

Low-income Older Adults' Needs and Preferences for Nutrition Education

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(ABSTRACT)

Low-income older adults are at high risk for developing diet-related chronic diseases. Nutrition education programs can improve dietary and lifestyle practices, thereby decreasing the incidence of diet-related diseases. Focus groups were conducted to gain insight into the needs and preferences of low-income older adults for nutrition education. Results were made available for use in the Smart Choices Nutrition Education Program at Virginia Tech to aid in the development of nutrition education programs.

Four focus groups were conducted with a total of 35 elderly (28 females; 7 males), ages 55-90+ years, recruited from Congregate Meal Program sites in four regions of Virginia. Seventeen were African American, and 18 were non-Hispanic white. Discussion questions addressed practices for purchasing and preparing foods, importance of food to health, and preferences for education methods. The *Determine Your Nutritional Health Checklist* of the Nutrition Screening Initiative was used to assess nutritional risk of the elderly adults. Focus group discussions were audio-taped and written transcripts were made for use in data analysis. Themes of the discussions were identified in that analysis and reported in the following broad areas: Factors that Influenced Dietary Practices of Focus Group Participants and Perceived Needs and Preferences of Focus Group Participants for Nutrition Education.

All elderly believed that food was important to their health and were interested in nutrition education. The predominant theme was the influence of a health condition on dietary practices. The elderly made food choices according to dietary restrictions imposed by their health condition. The most prevalent health conditions were chronic diseases, primarily

hypertension, diabetes, and hiatal hernia. The majority (32) were at nutritional risk, with a larger number at high risk (20) than at moderate risk (12). Food preferences and sensory attributes of food also were important to them when making food choices. Some reported that convenience was important because they did not want to spend time and effort to purchase and prepare foods. Some also reported experiencing food insecurity, primarily from lack of money. The majority learned about food and cooking from family members, and only a few learned about nutrition and food choices from health professionals. Most wanted information about disease-specific food choices and preparation methods, and preferred to receive this information during group discussions because sharing ideas and opinions was an effective way to learn. Only a few were interested in television programs, while many were interested in written materials.

Nutrition education programs for low-income elderly should teach these adults how to choose and prepare foods that are appealing and nutritious, as well as within dietary restrictions imposed by their health conditions. Educators should convey this information to them in group settings and distribute written materials, such as pamphlets and brochures, that outline “how-to” information.

This thesis is dedicated to the memory of my loving mother, Trecillia L. Moore, who was so supportive of me in this endeavor, but was called to leave this world before its completion.

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CHAPTER I

INTRODUCTION

Statement of the Problem

Low-income elderly are at increased risk of developing diet-related chronic diseases, such as heart disease and cancer. Unbalanced diets with poor dietary and lifestyle practices contribute to high rates of disease, resulting in increased health care costs among the low income elderly in the U.S. The population of Virginia includes 6,187,358 individuals (U.S. Bureau of the Census, 1990) with over 611,596 people (10%) living in poverty. Specifically, 88,750 (14.1%) adults aged 65 and over in Virginia have poverty incomes. However, many elderly do not use food assistance programs for which they are eligible. In 1984, only 35% of the elderly estimated to be eligible for the Food Stamp Program participated (Wolfe et al., 1996). Thus, nutritional problems of low-income elderly may be a greater problem than estimated from use of food assistance programs. However, incidence of diet-related diseases may be decreased among low-income elderly with the improvement in nutrition education programs.

A 1985 survey of elderly in 21 states found 22% to be at nutritional risk, with the elderly living on incomes below the poverty level more likely to be at risk and to report problems with purchasing needed food (Wolfe et al., 1996). The incidence of diabetes increases from 7% to 9% as a person ages from 55 to 85 years or older, ischemic heart disease increases from 9% to 12%, cerebrovascular disease increases from 3% to 10%, and hypertension increases from 31% to 40% (Maloney and White, 1995). Thus, it is important that low-income elderly, including food stamp recipients, receive education on choosing healthy and safe diets and gain knowledge and skills needed to maintain optimal nutritional status.

To better understand the prevalence of nutrition-related diseases among low-income elderly, psychosocial factors contributing to motivations for dietary practices must be examined. A study involving understanding food insecurity in the elderly (Wolfe et al., 1996) provides a conceptual framework that outlines factors which potentially increase or decrease food insecurity of older adults. Food insecurity was defined as “a condition in which there is a limitation of available nutritionally adequate and safe foods or inability to acquire acceptable foods in socially acceptable ways.” For example, many elderly have numerous health problems that produce extra medical expenses, limit access to food, and hinder food preparation. Dependency on others to purchase and prepare food may prevent the elderly from obtaining nutritious food if those individuals lack money management and food buying practices. Religion may affect food insecurity in that individuals may depend on faith to improve food supply and health rather than request help from others to obtain food. Previous experiences, such as surviving worse conditions, may convince some elderly to accept deprived situations. Once we understand motivations of the low-income elderly, we may be able to provide nutrition information in stimulating and pleasing ways by appealing to those motivations. As a result, these individuals would be able to improve their health through changes in dietary practices.

At the present time, there are no government nutrition education programs specifically targeting the elderly. However, nutrition education is included in food assistance programs such as the Special Supplemental Food Program for Women, Infants, and Children (WIC) and the Expanded Food and Nutrition Program (EFNEP) for low income families with young children. The goal for food stamp recipients, specifically, is to improve diets by improving food purchasing ability, food choices, and money management strategies. The Smart Choices Nutrition Education Program (SCNEP) is an educational program that has been developed and administered by the Virginia Cooperative Extension with funds from the Food and Nutrition Service (FNS), United States Department of Agriculture (USDA). SCNEP is a program offered specifically in Virginia and is equivalent to the Food Stamp Nutrition Education Program

(FSNEP) offered in other states in the U.S. The purpose of SCNEP, as well as FSNEP, is to teach nutrition education to members of food stamp households using paraprofessionals. The SCNEP program assistants target older food stamp households and individuals who do not fit the EFNEP guidelines. Food stamp recipients who meet EFNEP guidelines are referred to EFNEP, while those who do not qualify for EFNEP are referred to SCNEP.

As Sims and Voichick (1996) stated, the positive effect of food assistance programs for needy families is magnified with nutrition education. However, since evaluation of nutrition education programs is very complex, few studies have been able to clearly demonstrate the impact of nutrition education programs on behavior change and health. More research is needed to improve the methodology used to convey nutrition information to the elderly as well as to measure the impact of nutrition education programs on behavior and health.

Objectives of the Study

This study was conducted to gain insight into the needs and preferences of low-income elderly adults, who were participants in the Congregate Meal Program in Virginia, for food and nutrition information through the use of focus groups. Results of this study will be available for use in the development of statewide nutrition education programs for low-income elderly adults participating in the SCNEP program in Virginia or the FSNEP in other states. Focus groups were conducted with participants of the Congregate Meal Program in the following areas of Virginia: Fredericksburg, Richmond, Christiansburg, and Halifax. Specific objectives of the study were:

- 1) To assess the nutritional risk of the participants through the use of the Nutrition Screening Initiative *Determine Your Nutritional Health Checklist*;
- 2) To examine current food purchasing and preparation practices of the participants;

- 3) To understand the participants' perception of the importance of food to health; and
- 4) To identify ways in which participants prefer to receive information on food purchasing, food preparation, and nutrition.

CHAPTER II

REVIEW OF THE LITERATURE

Demographics of the Elderly Population

The Elderly Population

The population of elderly adults, 65 years of age and older, is one of the fastest growing populations in the United States. This population grew from 4.1% in 1900 to 12.5% in 1990. Between 1980 and 1990, the elderly population increased by 22% while the total population in the U.S. increased by only 9.3% (Schick and Schick, 1994). From 1990 to 2020, the elderly population is projected to increase to almost 54 million persons. Partially responsible for the growth of the elderly population is the increase in life expectancy. In 1900, the average life expectancy was 47.3 years, but in 1990, the average life expectancy was 78.6 years for women and 72 years for men (Schick and Schick, 1994).

In 1990, the population of elderly aged 60-64 years in Virginia was 245,436 people while the population of those 65+ years was 664,470 (U.S. Bureau of the Census, 1990). Virginia ranked 43rd in 1990 with 10.7% of its population being 65 years of age and older. However, the elderly population in Virginia is expected to increase to 12.0% of the total population by the year 2010. Virginia will have one of the largest increases in the elderly population in the U.S., with Virginia ranking 12th among the states in relation to the elderly population.

Ethnicity

Currently, the majority of the national elderly population is white and not of Hispanic origin. Of the 31 million elderly people in 1990, 28 million were white, 2.5 million were African-American, 1.1 million were of Hispanic origin, 454,000 were Asian or Pacific Islander; and 114,000 were American Indian, Eskimo or Aleut (U.S. Department of Commerce, 1993). Only 8% of African-Americans and Hispanics are age 65+ compared to 13% of whites. Perhaps these rates are due to the greater numbers of births in minority populations, greater numbers of young, and a shorter life expectancy (Schlenker, 1993). However, the proportion of nonwhite and Hispanic older populations is expected to increase more rapidly than that of whites (Schlenker, 1993). In 1990, minorities made up only 14% of the elderly population, but the percentage is expected to increase to 32% by the year 2050.

According to the 1990 Census (U.S. Bureau of the Census, 1990), the state of Virginia includes 12.1% white elderly, 2.4% African-American elderly, and 0.2% other races of elderly. In comparison to national figures for the elderly, Virginia consists of an analogous percentage of whites and other races, such as Asian and American Indian, but has a larger percentage of African-American elderly. Since the national percentages of elderly minorities are expected to increase greatly over the next several decades, Virginia's minority elderly populations are also expected to increase.

Education

Nationally, educational attainment of the elderly has begun to increase. As of 1990, 29% had an 8th grade or less education, 19% had some high school, 27% had a high school diploma, and 25% had some college (Darnay, 1994). However, among persons 75 years or older, 23% had a high school diploma compared with 31% of those 70-74 years old and 33% of those 65-69 years old. The younger elderly (65-74) were more likely to have completed some college than those aged 75+ years (U.S. Department of Commerce, 1993). As the elderly population

increases, more elderly will have higher levels of education because more younger individuals today have continued their education. Currently, more than 80% of the population aged 25-64 years has at least a high school education (U.S. Department of Commerce, 1993).

Income

Generally, the elderly have lower incomes than people younger than 65. In 1990, total income for 44% of elderly ranged from \$5,000 to \$14,999, and 10% of people 65+ years of age received less than \$5,000 (Darnay, 1994). Primary sources of income for the elderly are social security and pensions; however, assets, earnings, supplemental social security, and other sources contribute a small percentage to the total income. Despite the effort through social security to provide some income for the elderly, particular segments of that population are especially vulnerable to financial insecurity (Schlenker, 1993).

In the United States, many elderly live near or below the poverty threshold. As of 1991, the weighted average poverty threshold of a single person 65+ years of age was \$6,532. In a family of two persons, of which the head of household was 65+ years, it was \$8,241 (Darnay, 1994). The elderly living below poverty level included 10.1% white, 33.8% African American, and 22.5% Hispanic (Schick and Schick, 1994). Level of education influenced poverty level percentages. In 1991, 21% of elderly below poverty level had no high school diploma, 8.1% had a diploma, and 3.8% had a bachelor's degree or more (Darnay, 1994).

Elderly of all income levels participate in some government assistance programs. For all persons 65+ years old in 1991, 17.7% received means-tested assistance, 9.7% received means-tested cash assistance, 4.6% received food stamps, 11.9% received Medicaid, and 5.0% lived in public or subsidized housing (Darnay, 1994). As of 1990, 14 states in the U.S were considered poor states, 13 of which were in the south. Poverty rates of persons aged 65+ years in those states were 14.9% or more. Nine of those states had more than 1 in 5 elderly persons considered poor (U.S. Department of Commerce, 1993).

Although Virginia is a southern state, it is not classified as a poor state. The poverty rate for elderly in 1989 was 14.1%, which was lower than 14 other southern states. Virginia ranked 18th based on percent of poor persons 65+ years. In fact, Virginia's average per capita personal income for all ages in 1991 was \$20,048 (U.S Bureau of Census, 1990). In 1992, approximately 183,940 persons of all ages in Virginia participated monthly in the Food Stamp Program compared to 293,374 persons who did not participate in public assistance programs. Since only 14.1% of the elderly are below poverty level, it is likely that many of these poor elderly did not participate in the Food Stamp Program.

Health Care

Throughout the century, the health status of America's elderly has improved with advanced medical care and technology. However, as more elderly are living longer, more are living with long-term illnesses and disabilities. Most older people consider themselves to be in good health despite the presence of chronic disease (Schlenker, 1993). In a national health survey of more than 27,000 non-institutionalized elderly, 69% of the participants described their health as excellent, very good, or good compared with others their age; only 31% considered their health to be fair or poor (Schlenker, 1993). According to the Respondent-Assessed Health Status of Persons Aged 65+ Survey (which was administered to more than 29,000 elderly) perception of health status declined from excellent to poor as income decreased (Darnay, 1994).

The most prevalent chronic diseases affecting the elderly are arthritis, hypertension, heart conditions, hearing and visual impairments, cancer, and diabetes (Schick and Schick, 1994). The average annual number of physician visits per person increases with age. In the national Health Interview Survey, the average number of annual physician visits of adults aged 60-64 years old from 1985 to 1987 was 4.8 for males and 5.2 for females. Elderly males 65+ had an average of 5.4 and females had 5.8, regardless of perceived health status (Schick and Schick, 1994).

Elderly adults are hospitalized more frequently than younger adults and have longer stays in the hospital because of acute illnesses, such as pneumonia or digestive conditions (Schick and Schick, 1994). Since life expectancy of the elderly has increased, dependent living of the elderly may also increase. The nursing home population increased by 24% between 1980 and 1990, from 1.4 million to almost 1.8 million (Schick and Schick, 1994).

Nutrition and the Low-Income Elderly

Dietary Intakes

Inadequate intake of vitamins, minerals, and other nutrients have been frequently associated with low-income elderly populations (AoA, 1994). Poor nutritional status is highest for those with inadequate incomes to purchase food; those who are isolated; and those who suffer from illness, disease, and other conditions affecting independence. Approximately 5-15% of the elderly suffer from nutrient deficiencies, such as protein-calorie malnutrition and low intakes of vitamins or minerals (ADA, 1993). In general, food intake data from nutritional surveys suggest that elderly adults consume less food than required to meet energy and nutrient recommendations (Ryan et al., 1992).

In the Ross Laboratory Elderly Dietary Survey (RLEDS), conducted nationwide in 1990, nutrient analyses of diets of 474 elderly adults (aged 65-98 years), were performed. Approximately 40% of the adults had mean energy intakes below two-thirds of the Recommended Dietary Allowance (RDA). Calcium, zinc, vitamin A, and vitamin E were below two-thirds of the RDA (Ryan et al., 1992).

In a study by Lee et al. (1991) nutrient intakes of rural elders in eleven southern states were evaluated based on sociodemographic levels. The study included 2,893 elderly (65-106 years of age) of which 42% had incomes of \$350 or less per month. The researchers found that rural elderly in southern states were more likely to have incomes below poverty level, a larger

number of health problems, and limited accessibility to health and human services than urban elderly. Compared to African-Americans, whites had significantly higher intakes of energy, thiamin, riboflavin, folate, calcium, phosphorous, and fiber. However, African-Americans had higher intakes of protein, vitamin A, vitamin C, and total cholesterol. Intakes of dietary energy, protein, calcium, vitamin C, niacin, and fiber tended to decrease for all groups as age increased. The researchers concluded that race, but not sex or age, was a significant determinant of overall nutrient intake. The slight difference among race was due, in part, to dissimilarities in income rather than differences in race. Since income and educational level were highly correlated, the combination of both variables produced similar results.

The National Health Interview Survey (NHIS), conducted by the National Center for Health Statistics, provided estimates of the distributions of usual nutrient intakes in a national sample. In the 1987 NHIS, the sample population consisted of different races with variable incomes and included 1,148 men 65-79 years of age, 213 men 80+ years of age, 1,926 women 65-79 years of age, and 521 women 80+ years of age. Results indicated a general trend of decreasing average energy intake with increasing age for both men and women and decreasing carbohydrate intake with increasing age. A trend of decreased saturated fat intake and decreased cholesterol intake was also noted with increasing age. Because a smaller percentage of energy was from fat, percent of energy from carbohydrates for ages 65-80+ appeared to be comparable with other age groups. Percent energy from protein also appeared to be similar to that of younger age groups. Calcium intake was lowest for those 65-80+ years of age with women having the lowest intake. Generally, decreased average intakes of iron, folate, niacin, phosphorus, and riboflavin occurred for men and women 65-80+ years (Block and Subar, 1992).

The National Health and Nutrition Examination Survey (NHANES III) conducted by the National Center for Health Statistics provided important information on dietary, nutritional, and health status of the United States Population (Aliamo et al., 1994a). Although results are not reported as a function of income, results are reported for the general population including adults

60 years and over. Results indicated that elderly adults have average intakes below the RDA for vitamin E, vitamin D, thiamin, riboflavin, calcium, and zinc. Individuals 70-79 years and 80+ years have the lowest calcium intakes of all age groups. Specifically, women older than 70 years consume the least amount of calcium of all groups. For both males and females, intakes of carbohydrates, protein, and alcohol tended to decrease as age increased. However, elderly adults had the lowest fat and cholesterol intakes of all adult age groups, and the majority received energy from carbohydrates, protein, and some monounsaturated fats (Aliamo et al., 1994b).

In order to study nutrient intakes of the elderly, the average consumption of nutrients must be examined for meals prepared by others, such as with meals-on-wheels and congregate meals. These services may be the primary source of meals for some adults. A study conducted in 1992 evaluated the nutrient intakes of urban (48) and rural (47) elderly receiving home delivered meals (Stevens et al., 1992). Urban elderly consumed significantly more energy than did rural elderly. Of the total population, 70% of the individuals had intakes below 66% of the RDA for 3 or more nutrients.

Moran and Reed (1993) evaluated meals served in one large congregate feeding program and examined self-reported consumption of the meals in relation to dietary restrictions. Meals were judged using the following criteria: 1) provided 1/3 of RDA for energy, 2) provided no more than 30% of total energy was from fat, 3) provided no more than 1500 mg of sodium, and 4) provided no more than 100 mg of cholesterol was in the meal. Results from a four-week period showed meals met dietary recommendations for sodium, but exceeded limits on cholesterol, energy from fat, and total energy. These results are significant because 46.3% of the 438 adults interviewed ate 5 to 7 congregate meals per week and 25.6% ate 3 to 4 meals per week. Based on these results, The American Dietetic Association (ADA) recommended that home delivered meals be prepared at greater percentages of the RDA and be delivered 7 days a week instead of 5. The ADA also suggested that dietitians are needed to assist in planning congregate meals to meet the needs of older adults (Moran and Reed, 1993).

As a result of the 1992 amendments to the Older Americans Act (OAA), the AoA and the U.S. Department of Health and Human Services (DHHS) evaluated the OAA nutrition programs in 55 state units funded by the Elderly Nutrition Program (ENP) (AoA, 1996). The objectives of this study were to evaluate the effectiveness of the Home Delivered Meal and Congregate Meal Programs on participants' nutritional status and socialization as well as to evaluate participation in these programs. In order to determine the impact of ENP on daily nutrient intakes of low-income elderly, the researchers compared intakes of program participants to those of a matched group of older adults who did not participate in ENP. Results of 24 hour nutrient intakes indicated that both Congregate and Home Delivered Meal participants had higher daily intakes as a percentage of the RDAs than the control group for nutrients, such as energy, zinc, calcium, and vitamin B6. There were no significant differences between groups for intakes of sodium, cholesterol, carbohydrate, protein, total fat, and saturated fat as a percentage of total energy intake. Results also indicated that on average, participants had daily intakes that met or exceeded the RDAs for vitamin A, vitamin C, vitamin D, thiamin, riboflavin, niacin, folate, vitamin B12, iron, phosphorous, and potassium. However, average intakes of energy, vitamin E, vitamin B6, calcium, magnesium, and zinc were below the RDA for elderly who participated in ENP. Female Home-Delivered Meal and male ENP participants had lower mean intakes of virtually all nutrients than the general population of elderly females and males, respectively.

Chronic Diseases

Chronic diseases which negatively impact nutritional status are more prevalent in older adults. These include arthritis, cancer, chronic bronchitis, emphysema, dental and oral diseases, osteoporosis, diabetes, heart disease, atherosclerosis, and hypertension (AoA, 1994). "Age-related degenerative changes exacerbated by chronic diseases make older individuals increasingly vulnerable to nutrient-related chronic disorders, regardless of health status" (Schlenker, 1993). Chronic disease may reduce the individual's ability to acquire adequate foods. A disorder may

alter chewing, swallowing, and digestive ability as well as taste and smell sensitivity. As a result, older adults may eat less and become malnourished (AoA, 1994).

In general, 4 out of 5 adults over 65 years of age suffer from diabetes, hypertension, arthritis, or heart disease, with 35% suffering from three or more of these (AoA, 1994). Physiological changes of aging may influence the development of these chronic diseases. For example, osteoporosis arises with decreased calcium absorption and increased calcium loss, resulting in continued loss of bone and bone strength. The ability to metabolize glucose deteriorates with age, but most elderly who develop diabetes mellitus, develop the non-insulin dependent type. Decreased response of the pancreas to glucose levels and alterations in sensitivity of tissues in the body to insulin contribute to glucose intolerance in the elderly (Schlenker, 1993). Increased sodium retention and alterations in the sympathetic nervous system leading to enhanced vasoconstriction and loss of elasticity in large arteries contribute to the development of hypertension (Schlenker, 1993).

Results of the national evaluation of the ENP from 1993-1995 (AoA, 1996) indicated the most common health problems reported by Congregate and Home Delivered Meal Program participants include arthritis, hypertension, heart disease, lung or breathing problems, elevated blood cholesterol levels, and diabetes. Other conditions present among ENP participants were cancer, anemia, osteoporosis, and kidney diseases. Forty-one percent of congregate meal participants had three or more chronic conditions, while 59% of home-delivered meal participants had three or more chronic conditions. Compared with the overall elderly population, ENP participants had a poorer health status. For example, 48% of the general population of elderly had arthritis, and 38% had hypertension. Among congregate meal participants, 51% had arthritis and 50% had hypertension, while 64% of home-delivered meal participants had arthritis and 50% had hypertension.

Nutritional Assessment

Preventive health measures are essential for the elderly because of the expected increase in Americans over age 65. Health care will need to focus on nutrition screening and intervention as a strategy to control health care expenditures, while simultaneously improving independence and quality of life (Herndon, 1995). Nutrition screening can help identify those at risk for poor status as well as those with limitations that inhibit the ability to obtain adequate diets. The Nutrition Screening Initiative (NSI) was launched in 1989 to promote routine nutrition screening and better nutritional care (Finn and Wellman, 1993). The NSI is a set of techniques to assess nutritional risk and identify appropriate interventions. Results of NSI surveys show that a substantial number of older adults are at nutritional risk. Yet, elderly and their caregivers may not recognize nutritional problems because they are believed to be a normal part of aging (Coulston et al., 1996).

Screening assessment tools of NSI include a *Determine Your Nutritional Health Checklist*, a Level I screen and a Level II screen. The checklist contains questions in ten areas that pertain to how a person eats. “Yes” responses to each questions are added to generate a nutritional risk score with a score of 0-2 indicating low or no risk, 3-5 indicating a moderate risk, and 6 or more indicating high risk for nutritional problems. Levels I and II screens are designed to aid in diagnosing poor status and in planning and implementing appropriate interventions. The Level I screen is used to assess weight, size, and functional dependence. The Level II screen is used to identify common nutritional problems, such as energy malnutrition and obesity (NSI, 1991).

The *Determine Your Nutritional Health Checklist* and Level I and Level II screens were used to identify poor nutritional status among independent-living elderly applying for meals-on-wheels. Results of the NSI tools were compared with results of more traditional assessments. Subjects (n=230) were screened for nutritional risk with the NSI checklist along with anthropometric, nutritional intake, and laboratory data. Results of the traditional assessment showed that 74% of subjects had poor nutritional status, while results of the NSI assessment

indicated that 83% were at high risk for poor nutritional status and that 15% were at moderate risk. The researchers concluded that the majority of the Meals-on-Wheels Program applicants were in need of further assessment to identify interventions that would improve their status (Coulston et al., 1996).

Herndon (1995) assessed nutritional status of elderly participating in a home-delivered meals program using the NSI tools. Data from the *Determine Your Nutritional Health Checklist* indicated that most of the elderly applicants were at moderate risk (39%), with 28% at no risk and 33% at high risk. Level I screening indicated that most of the elderly had functional status problems, such as living alone and/or being housebound.

The national evaluation of ENP involved assessment of nutritional risk of participants in the Congregate Meal and Home-Delivered Meal programs using the NSI *Determine Your Nutritional Health Checklist*. (AoA, 1996). Results indicated that 22% of Congregate and 48% of Home-Delivered Meal participants reported a combination of factors that placed them at high risk for nutritional problems. “Overall, 64% of Congregate and 88% of Home-Delivered participants had characteristics associated with a moderate to high nutritional risk” (AoA, 1996). The most prevalent characteristics that placed ENP participants at nutritional risk included consumption of few fruits, vegetables, or milk products and three or more different prescriptions or over-the-counter medications a day. Other common risk factors were the presence of an illness or condition that caused a change in the kind or amount of food consumed by participants and eating alone most of the time.

Food Selection of Low-Income Elderly

Psychosocial Factors

Food selection and consumption by the elderly may be strongly influenced by psychological and social factors. In general, food patterns of older persons reflect life-long attitudes and habits (Schlenker, 1993). Environmental changes may lead to food insecurity.

Food insecurity is defined by the American Institute of Nutrition as “a condition in which availability of nutritionally adequate and safe foods or the ability to acquire adequate foods in socially acceptable ways is limited or uncertain” (Wolfe et. al, 1996). Psychosocial factors may cause food insecurity in that they may become barriers to adequate nutritional intake.

The study of food insecurity among the elderly has been limited, yet available evidence suggests that elderly are at risk for experiencing it. In a survey of elderly in New York, 11.4% were at risk for food insecurity, and 22% lived in poverty (Wolfe et. al, 1996). Based on a national survey, the Urban Institute estimated that nearly 16% of low income elderly experienced food insecurity (Wolfe et. al, 1996).

Mahajan and Schafer (1993) examined the effect of psychosocial factors, marital status, gender, and congregate meal participation on the nutrient intake of 200 non-institutionalized elderly. Results showed that elderly males had significantly higher intakes than females for energy, protein, fat, cholesterol, carbohydrates, vitamin K, phosphorous, iron, sodium, thiamin, niacin, and riboflavin. The researchers also found that married elderly of both sexes did not have a significantly better nutrient intake than single counterparts. Non-participants of meal sites had better nutrient intakes than participants; however, poor intake may have been due to participants not eating adequately away from meal sites.

Wolfe et al. (1996) developed a conceptual framework of factors that influence food insecurity. In depth interviews were conducted with 41 low-income rural white and urban African-American elderly in New York. The majority of subjects had less than a high school education, had two or more health problems, and used one or more food programs, such as food pantries or congregate meals. Factors that contributed to food insecurity were limited incomes, poor health and physical disabilities, high medical bills, and unexpected expenses such as house repairs and emergencies. Poor health led to increasing medical costs, as some participants stated that the need for medicine was greater than the need for food. Restricted mobility interfered with the ability to obtain food and the ability to prepare food. Also, health status and mobility

limitations increased the need for certain types of foods. Individuals experienced food insecurity in the form of anxiety about being able to obtain proper foods. Food management strategies of the elderly also were limited because of reliance on others who may not have practiced money management strategies when shopping for food or attempted to conserve food when preparing it. Previous experiences and religious beliefs of the population contributed to food insecurity as did individuals' acceptance of their impoverished situation. Some believed they had experienced harder times than the present or that prayer and faith in God would provide food. Food pantries, congregate meals, and home delivered meals were programs most frequently used by this group of elderly. Many believed these programs were developed specifically for the elderly, which created a sense of entitlement or belief that participation in these programs did not involve accepting government money. For some, food insecurity was reduced by the use of these programs. Some reasons for non participation were life-long beliefs that help from the government was disgraceful and that helping oneself was more important. For others, unavailability of family contributed to food insecurity in that some needed assistance from family for food preparation and financial emergencies. Community characteristics, such as availability of neighbors, transportation services, food programs, and other elderly services affected food insecurity. Some depended on neighbors for help and companionship, and some used community transportation to access food programs (Wolfe et al., 1996).

Frongillo et al. (1992) examined how economic status, location, and social, health, and food needs affected whether or not the elderly person did not eat for one or more days. Participants consisted of new home-delivered meal (HDM) clients (n=4,017) and former congregate meal (CM) clients (n=2,648). Results indicated that 3.4% of CM and 17.5% of HDM clients sometimes did not eat for one or more days. Risk factors for not eating included being a single male, having health problems that restrict mobility, receiving Medicaid, and living in New York City. Other factors that affected food needs included special diet requirements, need for assistance with shopping and food preparation, limited food access, and limited ability to eat.

The AoA (1996) identified food insecurity factors that affected dietary practices of congregate and home-delivered meal program participants in a national evaluation of the ENP. The researchers used four questions about household circumstances to measure the degree of food insecurity that referred to the occurrence of one or more of the following during the past month: 1) no food in the house and no money or food stamps to buy food on one or more days; 2) a choice between either buying food or buying medications; 3) a choice between either buying food or paying rent or utility bills; or 4) skipping one or more meals because she or he had no food in the house and had no money or food stamps to buy food. Results indicated that although overall most ENP participants had enough food to eat, 10% of congregate meal and 16% of home-delivered meal participants reported one or more circumstances of food insecurity during the past month. The most common factors that contributed to food insecurity involved having to make a choice about how to spend household resources. Ten percent of the congregate meal and 7% of home-delivered meal participants reported having to choose between buying food and buying medications, while another 10% and 5%, respectively, reported having to choose between buying food and paying rent or utilities. “Approximately 5% each of congregate meal and home-delivered meal program participants reported having no food in the house or skipping meals because they had no food or resources to buy food during the past month” (AoA, 1996).

In another study, the effect of loneliness on the dietary habits of the elderly was investigated. Subjects (n=61) were independently living older persons, aged 60 to 94 years. Degree of loneliness was defined in terms of the number of social contacts; those elderly having more social contacts were designated as less lonely. Degree of loneliness was related to dietary adequacy in that a greater degree was associated with decreased intakes of protein, iron, riboflavin, niacin, ascorbic acid, and phosphorous (Schlenker, 1993). Depression and diminished feelings of self-worth caused disinterest in food and poor dietary practices. Fischer et al. (1995) reported that attitudes affected dietary practices differently for younger elderly (60-70 years old) and older elderly adults (75-85 years). Younger seniors had more positive attitudes than older

seniors about outcome expectations and believed that eating habits lead to certain health effects. As a result, younger seniors had more high fiber breads, pasta, rice, and legumes and well as more fresh and frozen vegetables, unsaturated fats, and reduced calorie or low-fat salad dressings in their homes. Older seniors with more negative attitudes had more whole milk, high-fat cheeses, and baked goods such as pastries, pies, and cakes in their homes (Fischer et al., 1991).

Meal Patterns

Few studies have examined meal patterns of low-income elderly, but some report that skipping meals leads to malnutrition. Although limited information exists about meal skipping patterns of the elderly, Ryan et al. (1992) concluded from a national study that few elderly skip breakfast or dinner. In a sample of 474 elderly, the most frequently skipped meal was lunch, including 30% of the men and 21% of the women. More older adults (74+ years) skipped breakfast than younger adults (65-74 years), and more older females skipped dinner than males. However, results of the national evaluation of the ENP indicated that most congregate and home-delivered meal participants reported consuming about three meals a day, including breakfast. Twenty-two percent of congregate meal and 29% of home-delivered meal participants reported eating fewer than three meals per day (AoA, 1996).

Houston et al. (1994) reported results of the Georgia Centenarian Study. Adults aged 80-89 were more likely to skip breakfast; however, more younger adults (aged 60-69 years) skipped lunch. Lee et al. (1995) examined meal skipping patterns of 2,890 rural elderly from 11 southern states. Although the researchers found that income level was not significantly related to number of meals eaten, income level tended to decrease with fewer meals consumed per day. Most elderly reported eating 3 meals per day (83.7%); however, 16.3% reported eating less than 3 meals daily. Of the meal skippers, 10.7% skipped breakfast, 8.6% skipped lunch, and 5.8% skipped the evening meal.

Food Choices

Food consumption patterns of the general elderly population have changed within the last 20 years. Popkin et al. (1992) reported modest changes with less high-fat foods consumed by older adults based on a comparison of results of the 1977-78 and 1987-88 National Food Consumption Surveys (NFCS). Consumption of high-fat beef and pork and whole milk decreased as consumption of low-fat poultry, low-fat fish, low-fat beef and pork, and low-fat milk products increased. Results also showed a slight increase in the number of higher fiber, ready-to-eat cereals consumed by the elderly. The researchers concluded that the general population of elderly have made more healthful food choices based on health messages about fat and fiber.

Several studies have examined specific food choices of the general elderly. Men consumed more energy from eggs, meat, fish, and poultry, while women consumed more energy from fats, oils, fruits, and vegetables (Ryan et al., 1992). A later study found that rural southern elderly consumed many servings of fruits and vegetables followed closely by breads and cereals and a few servings of milk and cheeses (Lee et al., 1995). Fischer et al. (1991) reported differences in general populations of younger and older seniors in the Georgia Centenarian Study. Elderly aged 60-70 years consumed more high fiber breads, pasta, rice, and fresh and frozen vegetables. Older seniors consumed more high fat milk and cheese, pastries, pies, and cakes. The majority of the elderly did not meet current recommendations for dairy product intake with about 30% consuming less than one serving per week. Only 20% of the elderly in their 60's and 30% of those in their 80's and 100's consumed two servings per day.

Houston et al. (1994) reported that low-income elderly participants in the Georgia Centenarian Study consumed less healthy diets. The group consumed more whole milk and sugar and fewer fruits and vegetables, high fiber foods, and dairy products than elderly with higher incomes. The low-income group consumed more foods such as grits, biscuits, corn bread, and sweet breads. Level of education was related to dietary intake in that individuals with lower

levels of education consumed diets higher in fat. With respect to age, centenarians consumed more whole milk, fruit, grains, and more varied diets than octogenarians, while octogenarians ate more fiber and slightly more dairy products than sexagenarians or centenarians.

Food and Nutrition Programs for the Elderly

Pertinent Legislation

Legislation was first passed in 1965 to provide programs specifically for the elderly under the Older Americans Act (OAA). The amended version of the Older Americans Act of 1965 is the major piece of federal legislation today that provides nutrition programs for individuals aged 60 years and older (Schlenker, 1993). In 1972, the Nutrition Program for the elderly was established in response to problems of seniors with inadequate dietary intake due to financial reasons, lack of skills to select and prepare proper foods, limited mobility to shop and cook, or lack of incentive to provide meals for themselves. The Nutrition Program was reorganized in 1978 under Title III-C. Originally, the Title VII program provided meals for senior citizens at congregate meal sites, while later amendments included transportation services for elderly and home-delivered meals (Schlenker, 1993).

Under the OAA, each state is required to establish Area Agencies on Aging (AAoA) which are responsible for planning, organizing, and implementing nutrition and social services. Nutrition Projects at each designated geographic location administer congregate meals at several sites and provide home-delivered meal services. The number of sites and meals in each area depends on its size and population density. The sites are operated with federal OAA funds, local funds, and program contributions from elders themselves (AoA, 1994).

The 1992 reauthorization of the OAA includes amendments for specific mandates of the nutrition programs. A full-time officer with Registered Dietitian credentials is to administer nutrition services under the supervision of the State Unit on Aging. Nutrition projects are to

ensure that all meals meet the Dietary Guidelines for Americans and that one, two, or three meals served must meet 1/3, 2/3, or all of RDA, respectively. Projects must also provide nutrition education for congregate and home-delivered meal clients (AoA, 1994). Thus, legislation continues to provide assistance for elderly to obtain nutritionally adequate meals, either by providing financial resources through food stamps or by serving meals at congregate meals or home-delivered meals.

Food Stamps

One program elderly have access to is the Food Stamp Program which is administered by USDA at a federal level through its Food and Nutrition Service (FNS). Local welfare agencies determine each individual's eligibility and level of benefits and distribute the food stamp benefits to eligible households (USDA, 1994).

For older adults to be eligible for the program, the household gross income can be no more than 30% above the federal poverty guidelines, as determined by the Department of Health and Human Services. There can be no more than \$3,000 available in countable resources, such as bank accounts, as long as one person in the household is 60 years or older. To be eligible, the gross monthly household income of the senior must be 130% or less and net monthly income 100% or less of federal poverty guidelines (USDA, 1994).

Unfortunately, elderly individuals eligible for food stamps are less like to participate in the program than younger people (Schlenker, 1993). According to Nutrition Program Facts provided by USDA (1994), only 7% of food stamp recipients are elderly, with women outnumbering men by about two to one. A larger percentage of participants is white (42%); however, 35% are African-American and 16% are Hispanic. As of 1994, the average monthly income per household of recipients was \$501, and the average monthly food stamp benefit was \$170 per household (USDA, 1994).

Community and Home-Delivered Meal Programs

The Elderly Nutrition Program also provides meals to seniors aged 60 and over as well as their spouses of any age. Meals are served at congregate meal sites, which have been established in community or recreation centers, municipal buildings, public housing, senior citizens centers, and churches (Schlenker, 1993). However, preference for service is given to those with greatest economic and social needs (AoA, 1994). These programs are to serve at least one meal five days a week, except in rural areas where five may not be feasible. Transportation is available for seniors to have access to meal sites.

Meals may be delivered to homebound elderly by a service known as Meals-on-Wheels. Older people can receive meals through referrals from a family member, physician, visiting nurse, or social worker. To be eligible, the recipient must be at least 60 years of age, although spouses under 60 may also be served. The recipient must be confined to the home because of disability or other circumstances. Eligibility must be reviewed and recertified every 6 months (Schlenker, 1993).

Since 1980, there has been nearly a 200% increase in home delivered meals compared to only 2% for congregate meals (AoA, 1994). In 1993, 73% of home delivered meal clients were frail or disabled, and 55% had low incomes. Of congregate meal participants, only 27% were frail, while 45% had low incomes (AoA, 1994).

Results of the national evaluation of the ENP indicated that the majority of congregate meal participants were between the ages of 60-84 years with an average age of 76 years. The majority of home-delivered meal participants were aged 75-84 years with an average age of 78 years (AoA, 1996). The majority of ENP participants were female and the ratio of female to male participants exceeded 2 to 1. More than half of congregate (57%) and home-delivered meal (60%) participants lived alone. The majority of program participants were poor or near poor with 34% of congregate and 48% of home-delivered meal participants receiving incomes below 100% of the DHHS poverty guidelines. Household incomes of 79% and 90% of congregate and

home-delivered meal participants, respectively, were 200% below the poverty guidelines. Results also indicated that 10% of congregate and 20% of home-delivered meal program participants also participated in the Food Stamp Program. Nearly 25% of congregate and 18% of home-delivered meal participants received USDA commodity food packages. Fewer than 5% of both congregate and home-delivered participants received food from food pantries or soup kitchens. The majority of participants were non-Hispanic, white elderly individuals; however a significant portion of congregate (27%) and home-delivered meal participants (25%) were either non-Hispanic blacks or Hispanics.

Recent findings from the national evaluation of the ENP (AoA, 1996) reported that 2% of congregate meal program participants attended a meal site five or more days per week, 57% four to five days, 39% one to three days, and 2% less than one day per week. Twenty percent reported participation for more than ten years, 25% for six to ten years, 40% for one to five years, 7% for six to eleven months, and 9% for less than six months. Ninety-five percent of home-delivered meal program participants received five or more meals per week, 3% received three to four meals per week, 1% received one to two meals per week, and less than 0.5% received less than one meal per week. The majority of home-delivered meal recipients reported participation in the program for one to five years (54%), with fewer participating for more than two years (2%) or less than six months (17%).

Peterson and Maiden (1991) explored variables that shaped awareness and utilization of nutrition programs among rural elderly in New York. Subjects were primarily female with average age of 75 years, an education level of less than a high school diploma, and a mean family income of \$8,000. The researchers reported a high awareness of congregate meals, Meals-on-Wheels, and the food stamp programs, with 86% aware of all three and 37% who used at least one service. Twenty-six percent participated in congregate meals, 8% participated in Meals-on-Wheels, and 10% participated in the food stamp program. Those who participated in these

programs less often had more personal and social resources, such as self efficacy, an internal locus of control, marriage, group memberships, and mobility.

Another study examined food program participation in a sample of seniors aged 60 years and over living in metropolitan New York (Logan and Spitze, 1994). The affects of needs, predisposing factors, and enabling factors were examined. Results indicated that 6.3% ate meals served at group sites and that 4.2% participated in Meals-on-Wheels. Participation in Meals-on-Wheels was significantly associated with greater functional disabilities and age. Congregate meal participation was more associated with lower income. Participation in these programs was also associated with participation in other services, such as civic, charity, or religious groups; community centers; or neighborhood associations. Seniors living with spouses or receiving help from adult children were less likely to use the programs. Availability of services and accessibility, including hours of operation, location, or transportation, had no effect on congregate meal participation. The researchers concluded that relatively few elderly adults participate in these programs provided by the AAoA, with one in four using community-based services (congregate meals) and only 1/2 that number using home-based services

Yeatts and coworkers (1992) described two conceptual frameworks, basic and practice-oriented, detailing factors affecting health care and social service use of low-income minority elderly. The authors used these frameworks to identify strategies to overcome these barriers. The basic framework outlined predisposing factors of race, gender, age, education, and religion, as well as enabling factors of income, perceived availability, and transportation. All factors affected the perceived need for help and service use. The practice-oriented model included 1) knowledge of service and need; 2) access according to transportation affordability, and intent, which included attitudes and willingness towards service use; and 3) attractiveness of services offered. The researchers stated that identifying these existing barriers and strategies should help service providers reach more low-income minority elderly.

Militello and coworkers (1995) evaluated the use of federally funded nutrition programs in several counties of central Florida. Overall, participation by seniors 60+ years of age in congregate meal and home-delivered meal programs was low. Congregate meal use ranged from 0.6% to 1.7%, and home-delivered meal use was from 0.5% to 2.7%. Of all congregate meal participants, 32% lived below poverty level, 25% were severely disabled, 53% were 75 years or older, and 51% lived alone. However, 49% of home-delivered meal clients were below poverty level, 46% were severely disabled, 61% were 75 years or older, and 60% lived alone.

Nutrition Education of Low-Income Elderly

Food and Nutrition Knowledge

In order to develop effective nutrition education programs for low-income elderly, nutritional knowledge must be assessed; however, little research is available. According to recent national surveys, almost 50% of Americans say there is too much conflicting information about what foods are good for them. Perhaps this confusion has caused some frustration since the percentage of those concerned about getting balanced diets dropped from 11% in 1988 to 2% in 1995 (Sutton et al., 1996).

Research has shown the elderly, in general, may have only limited knowledge of foods required for good health. In a study of 164 adults over 64 years of age living in Oregon, participants were asked to name four groups of foods required for a balanced diet. Results indicated that 27% and 28% failed to mention grains and dairy foods, respectively, while fewer than 5% failed to mention protein foods or fruits and vegetables (Schlenker, 1993). However, another study of congregate meal participants in Arizona found that the majority were knowledgeable about nutrition concepts, such as the relationship of appropriate cooking and

storage methods with nutrient retention, the importance of green leafy vegetables, and the use of calcium supplements when dairy foods were not consumed (Schlenker, 1993).

Mann et al. (1989) conducted a study with 150 seniors, aged 65 years and over, to examine both perceived and actual nutritional knowledge and these relationships to demographic variables. The majority of the sample (51.8%) received a family income of less than \$10,000, and 49% had less than a high school education. Perceived knowledge was measured by agreement or disagreement to the statement, "I know a good deal about nutrition." Actual knowledge, measured by 20 agree/disagree statements focusing on food sources of nutrients, yielded an overall 66% correct responses. Over 90% were knowledgeable of certain basic facts, such as sources of vitamin C, fiber, and saturated fats. Actual nutrition knowledge was significantly related to both income and education, as those with higher incomes levels provided more correct responses (Mann et al., 1989).

Stanek and Sempek (1991) examined the relationship of food supplement use to nutritional knowledge and dietary intake of seniors, aged 60-97 years, who attended Title III-C nutrition programs. Most of the seniors had less than a high school education (53%) and had a yearly gross income of under \$5,000 (51%). Thirty-seven percent used some type of food supplement, but there was no significant difference in nutritional knowledge or dietary intake of supplement users and non-users. There was a positive correlation between nutrition knowledge, education, and income.

Magnus (1990) examined knowledge of congregate meal site participants in relation to heart health. Knowledge of prevention of hypertension and hypercholesterolemia as well as techniques for reducing blood pressure and cholesterol levels were examined. Test Your Heart Health IQ questionnaires were administered at 10 meal sites in which 37.2% of participants were between ages of 66 and 74 years and 47% were over 75 years. Marked misinformation about dietary approaches for reducing cholesterol was apparent in the responses. For example, 65%

said cholesterol was found in plant foods, and 74% believed cholesterol was lowered by eating less cholesterol.

Briley et al. (1990) examined sources of nutrition information available to non-institutionalized rural and urban elderly. Written materials were the most common sources of information for both groups of older adults. Magazines were the most common sources (36%), followed by newspapers (22%). Cookbooks were the primary source for the rural elderly. Although 96% of all participants watched TV and 51% listened to radio on a regular basis, these media were not identified as sources of nutrition information. Least frequently used sources for both rural and urban elderly were pharmacists and grocery store flyers.

Nutrition Education Strategies

Surveys have been conducted to assess willingness of independent living seniors to participate in nutrition education programs. Results of one indicated that 40% were willing, 30% were not willing, and 30% might be willing to participate (Krinke, 1990). Another indicated that some elderly want to know more about food buying, food preparation techniques to retain nutrient value, and diet changes for disease or weight control (Krinke, 1990). Topic choices from focus groups with rural elderly included healthy food choices, basic nutrition, incorporating fiber into diets, and new ideas for preparing tasty foods (Crockett and Heller, 1990).

The OAA requires the ENP to provide nutrition education to congregate and home-delivered meal program participants. In fact, results of the national evaluation of the ENP (1996) revealed that nutrition education, along with meals, was one of the most widely available nutrition services offered to participants. Eighty-nine percent of congregate and 81% of home-delivered meal programs reported offering nutrition education to participants about nutrition, diet, food purchasing, food preparation, and other related topics. Thirty percent of congregate meal programs offered nutrition education more than 12 times a year, while forty percent offered it 7 to 12 times a year. The most common materials used for nutrition education administered by

congregate meal sites included printed materials (81%), lectures (69%), visual displays (56%), groups discussions (50%), and personal discussions (38%). Results of participants' evaluations of services received from the ENP indicated that 31% of congregate and 12% of home-delivered meal participants reported that the nutrition education was very useful, while 27% and 14%, respectively, found it somewhat useful, and 3% from each program found it not useful at all.

Because some older adults are not interested in new educational information or have limited literacy skills, nutrition information must be stimulating, comprehensible, and interesting. Some elderly have indicated interest in television programs, meetings, and social gatherings that include lessons and demonstrations (Krinke, 1990). Some prefer verbal and visual formats, including talks, filmstrips, demonstrations, or movies more than lectures or written materials (Schlenker, 1993).

Mayeda and Anderson (1993) examined the effectiveness of a nutrition education program called "Self-Care for a Healthy Heart" administered at 8 different congregate meal sites. The treatment group received education intervention which included lessons in 4 steps of heart disease risk controls. Results of knowledge quizzes and food records at the end of the intervention period indicated that there were no significant differences between treatments and control groups.

Bedell and Shackleton (1989) studied nutrition knowledge and eating behaviors of older adults in New York. Forty-one percent received annual incomes of \$5,000 or less, and 49% received \$5,001 to \$10,000 per year. The experimental group received four 45-minute lectures/discussions addressing basic food groups and nutrients. The control group received no intervention. No significant differences were found between post-test scores of both groups; however, knowledge of both groups increased from pre- to post-test, with the experimental group scoring somewhat higher. In contrast, Constans et al. (1994) found a significant increase in calcium consumption over a 2 year period by elderly who received education pertaining to dairy food choices and calcium content of these foods. In a study by Maloney and White (1995),

congregate meal site participants received 12 weekly one hour nutrition and fitness lessons. Results indicated that these lessons produced a significant increase in knowledge, but no changes in dietary fat intake. However, there was a significant change in type of fat consumed, with an increase in polyunsaturated fats and a decrease in saturated fat. An innovative approach to significant improvements in attitudes, perceptions, and dietary intakes included encouraging dietary changes with nutrition information while promoting psychological well being of older adults with gardening (Maloney and White, 1995).

Models of Behavior Change

Stages of Change

One well known behavior change model is called the transtheoretical model, better known as Stages of Change. “The model postulates that both the cessation of high risk behaviors and the acquisition of healthier alternatives involves progression through 5 stages of change” (Prochaska, 1994). The amount of progress towards a behavior change as a result of an intervention is directly affected by the stage at the start of treatment (Marcus et al., 1992). The state of readiness for change must be assessed and interventions tailored accordingly.

The earliest stage, called precontemplation, is when the individual may be unaware or underaware of the problem behavior and have no intention to change the behavior in the foreseeable future or within the next 6 months (Prochaska et al., 1992). In contrast, “contemplation is the stage in which people are aware that a problem exists and are seriously thinking about overcoming it in the next 6 months “ (Prochaska et al., 1992). At this stage, pros of changing the behavior and cons or costs to overcome the problem are analyzed. “Preparation is the stage in which individuals are intending to take action in the next month and have unsuccessfully attempted to do so in the past year” (Prochaska et al., 1992). Individuals are in the action stage if they have successfully altered the problem behavior or reached a particular

criterion within a period of 1 day to 6 months. Behaviors, experiences, or the environment has been modified by those in this stage to overcome their problem (Prochaska et al., 1992). Finally, “maintenance is the stage at which people work to prevent relapse and consolidate the gains attained during action” (Prochaska et al., 1992). Those in the maintenance stage are free of the problem behavior and have been able to engage in alternative behaviors for more than 6 months. However, for some behaviors, this stage may last a lifetime. Movement through these stages does not progress linearly because relapses occur often. Many individuals must make several attempts at behavior change before they achieve their goals (Marcus et al., 1992).

Health Belief Model

The Health Belief Model includes beliefs of personal susceptibility to negative consequences of a behavior, severity of those consequences, belief that a behavior change will render benefits and may reduce susceptibility and/or severity, and the perception that barriers or other costs related to the behavior change are not excessive (Chapman et al., 1995). Sporny and Contento (1995) included both the Stages of Change Model and the Health Belief Model in a study to compare people who were at different stages of dietary fat reduction based on psychosocial variables. Participants were placed in appropriate stages of change based upon self-reported behaviors and then were assessed for motivational beliefs with the Health Belief Model. Measures of social influences, self-efficacy and dietary fat intake were also determined. As expected, those in precontemplation and contemplation stages ate the most fat and least fiber, while those in the maintenance stage ate more fiber and less fat. All stages believed fat intake related diseases were severe. Contemplators scored higher on perceived levels of susceptibility, benefits, and barriers than those in precontemplation. Those in the maintenance stage had the highest perception of benefits of eating low-fat diets and lowest perception of barriers. The researchers concluded that the anticipated outcomes (perceived benefits) of the behavioral beliefs component is important in predicting behavioral intention.

Locus of Control and Self-Efficacy

Locus of control describes how one's outcome expectations or reinforcements are derived, either by oneself which is internal locus of control, or by luck, chance, or others, which is external locus of control. Self-efficacy is the belief that one can successfully perform the behavior necessary to yield a particular outcome. Waller and Bates (1992) examined locus of control, generalized self-efficacy beliefs, and health behaviors in a sample of elderly who have remained healthy. A locus of control scale, a self-efficacy scale, and a Healthstyle Self Test were administered to 57 elderly. Results showed that 91.2% had an internal locus of control. The majority (57.9%) had high general self-efficacy. Thus, the majority of the elderly accepted responsibility for maintaining good health, perceived the ability to do so, and practiced healthy behaviors that led to the expected outcome of good health in later years.

Social Marketing in Nutrition Education

Definition and Purpose

One approach to managing social and health problems of Americans involves social marketing to promote social change through persuasion and voluntary action (Wallack, 1990). Within the field of nutrition education, the use of social marketing techniques has steadily increased since it was first developed in the late 1970's (Vanden Heede and Pelican, 1995). Marketing in the business world involves "business activities that direct the flow of goods and services from producers to consumers...in order to best satisfy consumers and accomplish the firm's objectives" (Vanden Heede and Pelican, 1995). It starts by understanding what the public perceives it needs and wants and then develops products to meet those needs (Diamond et al., 1989).

Social marketing utilizes these marketing principles to promote the adoption of a social cause, idea, or behavior. Social marketing may be defined as "a social change management

strategy involving the design, implementation, and control of programs aimed at increasing the acceptability of a social idea or practice by the target audience” (Wallack, 1990). When social marketing is used in nutrition education or health promotion, programs are developed to satisfy consumer needs and designed to reach those in need, while also meeting the organizational objectives (Lefebvre et al., 1995).

Social marketing, when used in combination with nutrition education, may foster behavior change to more positive dietary practices. Behavior change in a social marketing perspective assumes behavior is influenced by a variety of factors. These include intrapersonal factors, such as personal benefits, and interpersonal factors, such as significant others, institutional, communities, and public policies (Lefebvre et al., 1995). Social marketing involves the use of theories, such as Stages of Change and the Health Belief Model, about how people make behavior choices to develop nutrition education interventions that are likely to be effective.

One researcher described social marketing as a “bottom-up” approach in which the wants, needs, values, and preferences of the target audience are considered first and foremost. Information giving and service strategies for behavior change are designed based on acceptance and preferences of the target audience (Brown et al., 1992).

The process of social marketing involves first the identification of a nutrition-related health problem of a target audience. The audience is then grouped according to similarities, such as risk factors, occurrence of health problem, and demographics. Focus groups and personal interviews are used to determine the wants, needs, and values of that target audience and nutrition education programs are developed incorporating this information.

Some nutrition educators object to social marketing techniques because they believe that marketers use the techniques to analyze consumers. Other educators believe behavior change by these methods encourage adoption of new behaviors without understanding them or striving for mastery of learning by the consumer. Still other educators believe some marketing techniques

may be valuable in nutrition education, but do not adopt marketing as the final goal of education (Vanden Heede et al., 1995).

Social marketers believe nutrition education is important for behavior change, but by itself is not sufficient. The premise of social marketing is that it helps people learn in ways they can understand. It is a learner-centered approach which strives to find out where people are starting from in the hierarchy of learning before identifying methods for conveying information (Lefebvre et al., 1995).

Health and Nutrition Education

The social marketing approach was used to aid in the development of a prenatal weight gain intervention, called the “Healthy Infant Outcome Project.” Focus groups were conducted with low-income pregnant women to gain insight into maternal behaviors, perceptions, attitudes, and skills, as well as of acceptable communication channels and appropriate topics. The researchers found that participants felt a need for prenatal weight gain education. The women believed that education should address weight gain during pregnancy, weight loss after pregnancy, and acknowledge the emotional needs of the pregnant woman. (Brown et al., 1992).

Another study by Diamond and coworkers (1989) involved a survey to assess educational topics and format preferences of cardiac patients in order to learn more about living with heart disease. The researchers found that most patients would make an effort to follow Dietary Guidelines if they were familiar with them. The intervention method most acceptable to this group was self-instruction, such as booklets. The most popular topic preferences were physiology of heart disease and eating out and traveling in relation to heart disease.

CHAPTER III

METHODOLOGY

Design of the Study

The study included two pilot tests followed by four focus group discussions, all involving low-income elderly adults living in Virginia who participated in the Congregate Meal Program. Pilot testing was done to establish procedures for conducting focus groups and to test the focus group questions for clarity and the generation of desired information from participants. The study was approved by the Institutional Review Board for Research Involving Human Subjects at Virginia Tech. All subjects signed an informed consent form prior to participating in either a pilot test or focus group discussion (Appendix A).

Procedures for Conducting Pilot Tests

Participants and the Process

Two pilot tests were conducted with two groups of low-income elderly, 60 years of age and older, who were participants of the Congregate Meal Program. Contact was made with a regional Area Agencies on Aging director to obtain names of congregate meal site directors. Site directors were initially contacted by the research advisor who explained the objectives of the study. Once willingness to participate was obtained from each site director, the primary researcher then contacted the meal site directors to confirm a date to conduct a focus group and to

define participant criteria. The director of each site recruited regular participants of the meal program to participate in pilot testing.

The first pilot test was conducted June 20, 1996 at the Radford Congregate Meal Site in the Radford Senior Center and included 7 (2 males; 5 females) low-income elderly. The second pilot focus group, conducted on June 25, 1996 at the Blacksburg Congregate Meal Program, included 5 low-income elderly (3 males; 2 females). Incentives for participation in the pilot tests included coupons for free juice or milk from a local grocery store and health education brochures.

The researcher served as moderator of each of the pilot test focus groups. Each discussion began with an introduction of the topic and ground rules for a group discussion as outlined by Krueger (1994). A series of open-ended questions were tested in the discussions (Appendix B). These questions were a modification of questions developed previously by an investigator at Virginia Tech used to gain insight into the opinions, attitudes, stages of change, real and perceived needs, and preferred channels of nutrition information of food stamp recipients aged 55 years and younger (Stack, 1997). Prior to testing, the questions were modified to make them more appropriate for low-income elderly adults and to elicit information regarding current food purchasing and preparation practices, perceptions of the importance of food to health, and preferred topics and methods for receiving nutrition information. Probes were developed for each question and to derive additional information as described by Krueger (1994). The logical sequential flow and wording of the questions were tested during the pilot studies. Basic understanding, clarity of each question, and the ability of the questions to elicit desired information were determined based on responses from each pilot test. An assistant moderator was present at each pilot test to take detailed notes of participant responses, observe group interactions, operate an audio cassette recorder, and help ensure that each session ran smoothly. At the beginning of the discussions, consent was obtained from participants to record the dialogue of each pilot test with an audio cassette recorder. Pilot tests were conducted in the activity room in which congregate meals were served at each site. Name tags were worn by the

moderator, assistant moderator, and each participant in order to familiarize participants with the researchers and each other. Each pilot test lasted about 45 minutes.

The NSI *Determine Your Nutritional Health* Checklist (Appendix C) was administered to each participant after the closing question of each pilot test. The checklist was used to obtain information about health conditions, characteristics, and dietary practices of participants that potentially contribute to nutritional risk. On The reverse side of the checklist, participants completed a demographic questionnaire regarding gender, age, ethnicity, living arrangements, self meal preparation, and meal accompaniment. The assistant moderator and the research advisor helped administer the checklist to ensure that each participant understood the questions. A post-discussion analysis between the moderator, the assistant moderator, and the research advisor was held after each pilot test to identify problems and develop necessary revisions to focus group questions and procedures.

Results

Results of the pilot tests indicated that questions for the low-income elderly needed to be revised to be simpler and more comprehensible. The terms “food purchasing” and “food preparation” were changed to “buying and cooking food.” References to “nutrition class” were changed to “group discussions about nutrition” in order for this group to relate to the question and not feel intimidated by the term “class”. It was also necessary to delay the use of the term nutrition until later in the discussion so that the participants would freely discuss the issues, rather than assume they were being lectured. The *Determine Your Nutritional Health Checklist* seemed to be confusing and difficult for participants to understand; thus, it was deemed necessary for the researchers to read each statement to the participants and assist them with answering the questions.

Procedures were modified from those recommended by Krueger (1994), as it was frequently necessary to address each participant with focus group questions rather than wait for

them to volunteer information. These adults seemed rather reserved and did not discuss without prompting. More discussion of the questions occurred if participants were addressed individually. Responses from pilot tests also indicated the need to use more direct probes to obtain the desired information. Once the moderator used direct probes, more information was obtained from participants about how they decided what food to buy and cook and how they learned or preferred to learn about food and cooking. In some cases, probes were not effective in eliciting the desired information; therefore, some probes were modified to be used as focus group questions. Final questions that were used in the focus groups are included in the moderator's guide presented in Appendix D.

Procedures for Conducting Focus Groups

Participants

Criteria for recruiting participants for focus groups were: 1) white and African-American males and females 60 year of age and older and living in Virginia; 2) participants in the Congregate Meal Program; and 3) low-income, either food stamp recipients or food stamp eligible, as determined by the directors of the congregate meal sites where focus groups were conducted. Recruitment of participants was done in cooperation with the Virginia Area Agencies on Aging in that representatives of the agencies provided information about congregate meal sites in regions of interest and names of directors to contact for recruitment in these regions. Arrangements were made with site directors for focus groups after initial contact was made by the research advisor to explain the study and obtain consent to participate. The researcher arranged focus group session dates and explained participant criteria with each site director. At this time, directors were informed about free store coupons from local grocery stores as incentives to be distributed to each participant. Focus groups were conducted in four regions of Virginia throughout the month of July in order to obtain a variety of participants. A chronological plan as suggested by Krueger

(1994) was followed when conducting the focus groups (Appendix E). The first focus group took place July 16, 1996, in Richmond at the congregate meal site located in the Richmond Community Center. This group included 6 African-American female participants and represented the eastern Virginia region. The second group was held July 18, 1996, at the congregate meal site in Halifax and consisted of 8 African-American participants (7 females; 1 male) and represented the central region of Virginia. The third group was conducted July 25, 1996, in Christiansburg at the congregate meal site located in the Christiansburg Senior Center. It included 11 participants (5 females; 6 males) and represented the southwest Virginia region. The fourth and final focus group was conducted July 29, 1996, in Fredricksburg at the congregate meal site located in Shilo Baptist Church, Old-Site. This group consisted of 10 female participants and represented the northern Virginia region.

The Process

The primary researcher served as the moderator of each focus group. An assistant moderator was present at all focus groups to take notes, operate the audio cassette recorder, observe group interactions, and help ensure that each session ran smoothly. With participants' consent, each focus group was audio-tape recorded with two recorders and back up tapes were made following each session. Focus groups were conducted in the activity rooms where congregate meals were served at the sites. Name tags were worn by the moderator, assistant moderator, and participants to familiarize participants with the researcher and each other. Before focus group sessions began, participants were introduced to the researchers and encouraged to have a glass of juice provided by the researchers. Each focus group began with a brief welcome by the moderator, an overview of the topic of discussion, and ground rules which were developed during pilot testing (Appendix D). Following the opening of each focus group, participants signed consent forms (Appendix A) and returned them to the moderator. The audio-tape recorders were then turned on and participants were asked to introduce themselves individually

and state who did the cooking in their home. Although no names of participants were used in the analysis and report of the study, the assistant moderator generated a seating chart of participants in order to later examine possible influences of living alone on food choices and practices. Seventeen questions developed during pilot testing were used in the focus group discussions to elicit the desired information. These questions and the probes for the questions are contained in Appendix D. The basic line of participant questioning is given in Table 3.1. One written activity accompanied question 2. That activity was explained by the moderator to participants and addressed factors that influence choices for food purchasing and/or preparation (Appendix F). Participants picked the most important reason for choosing foods from the following four factors: easy to make, good for you, low in cost, and tastes good. Each participant then was asked to share the reason chosen as the most important.

An informal discussion style was used during each focus group in which participants were free to discuss at any time, and first names were used to convey a comfortable setting for strong participation. Focus groups lasted from 45 minutes to 1 hour. After the discussions, the moderator, assistant moderator, and research advisor administered the *Determine Your Nutritional Health Checklist* to participants (Appendix C). Rewards of coupons for free milk or juice from a local grocery store were distributed, and participants were thanked for their cooperation. Thank you notes were also sent by the moderator to each congregate meal site director for their cooperation.

Following each focus group session, a debriefing session was held, as recommended by Krueger (1994), between the research advisor, the moderator, and the assistant moderator to discuss participant characteristics, overall impressions, and repetitive themes. Audio tapes were reviewed to ensure that tapes captured all responses. Brief summary reports were written by the moderator to identify pertinent information and later use in a more thorough analysis of results.

Table 3.1 - Focus group questions

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1. Well let's begin. Let's start by going around the room. Tell us your name and who does the cooking in your house. Do you live alone?
 2. **ACTIVITY-FACTORS THAT INFLUENCE GENERAL FOOD CHOICES:** Lets go around the room so everyone can share what they ranked as most important and explain what influenced you to give it the highest ranking.
 3. How do you decide what foods to buy?
 4. For those who do their own shopping, do you always shop in the same place?
 5. Think about the foods you cook. How do you decide what foods to cook?
 6. Sometimes people have problems getting the food that they need. Can anyone tell about a time when this has happened to them?
 7. Think about the foods that you eat. Have you ever tried to change what you eat? Can anyone tell about a time in which you tried to make a change?
 8. How important do you think food is to your health?
 9. Think about what you already know about food and cooking. Where did you learn this information? From your doctor? From television?
 10. Some people feel they want to know more about food and cooking. What would you like to know more about?
 11. How would you like to find out more about food and cooking?
 12. What does the word "nutrition" mean to you? How important is nutrition?
 13. Think about any health condition you may now have, such as osteoporosis, cancer, high blood pressure, diabetes, heart disease, or recovery from surgery or illness. Would you like to know more about how food you eat can possibly reduce the bad effects or symptoms of that condition?
 14. Have you ever gone to group discussions where you talked about nutrition? If so, how did you feel about the session?
 15. Do you think you might like to attend group discussions on nutrition?
 16. Would you like to have someone come visit you at home to talk with you about food and cooking?
 17. Before we finish, is there anything that you would like to say that we haven't already covered?
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Data Analysis

Data generated from the four focus group discussions were analyzed according to procedures described by Krueger (1994) and Knodel (1993). First, written transcripts were produced for each focus group discussion from the audio recordings of the discussions. These

transcripts contained the qualitative data used in analysis. Prior to transcription, the moderator, who was the primary researcher, reviewed audio recordings for each discussion to become familiar with the flow of the dialogue. To produce a transcript, the moderator used a word processing program to transcribe participants' responses directly from the audio recordings. The moderator transcribed recordings from the second and fourth focus groups, and an assistant analyst transcribed recordings from the first and third focus groups. The assistant analysis was a graduate student in the Department of Human Nutrition, Foods, and Exercise, at Virginia Tech. The moderator and assistant analyst then reviewed and checked each other's transcripts to be sure that recordings were accurately transcribed. Transcripts were coded with the initials for the meal sites: R (Richmond), H (Halifax), C (Christiansburg), and F (Fredricksburg). Responses also were coded with numbers corresponding to the number of the response from the group of responses related to each specific focus group question. Similar procedures were used by Eddy (1997) for transcribing audio recordings from focus group discussions with older women.

The next step was to generate preliminary codes, as described by Knodel (1993), that were used in the initial stages of analyzing the qualitative data in the transcripts. Specifically, these codes represented general or broad themes and were used for grouping similar responses from the transcripts into those general themes. The moderator developed these preliminary codes based on the objectives of the study. The moderator reviewed notes taken by the assistant moderator during the focus group discussions as well as the summaries developed from the debriefing sessions following each discussion. Key ideas identified in those notes and summaries were used to develop the preliminary codes.

For the data analysis, the moderator read the transcripts from each focus group discussion and used the preliminary codes to sort similar responses into groups representing a general theme. A word processing program was used to sort similar responses from all of the transcripts into the groups. Each response within a group was coded with the letter identifying the focus group site (R, H, C, or F) and a number designating the response within the group of responses

related to each focus group question. This enabled the researcher to refer back to the context in which the responses originally occurred. As the researcher progressed through the analysis, the preliminary codes were refined and broken down into codes representing subthemes (Krueger, 1994; Knodel, 1993). This systematic analysis was conducted not only by the moderator, but also by the assistant analyst to minimize bias in data analysis. After completing the analysis, the primary researcher, assistant analyst, and research advisor met to discuss results. Discrepancies in coding and sorting between the moderator and assistant analyst were discussed until a consensus was reached and final codes were developed (Krueger, 1994; Knodel, 1993). The final codes represented the themes and subthemes used in reporting the results. These themes and subthemes are reported in Table 3.2. Themes were grouped according to two major categories which included, (a) Factors That Influenced Dietary Practices and (b) Preferences for Food and Nutrition Education. Similar procedures were used by Skinner et al. (1996) to identify the needs and preferences of pregnant adolescents for nutrition education.

Data from the NSI *Determine Your Nutritional Health Checklist* were analyzed in two ways. First, the number of participants, at each focus group site, who responded “yes” to each checklist statement was calculated. Also, nutritional risk scores were calculated for participants at each site according to procedures described in the NSI Manual (NSI, 1991). Scores were used to group participants into those at “low”, “moderate”, and “high nutritional risk” with scores of 0-2 representing “low risk”, 3-5 indicating “moderate risk”, and 6 or more indicating “high risk.” Number of participants at each site who responded to the various items on the sociodemographic questionnaire were also calculated.

Reporting of Results

The interpretive summary method described by Krueger (1994) was used to report results. This method provides a descriptive summary, illustrative quotes, and an explanation of

Table 3.2- Focus Group Themes and Subthemes Grouped into Two Major Categories

Factors That Influenced Dietary Practices

Health Conditions

Personal health conditions

Health conditions of significant others

Food Preferences

Personal food preferences

Food preferences of significant others

Resources

Human resources

Financial resources

Other resources

Preferences for Food and Nutrition Education

Current Sources of Food and Nutrition Information

Family Members

Media

Health professionals

Topic Preferences for Food and Nutrition Education Programs

Preferences related to health conditions

Preferences related to other topics

Preferred Methods for Food and Nutrition Education

Group Discussions

Media

Health professionals

each theme. Because this study involved qualitative data, results were reported using adjective phrases, such as “the majority of participants agreed that...” and “few participants felt that...”, as described by Krueger (1994). Although differences in prevalent themes between groups were noted, results and discussions of focus groups were derived from a collective analysis of all focus group responses.

Results are reported in Chapters IV-VI. First, a description of the elderly adults participating in the focus groups is provided in Chapter IV. Included in that chapter are the sociodemographic characteristics and nutritional risk of participants, and focus group dynamics. Focus group themes are reported and discussed in Chapters V and VI. Because themes were

divided into two major categories, two chapters were used to report the themes. In Chapter V, themes and subthemes related to Factors that Influenced Dietary Practices of Focus Group Participants are discussed. Chapter VI includes a discussion of themes and subthemes related to Preferences of Focus Group Participants for Food and Nutrition Education. Conclusions for the study are discussed in Chapter VII. This chapter includes a discussion of the major findings of the study, recommendations for nutrition education of low-income elderly adults (particularly those in SCNEP) and recommendations for additional research based on results of this study.