SAMPLE MINI-TEST

SAMPLE MINI-TEST

BIRTHDATE

MONTH

DAY

YEAR

COOKING FOR ONE

WHAT ARE TWO (2) USES FOR DRIED MILK?

1.

2.

WHAT CAN YOU DO TO MAKE MEALTIME MORE PLEASANT?

APPENDIX D

SAMPLE INSTRUCTIONAL MODULE

SAMPLE INSTRUCTIONAL MODULE

Cooking For One

Learning Objectives

1. The participant will select economical foods that can be bought when cooking for one person.
2. The participant will identify ways to make mealtime more pleasant when eating alone.

<u>Illustrated Talk Outline</u>	<u>Instructional Aid</u>	<u>Discussion Question</u>
---------------------------------	--------------------------	----------------------------

I. Food Storage Problem

A. Meat

buy as much as needed
buy extra and freeze

B. Milk

dry and evaporated

fluid - explanation
of date on carton

Poster - How to
reconstitute dry
milk

Poster - Where to
find expiration
date

Ask group if any
one uses dry milk.
What do they use
it for?

C. Fruits & Vegetables

ask clerk to split
larger packages
split package with
friend or neighbor

Ask group if they
buy in quantity.

Ask group if they
have any tips to
share.

D. Dried Soups & Potatoes

one serving made at a
time

Pass out example
boxes of dried
soups and pota-
toes

<u>Illustrated Talk Outline</u>	<u>Instructional Aid</u>	<u>Discussion Question</u>
---------------------------------	--------------------------	----------------------------

- E. Foods that keep in the refrigerator
- peanut butter
 - salad oil
 - jellies, jams
 - shortening
 - nuts
 - coffee
 - raisins

Poster with illustration of each item

Ask group if there any other foods that they find keep better in the refrigerator such as table syrup.

II. How to make mealtime more pleasant

- A. Once in a while eat in a room other than the kitchen

- B. Cook a little extra and invite a friend over

- C. Try to get out of the house a little while every day, it helps increase appetite

- D. Pay attention to food looks - tastes better if it looks good

Ask group what they do to get out of the house.

Ask group if they have any other suggestions that weren't mentioned.

Distribute recipés

Handout

Demonstration

panned meat & cabbage
cooked fresh fruit with different spices

Sampling of demonstration items by group

Summary

Meats
Milk

Poster - How to reconstitute dried milk

<u>Illustrated Talk Outline</u>	<u>Instructional Aid</u>	<u>Discussion Question</u>
Refrigerator food	Poster - Refrigerator foods	Ask group what else they can do to simplify cooking for one
Points for mealtime		Ask group how they can try to make mealtime more enjoyable

Materials Needed

Illustrated talk:

1. Poster depicting milk carton and where to find pull date.
2. Poster showing how to reconstitute dry milk.
3. Poster showing foods to be kept in the refrigerator for longer life.
4. Several boxes of different kinds of dried soups and potatoes.

Demonstration*

Panned meat & cabbage

1 large electric skillet	1/4 c fat or oil
measuring spoons	3 c luncheon meat
1 cup measuring cup	1 small head of cabbage
cutting board	1/2 c water
Chef's knife	salt and pepper
wooden spoon	(This should be sufficient for 30 people to sample)

Cooked fresh fruit

8 medium apples	1 apple corer
2 c water	large saucepan and cover
1/2 - 1 c sugar	1 cup measuring cup
dash nutmeg	wooden spoon
dash cinnamon	cutting board
dash allspice	

- * Plastic forks and spoons, napkins, and paper plates will be needed for tasting by the group.

COOKING FOR ONE

EGGS POACHED IN MILK

1 EGG
1/2 CUP EVAPORATED MILK
1/4 CUP WATER
1/4 TEASPOON CELERY SALT
DASH PEPPER
1 SLICE BUTTERED TOAST

HEAT EVAPORATED MILK AND WATER OVER
LOW HEAT IN A SMALL PAN. WHEN HOT,
ADD SALT AND PEPPER. BREAK EGG
AND SLIP INTO HOT MILK. COOK UNTIL
WHITE OF EGG IS SET. LIFT EGG
ONTO TOAST SLICE. POUR MILK AROUND
TOAST.

TOP OF THE STOVE CUSTARD

1 EGG, SLIGHTLY BEATEN
2 TABLESPOONS SUGAR
1 CUP MILK
PINCH SALT
FEW DROPS VANILLA FLAVOR

COMBINE ALL INGREDIENTS. POUR INTO
TWO CUSTARD CUPS. SPRINKLE WITH
NUTMEG IF DESIRED. SET CUPS IN A
SAUCEPAN CONTAINING BOILING WATER
THAT COMES ABOUT HALFWAY UP THE
SIDES OF THE CUPS. COVER PAN AND
KEEP WATER SIMMERING 10 TO 12
MINUTES. REMOVE AND EAT WARM OR
CHILLED.

RUTABAGA STRIPS

RUTABAGA CUT IN 1/4 INCH
STRIPS, ABOUT 3/4 CUP
FOR ONE SERVING

1 TABLESPOON MARGARINE

1/4 CUP WATER

1 CHICKEN BOULLION CUBE

1-1/2 TEASPOON SUGAR

COMBINE ALL INGREDIENTS IN A
SAUCEPAN. COOK COVERED UNTIL
RUTABAGA IS TENDER, ABOUT 15
MINUTES.

BAKED HAM POTATO CASSEROLE

1/2 CUP MASHED POTATO*

1/3 CUP CHOPPED, COOKED HAM

1 TEASPOON ONION, CHOPPED

1 TEASPOON MARGARINE

1 OUNCE SHREDDED CHEESE

* DEHYDRATED INSTANT POTATOES

MAY BE USED. FOLLOW DIRECTIONS

ON THE PACKAGE

MIX POTATOES AND HAM. COOK ONION
IN THE MARGARINE UNTIL THE ONION
IS CLEAR BUT NOT BROWN. ADD ONION
TO POTATO MIXTURE IN A SMALL OVEN-
PROOF DISH AND TOP WITH CHEESE.

BAKE AT 375° UNTIL TOP BEGINS TO
BROWN AND CHEESE MELTS, ABOUT 25
MINUTES.

MENU IDEA: SERVE WITH GREEN BEANS AND OATMEAL COOKIES.

KITCHEN HINT* LARGER SIZE BOXES OF CRACKERS USUALLY COST LESS THAN
SMALLER ONES. IF THE CRACKERS LOOSE THEIR FRESHNESS BEFORE YOU HAVE
USED THEM UP, STORE THEM IN A CLEAN, COVERED JAR. USE THE CRACKERS IN
MEATLOAF, SCALLOPED CORN, OR USE FOR BREADING INSTEAD OF BREAD CRUMBS.

LIVER AND ONIONS

1/4 POUND LIVER, SLICED
ABOUT 1 TABLESPOON FLOUR
2 TEASPOONS FAT OR OIL
1/4 TEASPOON SALT
PEPPER, IF DESIRED
1/2 SMALL ONION, SLICED
1 TABLESPOON WATER

DIP LIVER IN FLOUR. HEAT OIL OR
FAT IN FRY PAN. COOK LIVER IN THE
PAN OVER MEDIUM HEAT UNTIL BROWNED
ON ONE SIDE. TURN LIVER AND
SPRINKLE WITH SALT AND PEPPER.
PUT ONION ON LIVER. ADD WATER.
COVER PAN TIGHTLY AND COOK OVER
LOW HEAT ABOUT 20 MINUTES.

MENU IDEA: SERVE WITH MIXED VEGETABLES AND HAVE RICE PUDDING FOR
DESSERT.

PANNED CABBAGE AND MEAT

1/2 TEASPOON FAT OR OIL
1/3 CUP CUT-UP CANNED LUNCHEON
MEAT
1/8 SMALL HEAD OF CABBAGE
1 TABLESPOON WATER
SALT AND PEPPER, IF DESIRED

HEAT FAT OR OIL IN FRY PAN. ADD
MEAT AND COOK OVER MEDIUM HEAT
UNTIL BROWNED. THINLY SLICE CAB-
BAGE. ADD CABBAGE AND WATER TO
THE MEAT. COVER AND COOK ABOUT 5
MINUTES, UNTIL THE CABBAGE IS
TENDER. ADD SALT AND PEPPER IF
DESIRED.

MENU IDEA: SERVE WITH SWEET POTATOES AND BANANA PUDDING.

GRILLED CHEESE SANDWICH

1 THIN SLICE CHEESE
2 SLICES BREAD
MARGARINE OR BUTTER FOR
BROWNING

SPREAD EACH SLICE OF BREAD LIGHTLY
WITH BUTTER OR MARGARINE. PUT A
SLICE, BUTTERED SIDE DOWN, IN A
FRY PAN. PUT THE CHEESE ON TOP
AND COVER WITH THE OTHER SLICE OF
BREAD, BUTTERED SIDE UP. COOK
OVER LOW HEAT UNTIL CHEESE MELTS
AND SANDWICH IS BROWNED. TURN
SANDWICH AND BROWN OTHER SIDE.

MENU IDEA: SERVE WITH TOMATO SOUP, CELERY STICKS, AND A PIECE OF
FRESH FRUIT.

HOT COCOA

1-1/2 TEASPOONS COCOA
1 TABLESPOON SUGAR
1 CUP WATER
1/4 CUP INSTANT NON-FAT DRY
MILK
FEW DROPS VANILLA FLAVOR

MIX COCOA, SUGAR, AND PART OF THE
WATER IN A SAUCEPAN. HEAT TO
BOILING AND COOK SLOWLY FOR 5 MIN-
UTES TO MAKE A SYRUP. REMOVE FROM
HEAT. ADD THE REST OF THE WATER.
THEN ADD DRY MILK. STIR OR BEAT
UNTIL SMOOTH. HEAT BUT DO NOT
BOIL. ADD VANILLA.

SPEEDY VEGETABLE SOUP

1/2 POUND GROUND BEEF

1 BAYLEAF

3 CUPS WATER

1 LARGE CARROT, CUT UP

2 STALKS CELERY, CUT UP

1 SMALL ONION, CHOPPED

1 CUP CANNED TOMATOES

1/4 CUP RICE OR BARLEY

1-1/2 TEASPOONS SALT

DASH PEPPER

2 OR 3 BEEF BOULLION CUBES

THIS MAKES ABOUT 4 CUPS - ENOUGH FOR TWO OR THREE MEALS. THE SOUP YOU DON'T USE AT THE FIRST MEAL WILL STORE IN THE REFRIGERATOR FOR THREE OR FOUR DAYS.

BROWN THE MEAT IN A DEEP SAUCEPAN.

ADD THE BAYLEAF AND THE WATER.

HEAT UNTIL THE WATER BOILS. TURN

THE HEAT TO LOW AND COOK 20-30

MINUTES. ADD THE REST OF THE IN-

GREDIENTS: COVER AND HEAT UNTIL

THE SOUP COMES TO A BOIL. TURN

THE HEAT TO LOW AND COOK ABOUT 20

MINUTES OR UNTIL THE VEGETABLES AND

RICE ARE TENDER.

COOKED FRESH FRUIT

1 MEDIUM SIZE APPLE OR PEACH

1/4 CUP WATER

1-2 TABLESPOONS SUGAR

SLICE APPLE OR PEACH. SKIN MAY BE

LEFT ON. PUT WATER IN A PAN AND

HEAT TO BOILING. ADD FRUIT, COVER

AND BOIL GENTLY UNTIL TENDER. ADD

SUGAR AND SPICES IF DESIRED.

APPENDIX E

FOLLOW-UP INTERVIEW

FOLLOW-UP INTERVIEW

1. Did you learn anything from the program?
2. What was the most important thing you learned from the program?
3. What did you like best about the program?
4. What would you have liked to have seen in the program that wasn't included?

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