To the Graduate Council:

I am submitting herewith a dissertation written by Edna Shields Gillis entitled "A Health Risk Appraisal of Community Dwelling Elderly in East Tennessee." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education with a major in Health Education.

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# A COMPARATIVE STUDY OF THE HEALTH STATUS OF COMMUNITY DWELLING ELDERLY IN EAST TENNESSEE

A Dissertation

Presented for the

Doctor of Education

Degree

The University of Tennessee, Knoxville

Edna Shields Gillis

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## Dedication

This manuscript is dedicated to my family for their support and faith. My father, Walter H. Shields, who taught me that anything is possible if you truly want it, my husband, Earl Gillis, for his total support, and my children, Joe, Susan and Alice for their enthusiastic encouragement.

## ACKNOWLEDGMENTS

I take this opportunity to thank those individuals that helped me to make my dream a reality. A very special note of appreciation to the Chair of my committee, Dr. Bill Wallace, who reminded me that it was only through a state of total disequalibrium, that learning was able to take place, so I was able to feel that I was in the process of learning. He always had time for me to stop in his office to vocalize and alleviate my frustrations. Dr. Jack Pursley for his enthusiasm and belief in the Health Risk Appraisal as a valid health tool so that my enthusiasm was also maintained. A special appreciation is felt for Dr. Velma Pressly who has a special ability to help me relax and see the reality of the situation. Last, but not least, Dr. Bill Poppen for being such a good listener and helping me to stay in touch with the significance of the human element of my study.

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# ABSTRACT

The purpose of this study was to develop a profile of the health status of community dwelling elderly, aged sixty and over living in East Tennessee, through the use of a computerized health risk appraisal. This study looked at information obtained through the administration of the instrument "Healthier Living: An Appraisal Program for Older Americans".

Answers were specifically sought to the following questions:

1. Are the health risk factors of the elderly in East Tennessee Development District 02 the same as those observed nation wide?
2. What is the health profile of the elderly in the East Tennessee Development District 02?
3. Will the health profile of the elderly living in urban areas differ from the health profile of the elderly living in rural areas?
4. Will there be a difference in the health risk profile of the young-old, the old, and the oldest-old?
5. What differences will be seen in the health risk profile of individuals residing alone as compared to those residing with others?

A sample of 246 elderly persons, age 60 or older in attendance at area senior centers, was randomly selected by the use of a proportional sampling design. Each individual completed the Healthier Living instrument and the answers were then entered into the EPI-INFO program for analysis.

Results were presented by descriptive research methods and the use of the Chi-Square test for homogeneity.

The following major conclusions were drawn from the findings of the study: (1) when comparing the health risk factors of residents of East Tennessee with those health factors observed on a national basis, East Tennessee residents had a higher rating in the areas of; self perception of health, the non-use of tobacco and exercise habits and a lower rating in the areas of vision and hearing impairment; (2) residents of urban and rural areas tend to have similar health profiles; (3) cohort groups tend to have a similar health profile; (4) the age of the respondent has a direct bearing on the appraised age as arrived at through the health risk appraisal; and (5) living alone or with another tends to have no bearing on individual health profiles.

Conclusions were made and recommendations offered related to the use of the health risk profile, as an avenue of communication and education when interacting with the elderly.

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# CHAPTER I

## INTRODUCTION

Any piece of literature that deals with the population of the United States, if not the world, emphasizes the increase in the percentage of the elderly as compared to the total population (Dychtwald, 1990; Soto, Behrens & Rosemont, 1990; Kabcenell, Barker, Weisfeld, Pomphrey, Cox & Hollendonner, 1991). As the generation known as the Baby Boomers nears the age of fifty, this fact is becoming a greater concern with regard to the impact it will have on our society as a whole (Dychtwald, 1990; Aiken, 1989).

The portion of those sixty-five plus is growing at a faster rate than any other segment of the United States population. In 1980, 11.4% of the population were sixty-five plus, and that percentage is expected to reach 13.1% by the year 2000. By the time the Baby Boomers reach sixty-five around the year 2040, the numbers will start to swell dramatically. It is estimated that by the year 2050, the number of sixty-five plus individuals will account for 21.7% of the population (Health United States 1990, 1991).

At the Surgeon General's Workshop on Health Promotion and Aging, C. Everett Koop stated that, "Those projections are much more than mere numbers. Those are projections

about the lives of real people - flesh-and-blood men and women who will be old and who will need a certain level and type of health care." (1988,p.2). His concern was that this variety of health care was not very well understood, much less currently employed, in our society.

The attention directed toward the state of the health care of the elderly cannot wait for the Baby Boomers to reach retirement age. Ken Dychtwald (1990), in Age Wave, states that there are three significant situations occurring at once causing an extensive demographic shift; the senior boom, a decrease in the birth rate, and the aging of those born during the baby boom. The prediction is that by 2025, Americans over the age of sixty-five will outnumber teenagers by more than two to one.

With this shift in the population, there will be a comparable shift in the concept of old age. The belief that being old means being sick and frail is starting to diminish. It is being replaced by the idea that most older persons are healthy and vigorous, and they want to stay well and functioning as long as possible (Fisk, 1988).

With the rising cost of health care, and the added requirements that this segment of society will place on the health care system, it becomes increasingly important that the life patterns, ideals and attitudes are determined so

the future direction of programs offered can be better managed. One approach is through a Health Risk Appraisal (HRA), resulting in a Health Risk Profile (HRP) showing the demographics of the population being dealt with. There is also a need for increased education within the older population regarding the value of health promotion and wellness at any age and to disseminate the idea that modifying habits, even in later life, will show meaningful and discernible benefits (Fisk, 1988).

## PURPOSE OF THE STUDY

The purpose of this study was to develop a health profile of community dwelling elderly aged sixty and over living in the East Tennessee Development District, based on analysis of the Health Risk Appraisal (HRA), "Healthier Living; An Appraisal Program for Older Americans" (see Appendix A).

## RESEARCH QUESTIONS

This investigation specifically sought to address the following research questions:

1. Are the health risk factors of the elderly in the East Tennessee Development District the same as those observed nation wide?

2. What is the health profile of the elderly in the East Tennessee Development District?

3. Will the health profile of the elderly living in urban areas differ from the health profile of the elderly living in rural areas?

Null hypothesis -1: There will be no difference between the health profile of the elderly living in urban areas and the elderly living in rural areas.

4. Will there be a difference in the health risk profile of the young-old, the old, and the oldest-old:

Null hypothesis -2: There will be no difference between the health profile of the young-old, the old, and the oldest-old.

Null hypothesis -3: There will be no relationship between the health profile and the age of the respondent.

5. What differences will be seen in the health risk profile of individuals residing alone as compared to those residing with others?

Null hypothesis -4: There will be no differences between the health risk profiles of individuals residing alone as compared to those residing with others.

## NEED FOR THE STUDY

The composition of the population is undergoing drastic changes. Dealing with just the numbers, in 1980 in the United States, there were 25.5 million people over sixty-five, and in 1988 that number had increased to 30.4 million (Health United States: 1990, 1991). The 1990 Census shows the number of people over sixty-five as 31.25 million, and if you include those aged sixty to sixty-four the total number is 41.86 million.

From the U.S. Census the numbers show that Tennessee is experiencing the same demographic shift that is being observed nation wide. In 1988 in Tennessee, 11.8% of the population were sixty-five or over, as compared to 12.3% on the national level. By 1990 those numbers were; Tennessee - 12.7%, and nationally - 16.8% (U.S. Census, 1988; U.S. Census, 1990). A detailed comparison of the population from 1970 to 1990 between the Nation and Tennessee may be found in Appendix B.

A comparison of the population aged sixty-five plus in the East Tennessee Development District with the same age group state wide, shows that this area of Tennessee is not just keeping pace with the population growth (60+), but is surpassing it. The East Tennessee Development District (02) is composed of the following counties: Anderson, Blount, Campbell, Clairborne, Cocke, Grainger, Hamblen, Jefferson, Knox, Loudon, Monroe, Morgan, Roane, Scott, Sevier, and Union (Appendix F). Within these sixteen counties, in 1980 the percentage of the population over sixty-five was 11.2% and by 1990 that portion of the population had risen to 13.3%. The populations of these counties between 1980 to 1990 may be found in Appendix C.

In reference to the national scene, Surgeon General Koop said in 1988 that the types of programs offered and the methods of program delivery to the elderly need to be constantly re-evaluated to see if there is need of change so the benefit of preventive care can be realized before illness strikes. Through a health risk appraisal, those areas of greatest risk within the population can be identified and programs developed to meet the needs of the targeted population. Health risk appraisals are seen as an educational tool and assessment program so that the

participants might be alerted to negative lifestyle practices.

Donald Patrick, as a presenter at the hearings held by the Public Health Service and the Institute of Medicine in 1988, felt the goals of older Americans should be measured in terms of health-related quality of life and the perception of quality adjusted life years. Patrick suggested four health promotion and disease prevention approaches for the elderly:

> -Early identification of risk factors for which there are methods for intervention.
> -Modification of physical and social environments.
> -Maintenance and improvement of desirable health habits.
> -Strengthening personal autonomy.
> (Soto, Behrens, Rosemont, 1990).

Harrison in 1991, reported that most researchers are prone to lump the 'elderly' together starting at age 60. The group of 60 plus is growing at such a fast rate and shows such diversity that this group is now being broken into segments within itself. In 1984, the Panel on Statistics for an Aging Population was established under the sponsorship of the Committee on National Statistics and within the National Research Council to study the adequacy of current statistical information and methodology, particularly in the area of health and medical care for an aging population. This panel chose to use the age sub-sets:

"young-old (65-74), old (75-84), and oldest-old (85-and over)" (Gilford, 1988, p.66).

The very concept of "old age" and our policies and programs for the "aged", relate to the belief that there is an abrupt decline in physical and/or mental capacity, as well as life expectancy, after 65. This is now clearly erroneous, but as a nation we haven't decided how to adapt to the changing situation (Soto, et al., 1990).

A Health Risk Appraisal of the elderly in East Tennessee, would serve as a method of communicating with the elderly population so they could have a better understanding of their personal health status. The results of the Health Risk Appraisal would also serve as an educational tool to start a dialogue in terms of preventative health care. A current health profile would better identify the populations that are defined under the Older American Act, to make sure that the types of programs offered and the methods of program delivery are the best available for the current needs.

## ASSUMPTIONS

For the purpose of this investigation it was assumed that:

1. The subjects responded to the questions in the HRA honestly and factually.

2. Circumstances at the various sites did not significantly affect the outcome.

## DELIMITATIONS

The delimitations of this investigation were:

1. The subjects were volunteers aged 60 or over, attending a Senior Center within the East Tennessee Development District.

2. Data collected was based on factors as assessed by "Healthier Living: An Appraisal Program for Older Americans", the HRA designed by the Healthier People Network Inc., Decatur, GA.

## LIMITATIONS

The limitations of this investigation were:

1. The ability and willingness of the subjects to complete the questionnaire fully.

## DEFINITIONS

For the purpose of this investigation the following definitions were used:

Age sub-sets: the classification of all over the age of 55 as determined by the Panel on Statistics for an Aging Population (Gilford, 1988);

Young-old - individuals between the ages of sixty and seventy-four

Old - individuals between the ages of seventy-five and eighty-four

Oldest-old - individuals who are eighty-five or over.

Community dwelling individuals - individuals that are not presently living in a primary care unit.

East Tennessee Development District - the area within the eastern half of the state of Tennessee containing the following 16 counties: Anderson, Blount, Campbell, Clairborne, Cocke, Grainger, Hamblen, Jefferson, Knox, Loudon, Monroe, Morgan, Roane, Scott, Sevier, and Union.

East Tennessee urban population - all territory, population, and housing units in urbanized areas and in places of 2,500 or more persons outside urbanized areas (U.S. Census, 1993). This includes; Oak Ridge, Maryville, LaFallette, Harrogate, Newport, Morristown, Jefferson City, Knoxville, Loudon, Madisonville, Rockwood, Oneida and Sevierville.

East Tennessee rural population - all territory, population, and housing units not classified as urban (U.S. Census, 1993). This includes; Jellico, Tazwell, Rutledge, Dandridge, White Pine, New Market and Maynardville.

Elderly - persons sixty years of age or older.

Family/social contacts - contact with family members or friends, either in person or by telephone.

Healthier Living: An Appraisal Program for Older Americans - the Health Risk Appraisal (HRA) designed by the Healthier People Network Inc., Decatur, GA.

Health Risk Appraisal (HRA) - a printed or computer-assisted questionnaire used; 1) to evaluate an individual's lifestyle and behaviors; 2) to estimate an individual's risk of death/illness; 3) to estimate the potential for risk reduction based on epidemiological data, mortality statistics, and actuarial techniques.

Health risk factors - areas of daily living that have an effect on over-all health. Such as: emotional support, nutrition, safety practices, physical disabilities; hearing or sight, ability to care for self, health habits, and health practices.

Health Risk Profile (HRP) - the evaluation derived from a HRA showing the present health status of the individual and possible means of improving that status.

Life styles and attitudes - daily actions and beliefs directed toward maintaining personal health and safety.

Physical activities - any activity that utilizes the largest amount of muscle involvement available to the individual.

Safety practices - direct measures taken by the individual to prevent accidents or bodily injury.

## SUMMARY

This chapter presented the need for a current health risk profile of the community dwelling elderly in East Tennessee as an aid in health promotion and program needs assessment. The need for the investigation was identified in the following areas: the elderly as a rapidly growing segment of the population; as an educational tool to promote healthy life style changes; and the need for assessment of the attitudes, behaviors and beliefs currently exhibited by the elderly as an aid to program development.

The purpose of the study, statement of the problem, research questions and hypotheses were delineated. Assumptions, delimitations, and limitations were established. Definitions, as used in this investigation, were outlined.

# CHAPTER II

## REVIEW OF LITERATURE

Until recently, old age was considered as inevitable and was treated as something that was inescapable. With the formation of the National Institute of Aging (NIA) in 1974, increasing attention was given to the process of aging. While aging is an essentially natural and universal biological process, where all biological reserves gradually "run out", getting old is a wear and tear process inherent in all living organisms. Chronic diseases and aging appear to have similar mechanisms which result in the loss of organ reserves (Grassi, 1988).

Currently the four major causes of death of the aged: cardiovascular-renal diseases (heart disease), malignant neoplasm (cancer), cerebrovascular disease (stroke) and unintentional injuries, have all been shown to be modifiable through lifestyle changes. While these factors will not be eliminated, they can be largely modified, by physical activity, hypertension treatment, weight control and diet (Grassi, 1988).

Premature loss of organ function stems from disuse of the organ rather than overuse. The body functions atrophy rather than wear out. The old adage of 'use it or loose it'

seems to hold true in the discussion of aging (Grassi, 1988; Fries & Crapo, 1981).

Through the personal decision to follow a lifestyle of health promotion and disease prevention a better life can be realized. Our society has almost eliminated premature death due to illness, and the implications for how we live and die are momentous (Fries & Crapo, 1981; Gilford, 1988).

Gilford (1988) differentiates between health promotion and disease prevention. Health promotion is the development of behaviors that improves bodily functioning and enhances an individuals ability to adapt to a changing environment. Disease prevention involves actions to reduce or eliminate exposure to risks that might increase the chances that an individual will incur disease, disability, or premature death.

An important fact is that medical treatment is not the best way to approach current health problems. There is abundant evidence that points to personal health habits as the main risk factors for diseases. Positive changes in life-style have shown that prevention is more promising than medical therapy (Fries & Crapo, 1981).

Clark (1987), found that even as individuals aged and their health declined, they were inclined to consider their health as good. This attitude was attributed to the fact

that health and illness are social constructs, they are not simply the result of physiological processes. Some of the social constructs that Clarke sees as relating to illness are ethnicity, sex, social class, religion, age, family status, degree of community involvement, degree of impairment in work and social functioning, cost of medical services, and the distance from medical services.

Fries and Crapo (1981), in their studies on mortality and morbidity, differentiates among three categories in relation to the life of man. The first category is maximum life potential (MLP). MLP is designated as the age at death of the longest lived member of the species. In humans MLP is 115 years. The second category is life span. Life span is the age of death if no diseases or accidents occur. In humans the life span is 85 years and has been constant for centuries. The third category as defined by Fries, is life expectancy. Life expectancy is the age at death of the average individual granting current mortality. Life expectancy in the United States is now at 75.4 years and is showing signs of rising. The increase in life expectancy is the result of elimination of premature death, rather than the extension of the natural life span.

It becomes increasingly clear that for each species there exists a specific maximum life span. The guinea pig

has a life span of approximately 2 years, the domestic dog and cat have a life span of 15 years, the chimpanzee lives for 17 years and man lives for at least 70.8 years (Grassi, 1988; Fries & Crapo, 1981). In the decade of 1980 to 1990, overall life expectancy increased from 73.7 to 75.4, a gain of 1.7 years (Health United States, 1992), so the question becomes not how to extend life, but how to improve the quality of life that an individual will experience to the end.

The different systems and organs do not show signs of aging and deterioration at the same rate. Rather the act of aging is a collection of the ravages of life and the environment that is allowed to assault the body over the total lifetime. Signs of aging occur at all levels within the human body, from molecular to surface changes that are easy to observe. It was the aspects of aging from the level of tissues and systems, to those that could be seen by the observer or related by the participant that were the focus of this study.

## FACTORS OF AGING

Physical factors of aging can be divided into two areas, those that are from pathological causes and those

that are normal conditions of the body. After the cause of change has been determined then further distinction must be made between "avoidable-unavoidable" and "treatable-nontreatable" conditions of human health and disease (Grassi, 1988). These two features are reason for quality gerontological assessment. There is a need to distinguish between pathological and normal features of the aging process and to identify those features that are modifiable through lifestyle changes. Older adults experience an assortment of physical, mental, and social problems that can occur singularly, but that frequently coexist and are interrelated (Eliopoulos, 1984).

## NORMAL FEATURES OF AGING

There are some aspects of aging that are presently unavoidable. Features of aging that are unavoidable are; arterial wall rigidity, cataract development, graying of hair, kidney function, thinning of the hair and elasticity of skin. These are apparently fixed biological occurrences, and endeavors to control them have not yet been effective (Fries & Crapo, 1981). The hardest part for the unchanging "inner man" to accept is the bodily changes that are inevitable with aging.

# EXTERNAL SIGNS OF AGING

## The Hair

For the majority of people, somewhere in the mid-thirties to forty, the first visible sign of aging is noticed in the hair with loss of pigmentation. This loss of pigmentation causes the hair to turn gray or white and is the first sign that aging is inevitable. More noticeable in men than women, is the accompanying thinning or loss of the hair. This thinning of the hair is due to the regression of the hair germ centers while the pattern of balding is generally heredity with few known antidotes. It is also noted that hair on the rest of the body undergoes changes at the same time. As the hair on the scalp noticeably undergoes change, hair in the underarm and pubic area lessens while hairs in the ears, nostrils, and eyebrows become coarser. These changes are especially noted in males (Weeks, 1984; Ferrini & Ferrini, 1989).

## The Skin

With age, changes in the skin surface of the body, especially in the face become more notable. The appearance of wrinkles accompanied by the loss of some of the elasticity of the skin may be noticed. There is a loss of coloration while at the same time the appearance of age

spots occurs (Bromley, 1988; Ferrini & Ferrini, 1989; Hazell, 1960). There is a decrease in subcutaneous fat that allows the now inelastic skin to hang in folds, resulting in wrinkles (Bromley, 1988; Ferrini & Ferrini, 1989). The formation of pigmentation plaques results in what is commonly called "liver spots" (Weeks, 1984). The skin takes on a parchment-like texture and is rougher and drier, another indication that the aging process is going on.

Changes that occur within the skin, while generally are not life threatening, do have a great deal to do with the feeling of self presentation and self regard. While people feel that the changes observed in the skin are inevitable to the aging process, research has shown that so-called aged skin is mainly related to the exposure to sunlight. A certain degree of irreversible skin damage occurs with each prolonged exposure to the sun and accumulates to cause what we call aged skin. Sunlight not only stimulates the development of age spots but also the development of premalignant and malignant (cancerous) skin lesions (Ferrini & Ferrini, 1989).

The Physical Structure

Muscle strength remains constant through adulthood, with a decrease of strength becoming apparent around age sixty. At the same time that muscles are deteriorating,

there is a corresponding loss of bone density. Women will lose 20-30 percent of their bone mineral density over a life span and men will only lose 10-15 percent. This difference is believed to be due to hormone level differences between the sexes. Some describe osteoporosis (a chronic disease) as an accelerated version of normal, age-related bone loss (Ferrini & Ferrini, 1989).

The disks of the backbone may become compressed allowing some of the vertebrae to collapse and the vertebral column to become bowed. The loss of stature seems to begin around the age of forty and quicken with age, so that by the time a person is eighty they may be growing shorter by as much as 2 centimeter per decade (Ferrini & Ferrini, 1989; Weeks, 1984).

## INTERNAL SIGNS OF AGING

Internal changes that occur at a less visual level include the following systems: the cardiovascular, respiratory, gastrointestinal, muscular skeleton, genito-urinary and the nervous system.

### The Cardiovascular System

The physical changes that take place in the heart with age include decreased elasticity with increased rigidity

leading to difficult contraction and dilation of the cardiac muscle. The heart rate slows with age, stroke volume decreases and cardiac output decreases about 1% per year starting at age twenty. With a loss of elasticity in the blood vessels there tends to be a rise in both systolic and diastolic blood levels leading to high blood pressure (Eliopoulos, 1984).

The Respiratory System

In older adults connective tissues required for respiration and ventilation is impaired. The water content in relation to the body composition decreases, causing a change in the cilia in the upper airway and the effectiveness in removal of foreign particles. There is a loss of normal muscular elasticity that impairs the normal recoil of the lung during expiration. Expiration is no longer a totally passive activity, but requires the use of accessory muscles. The efficiency of the pulmonary vasculature function also undergoes changes causing a decrease in the rate of oxygen exchange (Eliopoulos, 1984).

The Gastrointestinal System

Aging effects the gastrointestinal system from entrance to exit. There is a decrease in salivary gland activity and the membrane of the mouth is much drier. There is some loss of taste, especially sweet and salty. Teeth are often

missing or in poor condition. The gag reflex is weaker often leading to aspiration problems. The gastric acids of the stomach are secreted in smaller amounts. In some older adults their hemoglobin level is noted to be lower. This is related to loneliness, poor eating habits and atrophic changes in gastric mucuosa that may contribute to anemia. There is a 30% decline in the basil metabolism rate between the ages of thirty and seventy. There is almost no change in the small intestine, but the large intestine experiences a decrease in the peristaltic activity accompanied by the incomplete emptying of the bowel that leads to constipation. The gallbladder's bile secretion is in smaller quantities and thicker and the amounts of cholesterol are greater in the older adult. Fewer digestive enzymes are produced and the release of insulin is slowed with age (Blocker, 1992; Bromley, 1988; Eliopoulos, 1984).

These changes are all identified with normal aging within the gastrointestinal system. The loss of taste and smell can contribute to a lack of interest in eating, and this in turn will add to the deficit of mineral and vitamin absorption as a result of the lack of interest in a well-balanced diet.

The Muscular-Skelton System

Under normal conditions, muscle strength will decline 12 to 15% between the ages of thirty and seventy. This loss of muscle strength is compounded by inactivity which in turn will result in muscle atrophy due to disuse. During this time period there is also a normal loss of speed of muscle contraction and muscle coordination (Blocker, 1992).

Loss of muscular strength, or a feeling of general weakness is often the result of underlying factors rather than a general loss of muscle strength. There might be an underlying neuromuscular, infectious, metabolic, or drug induced cause that can be life threatening if not identified and treated (Mold, Nevins, Sherman, & Waltman, 1990).

The Genito-urinary system

With age the genito-urinary system undergoes changes. The blood urea nitrogen of the elderly may be as much as twice that of the young (Blocker, 1992). Between the ages of twenty and seventy the kidney will loose about 20% of its' weight. This reduction does not seem to have an effect during normal times, but in times of dehydration, stress, or drug use, there may be an effect on kidney function (Ferrini & Ferrini, 1989).

With age the bladder is capable of holding less volume before voiding and at the same time more urine remains in

the bladder after voiding. Because of this elderly men are subject to lower urinary tract obstruction, while elderly women are subject to incontinence and infection (Blocker, 1992).

The Nervous System

The nervous system consists of the central nervous system (the brain and spinal cord) and the peripheral nerves. Some structural changes involving the neural system are well documented, however there is little documentation that nervous system function declines with advancing age (Ferrini & Ferrini, 1989).

The brain of a twenty year old male weighs about 1,400 grams and will decrease to about 1,250 by the age of eighty. A twenty year old female's brain weighs about 1,250 grams and will decrease to about 1,125 by the age of eighty. With aging there is a diffuse cerebral atrophy in which some areas are particularly affected. The fissures in the brain become wider and deeper and the ventricles become larger and deformed. As these changes occur, many nerve cells are lost while others suffer degenerative changes. Age changes in the brain are not necessarily innate and appear to arise mainly as the result of adverse biological aging elsewhere in the body (Bromley, 1988).

Age changes in the peripheral nervous system appear to be similar to those occurring in other parts of the nervous system. The nerve fiber bundles appear atrophied, thickened in parts and uneven, with splitting and deterioration. The blood circulation decreases, connective tissues increases and the essential active factors of the nerve cells are reduced or lost altogether (Bromley, 1988).

A number of studies have demonstrated that reaction time decreases with age. The decrease in visual and auditory reflexes and time to complete a physical or mental task decreases 20% or more from youth to old age. Although this results in a statistically significance in the reduction of reaction time, in real life it translates into a reduction of only hundredths of a second, not truly functionally important (Ferrini & Ferrini, 1989).

## Pathological Causes

Pathology is the area of medicine that deals with the nature of diseases, especially the structural and functional changes caused by disease. Earlier in this century, the majority of deaths were from diseases associated with infection and poor sanitation. Since 1900 the discovery and use of antibiotics and immunization serums, along with

improved sanitation have all made substantial contributions to improving the health and life expectancy of most Americans (Ciesielski, 1992).

As this nation has gone through the transformation from rural to urban-technological societies, one set of diseases have replaced another in the forefront of health care. As the infectious diseases were brought under control in this country in the first decades of this century, chronic diseases began to emerge as the major causes of death and disability (Schienle & Eiler, 1984). Current projections are that from 1980 to 2040 there will be a 232.6 percent increase in the number of individuals, aged sixty-five and over, dealing with limitations in their daily living activities (Rice, 1990). This increase in limitations will be a direct result of chronic diseases.

In 1992 the four leading causes of death were; heart disease, malignant neoplasms, cerebrovascular disease, and unintentional injuries. These four causes of death can be modified, if not controlled, through improved lifestyle and health choices.

## AVOIDABLE/MODIFIABLE CHANGES OF AGING

Identifiable predisposing factors to chronic illness and poor health which are within the individual's control include: alcohol, tobacco use, diet, exercise, stress and social isolation (Fries & Crapo, 1981). Furthermore, Oberlander (1982) has identified what she calls "The Big 3 of Aging" (p.127);

- food - eat to keep fit,
- friends - socialize to keep friends,
- exercise - to keep muscle tone.

## PHYSICAL ACTIVITY AND THE ELDERLY

Physical activity has been shown to have a positive effect on every system of the body. The immobilized elder undergoes a gradual, general deconditioning of the physical being, and a general withdrawal from social activities resulting in the feeling of isolation and depression.

### Physical Activity and the Cardiovascular System

Blocker (1992) found that the lack of physical exercise is especially noticed as a deconditioning process within the cardiovascular system. The cardio-vascular system receives so much emphasis because it is easy to monitor and ascertain changes that have occurred. With the hard data that could

be obtained and replicated, there have been considerable studies done in regard to this physical system. Two of the better known are associated with the Cooper Institute in Dallas, Texas and the Framingham Heart Study.

Two separate studies were conducted to observe the effect that an exercise program had on the cardiovascular system of the elderly (Morey, Cowper, Feussner, DiPasquale, Crowley and Sullivan, 1991; Posner, Gorman, Windsor-Landsberg, Larsen, Bleiman, Shaw, Rosenberg and Knebl,1992). These exercise programs entailed exercising three times a week for 90 minutes duration. Both studies found there was measurable improvement in the cardiovascular system within four months. Morey found that when the exercise program was followed for two years, the improvement was maintained.

A study in Sweden in 1991, with 619 subjects who were seventy years of age, concluded that a daily walk of 30 minutes can reduce the incidence of coronary heart disease in the general population (Frandin, Grimby, Mellstrom & Svanbor, 1991).

Adams and deVries (1973), while studying the training effect on a group of women aged 52-79, found no significant difference between the training gain in older women and younger women. This study is of importance since it shows

that it is never too late in life to effect a positive change through life-style.

Inactivity results in a diminishing of the cardiac muscle fibers, an infiltration of fatty substances and brown atrophy within the myocardium. There is a predisposition to inefficient cardiac function due to the dilation of the aorta accompanied by a loss of elasticity of the arteries. This is then compounded by fibrosis and calcification of the heart valves (Blocker, 1992; Oberleder, 1982). This level of deterioration was observed when medical intervention was necessary and the heart was observable during surgery.

Physical Activity and the Respiratory System

Physical activity cannot repair damaged lung material or replace lost respiratory tissues, but it can improve other functions associated with respiratory function. Physical activity can increase oxygen consumption and utilization, improve ventilation, reduce resting heart rate, and increase the tolerance for work (Ferrini & Ferrini, 1989).

The brain is very sensitive to the lack of oxygen. A lack of oxygen could result in varying degrees of inefficiency such as drowsiness, muscular weakness, poorer problem-solving, and a loss of sensory-motor coordination. Severe lack of oxygen produces confusion, loss of

consciousness, damage to nerve cells and eventually death (Bromley, 1988).

Adequate intake of oxygen is crucial to physical and mental performance. Physical activity will increase the rate of respiration, allowing all the other benefits to follow.

Physical Activity and the Gastrointestinal System

With inactivity, the elderly tend to develop a negative nitrogen balance, negative calcium, sulfur, and phosphorus balance along with a loss of such minerals as magnesium, potassium, and sodium. Maintaining physical activity may favorably alter the appetite accompanied with changes in the metabolic and mineral levels (Blocker, 1992; Oberleder, 1982). Physical activity helps to maintain a healthy appetite, and aids in the digestion and elimination of food.

Physical Activity and the Musculoskeletal System

Physical activity has also been shown to have a positive effect within the musculoskeletal system. Maintained activity allows the older individual to keep joint flexibility and range of motion. When joint flexibility and range of motion are maintained the risk of arthritis and related pain is reduced. Activity decreases the loss of calcium within the bones helping to prevent osteoporosis. Maintained muscle strength allows the older

individual to continue their daily living activities unaided (Blocker, 1992; Frandin, et.al., 1991; Frenkany & Leslie, 1975; Lonnerblad, 1984).

The question of whether or not an adult can increase or recover lost bone is still controversial. On one side of the controversy the playing arm of tennis players show increased bone density due to the intense activity of the arm. On the other side of the controversy women (mean age 72) after completing a routine of aerobic walking twice a week for nine months, showed no appreciable increase in bone mineral content. However, the training period of nine months did appear to prevent the loss of bone mineral content that was observed in a control group (LeBlanc & Schneider, 1991).

Blocker (1992) states that exercise alone is sufficient to prevent osteoporosis, while staff writers in Geriatrics, (Jan.-Feb. 1992) reported that exercise plus hormone replacement therapy, appears necessary to slow bone loss. LeBlanc & Schneider (1991) find that adequate calcium and nutritional intake are also recognized as necessary to prevent excessive bone loss.

Physical Activity and the Quality of Life

Even with the normal decrease in sexual drive, 70% of men remain sexually active at age 74, and 35% of women

remain sexually active until the age of 75 (Blocker, 1992). Sexual activity has been shown to be a reliever of mental stress and physical tension (Horton, 1982). So through physical activity many elderly will be able to retain their interest in sexual activity.

Mental well-being has also been shown to be maintained through physical activity. Psychological changes are often secondary to the deconditioning syndrome. These changes might include depression, anger, agitation, frustration, anxiety, paranoia, reduction in mental activity, disorientation and decline in memory (Blocker, 1992; Oberleder, 1982). Aikens (1989) feels that the importance of physical activity can not be overemphasized. The cause of mental and physical deterioration may well be the result of limiting activity.

Maintaining mobility enhances quality of life, improves medical well-being and often postpones or even avoids costly nursing home placement. Placement in a nursing home with a further loss of mobility has been shown to be associated with a 50% increase in mortality rate within six to twelve months among nursing home patients (Blocker, 1992).

If the consideration of quality of life is not enough reason to maintain physical activity, then the cost of placement in a nursing home environment should be

considered. Whether the cost is covered by private or public funds, placement in a nursing home is an expensive proposition. In the United States, the annual cost of nursing home care averages $25,000 per patient. To cover these expenses, 53.9% of the bill of nursing home care comes from public funds, Medicare and Medicaid, with out-of-pocket accounting for 43.1% and private insurance and other private funds accounting for 3% (Health United States, 1992, 1993).

With all the positive that can be said for maintaining physical activity, there are some contraindications. For example, patients with severe loss of coordination and balance or weakness of trunk, or extremity muscles that precludes the use of wheelchairs, standing, and ambulation should be discouraged from mobile activities (Blocker, 1992).

## SAFETY AND THE ELDERLY

One of the four leading causes of death in the United States, for all races and ages, is unintentional injuries (Health United States 1990,1991; Thygerson, 1986). The leading type of accidents are vehicle related followed by falls within the home.

Older drivers are increasing in numbers rapidly. At the dawn of the automobile age only five percent of the population was aged sixty-five or over. In 1989, 12 percent of the population was sixty-five or over and it is estimated that by 2020 the number will be 17 percent. In the year 2020, almost 50 million Americans over sixty-five will be eligible to drive of which 22 million of those will be over seventy-five, and seven million will be over eighty-five (Goodwin, 1989).

The drivers license is a ticket to independence and the elderly are reluctant to give it up. Without this method of mobility, the elderly may experience feelings of isolation and depression. It is no wonder that they are resistant to giving up their right to drive. Although older drivers are involved in a relatively small number of severe crashes each year, the risk of involvement increases with age (Goodwin, 1989). The elderly involved in an automotive accident, whether as the driver or a passenger, has a risk of injury two to five times higher than a younger person (Organization for Economic Co-operation, 1986).

Goodwin (1989) and Cooper (1990) both feel that the elderly are aware of their shortcomings and make adjustments to compensate for them. The elderly realize the difficulty of unprotected left turns and will take routes to avoid

them. The reduction of reaction time, poorer vision after dark and problems with inclement weather are other areas that the elderly take into consideration and make allowances for.

Older drivers have a higher risk of being involved in a crash in relation to the amount of miles driven, but older drivers drive considerably less than the rest of the population, and as a result are involved in a relatively small number of crashes (Goodwin, 1989). Due to their frailty, when an older individual is in a crash, the injuries sustained have the tendency to be more severe.

The elderly are greatly over represented in pedestrian fatalities. There is a complex set of situations that contribute to this fact; the elderly have a slower reaction time, there is a decrease in their vision and hearing, and they place more reliance on the protection of the traffic lights (Preusser, 1988; McNulty, 1989). Although people of this age group are not involved in more pedestrian accidents, they make up 22 percent of the fatalities due to their added frailty (McNulty, 1989).

There have been many suggested approaches to improvement in the area of safety and the elderly as participants on the nations highways. Increased screening of the older driver has been suggested, but screening

procedures used by many states have not been effective in screening drivers of any age (Goodwin, 1989). The Organization for Economic Co-operation and Development (1986) see this as open ageism and warns about the endorsement of this approach.

Other suggestions such as physical changes in the signs and markings on the road systems have been addressed. Making the road signs both bigger and brighter, with a greater use of advanced signs are the main suggestions. Goodwin (1989) states that when looking at this safety element this would be a benefit to all drivers, not just the elderly.

For pedestrian safety, a longer time allowance on traffic signals between changing from red to green would give the elderly more time to cross the roadway. If the intersection is large, refuge islands in the middle would allow the elderly a chance to use two cycles of the signal light if needed. Traffic lights are based on someone walking at four feet per second, and many elderly walk slower that (Goodwin, 1989).

Awareness and education are two important areas that would help in reducing the number of vehicular accidents involving the elderly. The importance of the use of seat belts and, if purchasing a new vehicle, considering the

availability of air-bags. There are innovative programs that help the older person assess their skills and learn how to assess their shortcomings while at the same time informing them of the availability of alternative modes of travel within their community (Goodwin, 1989; Mortimer, Goldsteen, Armstrong & Macrina, 1990). All of these are areas that would increase the safety level of the elderly on the nation's roadways.

Falls account for the second highest number of accidents sustained by the elderly. The National Safety Council, in "Accident Facts 1991, Final Condensed Edition", found that home accidents were down by 6 percent from the 1989 total, but that falls within the home, accounted for 30 percent of deaths.

The incidence of falls is hard to document since many of the falls that occur are never reported unless there is an injury. It is estimated that one in four elderly fall with five percent resulting in fractures - the leading cause of disability and morbidity in people older than sixty-five (Practical Briefings, 1990).

Problems in gait and the resultant falls should not be automatically assumed to be a result of aging. Evaluations should be performed to rule out muscle imbalance, foot problems, a needed correction in lens prescription, or a

possible drug reaction (Kallman, Kay & Zuckerman, 1990). To assume the fall is just a result of age is a disservice to the older individual.

Dreher (1991) identifies areas within the home that will help to prevent many home accidents. Lighting that is too dim or non-existent is just setting the stage for an accident. Highlighting steps with bright tape and the addition of hand rails will prevent falls on the steps. Limiting the use of scatter rugs on slippery floors and not stringing extension cords across walkways will also help to eliminate falls.

The Committee on Trauma Research Commission (Injury In America, 1985) suggested methods to improve the prevention of injury in America. The first was to persuade the individual that it is in their best interest to work at prevention. The second suggested method was some form of regulation so that the individual would be forced into practicing safety. The third suggested method was to provide automatic protection so the individual would have to make some effort to circumvent the safety measure.

## THE VALUE OF SOCIAL CONTACT

Social contact and close ties have been shown to have a relationship with feelings of well-being and satisfaction with life. Social contact may be maintained with family members, such as parents, siblings, children or spouse, or the contact may be with friends with similar interests. Regardless of the source of social contact, Jerrome (1991) found that contact with other people reduces depression and stress.

Krause (1991) studied the effect of stress and isolation and the impact on close ties during later life. It was a question of which came first, the isolation or the resulting stress and distrust. What he found was that in times of stress, not all elders turn to someone else for help, some will retreat into isolation. Isolation tends to promote distrust of others and a fear of crime, which in turn leads to greater isolation from close network ties. Although the evidence is far from conclusive, it appears that the effects of stress are reduced for the elderly who maintain close social ties.

Widows are often the subject of concern in regard to their ability to cope with life problems. Women who were capable individuals when their husbands were living,

continued to be capable individuals after the death of their husbands. Many of the respondents in O'Bryant's (1991) study didn't want to remarry because they felt they would loose their newfound independence. The support of friends, both socially and emotionally, generally enhanced the widow's well-being. Such contacts keep them from feeling lonely and socially isolated and may also provide evidence that there are people who care about them.

Another avenue of social contact is found through a pet. According to Winkler, Fairnie, Gericevich and Long (1989) living with a pet increased the individuals ability to communicate with others. There was an increase in their self-esteem, and they become more independent and responsible through the association with the pet. Pets provide many benefits for humans, unconditional love, a purpose of sense of mattering, feelings of safety and security, and a catalyst for social interaction.

## HEALTH RISK APPRAISAL

One method of assessing the current health risk of an individual is through a Health Risk Appraisal (HRA). The concept of a health risk appraisal is generally credited to Lewis C. Robbins, M.D., who in the 1940's formulated the

idea that if a physician recorded a patient's health hazards as a guide to preventive efforts, the medical examination would have a more prospective orientation. A decade later, Robbins, as Chief of the Cancer Control Program at the Public Health Service Division of Chronic Disease, directed the development of tables of ten year mortality risks. He then established several demonstrations where the HRA was used as a medical teaching and practice model. By the end of the 1960's with the application of life insurance actuarial principles to risk assessment and the quantitation of risk multipliers for patient characteristics that affect mortality risks, all the necessary components for quantitative risk appraisal had been created. With the publication in 1970 of the Robbins and Hall manual How to Practice Prospective Medicine, the complete HRA package was provided. This manual was written for the practicing physician and included the questionnaire, risk computations, and feedback strategy (Schoenback, 1987).

An HRA is a method of finding out how an individual compares to the population as a whole or to a subset of the population based on age, race, or sex. HRA's are intended to raise the individuals awareness of their current health profile while serving as a method of education in areas

where change would be a benefit (Insel, 1988; Pursley & Neutens, 1986).

The HRA will yield two ages; one the appraised age (health age) as compared to the clients real age, and an estimated age (attainable age) which is the age the client should be able to attain with the suggested lifestyle changes (Hyner & Melby, 1985; Pursley & Neutens, 1986).

An HRA should be used as a tool of assessment and intervention. The HRA is a means of assisting an individual in arriving at an informed decision in regard to their lifestyle (Pursley & Neutens, 1986). Hyner and Melby (1985) found that when an HRA is used as originally proposed by Robbins as an adjunct to private medical practice, and communications were opened between the doctor and patient, then the HRA served a valid purpose.

Carter, Elward, Malmgren, Martin and Larson (1991) found that until recently the major research on risk factors such as the Multiple Risk Factor Intervention Trial (MRFIT) and the Lipid Research Centers Coronary Primary Prevention Trial, excluded persons over the age of sixty. As a result health recommendations and disease prevention programs for the elderly were sparse.

In 1978, E.B. Hutchins at the Carter Center of Emory University started work on a program that would encompass

individuals over the age of sixty. Hutchins used the expertise of Eris Associates to produce a million bytes of code in support of the revised scientific algorithms. A completely new computer program was the result. This program included up-to-date mortality tables, recommendations from the Breslow Risk Factor Update Project, and up-to-date regression equations that were developed by the Framingham Study. New models for cancer estimates developed by NCI were employed, new height-weight tables were incorporated, and HDL was included as a risk factor. Race was dropped as a predictor variable, so mortality estimates were based only on age and sex (Society of Prospective Medicine, 1990). Race was dropped from EPI5 due to the low correlation between the variables included in the actuary tables as attributed to the different races. Race will be included in EPI6 (due out in 1995) but the variables will be based on incidents of accidents and violent homicide (E.B. Hutchins, personal communication, March 19, 1994).

In 1988, at the 24th Annual Meeting of the Society of Prospective Medicine, two more universities outlined their work in the field of HRA's for the elderly. The Center for Health Risk Assessment and Disease Prevention and Center for Aging at the University of Alabama at Birminghan, presented

a paper on the "Development and Validation of a Health Risk Assessment for the Elderly". St. Vincent Wellness Centers in Indianapolis, Indiana, presented a paper titled, "The CDC/HRA S-Scale Scores; Their Correlation With Persons Over 65 and Their Beliefs and Health Behaviors" (Society of Prospective Medicine, 1990). The data suggests that the elderly not only live longer by heeding health promotion advice, but that they live better (Carter, et al., 1991). We need to get past the idea that there is a single concept of health which can be reduced to a single operational definition. The further we move from the specific, to the general definition of health, the more likely we are to include more than purely physical considerations. The need is to develop an indicator of the functional level of health, not an indicator for the diagnosis of a specific ailment (Lawton, Ward, & Yaffe, 1967).

## RELATED STUDIES

The Psych-Lit Data Base reveals that since Robins and Hall developed the Process of a Health Risk Appraisal many studies have been completed. In the period between January 1987 to June 1992, fifteen projects were reported, all of them dealing with the adult population in the educational

setting or workplace. No mention was made of the inclusion of any segment of the older population.

A search of ERIC for the period between 1966 and 1981 turned up one report dealing with Health Risk Appraisals and this one dealt with college aged students. An ERIC search for the period between 1982 and June 1992, turned up twenty-five reports. The populations included in the reports were: thirteen on students, four on office workers, two on teachers, and one each on minorities, migrant workers, correctional personnel, the effect of advertising, AIDS patients, and the identification of people with chronic diseases. Again the absence of the older population was very evident.

There appears to be relatively few studies available on HRAs and the results that can be obtained from them. There are even fewer to be found on HRAs that have been utilized with the elderly population.

Mary Ann Pascucci, in the graduate school of the Texas Woman's University, completed a study on "Health values, incentives, and social support related to health promotion behaviors in the well-elderly". This study was directed toward the investigation of why people want to improve their health and what leads to their involvement in health promotion activities. The instrument used was an adaptation

of: The Fromby Health/Health Promotion Value Scale (1985), the Health-Promoting Lifestyle Profile (1986), and the Personal Resource Questionnaire (1981). Also used was a demographic inventory and an Incentive Health Promotion Scale developed by the investigator (Pascucci, 1987).

In 1990, Elisa Barr, completed her dissertation at the University of Tennessee in the Department of Health, Leisure and Safety. Her study on senior citizens was conducted using a health risk appraisal dealing with non-homebound individuals in East Tennessee. Barr used the instrument Healthier People, Health Risk Appraisal from the Carter Center of Emory University. Barr summarized the use of health risk appraisals with the statement, "Health risk appraisals generally have not been designed with the elder population in mind." (p.33).

## RELATED METHODOLOGY

With the elderly, those sixty-five and over constituting 12.7% of the Tennessee population in 1992 (U.S. Census, 1990), a sampling method would need to ensure both geographic representation and random sampling. To best determine a method to accomplish this, a review of related methodology was undertaken.

Goodrow in 1974 performed a needs assessment of learning opportunities of the elderly in Knox County. To obtain his population he utilized the 1970 Census data and information supplied by the Knox County Metropolitan Planning Board. A problem encountered was the fact that no listing of residents by name and address existed for all of the residents in Knox County over the age of sixty-five.

Goodrow developed a sampling system that would ensure both geographic representation and random selection. This system involved random selection of blocks identified through a grid layout of the county, and then door to door canvassing to locate residents over the age of sixty-five.

This technique was utilized again by Wilson (1978) in her study of the perceived need of home health care of the elderly. Wilson noted the same problem as mentioned by Goodrow, the fact that identifying and locating the elderly residents presented an obstacle in obtaining data for the proposed project.

The procedure as designed by Goodrow was used by Marrs in 1985. There was still the problem of no existing directory for those sixty-five and over so it was still through random selection of the blocks and door to door canvassing that the desired sample was obtained. Marrs used the National Education Association's Small Sample Technique

to determined the sample size and insure adequate geographic representation.

Breitenstein (1984) used the sampling technique of snowballing. In snowballing the researcher builds up a sample of a special population by first identifying an initial set of individuals who in turn identify others with the needed qualifications. With this type of sampling, it is recognized that the generalizability of the results would be low since representative sampling was not done and that in all likelihood, some elements of the population were omitted.

Numerous research projects have been completed using populations within a self-contained environment. Kilgore (1986) conducted her research on the self perception of general health of individuals living in either age-segregated and age-intergrated communities. The populations were obtained through the residents of age-segregated communities located in Orlando, FL, and residents in an age-integrated community in Knoxville, TN. Cox (1985) limited the population in her study of the adherence of women to an exercise program to those members enrolled in certain exercise classes at the West Side Y.M.C.A. in Knoxville, TN. Blair (1988) utilized the populations that were currently active in walking clubs to

examine the socialization characteristics of the members as related to the type of walking club they were in. One walking club was considered as informal, the Hamilton Place Mall Walkers Club and the other walking club was considered formal, the Old Timer's Club of Eastgate Mall in Hamilton County, TN. For both walking clubs, Blair was able to obtain a list of the members from the secretaries for contact purposes.

The method that appears to be utilized most often to determine a research group within a designated population, is that of locating a contained segment of the desired population. When dealing with the elderly at the current time, it seems that it would also be the most advisable since the advice to the elderly is that they should not open their door to someone that is not known to them.

## SUMMARY

The intent of the literature review was to identify the factors of aging, and then to further identify those areas that were under the control of nature and those factors that were under the control of the individual through life-style choices. The development of the Health Risk Appraisal as an addition to preventive care was outlined. As more research yields evidence supporting the belief that it is through

lifestyle choices that an individual can maintain a healthy and productive life, it becomes increasingly important that a method of dispensing this information is developed.

# CHAPTER III

## METHODOLOGY AND DESIGN

The sampling methods, the research design, and the instrument used are presented in this chapter. The methods needed to solve the stated problem are categorized into the following: Sample Selection, Instrumentation, Interview Procedures, Statistical Treatment and Data Analysis, and Summary.

## SAMPLE SELECTION

### The Elderly Population

In view of the findings in relation to the selection of a population for a proposed study, it was decided to target self contained groups of elderly in East Tennessee. The population chosen for use in this research project was those senior citizens who could be contacted through the senior centers located in the East Tennessee Development District.

To determine the actual number of elderly needed for this study the National Education Association's Small Sample Technique (Hausken, 1963) was applied to the census information in regard to the elderly population located within the East Tennessee Developmental District.

Working with a .05 level of significance, a confidence interval of .95 was selected. The calculation of the minimum sample size needed for this study was performed as follows:

$$n = \frac{(x^2 N \varnothing (1-\varnothing))}{(d^2(N-1)+x^2\varnothing(1-\varnothing))}$$

where:

- n = the required sample size
- $x^2$= the table value of chi-square for one degree of freedom and the desired confidence interval - usually 90 or 95%.
- N = the population size or sample size of the smallest sub-group to be proportionately represented.
- $\varnothing$ = the population proportion which it is desired to estimate (.50 will give minimum sample size).
- d = the degree of accuracy expressed as a proportion (.05 with confidence interval of 95 percent).

In the East Tennessee Developmental District, the number of elderly, sixty years of age and over, was 160,308. The calculated sample size was computed to be 271 subjects. This figure was determined as follows:

$$n = \frac{(2.71 \times 160{,}308 \times .5 \times .5)}{\left((.05)^2 \times 160{,}308 + (2.71 \times .5 \times .5)\right)}$$

1. 2.71 = table value for Chi-Square for one degree of freedom and the 90% confidence interval.
2. 160,308 = the total number of elderly residents of East Tennessee Development District.
3. .5 = the population proportion it was desired to estimate.
4. .05 = degree of accuracy expressed as a proportion.

This was determined as the minimum number needed to be a representative sample.

To determine the percentage of elderly residing within each county of the East Tennessee Developmental District that was needed for the study, the total number of elderly in each county was divided by the total number of elderly within the Development District. This was carried to four decimal places for consistency.

Ex: Anderson County

$$14,101 \div 160,308 = .879 \times 271 = 23.89 = 24$$

The number needed for the study was then multiplied by this four digit number to obtain the number needed from each county. This number was carried out to two decimal places and at .50 was rounded down to the next whole number and at .51 was rounded up to the next whole number (Appendix D).

To determine the proportional number of each age group needed within each county, the number of individuals in each age group was divided by the total number of elderly in the

East Tennessee Developmental District and then multiplied by the number need for the study.

Ex: Anderson County - Total number needed - 24

Population by age groups:

$60-64: 3616 \div 160,308 \times 271 = 6.11 = 6$
$65-74: 6431 \div 160,308 \times 271 = 10.87 = 11$
$75-84: 3279 \div 160.308 \times 271 = 5.54 = 6$
$85+: \quad : 775 \div 160,308 \times 271 = 1.31 = 1$

Total: 24

Again this number for consistency was rounded to the nearest whole number. Appendix D shows the required numbers for each county included in the study. This procedure insured that each subset would be represented in the final calculations.

## INSTRUMENTATION

The instrument used for this study was the health risk appraisal "Healthier Living: An Appraisal Program for Older Americans:, developed through the Healthier People Network Inc., Decatur, GA. The instrument was adapted for specific use with the population aged 60+. The administration of this instrument to the population within the East Tennessee Development District was part of a pilot program. A complete copy of the instrument used can be found in Appendix A.

## INTERVIEW PROCEDURES

The East Tennessee Area Office on Aging was contacted for program support and the researcher was invited to appear on the agenda of the East Tennessee Aging Network Training Session. At this meeting, Area Managers were given a project proposal, explaining the purpose and use of a health risk appraisal. The month of July was designated as a time to contact and arrange a time to meet with the coordinator of each senior center.

Upon meeting with the coordinator from each site, a time was selected for contact to be made with the center's clientele. These meetings were to start during the month of September and were generally set to coincide with another activity at the center, such as a luncheon, exercise class or board meeting. Times set within the center as bridge tournaments were carefully avoided.

At the initial contact with the participants all individuals at the center were encouraged to complete a questionnaire. The objectives of the research were carefully explained and emphasis was placed upon the need for reliable information which could only be supplied by the respondent. Each respondent was informed of the right to refuse to answer any or all questions in the instrument but

that the information was of critical importance and may be used to help plan and develop new programs for the elderly residents of East Tennessee, or as a means of identifying the needs of this population.

After the instrument was explained and the participants were given a chance to ask any questions, the instruments and informed consent forms were distributed. Each questionnaire was completed by the individual themselves, with the researcher being present if help was needed.

At each site, a date and time was established for the return and explanation of the HRA results. At that time each participant received a copy of their HRA for their records or to discuss with their doctor on their next visit.

Confidentiality of any information received was assured to each participant and that all information would be combined within groups for total analysis. Only the individual completing the questionnaire would receive any type of individual data report.

After the questionnaires were completed the data were prepared by the researcher for mechanical scoring by software that was included in the Healthier Living program, or through statistical analysis within EPI5.

Once the number for each subset was determined a further division was made for those counties where more than

one center was maintained: Jefferson, Campbell and Clairborne. The required numbers were divided proportionally between the urban and rural sites within the counties. A total was then obtained for each age group within the classifications of urban and rural. To stay within the framework of the National Education's Small Sample Formula, the returns for each age group within the urban or rural areas were combined and the required sample size was obtained through application of a table of random numbers.

## STATISTICAL TREATMENT AND DATA ANALYSIS

The method of statistical data analysis was dependent upon the research question. In the interest of clarity the research questions were categorized into five data groups: (1) the identification and description of selected demographic characteristics of the sample, (2) the identification and description of the health risk factors identified, (3) the comparison of the health risk profiles among the different age subsets, (4) the association of health and chronological age, and (5) the association of health and dwelling status. In the following section, each area is considered as an independent element, and when

applicable, reference is made to a specific research question.

Demographic characteristics

The data collected concerning demographic characteristics included the following factors:

| | |
|---|---|
| Age | Martial status |
| Sex | Race |

The interview procedure resulted in nominal level data which were best handled by nonparametric techniques. Each factor was recorded per respondent, and the resulting data were tabulated into a frequency table. Percentages for each characteristic were determined from the frequency table. The data were grouped and categorized to reveal trends or associations within subgroups of the total population to include sex, age, race and marital status groupings. The median was calculated where applicable, such as in determining average age and level of education. The majority of data concerned with demographic characteristics lent themselves to these techniques and were tabulated in this manner.

Health risk factors

The data included in the health risk factors included:

| | |
|---|---|
| Smoking | Vision |
| Driving habits | Hearing |

| | |
|---|---|
| Exercise | Safety |
| Nutrition | Living arrangements |
| Physical condition | Social contacts |

The type, frequency, and total number of responses were determined and presented in tabular form. Calculation of overall percentages and a breakdown into problem areas according to major variables such as age, race, and sex of the respondents was then possible.

Heal risk profiles

To investigate the relationship between the health risk profiles and the three sub-groups of the elderly, the Chi Square test was applied to estimate the likelihood that some factor other than chance accounts for the apparent relationship.

Health and chronological age

To resolve the association between health and chronological age, a Regression Analysis was determined to predict the value of a dependent variable (y) [health] from a known independent variable (x) [age].

Health and dwelling status

The Chi Square was calculated to determine if there was a relationship between health status and the living arrangement of the respondent.

An alpha level of .05 was selected as the criterion of significance for all statistical data.

## SUMMARY

This chapter describes the methodology used to determine the health status of well elderly in East Tennessee Development District. The subjects were identified as being 60 years of age or older, willing to participate and able to complete the form. Instrumentation was the Healthier Living questionnaire from Healthier People, Inc., Decatur, GA. Statistical computation was through the software of the Healthier Living, HRA and EPI5. Data collection occurred at senior centers located in each county within the district. Statistical treatment of the data included percentages, frequencies and correlation.

# CHAPTER IV

## ANALYSIS AND INTERPRETATION OF DATA

### INTRODUCTION

Previous chapters presented an introduction to the study area, a review of the related literature, and the methodology employed in the study. This chapter presents the analysis and interpretation of data compiled from 246 Health Risk Appraisals completed by the elderly in East Tennessee Area 02. The findings are presented under the following categories: description of selected demographic characteristics of the sample, data description of selected health risk factors of the sample, the comparison of health risk factors between urban and rural residents, the comparison of health risk factors within age sub-sets, the comparison of health risk factors in relation to living arrangements and the discussion and analysis of the questions and hypotheses.

### DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE

The population of elderly persons used in this study consisted of 436 persons attending Senior Centers in the East Tennessee Area 02. From this population, through the application of the NEA Small Sample Formula, it was

determined that a N=271 should be used for statistical purposes. Through the use of the Table of Random Numbers a random selection was made within each age sub-group to maintain a reliable statistical representation of the elderly. Random selection resulted in a statistical group of 246. This sample of 246 was found to be representative of the elderly population in East Tennessee, Area 02 except for an under-representation of the 60-64 age group. This under-representation was due to the fact that individuals within this age group were not in attendance at the senior centers.

The Statistical Group was then broken down into groups representing urban and rural areas. Where applicable demographic data will be given for the three groups: Total Statistical Group (N=246), Urban (N=227) and Rural (N=19).

Age

Ages within the sample group ranged from 60-104, with a mean age of 72.7. The distribution was; 157 in the age group of 60-74 or 64%, 66 in the age group of 75-84 or 26.9% and 23 in the age group of 85+ or 9.3%. The range of ages in the urban group was 60-104 with a mean age of 72.3. Within the urban group 148 participants were in the age group of 60-74 or 65%, 61 in the age group of 75-84 or 26.8% and 18 in the age group of 85+ or 7.9%. The age range in

the rural group was 62-95, with a mean age of 76.7. In the rural group there were 9 participants in the age group 60-74 or 47%, 5 in the age group of 75-84 or 26.3%, and 5 in the age group 85+ or 26.3%. The description of the sample by age is presented in Table 1.

Gender

In the sample group of the 246 participants, males accounted for 60 or 24.4% and females for 186 or 75.6%. In the urban group out of 227, there were 54 males or 23.8% and 173 females or 76.2%. In the rural group out of 19, there were 6 males or 31.6% and 13 females or 68.4%. The description of the sample by sex is presented in Table 2.

Marital status

There were five categories within this question: married, separated, divorced, widowed and never married.

In the sample group 242 participants responded, showing that 109 or 45% were married, 1 or 4.1% was separated, 17 or 7% were divorced, 106 or 43.8% were widowed and 9 or 3.7% were never married. In the urban group 223 participants responded, showing that 101 or 45.3% were married, 1 or .4% was separated, 17 or 7.6% were divorced, 95 or 42.6% were widowed, and 9 or 4% were never married. In the rural group of 19, 8 or 42.1% were married while 11 or 57.9% were

Table 1: Number and Percent of Sample by Age

| | Sample | | | Urban | | | Rural | |
|---|---|---|---|---|---|---|---|---|
| AGE | Number | Percent | | Number | Percent | | Number | Percent |
| 60-74 | 157 | 63.8 | | 148 | 65.1 | | 9 | 47.3 |
| 75-84 | 66 | 26.8 | | 61 | 26.8 | | 5 | 26.3 |
| 85+ | 23 | 9.3 | | 18 | 7.9 | | 5 | 26.3 |
| Total: | 246 | | | 227 | | | 19 | |
| Mean: | 72.72 | | | 72.3 | | | 76.7 | |
| Range: | 60-104 | | | 60-104 | | | 62-95 | |

Table 2: Number and Percent of Sample by Gender

| | Sample | | | Urban | | | Rural | |
|---|---|---|---|---|---|---|---|---|
| | Number | Percent | | Number | Percent | | Number | Percent |
| GENDER | | | | | | | | |
| Male | 60 | 24 | | 54 | 24 | | 6 | 32 |
| Female | 186 | 76 | | 173 | 76 | | 13 | 68 |
| Total | 246 | | | 227 | | | 19 | |

widowed. The description of the sample by marital status is presented in Table 3.

Race

The questionnaire identified six races: White, Asian, Native American/Indian, Hispanic/Latino, Black/African-American, and Other. White was the race with the greatest response by 216 or 92.7%, with the next largest group being African-American with 9 or 3.9% The description of the sample by race is presented in Table 4.

## SELECTED HEALTH RISK FACTORS

The health risk factors included are: smoking, driving, exercise, nutrition; fiber and fat, physical condition, vision, hearing, safety, living arrangements, and social contacts; family and friends. The number of responses on these factors show some variance due to the fact that not all participants choose to answer the question. A summary of the health related factors can be seen in Table 5.

Smoking

Of the two hundred forty-one respondents that answered the question on smoking habits, 162 or 67% have never

Table 3: Number and Percent of Sample by Marital Status

| | Sample | | | Urban | | | Rural | |
|---|---|---|---|---|---|---|---|---|
| | Number | Percent | | Number | Percent | | Number | Percent |
| MARITAL | | | | | | | | |
| Married | 109 | 45 | | 101 | 45.3 | | 8 | 42.1 |
| Separated | 1 | 0.4 | | 1 | 0.4 | | | |
| Divorced | 17 | 7 | | 17 | 7.6 | | | |
| Widowed | 106 | 43.8 | | 95 | 42.6 | | 11 | 57.9 |
| Never Married | 9 | 3.7 | | 9 | 4 | | | |
| Total: | 242 | | | 223 | | | 19 | |

Table 4: Number and Percent of Sample by Race

| | Sample | | | Urban | | | Rural | |
|---|---|---|---|---|---|---|---|---|
| | Number | Percent | | Number | Percent | | Number | Percent |
| RACE | | | | | | | | |
| White | 216 | 92.7 | | 200 | 93 | | 16 | 88.9 |
| Hispanic | 4 | 1.7 | | 4 | 1.9 | | | |
| Asian | 2 | 0.9 | | 2 | 0.9 | | | |
| African-Amer | 9 | 3.9 | | 7 | 3.3 | | 2 | 11.1 |
| Native-Amer | 1 | 0.4 | | 1 | 0.5 | | | |
| Other | 1 | 0.4 | | 1 | 0.5 | | | |
| Total: | 233 | | | 215 | | | 18 | |

Table 5: Summary by Number and Percent of Health Risk Factors

| Catagory | Number | Percent | | Catagory | Number | Percent |
|---|---|---|---|---|---|---|
| SMOKING | | | | EXERCISE | | |
| Never | 162 | 67 | | <1 time a week | 42 | 21 |
| Used to | 71 | 29 | | 1-2 times a week | 48 | 24 |
| Still smoke | 7 | 3 | | 3 times or more | 107 | 53 |
| Total: | 240 | | | Total: | 199 | |
| PHYSICAL COND. | | | | LIVING ARRANGEMENT | | |
| Excellent | 41 | 19 | | With spouse | 106 | 44 |
| Good | 101 | 48 | | With relatives | 19 | 2 |
| Fair | 59 | 28 | | With other | 2 | 1 |
| Poor | 9 | 4 | | Alone | 111 | 47 |
| Total: | 210 | | | Total: | 238 | |
| WALK A MILE | | | | SAFETY | | |
| Yes | 158 | 69 | | Positive practices | 176 | 75 |
| No | 68 | 32 | | Negative practices | 59 | 25 |
| Total: | 226 | | | Total: | 235 | |
| VISION | | | | HEARING | | |
| Yes | 116 | 53 | | Yes | 69 | 31 |
| No | 101 | 46 | | No | 150 | 68 |
| Total: | 217 | | | Total: | 219 | |
| DRIVING | | | | | | |
| Walk | 18 | 8 | | | | |
| Motorcycle | 1 | 1 | | | | |
| Compact car | 37 | 16 | | | | |
| Full size car | 146 | 64 | | | | |
| Truck/Van | 23 | 10 | | | | |
| Bus | 3 | 1 | | | | |
| Total: | 228 | | | | | |

| NUTRITION | # Yes | % | # No | % | Don't Know | | |
|---|---|---|---|---|---|---|---|
| High fiber | 203 | 97 | 4 | 1 | | | |
| Low fat | 56 | 26 | 143 | 68 | 9 | 4 | |
| Total: | 259 | | 147 | | 9 | | |

| SOCIAL CONTACT | Family | | Friends | | | | |
|---|---|---|---|---|---|---|---|
| No contact | 7 | 3 | 5 | 2 | | | |
| 1 time a month | 8 | 3 | 30 | 13 | | | |
| 2 times a month | 23 | 10 | 47 | 20 | | | |
| 3-4 times a month | 70 | 30 | 74 | 32 | | | |
| 5-8 times a month | 56 | 24 | 36 | 15 | | | |
| 9 times or more | 71 | 30 | 41 | 17 | | | |
| Total: | 235 | | 233 | | | | |

smoked, 71 or 29% used to smoke and 7 or 3% still smoke (see Table 5).

Driving habits

The method of usual travel was selected as being indicative of driving habits. This question resulted in 228 responses. 18 or 8% walk as their main method of travel, 1 or 1% ride a motorcycle, 37 or 16% drive a compact car, 146 or 64% drive a mid/full size car, 23 or 10% drive a truck/van and 3 or 1% rely on the bus (see Table 5).

Exercise

There were 199 responses to this question, with the choices being; less than one time a week, one to two times a week, or at least three times or more a week. Of those responding 42 or 21% exercised less than one time a week, 48 or 24% exercised one to two times a week and 107 or 53% exercised three or more times a week (see Table 5).

Nutrition

Nutrition specifically asked questions related to fiber and fat consumption. 209 responded to the question relating to fiber and 208 responded to the question relating to fat. 203 or 97% ate foods high in fiber while 4 or 1% did not. When asked if they ate foods high in fat, 56 or 26% did, 143 or 68% did not and 9 or 4% did not know (see Table 5).

Physical condition

Respondents were asked how they perceived their health to be at the present time with a choice of excellent, good, fair, and poor. Out of 210 responses, excellent was the choice of 41 or 19%, good by 101 or 48%, fair by 59 or 28% and poor by 9 or 4% (see Table 5).

When asked if they could walk a mile, responding yes was 90% of those 60-64, 77% of those 65-74, 51% of those 75-84 and 35% of those 85+ (see Table 5).

Vision

Vision impairment was experienced by 116 or 53% of the 217 respondents to this question while 99 or 46% experience no impairment (see Table 5).

Hearing

Hearing impairment was responded to by 219 participants. Hearing impairment was noted by 69 or 31%, while 147 or 67% stated that none was noted (see Table 5).

Safety

Thirteen questions were asked in the area of safety. The areas covered were: sufficient lighting, non-skid rugs, loose carpet edges, cluttered walkways, slippery areas outdoor, use of slippery tubs, tub grab bars, poor lighting on stairs, uneven stairs, no handrails on stairs, sturdy step stools, smoke detectors, and water temperature set too

high. The questions on loose carpeting, tub surface, tub grab bars, smoke detectors, and temperature of water were chosen as being indicative of sound safety practices. The responses in the preferred practices were averaged to give a composite safety profile. This resulted in 176 or 75% shown as showing positive safety habits and 59 or 25% as showing negative safety habits (see Table 5).

Living arrangement

Of two hundred thirty-eight respondents, 111 or 47% lived alone, 106 or 44% lived with a spouse, 19 or 2% lived with other relatives and 2 or 1% lived with a non-related other (see Table 5).

Social contacts

Included in social contacts is frequency of contact with family and friends. Frequency was designated as number of times a family member or friend was seen or heard from on a monthly basis. Categories were broken into: no contact, one time a month, two times a month, 3-4 times a month, 5-8 times a month and 9 times or more a month. Contact with family showed a slightly higher incidence with 71 or 30% having contact with family <9 times a month compared to 41 or 17% having contact with friends (see Table 5).

# COMPARISON OF HEALTH RISK FACTORS: URBAN AND RURAL

## Smoking

A comparison of smoking habits between the urban population and the rural population, showed that 146 or 66% of the individuals in an urban setting had never smoked as compared to 16 or 84% of the individuals in the rural setting. Those that had stopped smoking accounted for 68 or 31% in the urban areas and 3 or 16% in the rural and 3 or 1% in the urban areas stilled smoked as to none in the rural areas (Figure 1).

## Driving habits

Two methods of travel that were seen in the urban area that were not observed in the rural areas are motorcycle (1 or .5%) and bus (3 or 1%). The other means of travel in comparison are: walking; 16 or 8% in the urban area and 2 or 10% rural, compact car; 35 or 17% urban and 2 or 10% rural, mid/full size car; 134 or 64% urban and 12 or 63% rural and truck/van; 20 or 9% urban and 3 or 16% rural (Figure 2).

## Exercise

Exercise habits for individuals in urban and rural areas are shown respectively. Less than 1 time a week: urban 35 or 19%, rural 7 or 50%; one to two times a week:

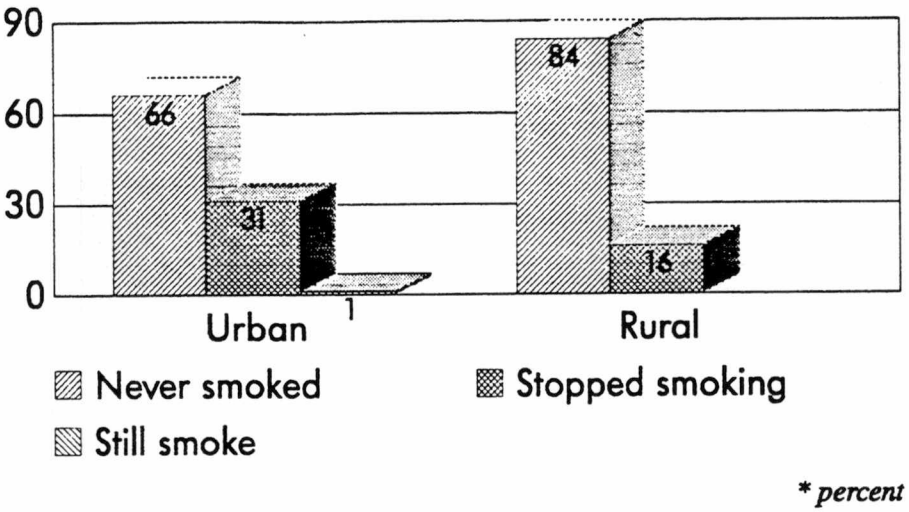


Figure 1: Smoking - Urban and Rural

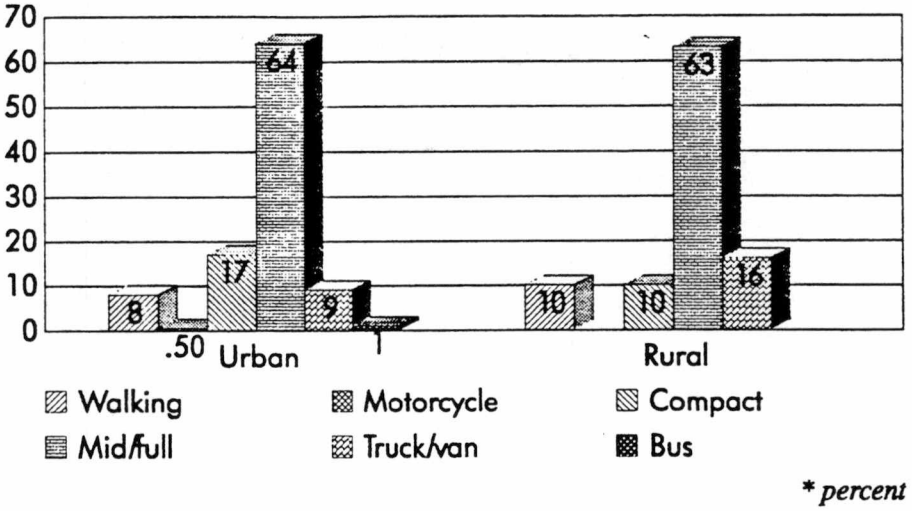


Figure 2: Driving habits - Urban and Rural

urban 46 or 25%, rural 2 or 14%; and at least 3 times a week: urban 102 or 55%, rural 5 or 35% (Figure 3).

Nutrition

Nutrition when viewed as the consumption of a high fiber and low fat diet showed the following results. While 188 or 97% of the urban population consumed a high fiber diet 15 or 94% of the rural population did and 135 or 70% of the urban population had a low fat consumption and 8 or 50% of the rural population had a low fat consumption (Figure 4).

Physical condition

In describing their present physical condition in terms of excellent, good, fair or poor, 40 or 21% and 1 or 6% of the urban and rural respondents described their health as excellent. Good health was the choice of 94 or 48% of the urban and 7 or 44% of the rural respondents. Fair health was the response of 53 or 27% of the urban and 6 or 37% of the rural, while poor health was the response of 7 or 3% of the urban and 2 or 12% of the rural (Figure 5).

Another measure of physical condition was the ability to walk a mile. Of the urban population 149 or 71% said they could and 9 or 50% if the rural population said that they could (Figure 6).

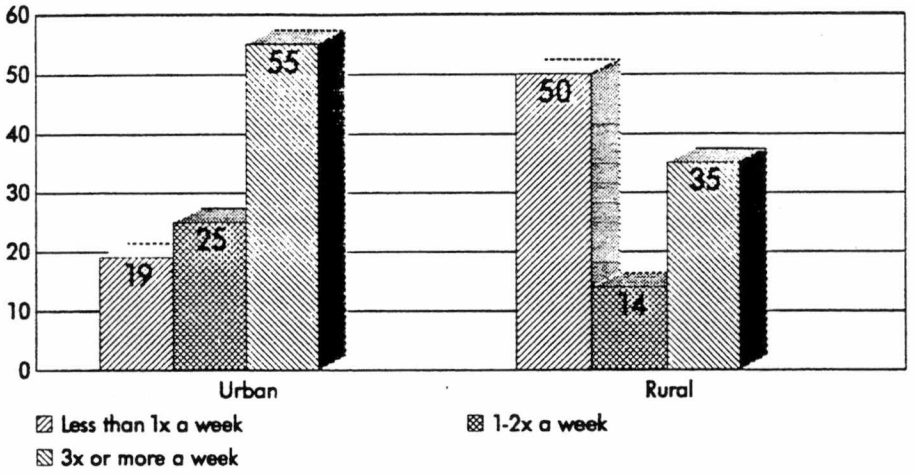


Figure 3: Exercise - Urban and Rural

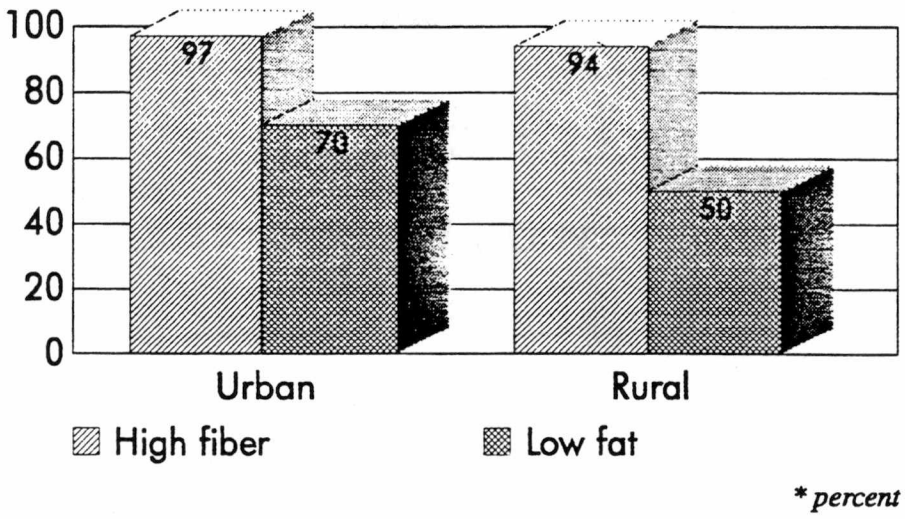


Figure 4: Nutrition - Urban and Rural

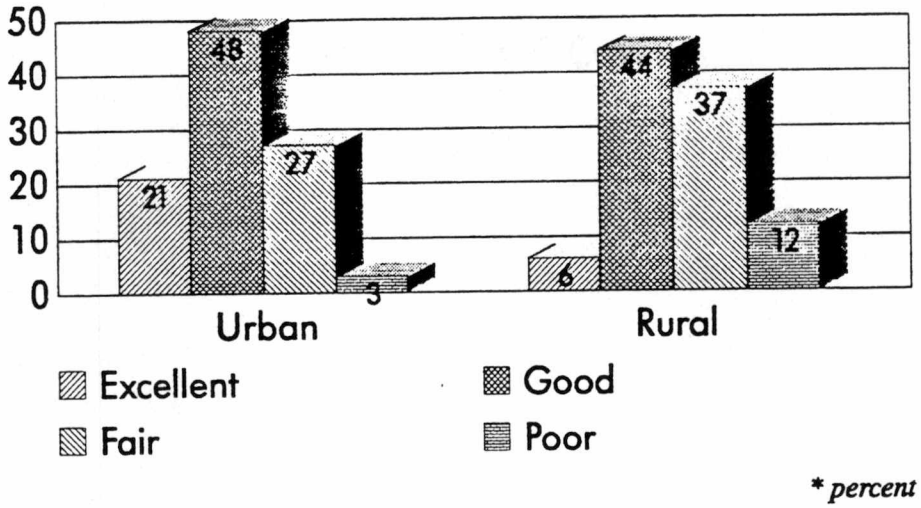


Figure 5: Physical Condition - Urban and Rural

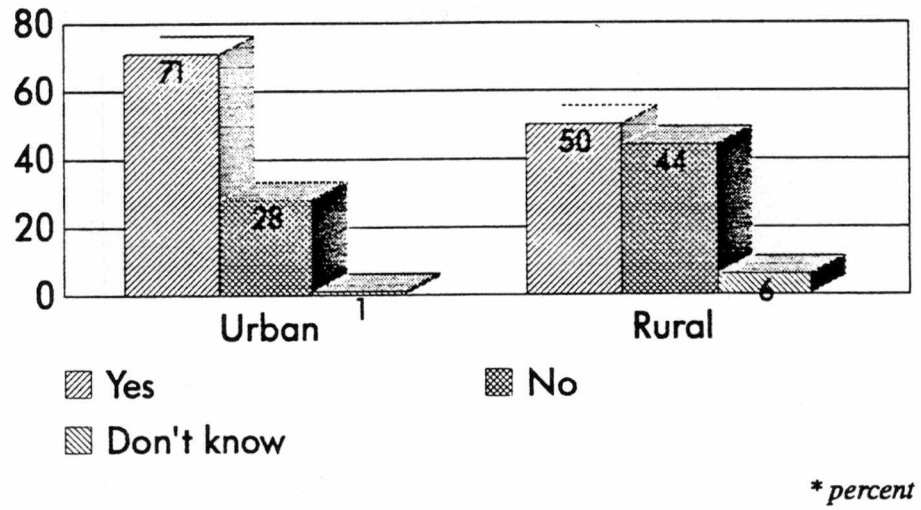


Figure 6: Walk A Mile - Urban and Rural

Vision

Vision impairment was noted for 104 or 52% of the urban population and for 12 or 71% of the rural population (Figure 7).

Hearing

Hearing impairment was noted by 56 or 28% of the urban population and 13 or 68% of the rural population (Figure 8).

Safety

The questions on safety practices chosen to be representative of safety habits were: In your home do you have loose carpeting, slippery tub surfaces, presence of grab bars in the tub, smoke detectors and water temperature hot enough to cause burns. Finding the average for each group resulted in 162 or 59% of the urban and 8 or 76% or the rural following proscribed safety practices (Figure 9).

Living arrangements

The question of living arrangements showed that those living with a spouse accounted or 98 or 45% of the urban sample and 8 or 42% of the rural, and living alone accounted for 101 or 46% of the urban and 10 or 52% of the rural. Living with other relatives accounted for 18 or 2% of the urban and 1 or 6% of the rural. There were 2 individuals in the urban sample accounting for 1% that lived with an unrelated other (Figure 10).

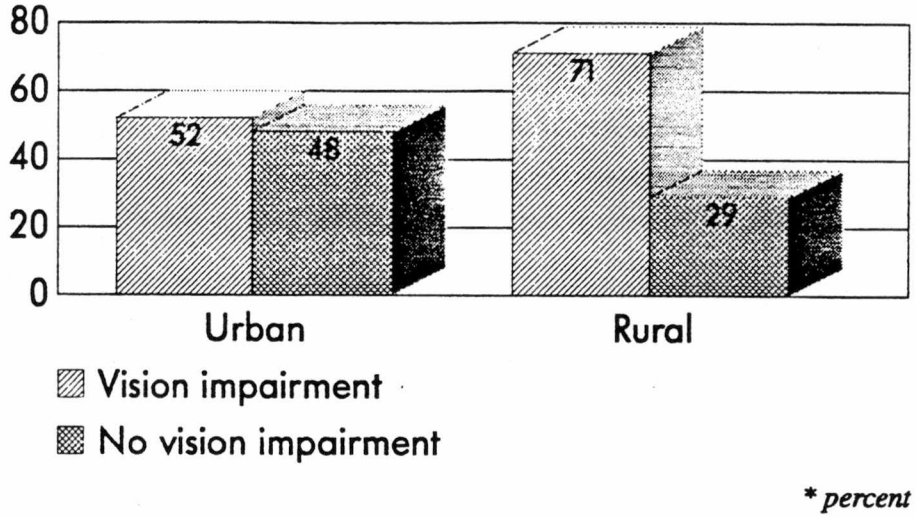


Figure 7: Vision - Urban and Rural

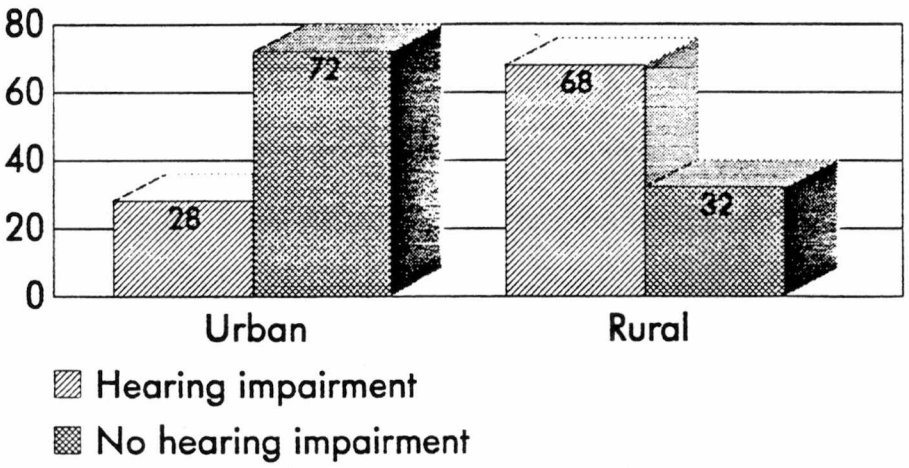


Figure 8: Hearing - Urban and Rural

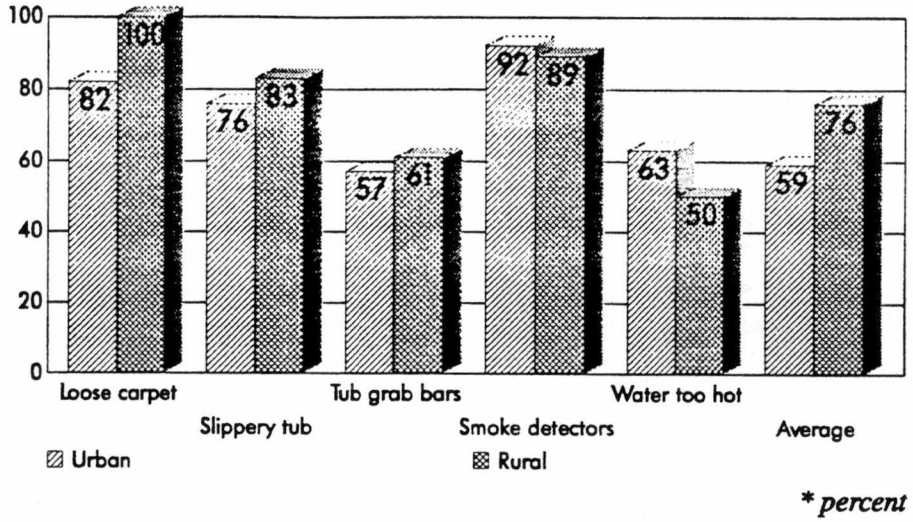


Figure 9: Safety - Urban and Rural

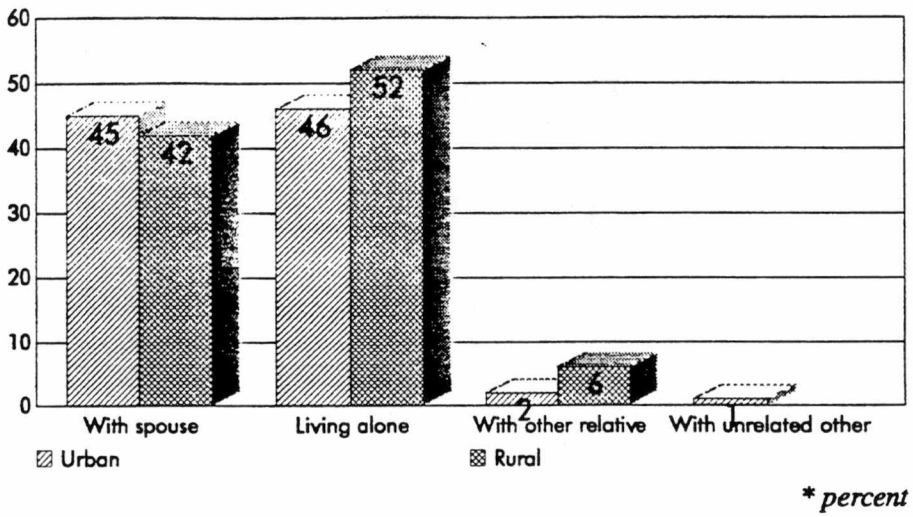


Figure 10: Living Arrangements - Urban and Rural

Social contacts

Social contacts was divided into two areas, contacts with relatives and contact with friends. Contact with family members was made 9 times or more per month by 63 or 29% of the urban and 8 or 42% of the rural respondents. In descending number of contacts, 5-8 times per month was maintained by 53 or 24% of urban and 3 or 16% of rural, 3-4 times per month was maintained by 65 or 30% of urban and 5 or 26% of rural, two times a month was maintained by 22 or 10% of urban and 1 or 5% rural, one time a month was maintained by 7 or 3% urban and 1 or 5% rural, and zero or no contact was expressed by 6 or 2% urban and 1 or 5% rural (Figure 11).

Contact with friends was also examined. The urban respondents reported 37 or 17% saw friends 9 times or more per month and rural respondents reported 4 or 21%. Friends were seen 5-8 times per month by 33 or 15% of the urban and 3 or 16% of the rural, 3-4 times a month by 67 or 31% of the urban and 7 or 37% or the rural, two times a month by 45 or 21% of the urban and 2 or 10% of the rural, one time a month by 28 or 13% of the urban and 2 or 10% of the rural, and there was no contact by 4 or 2% of the urban and 1 or 5% of the rural (Figure 12).

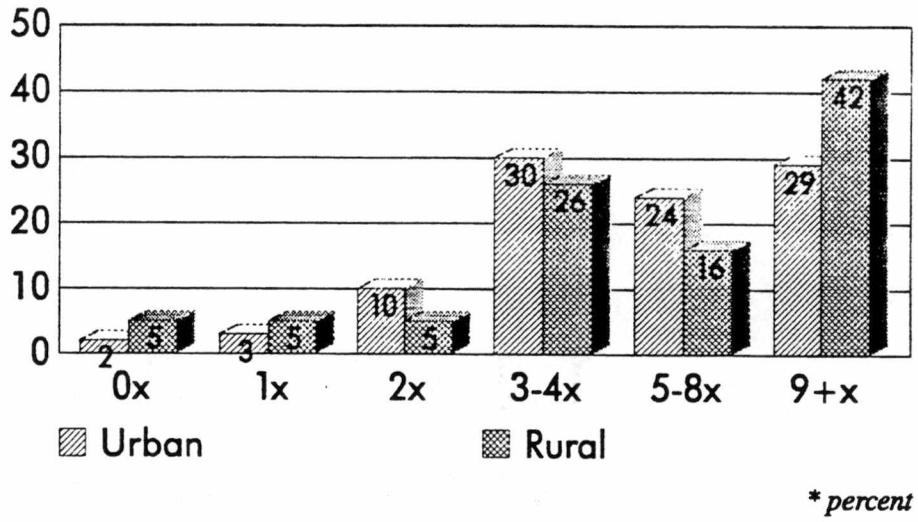


Figure 11: Social Contact With Family - Urban and Rural

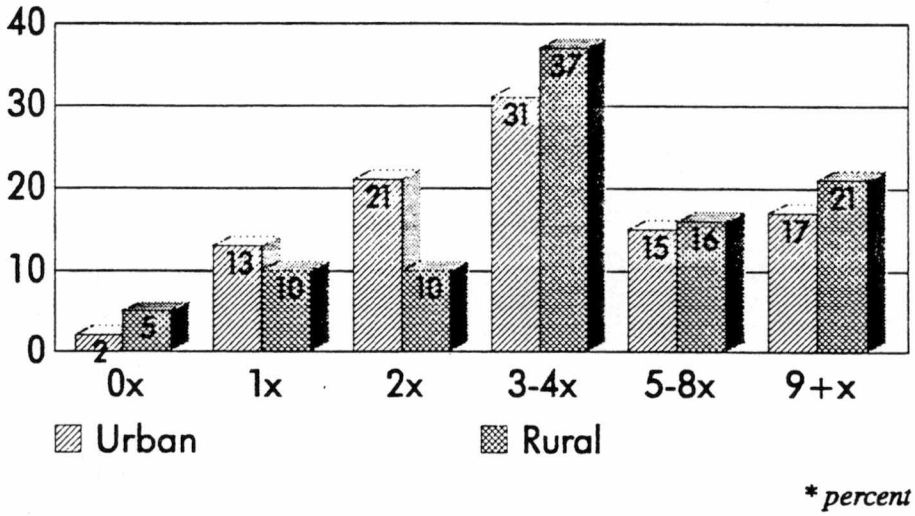


Figure 12: Social Contact With Friends - Urban and Rural

## COMPARISON OF HEALTH RISK FACTORS BETWEEN THE YOUNG-OLD, THE OLD AND THE OLDEST-OLD

Data was then looked at with a comparison of the health risk factors between the age groups of 60-74; the young old, 75-84; the old, and 85 and over; the oldest-old.

### Smoking

Of the 240 responses to the question on smoking, the highest percentage for all age groups have never smoked. Table 6 details the age groups with the number of responses and the age group percentage.

### Driving habits

The most designated mode of travel, both in numbers and percentage, for all age groups was a full size car. In the age group 60-74 the response was 96 or 63%, ages 75-84 the response was 39 or 70% and ages 85 and over the response was 11 or 55%. Comparisons for all age groups are in Table 7.

### Exercise

Respondents in the age group of 60-74 had the highest rate with 77 or 59% exercising three or more times a week. Within the age group of 75-84 the highest percent also exercised 3 or more times a week with 24 or 51%. Those 85+ had the highest results in exercise of less than 1 time a week. Table 8 shows the comparison by age groups.

Table 6: Smoking Habits - Summary by Number and Percent by Age Group

| | Young-Old (60-74) | | | Old (75-84) | | | Oldest-Old (85+) | |
|---|---|---|---|---|---|---|---|---|
| Catagory | Number | Percent | | Number | Percent | | Number | Percent |
| Never smoked | 100 | 64 | | 45 | 72 | | 17 | 77 |
| Used to smoke | 50 | 32 | | 16 | 26 | | 5 | 23 |
| Still smoke | 6 | 4 | | 1 | 2 | | 0 | 0 |
| Total: | 156 | | | 62 | | | 22 | |
| N=240 | | | | | | | | |

Table 7: Driving Habits - Summary by Number and Percent by Age Group

| | Young-Old (60-74) | | | Old (75-84) | | | Oldest-Old (85+) | |
|---|---|---|---|---|---|---|---|---|
| Catagory | Number | Percent | | Number | Percent | | Number | Percent |
| Walk | 8 | 5 | | 8 | 14 | | 2 | 10 |
| Motorcycle | 1 | 0.05 | | 0 | 0 | | 0 | 0 |
| Compact car | 29 | 19 | | 5 | 9 | | 3 | 15 |
| Full size car | 96 | 63 | | 39 | 70 | | 11 | 55 |
| Truck/ van | 17 | 11 | | 4 | 7 | | 2 | 10 |
| Bus | 1 | 0.05 | | 0 | 0 | | 2 | 10 |
| Total: | 152 | | | 56 | | | 20 | |
| N=228 | | | | | | | | |

Table 8: Exercise - Summary by Number and Percent by Age Group

| | Young-Old (60-74) | | | Old (75-84) | | | Oldest-Old (85+) | |
|---|---|---|---|---|---|---|---|---|
| Catagory | Number | Percent | | Number | Percent | | Number | Percent |
| <1 time a week | 20 | 15 | | 10 | 21 | | 12 | 54 |
| 1-2 times a week | 33 | 25 | | 13 | 28 | | 24 | 51 |
| 3+ times a week | 77 | 59 | | 24 | 51 | | 8 | 36 |
| Total: | 130 | | | 47 | | | 22 | |
| N=199 | | | | | | | | |

The ability to walk a mile shows a steady decline with age. Among those 60-74, 122 or 81% said they could, those 75-84, 28 or 51% said they could, and those 85 and over 8 or 35% said they could. Table 9 shows the ability to walk a mile by age groups.

Nutrition

On the basis that a diet high in fiber and low in fat constitute a nutritious lifestyle, these components were viewed in relation to the age groups. The age group of 75-84 showed the highest response with 51 or 100% responding yes to high fiber and 39 or 78% to low fat. Table 10 shows

Table 9: Ability to Walk a Mile - Summary by Number and Percent by Age Group

| | Young-Old (60-74) | | | Old (75-84) | | | Oldest-Old (85+) | |
|---|---|---|---|---|---|---|---|---|
| Walk a mile | Number | Percent | | Number | Percent | | Number | Percent |
| YES | 122 | 81 | | 28 | 51 | | 8 | 35 |
| NO | 29 | 19 | | 27 | 49 | | 15 | 65 |
| Total: | 151 | | | 55 | | | 23 | |
| N=229 | | | | | | | | |

Table 10: Nutritional Fiber/Fat - Summary by Number and Percent By Age Group

| | Young-Old (60-74) | | | Old (75-84) | | | Oldest-Old (85+) | |
|---|---|---|---|---|---|---|---|---|
| Catagory | Number | Percent | | Number | Percent | | Number | Percent |
| Nutritional Fiber | | | | | | | | |
| YES | 132 | 96 | | 51 | 100 | | 20 | 95 |
| NO | 5 | 4 | | 0 | 0 | | 1 | 5 |
| Total: | 137 | | | 51 | | | 21 | |
| N=209 | | | | | | | | |
| Nutritional Fat | | | | | | | | |
| YES | 39 | 26 | | 11 | 22 | | 69 | 27 |
| NO | 97 | 73 | | 39 | 78 | | 16 | 73 |
| Total: | 136 | | | 50 | | | 22 | |
| N=208 | | | | | | | | |

fiber consumption and Table 10 shows fat consumption by age groups.

Physical condition

More participants in all age groups perceived their health as good then any other category. Of those in the 60-74 ages it was 67 or 49%, for ages 75-84 it was 25 or 49%, and for 85 and over it was 9 or 41%. Table 11 shows the distribution by age groups.

Vision

The age group with the highest incidence of vision impairment was the 85 and over with 65% and the lowest was the age group of 60-74 with 46%. Comparison within the age groups is shown in Table 12.

Hearing

The age group with the highest incidence of hearing impairment was the 85 and over group with 64% of the respondents reporting some hearing impairment, with the next group being 75-84 with 39%. Comparison of all age groups are in Table 13

Safety

A composite score was obtained using the responses to the questions on loose carpeting in the home, using a tub with a slippery surface, is there a grab bar in the tub area, does your home have a smoke alarm, and is the hot

Table 11: Perception of Health - Summary by Number and Percent by Age Group

| | Young-Old (60-74) | | | Old (75-84) | | | Oldest-Old (85+) | |
|---|---|---|---|---|---|---|---|---|
| Catagory | Number | Percent | | Number | Percent | | Number | Percent |
| Excellent | 29 | 21 | | 7 | 14 | | 5 | 23 |
| Good | 67 | 49 | | 25 | 49 | | 9 | 41 |
| Fair | 36 | 26 | | 15 | 29 | | 8 | 36 |
| Poor | 4 | 3 | | 4 | 8 | | 0 | 0 |
| Total: | 136 | | | 51 | | | 22 | |
| N=209 | | | | | | | | |

Table 12: Vision Impairment - Summary by Number and Percent by Age Group

| | Young-Old (60-74) | | | Old84 (75-84) | | | Oldest-Old (85+) | |
|---|---|---|---|---|---|---|---|---|
| Catagory | Number | Percent | | Number | Percent | | Number | Percent |
| YES | 78 | 54 | | 25 | 50 | | 13 | 65 |
| NO | 67 | 46 | | 25 | 20 | | 7 | 35 |
| Total: | 145 | | | 50 | | | 20 | |
| N=215 | | | | | | | | |

Table 13: Hearing Impairment - Summary by Number and Percent By Age Group

| | Young-Old (60-74) | | | Old (75-84) | | | Oldest-Old (85+) | |
|---|---|---|---|---|---|---|---|---|
| Catagory | Number | Percent | | Number | Percent | | Number | Percent |
| YES | 35 | 24 | | 20 | 39 | | 14 | 64 |
| NO | 109 | 76 | | 30 | 59 | | 8 | 36 |
| Total: | 144 | | | 50 | | | 22 | |
| N=216 | | | | | | | | |

water hot enough to cause burns. The age group with the highest percentage for positive safety practices was the 85 and over with 77%. The age group with the lowest percentage was the 75-84 with 70%. Composite scores for each group are shown in Table 14.

Living arrangements

Individuals between the ages of 60-74 have the largest percentage of respondents living with a spouse with 82 or 54%. The age group of 75-84 has the largest percentage living alone with 39 or 62%. By the age of 85 and over 12 or 52% are living alone. A complete summary is shown in Table 15.

Social contact

Social contact was considered as contact with relatives or friends. Contact with family was seen at a higher rate with individuals in the age group of 60-74 showing that 53 or 35% of the respondents saw family members nine or more times a month. Comparisons are shown in Table 16.

Social contact with friends was seen at a higher rate with individuals in the age group of 75-84 with 29 or 49% of the respondents having contact with friends 3-4 times a month. Comparisons are shown in Table 17.

Table 14: Safety Practices - Summary by Number and Percent By Age Group

| | Young-Old (60-74) | | | Old (75-84) | | | Oldest-Old (85+) | |
|---|---|---|---|---|---|---|---|---|
| | Number | Percent | | Number | Percent | | Number | Percent |
| Positive Practices | 111 | 71 | | 42 | 70 | | 17 | 77 |
| Negative Practices | 45 | 29 | | 18 | 30 | | 5 | 23 |
| | N=156 | | | N=60 | | | N=22 | |

Table 15: Living Arrangement - Summary by Number and Percent By Age Group

| | Young-Old (60-74) | | | Old (75-84) | | | Oldest-Old (85+) | |
|---|---|---|---|---|---|---|---|---|
| Catagory | Number | Percent | | Number | Percent | | Number | Percent |
| W/Spouse | 82 | 54 | | 20 | 31 | | 4 | 17 |
| W/Other Relative | 10 | 6 | | 4 | 6 | | 5 | 22 |
| W/unrelated Other | 0 | 0 | | 0 | 0 | | 2 | 9 |
| Alone | 60 | 39 | | 39 | 62 | | 12 | 52 |
| Total: | 152 | | | 63 | | | 23 | |
| N=238 | | | | | | | | |

Table 16: Social Contact With Family - Summary by Number and Percent by Age Group

| | Young-Old (60-74) | | | Old (75-84) | | | Oldest-Old (85+) | |
|---|---|---|---|---|---|---|---|---|
| Monthly Contact | Number | Percent | | Number | Percent | | Number | Percent |
| None | 2 | 1 | | 4 | 7 | | 1 | 4 |
| 1 time | 4 | 3 | | 3 | 5 | | 1 | 4 |
| 2 times | 9 | 6 | | 8 | 13 | | 6 | 26 |
| 3-4 times | 48 | 31 | | 16 | 27 | | 6 | 26 |
| 5-8 times | 36 | 24 | | 17 | 28 | | 3 | 13 |
| 9 times | 53 | 35 | | 12 | 20 | | 6 | 26 |
| Total: | 152 | | | 60 | | | 23 | |
| N=235 | | | | | | | | |

Table 17: Social Contact With Friends - Summary by Number and Percent by Age Group

| | Young-Old (60-74) | | | Old (75-84) | | | Oldest-Old (85+) | |
|---|---|---|---|---|---|---|---|---|
| Monthly Contact | Number | Percent | | Number | Percent | | Number | Percent |
| None | 4 | 3 | | 1 | 2 | | 0 | 0 |
| 1 time | 23 | 15 | | 5 | 8 | | 2 | 9 |
| 2 times | 35 | 24 | | 7 | 12 | | 5 | 22 |
| 3-4 times | 38 | 26 | | 29 | 49 | | 7 | 30 |
| 5-8 times | 25 | 17 | | 8 | 13 | | 3 | 13 |
| 9 times | 23 | 15 | | 9 | 15 | | 6 | 26 |
| Total: | 148 | | | 59 | | | 23 | |
| N=230 | | | | | | | | |

## A COMPARISON OF HEALTH RISK FACTORS IN RELATION TO LIVING ARRANGEMENTS

Living arrangements were identified as; living with a spouse, living with other relatives, living with an unrelated other, and living alone. The identified health risk factors were examined in relation to these living arrangements.

### Smoking

Respondents who had never smoked, 86 or 54 percent live alone and 58 or 37 percent live with their spouse. Among those who still smoke, 6 or 86 percent live with their spouse and one, accounting for 14% live alone (Table 18).

### Driving Habits

The one respondent that uses a motorcycle for transportation lives alone. Twenty-one or 58% of respondents that drive a compact car live with a spouse and 73 or 52% of the respondents that drive a full sized car live alone. Fourteen or 64% of the truck/van drivers live with a spouse, while 5 or 23% live alone (Table 19).

### Exercise

The highest level of exercise was observed among those living with a spouse, with 53 or 50% exercising at least three times a week. The highest level of non-exercise was

Table 18: Smoking Habits in Relation to Living Arrangement

| | Never smoked | | | Used to smoke | | | Still smoke | |
|---|---|---|---|---|---|---|---|---|
| Living arrangement | Number | Percent | | Number | Percent | | Number | Percent |
| W/spouse | 58 | 37 | | 39 | 58 | | 6 | 86 |
| W/other relative | 13 | 8 | | 5 | 7 | | 0 | 0 |
| W/ unrelated | 1 | 1 | | 1 | 1 | | 0 | 0 |
| Alone | 86 | 54 | | 22 | 14 | | 1 | 14 |
| Total: | 158 | | | 67 | | | 7 | |
| N=232 | | | | | | | | |

Table 19: Driving Habits in relation to Living Arrangement

| | Walk | | | Motor-cycle | | | Compact | | | Full Size | | | Truck /Van | | | Bus | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Livi Arra | # | % | | # | % | | # | % | | # | % | | # | % | | # | % |
| W/S | 4 | 22 | | 0 | 0 | | 21 | 58 | | 60 | 42 | | 14 | 64 | | 0 | 0 |
| W/R | 2 | 11 | | 0 | 0 | | 3 | 8 | | 8 | 6 | | 3 | 14 | | 1 | 33 |
| W/UR | 0 | 0 | | 0 | 0 | | 1 | 3 | | 0 | 0 | | 0 | 0 | | 0 | 0 |
| AL | 12 | 67 | | 1 | 100 | | 11 | 31 | | 73 | 52 | | 5 | 23 | | 2 | 66 |
| Tot: | 18 | | | 1 | | | 36 | | | 141 | | | 22 | | | 3 | |
| N=221 | | | | | | | | | | | | | | | | | |

observed among those living alone, with 20 or 48% exercising less than one time a week (Table 20).

Nutrition

The participants that lived with their spouse appeared to be more slightly more conscious of fiber consumption with 93 or 47% eating foods high in fiber as compared to 85 or 43% living alone (Table 21). Eating foods high in fat was split evenly in half between those living with a spouse and living alone with 64 or 46% for each (Table 22).

Vision

Vision impairment was almost equally divided between those responding yes or no and whether they lived with a spouse or lived alone. Responding yes: with spouse; 54 or 47%, alone 48 or 42%, responding no: with spouse; 43 or 45%, alone; 46 or 48% (Table 23).

Hearing

The highest percentage of hearing impairment was noted among those respondents living with a spouse, 36 or 52% as compared to 27 or 39% living alone (Table 24).

Safety

In the area of safety, each question needs to be analyzed in relation to the living arrangement, rather than handled as a composite score.

Table 20: Exercise In Relation to Living Arrangement

| | < 1 tune a week | | | 1-2x a week | | | 3 or more times a week | |
|---|---|---|---|---|---|---|---|---|
| Living arrangement | Number | Percent | | Number | Percent | | Number | Percent |
| W/spouse | 16 | 38 | | 22 | 49 | | 53 | 50 |
| W/other relative | 5 | 12 | | 4 | 9 | | 8 | 7 |
| W/unrelated | 1 | 2 | | 0 | 0 | | 1 | 1 |
| Alone | 20 | 48 | | 19 | 42 | | 44 | 42 |
| Total: | 42 | | | 45 | | | 106 | |
| N=193 | | | | | | | | |

Table 21: Nutritional Fiber in Relation to Living Arrangement

| | Yes | | | No | |
|---|---|---|---|---|---|
| Living arrangement | Number | Percent | | Number | Percent |
| W/ spouse | 93 | 47 | | 3 | 50 |
| W/other relative | 16 | 8 | | 0 | 0 |
| W/unrelated | 2 | 1 | | 0 | 0 |
| Alone | 85 | 43 | | 3 | 50 |
| Total: | 196 | | | 6 | |
| N=202 | | | | | |

Table 22: Nutritional Fat in Relation to Living Arrangement

| | Yes | | | No | |
|---|---|---|---|---|---|
| Living arrangement | Number | Percent | | Number | Percent |
| W/spouse | 32 | 52 | | 64 | 46 |
| W/other relative | 8 | 13 | | 9 | 6 |
| W/ unrelated | 0 | 0 | | 2 | 1 |
| Alone | 22 | 35 | | 64 | 46 |
| Total | 62 | | | 139 | |
| N=201 | | | | | |

Table 23: Vision Impairment in Relation to Living Arrangement

| | Yes | | | No | |
|---|---|---|---|---|---|
| Living arrangement | Number | Percent | | Number | Percent |
| W/spouse | 54 | 47 | | 43 | 45 |
| W/other relative | 12 | 10 | | 5 | 5 |
| W/ unrelated | 1 | 1 | | 1 | 2 |
| Alone | 48 | 42 | | 46 | 48 |
| Total: | 115 | | | 95 | |
| N=210 | | | | | |

Table 24: Hearing Impairment in Relation to Living Arrangement

| | Yes | | | No | |
|---|---|---|---|---|---|
| Living arrangement | Number | Percent | | Number | Percent |
| W/spouse | 36 | 52 | | 63 | 44 |
| W/other relative | 5 | 7 | | 12 | 8 |
| W/unrelated | 1 | 1 | | 1 | 1 |
| Alone | 27 | 39 | | 66 | 46 |
| Total: | 69 | | | 142 | |
| N=211 | | | | | |

The question, does your rugs have non-skid backing, the respondents living alone showed a slightly higher incidence with 76 or 75% as compared to 74 or 71% for those living with a spouse (Table 25).

The question, do you use tubs or showers with slippery surfaces, the respondents living alone showed a lower incidence rate with 18 or 18% as compared to 31 or 30 percent for those living with a spouse (see Table 25).

To the question do you use a tub or shower that does not have a grab-bar, the respondents living alone had a much higher incidence of having a grab-bar with 58 or 55% as compared to 31 or 30% living with a spouse (see Table 25)

The question on the presence of a smoke detector was evenly divided with 95 or 90% of those living alone and 96 or 92% of those living with a spouse having a smoke detector (see Table 25).

The question on whether or not the hot water temperature was set high enough to burn them, 70 or 67% of those living alone said it was not while 62 or 60% or those living with a spouse said it was not (see Table 25).

Social Contact

The highest rate of contact with family members was seen among the respondents living with other relatives with 9 or 47% seeing family members nine times or more a month.

Table 25: Safety in Relation to Living Arrangement

| Living arrange-ment | W/spouse | | | W/ other relative | | | W/ unrelated | | | Alone | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Safety concern | # | % | | # | % | | # | % | | # | % |
| Non-slip rug | | | | | | | | | | | |
| Yes | 74 | 71 | | 13 | 68 | | 1 | 50 | | 76 | 75 |
| No | 23 | 22 | | 3 | 16 | | 0 | 0 | | 18 | 18 |
| Does not apply | 6 | 6 | | 3 | 16 | | 1 | 50 | | 8 | 8 |
| Use slippery tub | | | | | | | | | | | |
| Yes | 31 | 30 | | 3 | 16 | | 0 | 0 | | 18 | 18 |
| No | 72 | 70 | | 16 | 84 | | 2 | 100 | | 83 | 88 |
| Do not have grab-bar | | | | | | | | | | | |
| Yes | 72 | 70 | | 10 | 53 | | 1 | 50 | | 48 | 45 |
| No | 31 | 30 | | 9 | 47 | | 1 | 50 | | 58 | 55 |
| Have smoke detector | | | | | | | | | | | |
| Yes | 95 | 92 | | 18 | 95 | | 2 | 100 | | 95 | 90 |
| No | 8 | 18 | | 1 | 5 | | 0 | 0 | | 11 | 10 |
| Hot water could burn | | | | | | | | | | | |
| Yes | 42 | 40 | | 7 | 39 | | 0 | 0 | | 34 | 33 |
| No | 62 | 60 | | 11 | 58 | | 2 | 100 | | 70 | 67 |
| N=227-231 | | | | | | | | | | | |

This was followed by those living alone, with 34 or 32% seeing relatives nine times or more a month and then those living with a spouse, 34 or 32% who saw relatives three to four times a month (Table 26). Those living with unrelated others was not considered due to the small sample of two. Social contact with friends was highest with those living alone with 37 or 35% seeing friends three to four times a month, followed by those living with a spouse, 33 or 31% seeing friends three to four times a month (Table 27). Those living with unrelated others was not considered due to the small sample of two.

## DISCUSSION AND ANALYSIS OF QUESTIONS AND HYPOTHESES

Question 1 - Are the health risk factors of the elderly in the East Tennessee Development District the same as those observed nation wide? To answer this question, where possible, national findings or Healthy People 2000 baselines were compared to the findings observed in East Tennessee Development District 02.

The statement by Fries (1981) that evidence points to the fact that personal health habits are the main risk factors for disease it becomes important to look at the health habits of the elderly. Are the health risk factors

Table 26: Social Contact With Family in Relation to Living Arrangement

| Living arrangement | W/spouse | | | W/other relative | | | W/ unrelated other | | | Alone | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Contacts per month | # | % | | # | % | | # | % | | # | % |
| None | 2 | 2 | | 1 | 5 | | 0 | 0 | | 4 | 4 |
| 1 time | 5 | 5 | | 0 | 0 | | 0 | 0 | | 3 | 3 |
| 2 times | 10 | 9 | | 0 | 0 | | 0 | 0 | | 13 | 12 |
| 3-4 times | 34 | 32 | | 6 | 31 | | 0 | 0 | | 29 | 27 |
| 5-8 times | 29 | 27 | | 3 | 16 | | 0 | 0 | | 24 | 22 |
| 9 or more | 26 | 24 | | 9 | 47 | | 2 | 100 | | 34 | 32 |
| Total: | 106 | | | 19 | | | 2 | | | 107 | |
| N=234 | | | | | | | | | | | |

Table 27: Social Contact with Friends in Relation to Living Arrangement

| Living arrangement | W/spouse | | | W/ other relative | | | W/ unrelated other | | | Alone | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Contacts per month | # | % | | # | % | | # | % | | # | % |
| None | 3 | 3 | | 1 | 5 | | 0 | 0 | | 1 | 1 |
| 1 time | 15 | 14 | | 0 | 0 | | 1 | 50 | | 13 | 12 |
| 2 times | 26 | 25 | | 5 | 26 | | 0 | 0 | | 16 | 15 |
| 3-4 times | 33 | 31 | | 4 | 21 | | 0 | 0 | | 37 | 35 |
| 5-8 times | 14 | 13 | | 6 | 31 | | 0 | 0 | | 16 | 15 |
| 9 or more | 14 | 13 | | 3 | 1 | | 1 | 50 | | 22 | 20 |
| Total: | 105 | | | 19 | | | 2 | | | 105 | |
| N=231 | | | | | | | | | | | |

of the elderly in East Tennessee the same as those observed in other elderly populations?

In East Tennessee, Area 02, well over half (67%) of the respondents considered their health as good or excellent as compared to the report from the National Center for Health Statistics (Health, United States 1990, 1991) which that found that 47% of the population 65 and over felt that their health was good or excellent.

It was found by Clark (1987) that social constructs such as gender, family status, and degree of community involvement played a strong part in health construct. The sex ratio of the respondents was 25 percent males and 75 percent females or a ratio of 1:3, this is comparable to a ratio of 2:3 observable in the United States in 1989 (Wright, 1991). In regard to family and community (friends) the participants in this study appear to be very family oriented with 84 percent being in contact with their family three or more times a month and 64 percent maintaining contact with friends three or more times a month. There were no national norms available for comparison of social contact.

Some of the factors that have been identified as being predisposing to chronic illness are tobacco use, diet and exercise. The study group scored relatively high in these

areas. Only 3 percent of the respondents are still smoking as compared to 15 percent as a national average (Health, United States 1990, 1991). Dietary fiber intake was adequate for 97 percent of the respondents while dietary fat was slightly more of a problem with 68 percent eating food low in fat.

Exercise of at least three times or more a week was accomplished by a little over half of the respondents. Fifty-three percent of the respondents managed to exercise three times or more per week, while another 24 percent exercised 1-2 times a week. Compared to a 1987 survey that revealed that only 7.7 percent or women and 8.5 percent of men over 65 were exercising three or four times a week (Healthy People 2000, Citizens Chart the Course, 1990). Healthy People 2000 has set a goal of reducing to 22 percent those over 65 who engage in no exercise, so the respondents of East Tennessee are currently exceeding the established goal.

Accidents are among the four leading causes of death in the United States (Health, United States, 1990, 1991). Automobile accidents are shown as the leading cause followed by falls. Driving habits among the respondents show that 64 percent choose to drive a full sized car which gives more protection on the road. It was also shown that only 59.5

percent wear their seat belt every time they get in the car, while 18.5 percent were it 50 percent of the time or less. Maintaining a driving speed within five miles of the speed limit was 78 percent, leaving 22 percent that regularly exceed the speed limit by more than five miles.

Safety within the home showed that 75 percent adhered to safe practices. Three of the specific areas dealt with situations that could result in falls so at least three-fourth of the respondents were conscious of and worked to alleviate these problem areas.

Vision and hearing are both conducive to continued socialization. Healthy People 2000 identified a base line in 86-88 of 9 percent of older individuals with visual impairment. The participants of the study indicated 53 percent with visual impairment. The definition used by Healthy People 2000 for visual impairment is vision not able to be corrected with corrective lens, and the respondents to the survey instrument interpreted it as "needing corrective lens", so there is no basis of comparison. The base line identified by Healthy People 2000 for hearing impairment in 86-88 was 20 percent of the older population with a hearing impairment. East Tennessee respondents indicated that 31 percent had a hearing impairment.

The comparison of the elderly in East Tennessee and national results are shown in Table 28.

Question 2 - What is the health profile of the elderly in the East Tennessee Development District?

A composite of all of the respondents result in a health profile of an elderly resident of East Tennessee which shows that they are a white female, aged 72.72 with a health risk age of 70.79.

She exercises 2-3 times a week and can comfortably walk a mile. She lives alone and perceives her health to be good. She experiences no trouble in dressing, bathing, or preparing her own meals. Her diet is regularly high in fiber and at least two-thirds of the time her foods are low in fat.

She does not smoke, does not have trouble with her hearing, but probably does wear glasses.

Ten hours a day are spent at home alone and she manages to get out of the house at least one time a day. Her social contacts are high with contact with family members made at least nine times a month and contact with friends made six to eight times a month.

She drives a full sized car and regularly drives six to ten miles over the speed limit. Ninety percent of the time when she gets in the car she will wear her seat belt.

Table 28: A Comparison of Health Risk Factors Among the Elderly of East Tennessee and National Observations

| Health Risk Factors | East Tennessee, Area 02 | | National Observations |
|---|---|---|---|
| Perception of Health | 67% Good or Better | | 47% Good or Better |
| Sex Ratio | 1 male to 3 females | | 2 males to 3 females |
| Social Contact | No available comparison | | |
| Still Use Tobacco | 3% | | 15% |
| High fiber/Low fat | No available comparison | | |
| Exercise 3 times a week | 53% | | 8% |
| Accidents | No available comparison | | |
| Safety | No available comparison | | |
| Vision Impairment | 53% * | | 9% * |
| Hearing Impairment | 31% | | 20% |

This is a profile of an elderly resident of East Tennessee who can be found attending activities at Senior Centers in Area 02. There is no way to compare this individual to those who could be considered "community dwelling well elderly", but for what ever reason choose not to attend activities at any of the Senior Centers.

Null hypothesis -1: There will be no difference between the health profile of the elderly living in urban areas and the elderly living in rural areas.

The respondents in the urban and rural groups respectively were placed in one of three groups determined by a comparison of their chronological age with their

appraised age. These groups were: Lower, if their appraised age was lower than their chronological age; Same if they were in the same age range; and Higher if the appraised age was higher than the chronological age. The EPI Program gave the HRA in tenths of years, so to have some conformity, both the chronological age and the appraised age were divided into groups of five years (Table 29).

Table 29: Appraised Age Ranking According to Residence in Urban or Rural Area

| | Urban | | Rural | | |
|---|---|---|---|---|---|
| Lower | 142 | | 10 | | 152 |
| Same | 64 | | 8 | | 72 |
| Higher | 21 | | 1 | | 22 |
| | 227 | | 19 | | N=246 |

The Chi Square was used to determine if there was a relationship between the health profile, as determined by the comparison of the chronological age and the appraised age, and the area of residence whether urban or rural. The value of $x^2$ required for significance at the .05 level is 5.99. Since the computed $x^2$ of 1.4964 is less than 5.99 the null hypothesis was not rejected. There is no relationship

between the health profile and residence in urban or rural areas, $x^2$ (2, $\underline{N}$ = 246) = 1.4964, $\underline{p}$<.05 (Table 30).

Table 30: Chi Square Test for Relationship of Health Risk Profile and Residence in Urban or Rural Areas

| Critical Value | $x^2$ Calculated Value |
|---|---|
| 5.99 | 1.49 |
| p<.05 | |

*2df

Null hypothesis -2: There will be no difference between the health profile of the young-old, the old, and the oldest-old.

Each respondent in the young-old category was grouped into one of three groups depending on whether their appraised age was lower than their chronological age, the same as their chronological age, or higher than their chronological age. The same procedure was followed for the old and the oldest-old respondents (Table 31). To maintain conformity, both the chronological age and the appraised age were divided into levels of five years.

Table 31: Appraised Age Ranking According to Chronological Age Group

| | Young-Old | | Old | | Oldest-Old | | |
|---|---|---|---|---|---|---|---|
| Lower | 98 | | 38 | | 15 | | 151 |
| Same | 46 | | 17 | | 8 | | 71 |
| Higher | 13 | | 11 | | 0 | | 24 |
| | 157 | | 66 | | 23 | | N=246 |

The Chi Square was used to determine if there was a relationship between the chronological age and the appraised age. The value of $x^2$ required for significance at the .05 level is 9.49. Since the computed $x^2$ of 4.329 is less than 9.49, the null hypothesis was not rejected. There is no relationship between the age of the respondent and the health profile, represented as an appraised age, $x^2$ (4, $\underline{N}$ = 246) = 4.329, $\underline{p}$<.05 (Table 32).

Table 32: Chi Square for Relationship of Chronological Age and Appraised Age

| Critical Value | $x^2$ Calculated Value |
|---|---|
| 9.49 | 4.33 |
| p<.05 | |

*4df

Null hypothesis -3: There will be no relationship between the health profile and the age of the respondent.

To determine if there was a relationship between the respondents health profile, as represented by the appraised age and chronological age, a correlation was obtained through the EPI5 program. At the .05 confidence level the limits are $0.89<r<0.93$. An inspection of a scatter diagram illustrates this point (Figure 13).

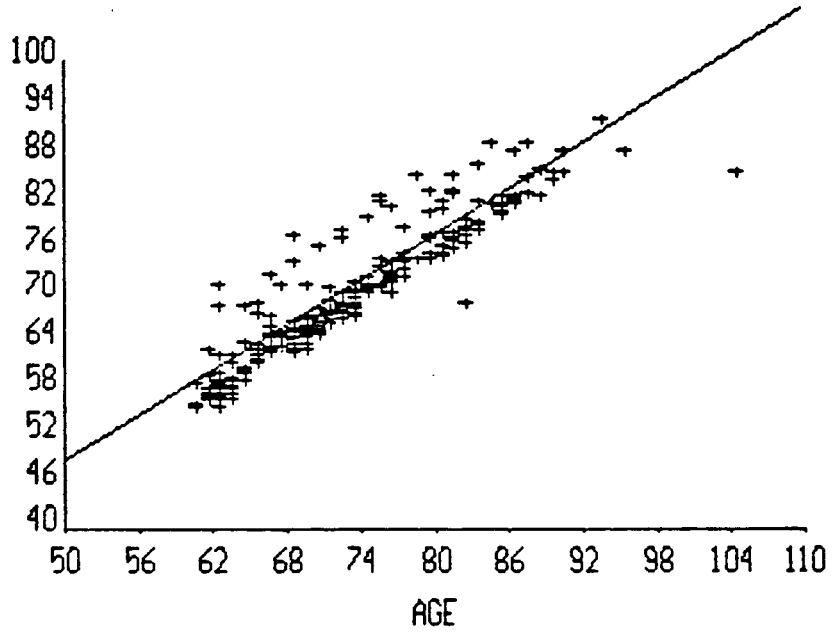


Figure 13: Correlation of Age and Appraised Age

The existence of a correlation does not necessarily imply a direct causal relationship. The two variables, age and appraised age, may be correlated because both are correlated with an underlying variable or set of variables.

In this instance passage of time, similar life events, level of medical care or other variables may have a compounding influence.

In this instance there appears to be a high positive correlation existing between age and the health profile of the respondent so the null hypothesis is rejected.

Null hypothesis -4: There will be no differences between the health risk profiles of individuals residing alone as compared to those residing with others or in congregate housing.

All chronological ages and appraised ages were grouped in levels of five years. Each respondent was then classified into one of three groups depending on whether their appraised age was lower, the same or higher than their chronological age. These groups were then placed into a Chi Square Table according to their living arrangement (Table 33).

Table 33: Appraised Age Ranking According to Living Arrangements

| | Lower | | Same | | Higher | |
|---|---|---|---|---|---|---|
| With Spouse | 57 | | 12 | | 10 | 79 |
| With relative | 39 | | 7 | | 0 | 46 |
| With other | 2 | | 0 | | 0 | 2 |
| Alone | 74 | | 24 | | 13 | 111 |
| | 172 | | 43 | | 23 | N=238 |

The Chi Square was used to determine if there was a relationship between the chronological age/appraised age bracket and living arrangement. The value of $x^2$ required for significance at the .05 level is 9.49. Since the computed $x^2$ of 4.3074 is less than 9.49 we the null hypothesis was not rejected. There is no relationship between the health profile, as represented by appraised age, and living arrangement, $x^2$ (4, $\underline{N}$ = 238) = 4.3074, $\underline{p}$<.05 Table 34).

Table 34: Chi Square for Relationship of Health Risk Profile and Living Arrangement

| Critical Value | $x^2$ Calculated Value |
|---|---|
| 9.49 | 4.31 |
| p<.05 | |

*4df

# CHAPTER V

## SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

### SUMMARY

#### Purpose of the Study

The purpose of this study was to develop a profile of the health status of community dwelling elderly, aged sixty and over living in East Tennessee, through the use of a computerized health risk appraisal. This investigation looked at information obtained through the administration of the instrument "Healthier Living: An Appraisal Program for Older Americans" developed by the Healthier People Network, of Decatur, GA.

#### Importance of the Study

Every society is currently undergoing a rapid increase in the number and percentage of older persons. There is a need for constant re-evaluation of the health status and the programs that are being offered to this segment of the population to assure that needs are being met. Through the use of a health risk appraisal, those areas of greatest risk within the population can be identified and programs developed to meet the needs of this target population. If there is a need of change it can be identified so the

benefit of preventive care can be realized before illness strikes.

Procedure Followed

A total of 436 participants completed the instrument and through a table of random numbers a sample group of 246 was selected. To maintain a statistical balance between urban and rural areas the sample size was 227 and 19 respectively, based on the 1992 U.S. Census. The health risk appraisal was completed by the respondent on an individual basis unless there were extenuating circumstances and then the questions were read to the participant by the researcher. Twenty-one senior centers were identified in sixteen counties in the East Tennessee Development District. Interviews were started on September 3, 1993 and were completed on December 15, 1993. Within this time frame, each center was visited for completion of the instrument and then revisited for the return of an individual information printout to each participant in the program. Information obtained from the interviews was entered in the EPI INFO (Version 5) program for data analysis as well as analyzed by descriptive research methods.

## FINDINGS

The findings of this research can best be summarized under the headings of; Age, Gender, Marriage status, Race,

Smoking, Perceived health status, Vision impairment, Hearing impairment, Exercise level, Living arrangement, Safety practices, Method of transportation, Social contact - family, Social contact - friends and Nutrition, as follows:

Age

1. The majority of respondents were between the age of 60-74.

2. The rural population had a higher percentage of oldest-old (85+).

Gender

3. In the sample group women, out numbered men at the ratio of three to one.

4. In the urban population the ratio of women to men was 3:1.

5. In the rural population the ratio of women to men was 4:1.

Marriage Status

6. In the sample group the respondents were evenly divided between married and widowed.

7. In the urban population there was a slightly higher percentage of respondents married.

8. In the rural population there was a slightly higher percentage of respondents widowed.

9. In the urban population there were 7% divorced and in the rural population there were no respondents divorced.

Race

10. The participants were predominantly white. This held true for both urban and rural.

Smoking

11. A very small portion of the participants still smoke (3%).

12. A higher percent of rural respondents had never smoked than urban respondents.

13. Those who still smoke were in the young-old age group (60-74).

Perceived Health Status

14. Over half of all respondents considered their health as good or excellent.

15. More respondents in the urban area considered their health as excellent than did respondents in the rural areas.

16. More respondents in the rural areas considered their health as fair than did respondents in the urban area.

17. The over-all perception of health declined with increased age.

Vision Impairment

18. In the sample group slightly more than half had some vision impairment.

19. Rural respondents had a higher incidence of vision impairment.

20. The ratio of vision impairment stayed at approximately one-half until the Oldest-old (85+) where the ratio became two to one with vision impairment.

21. There was no difference in the incidence of vision impairment according to living arrangement.

Hearing Impairment

22. In the sample group less than one-third had hearing impairment.

23. Rural respondents had a higher incidence of hearing impairment.

24. There is an inverse relationship between hearing impairment and advancing age.

25. Participants living with a spouse had a higher incidence of hearing impairment.

Exercise Level

26. In the sample group over half of all respondents exercise three times or more every week.

27. Participants living in urban areas tend to exercise more often.

28. A higher percent of the young-old (60-74) exercise three or more times a week.

29. A higher percent of the oldest-old (85+) exercise 1-2 times a week.

30. Participants living with a spouse had a higher incidence of exercising three or more times a week.

Living Arrangements

31. In the sample group the respondents were evenly divided between living with a spouse and living alone.

32. Rural respondents had a slightly higher incidence of living alone or with other relatives.

33. There is a gradual decline in the number of those living with a spouse with the increase of age.

34. The age group with the highest percent of those living alone is the old (75-84).

Safety Practices

35. Three-fourth of the respondents observed and followed safety around the home.

36. On a combined average of safety practices, the rural respondents had a higher score than urban by 17%.

37. There was no difference in the safety practices of the young-old (60-74), the old (75-84) and the oldest-old (85+).

38. The participants living alone had a slightly higher score on safety awareness.

Method of Transportation

39. In the sample group over half of the respondents drove a full sized car.

40. The rural participants scored higher in two methods of transportation; walking and truck/van use.

41. The use of a full sized car was consistent across all age groups.

42. The highest incidence of compact car use and truuck/van use was among those living with a spouse.

Social Contact - Family

43. In the sample group over half of the respondents had contact with family members three or more times a month.

44. The urban had a higher percent of contact with family until the category of "nine times or more" and then the rural participants showed a 13% higher incidence.

45. The amount of contact with family remains fairly constant across the age groups.

46. Participants living with a spouse had a higher incidence of family contact.

Social Contact - Friends

47. In the sample group over half of the respondents had contact with friends two or more times a month.

48. The rural respondents had contact with friends three or more times a month.

49. Contact with friends was highest among the age group of the old (75-84).

50. The participants living alone had a slightly higher incidence of contact with friends nine times or more a month.

Nutrition

51. In the sample group participants were more conscious of fiber than fat in their nutritional diet.

52. The urban respondents were more conscious of the fat content in their nutritional diet.

53. Responses in regard to nutritional fiber and fat remained constant across the age groups.

54. Living arrangement had no effect on dietary fiber or fat.

## CONCLUSIONS

The following conclusions are based on the findings of this research study:

1. When comparing the health risk factors of residents of East Tennessee with those health factors observed on a national basis, East Tennessee residents had a higher rating in the areas of; self perception of health, the non-use of tobacco and exercise habits and a lower rating in the areas of vision and hearing impairment. There was no basis of comparison in the areas of; accidents, safety, social contact or nutritional fiber/fat. The final conclusion is that there is insufficient data available for a valid comparison.

2. The health profile of a typical elder in East Tennessee, is a white female who is 72.72 years of age, with an appraised age of 70.79. She lives alone, is fully able to care for herself and maintain an active lifestyle.

3. Residents of urban and rural areas tend to have similar health profiles.

4. Cohort groups tend to have a similar health profile. There was a similar distribution within each group of those who obtained a younger appraised age, an appraised age equal to their chronological age, or a higher appraised age.

5. The age of the respondent has a direct bearing on the appraised age, as arrived at through the health risk appraisal.

6. Living alone or with another tends to have no bearing on individual health profiles.

## RECOMMENDATIONS

The following recommendations result from the findings and conclusions based on the data produced by the study, and the review of literature:

1. An interactive method of obtaining a health risk appraisal needs to be developed. Through this approach the elderly could monitor their health and be made aware of areas that could benefit from personal or physician attention. Interpretation of the results must be easy to understand so there will be no chance of misunderstanding the information obtained.

2. Instructional units, dealing with the health concerns of the elderly should be available and implemented at all locations where the elderly congregate. While all areas should be included, two specific areas are nutrition and exercise. Data obtained in these areas indicate there is still a need for further information to decrease any misconception on the part of the elderly.

3. Methods of communicating and interacting with the community dwelling elderly, who do not choose to participate in senior center activities, need to be developed. The well-being of every citizen should be the aim of health awareness and promotion, not just the individuals that are involved in established programs.

4. Programs that encourage and encompass minority group participation should be implemented, or where they exist, they should be expanded.

5. To keep pace with the rapidly expanding population of elderly (55+), the supporting data base of the computerized health risk appraisal program should be updated to establish a valid base of comparison for the respondents.

## RECOMMENDATIONS FOR FURTHER RESEARCH

Specific recommendations for further research are:

1. A study, employing the health risk appraisal, of community dwelling elderly, who do not participate in senior center activities, needs to be conducted as a comparison to the results obtained from senior center participants.

2. Information on specific nutritional practices, with the elderly as the target population rather than an inclusion, needs to be collected.

3. Further research on the effect of social contact on an individual's health needs to be conducted.

4. Studies should also be conducted regarding the safety practices of the elderly and the effect of these practices on the health of the elderly.

# CHAPTER IV

# EPILOGUE

## Introduction

The purpose of this study was to develop a profile of community dwelling elderly, sixty and over, in the East Tennessee Development District 02. The profile was to be developed through the use of the health risk appraisal "Healthier Living; An Appraisal Program for Older Americans".

The information obtained would serve at least three purposes: (1) avail the participants to information regarding their health risk status, (2) give the directors of each senior center composite information regarding the health risk factors of the participants at their center as an aid in program development, and (3) information returned to the East Tennessee Area Agency on Aging as a composite profile of the elderly in their service area.

A total of 436 individuals completed the instrument and from this number, 246 were randomly selected for statistical computation.

## OBSERVATIONS ABOUT THE STUDY

The administration of the health risk appraisal to the sixty plus population in East Tennessee, was a project well worth the time and effort. The researcher does feel that the study would be more beneficial if it was conducted at a level that would include all individuals within the population that are sixty plus, not just those in attendance at senior center.

When you take into consideration that at any given time 5% of the elderly population are in an extended care facility, that leaves 95% that could be considered community dwelling individuals. In a twelve month period ending June 30, 1993, tabulations show that attendance at the senior centers in Area 02 ranged from a low of 6% in Roan County to a high of 34% in Scott County (East Tennessee Human Resource Agency; Senior Center Operations, Program 7-C). With this consideration, the population that was included in the study was in reality a small sub-division of the total population

## THE POPULATION

The population, was a self contained group that could be found attending senior centers located in each of the

counties of Development District (02) in East Tennessee. The statistical data was computed on a random sample of this group found within the senior centers. It can be questioned as to whether data obtained from this group could be applicable to the rest of the population. Individuals that get out of the house and participate in activities at a senior center already are exhibiting some of the characteristics that have been shown to be beneficial to their health.

One of the areas that this population rated high in, as compared to responses obtained from national information, was the perception of their health status as being good or excellent. Should the question be asked, "Does attendance at senior centers and participation in the activities help to increase an individuals self perception of their health status?", or "Do individuals that perceive their health as good have a greater inclination to attend activities at senior centers?". Every finding seemed to pose another question.

This population was friendly and open to the proposed project. Not all, but by far a good percentage of the

people were very willing to find out more about their health as well as do what they could to help me achieve my goal.

It was interesting that when the results were returned to the centers, the comment that I heard quite often was that they didn't think they would ever see me again after the test.

## THE INSTRUMENT

The instrument used in this study was "Healthier Living An Appraisal Program for Older Americans", from the Healthier People Network Inc., Decatur, GA. This instrument was part of a pilot program to aid in the establishment of a program with norms designed for the population sixty and over. As a pilot program the instrument was used as it was printed with no adaptations or additions.

The instrument, as it stands, is too long. There are 194 questions, which include 43 from the original HRA as developed through the Carter Center. Some questions are asked more than once and others are difficult to understand.

The instrument has been rated as being at the fifth grade reading level, but within the population that was taking the instrument, many had left the school system at

the first grade. In these instances the researcher sat with each person and read and completed their form for them. This was not a problem once the situation had been recognized, but until then the participant just sat there with a lost look, which is a terrible position to put anybody in.

Their most often expressed comment in regard to the instrument was in regard to it's length. Since most of the individuals completed the instrument on their own, as the results were entered into the computer program, it was observed that they would start "selectively" answering questions. If those questions that were necessary for the completion of a correct health risk appraisal were left blank, then it became necessary to make a phone call to complete the form or to obtain the information on the return trip and then send the results back via mail.

## STRENGTHS AND WEAKNESS OF STUDY

One of the strengths of this study, as it was conducted, was the personal interaction that took place between the participants and the researcher. When the results were returned to the centers, the researcher was

greeted as a long time friend. One participant revealed that she had talked more on this occasion than she had in "quite a while". She said that her friends like to talk more than she does, so she just usually listens.

More than once, by the time the results of the instrument were returned, the participant would say that when they had taken the test, it made them realize some of the habits they had developed, so many of them were already in the process of change; weight was dropping, doctor appointments had been made, diets were changed or exercise levels were increased.

One of the objectives for the use of a health risk appraisal is as a means to open communication with a medical care giver. Each participant had the option to request a duplicate copy of their personal report to share with their family or caregiver. Only seventy-nine or 18% requested a duplicate form for this purpose.

## FUTURE DIRECTIONS

When the results were returned, those individuals who had chosen not to complete the instrument on the original visit, now expressed an interest. Due to logistics this

practice was discouraged by the researcher. This indicates an interest that would increase as the center participants became more aware and comfortable with the procedure. The development of an affordable, self-explanatory instrument that could be used by the directors of the centers, could allow inclusion of the health risk appraisal as a center activity.

With the emphasis that is currently being placed on preventative medicine, the availability and utilization of a health risk appraisal for every individual in the elder population will become even more desirable. As life expectancy is increased, a life style that enables full participation until the end should become the goal.

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# APPENDICES

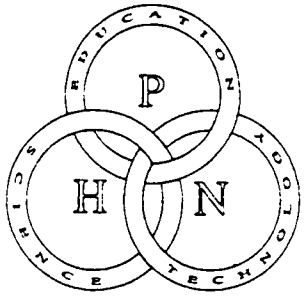
# APPENDIX A

# SURVEY INSTRUMENT

# HEALTHY LIVING

## AN APPRAISAL PROGRAM

## FOR OLDER AMERICANS




The HEALTHIER PEOPLE NETWORK Inc. 1549 Clairmont Road, Suite 205
Decatur, GA 30033 (404) 636-3127

# HEALTHY LIVING

## AN APPRAISAL PROGRAM FOR OLDER AMERICANS

This Health Risk Appraisal is for Americans age 55 and older. It shows choices you can make to keep in good health, maintain independent living, and guard the quality of your life as you grow older. The "HEALTHY LIVING" appraisal is not a substitute for a check-up or physical exam that you get from a doctor or nurse. In fact, you may want to ask your health provider to read the report with you and help you interpret it. Your report will suggest routine services you should seek from your medical provider. These are important to the maintenance of your health and well being. Equally important are the things you can do by yourself or with your family or friends to stay healthy. To get the most accurate results, answer as many questions as you can.

| | |
|---|---|
| IDENTIFICATION NO: | _ _ _ - _ _ - _ _ _ _ |
| TODAY'S DATE: | Month____; Day____; Year___; |
| Q-1. What is your sex? | ☐1 Male ☐2 Female |
| Q-2a. Your Age Today | [ ] Years |
| Q-2b. When were you born? | Month____; Day____; Year___; |
| **Your health care provider may need to provide information for some of the following questions. If you do not know the answers, leave them blank.** | |
| Q-3. What is your height?___ | [ ] Ft. [ ] In. |
| Q-4. What is your weight? | [ ] lbs |
| Q-5. What is your body frame size? | ☐1 Small; ☐2 Medium; ☐3 Large |

(2) Please Turn to Next Page

| | |
|---|---|
| Q-6a. Have you ever been told that you have diabetes or sugar diabetes? | ☐1 Yes ☐2 No |
| Q-6b. What is your Fasting Blood Glucose Level? | ☐☐☐ mg/dl |
| Q-7. Are you now taking medicine for high blood pressure? | ☐1 Yes ☐2 No |
| Q-8. What is your blood pressure now?<br>**OR**<br>Q-9. If you *do not* know the numbers, check the box that describes your blood pressure. | Systolic: ☐☐☐ mmHg<br>Diastolic: ☐☐☐ mmHg<br>☐1 High<br>☐2 Normal or Low<br>☐3 Don't Know |

| | |
|---|---|
| Q-10. What is your total cholesterol level? | ☐☐☐ mg/dl |
| Q-11. What is your HDL cholesterol level? | ☐☐☐ mg/dl |

| | |
|---|---|
| Q-12. How many cigars do you usually smoke per day? | ☐☐☐ cigars per day |
| Q-13. How many pipes of tobacco do you usually smoke per day? | ☐☐☐ pipes per day |
| Q-14. How many times per day do you usually use smokeless tobacco? Chewing tobacco, snuff, pouches, etc | ☐☐☐ times per day |

| | |
|---|---|
| **CIGARETTE SMOKING**<br>Q-15. How would you describe your cigarette smoking habits? | ☐1 Never Smoke<br>☐2 Used to Smoke<br>☐3 Still Smoke |
| **STILL SMOKE**<br>Q-16. How many cigarettes a day do you smoke? **(Go to Q-18.)** | ☐☐☐ cigarettes per day |
| **USED TO SMOKE**<br>Q-17a. How many years has it been since you smoked cigarettes fairly regularly?<br>Q-17b. What was the average number of cigarettes per day that you smoked in the 2 years before you quit? | ☐☐☐ years<br>☐☐☐ cigarettesper day |

(3) Please Turn to Next Page

| **The next questions have to do with your lifestyle habits that are important to your health** | |
|---|---|
| Q-18a. Do you ever drive? | ☐1 Yes ☐2 No |
| Q-18b. In the next 12 months how many thousands of miles will you probably travel by each of the following? (NOTE: U.S. average = 10,000 miles) | Car, truck, or van: ___,000 miles<br>Motorcycle: ___,000 miles |
| Q-19. On a typical day how do you USUALLY travel? (Check one only) | ☐1 Walk<br>☐2 Bicycle<br>☐3 Motorcycle<br>☐4 Sub-compact or compact car<br>☐5 Mid-size or full-size car<br>☐6 Truck or van<br>☐7 Bus, subway, or train |
| Q-20. What percent of the time do you usually buckle your safety belt when driving or riding? | ☐ % |
| Q-21. On the average, how close to the speed limit do you usually drive? | ☐1 Within 5 mph of limit<br>☐2 6-10 mph over limit<br>☐3 11-15 mph over limit<br>☐4 More than 15 mph over limit |
| Q-22. How many times in the last month did you drive or ride when the driver had perhaps too much alcohol to drink? | ☐ Times last month |
| Q-23a. How many drinks of alcoholic beverage do you have in a typical week? | ☐ Bottles or cans of beer per week<br>☐ Glasses of wine per week<br>☐ Wine coolers per week<br>☐ Mixed drinks or shots per week |
| Q-23b. Do you use drugs with a relaxing or sedating effect? (For example, valium or antidepressants.) | ☐1 Yes ☐3 Don't Know<br>☐2 No ☐4 Does Not Apply |
| Q-23c. In an average week, how many different medicines, drugs, and vitamins do you take include both prescription and non-prescription drugs? | ☐ Per week |

| **WOMEN ONLY**<br>**(Men go to Q-33)** | |
|---|---|
| Questions Q-24 to Q-32 are for Women only. | |
| Q-24. At what age did you have your first menstrual period? | ☐ Years Old |
| Q-25. How old were you when your first child was born? | ☐ Years Old<br>*(if no children, write 0)* |
| Q-26. About how long has it been since your last breast x-ray mammogram? | ☐1 Less than 1 year ago<br>☐2 1 year ago<br>☐3 2 years ago<br>☐4 3 or more years ago<br>☐5 Never |
| Q-27. How many women in your natural family mother and sisters only have had breast cancer? | ☐ women |
| Q-28. Have you had a hysterectomy operation? | ☐1 Yes ☐2 No ☐3 Not Sure |
| Q-29. How long has it been since you had a Pap smear? | ☐1 Less than 1 year ago<br>☐2 1 year ago<br>☐3 2 years ago<br>☐4 3 or more years ago<br>☐5 Never |
| Q-30. How often do you examine your breasts for lumps? | ☐1 Monthly<br>☐2 Once ever few months<br>☐3 Rarely or never |
| Q-31. About how long has it been since you had your breasts examined by a physician or nurse? | ☐1 Less than 1 year ago<br>☐2 1 year ago<br>☐3 2 years ago<br>☐4 3 or more years ago<br>☐5 Never |
| Q-32. About how long has it been since you had a rectal exam? | ☐1 Less than 1 year ago<br>☐2 1 year ago<br>☐3 2 years ago<br>☐4 3 or more years ago<br>☐5 Never |

**MEN ONLY**

**(Women go to Q-34)**

Question Q-33 is for Men only.

| | |
|---|---|
| Q-33. About how long has it been since you had a rectal or prostate exam? | ☐1 Less than 1 year ago<br>☐2 1 year ago<br>☐3 2 years ago<br>☐4 3 or more years ago<br>☐5 Never |
| Q-34. How many times in the last year did you witness or become involved in a violent fight or attack where there was a good chance of a serious injury to someone? | ☐1 4 or more times<br>☐2 2 or 3 times<br>☐3 1 time or never<br>☐4 Not sure |
| Q-35. Considering your age, how would you describe your overall physical health? | ☐1 Excellent ☐3 Fair<br>☐2 Good ☐4 Poor |
| Q-36. In an average week, how many times do you engage in physical activity exercise or work which lasts at least 20 minutes without stopping, and which is hard enough to make you breathe heavier and heart beat faster? | ☐1 Less than 1 time per week<br>☐2 1 to 2 times per week<br>☐3 At least 3 times per week |
| Q-37. If you ride a motorcycle or all-terrain vehicle ATV what percent of the time do you wear a helmet? | ☐1 75% to 100%<br>☐2 25% to 74%<br>☐3 Less than 25%<br>☐4 Does not apply to me |
| Q-38. Do you eat some food every day that is high in fiber? For example, whole grain bread, cereal, fresh fruits, or vegetables. | ☐1 Yes ☐3 Don't Know<br>☐2 No ☐4 Does Not Apply |
| Q-39. Do you eat foods every day that are high in cholesterol or saturated fat? For example, fatty meat, cheese, fried foods, or eggs. | ☐1 Yes ☐3 Don't Know<br>☐2 No ☐4 Does Not Apply |
| Q-40. In general, how satisfied are you with your life? | ☐1 Mostly Satisfied<br>☐2 Partly Satisfied<br>☐3 Not Satisfied |

| | |
|---|---|
| Q-41. Have you suffered a personal loss or misfortune in the past year that had a serious impact on your life? For example, a job loss, disability, separation, jail term, or the death of someone close to you. | ☐1 Yes, 1 serious loss or misfortune<br>☐2 Yes, 2 or more<br>☐3 No |
| Q-42a. What is your Race? | ☐1 White<br>☐2 Hispanic/Latino<br>☐3 Asian<br>☐4 Black/African-American<br>☐5 Native American/Indian<br>☐6 Other<br>☐7 Don't Know |
| Q-42b. Are you of Hispanic Origin such as Mexican-American, Puerto Rican, or Cuban? | ☐1 Yes ☐2 No |
| Q-43. What is the highest Grade you completed in school? | ☐1 Grade School or less<br>☐2 Some High School<br>☐3 High School Graduate<br>☐4 Technical School<br>☐5 Some college<br>☐6 College Graduate<br>☐7 Post-Graduate or Professional School |

| **For each item below, circle the most appropriate response.** | | | | |
|---|---|---|---|---|
| **Have you ever been told by a health care provider that you have...** | **Yes** | **No** | **Don't Know** | **Does Not Apply** |
| X-1. diabetes or sugar diabetes? | Y | N | DK | NA |
| X-2. had a stroke? | Y | N | DK | NA |
| X-3. had a heart attack? | Y | N | DK | NA |
| X-4. left ventricular hypertrophy? | Y | N | DK | NA |
| X-5. breast cancer? | Y | N | DK | NA |
| X-6. emphysema/chronic bronchitis? | Y | N | DK | NA |
| X-7. urinary incontinence? | Y | N | DK | NA |
| X-8. arthritis? | Y | N | DK | NA |
| X-9. Parkinson's disease? | Y | N | DK | NA |
| X-10. depression? | Y | N | DK | NA |
| X-11. a neurologic disease? | Y | N | DK | NA |
| X-12. chronic obstructive pulmonary disease? | Y | N | DK | NA |
| X-13. hearing impairment? | Y | N | DK | NA |
| X-14. vision impairment? | Y | N | DK | NA |
| X-15. blindness? | Y | N | DK | NA |
| X-16. deafness? | Y | N | DK | NA |

(7) Please Turn to Next Page

| For each item below, circle either Yes or No. | Yes | No |
|---|---|---|
| X-17. Have you fallen three or more times in the past year? | Y | N |
| X-18. Have you been injured by a fall one or more times in the past year? | Y | N |
| X-19. Do you have difficulty walking such as hobbling, shuffling, or not being able to walk a straight line? | Y | N |
| X-20. Do you have difficulty telling how far things are away from you? | Y | N |
| X-21. Have you ever had a serious reaction to any medication nonprescribed or prescribed? | Y | N |

| | |
|---|---|
| X-22. If you know you have diabetes mellitus, what kind do you have? | ☐1 Juvenile-onset, type I diabetes, or insulin-dependent diabetes<br>☐2 Adult-onset, type II diabetes, or non-insulin-dependent diabetes<br>☐3 I know I <u>do not</u> have diabetes Mellitus<br>☐4 Don't know |
| X-23. Do you ever have difficulty holding your urine until you get to a toilet? | ☐1 Yes ☐3 Don't Know<br>☐2 No ☐4 Does Not Apply |
| X-24. Do you ever leak or lose urine when you cough, sneeze, or laugh? | ☐1 Yes ☐3 Don't Know<br>☐2 No ☐4 Does Not Apply |
| X-25. About when was the last time you had a physical exam from your health provider? | ☐1 Less than 1 year ago<br>☐2 1 year ago<br>☐3 2 years ago<br>☐4 3 or more years ago<br>☐5 Never |
| X-26. Have you had a pneumonia shot since turning age 55? | ☐1 Yes ☐3 Don't Know<br>☐2 No ☐4 Does Not Apply |
| X-27. Within the last 12 months, have you had an influenza shot? | ☐1 Yes ☐3 Don't Know<br>☐2 No ☐4 Does Not Apply |
| X-28. About how long has it been since you have had a tetanus-diphtheria shot? | ☐1 11 or more years ago<br>☐2 1 to 10 years ago<br>☐3 Don't Know<br>☐4 Does Not Apply |

| | |
|---|---|
| F-1. How often do you get out of the house? | ☐1 Once a day or more<br>☐2 At leas' 3 times per week<br>☐3 1 to 2 times per week<br>☐4 Less than 1 time per week |
| F-2. Do you ever walk a mile? | ☐1 Yes ☐2 No |
| F-3. How often do you limit your activities because of your fear of crime? | ☐1 Frequently<br>☐2 Occasionally<br>☐3 Hardly ever |

| **For each item below, circle the most appropriate answer.**<br>**Because of health or physical problems, do you have <u>any</u> difficulty...** | **Yes** | **No** | **Don't Know** | **No for other reasons** |
|---|---|---|---|---|
| F-4. Bathing or showering? | Y | N | DK | OR |
| F-5. Dressing? | Y | N | DK | OR |
| F-6. Eating? | Y | N | DK | OR |
| F-7. Getting in and out of bed or chairs? | Y | N | DK | OR |
| F-8. Walking? | Y | N | DK | OR |
| F-9. Getting outside? | Y | N | DK | OR |
| F-10. Using the toilet, including getting to the toilet? | Y | N | DK | OR |
| F-11. Preparing your own meals? | Y | N | DK | OR |
| F-12. Shopping for personal items, such as toilet items or medicine? | Y | N | DK | OR |
| F-13. Managing your money, such as keeping track of expenses or paying bills? | Y | N | DK | OR |
| F-14. Using the telephone? | Y | N | DK | OR |
| F-15. Doing heavy housework, like scrubbing floors, or washing windows? | Y | N | DK | OR |
| F-16. Doing light housework, like doing dishes, straightening up, or light cleaning? | Y | N | DK | OR |

| **For each item below, circle the most appropriate answer.**<br>**By yourself and not using aids, do you have <u>any</u> difficulty...** | **Yes** | **No** | **Don't Know** | **No for other reasons** |
|---|---|---|---|---|
| F-17. Walking for a quarter of a mile that is about 2 or 3 blocks? | Y | N | DK | OR |
| F-18. Walking a half mile without help? That's about 8 ordinary blocks. | Y | N | DK | OR |
| F-19. Walking up 10 stairs? | Y | N | DK | OR |
| F-20. Walking up 10 stairs without resting? | Y | N | DK | OR |
| F-21. Walking up and down the stairs to the second floor without help? | Y | N | DK | OR |
| F-22. Lifting or carrying something as heavy as 25 pounds such as two full bags of groceries? | Y | N | DK | OR |

| **For each item below, check the most appropriate answer.** | |
|---|---|
| B-1. How many relatives do you see or hear from at least once a month? Note: include in-laws with relatives. | ☐1 Zero<br>☐2 One<br>☐3 Two<br>☐4 Three or Four<br>☐5 Five to Eight<br>☐6 Nine or more |
| B-2. How often do you see or hear from the relative with whom you have the most contact? | ☐1 Less than Monthly<br>☐2 Monthly<br>☐3 A few times a month<br>☐4 Weekly<br>☐5 A few times a week<br>☐6 Daily |
| B-3. How many relatives do you feel close to? That is, how many of them do you feel at ease with, can talk to about private matters, or can call on for help? | ☐1 Zero<br>☐2 One<br>☐3 Two<br>☐4 Three or Four<br>☐5 Five to Eight<br>☐6 Nine or more |
| B-4. Do you have close friends with whom you feel at ease, can talk to about private matters, or can call on for help? If so, how many? | ☐1 Zero<br>☐2 One<br>☐3 Two<br>☐4 Three or Four<br>☐5 Five to Eight<br>☐6 Nine or more |
| B-5. How many of these friends do you see or hear from at least once a month? | ☐1 Zero<br>☐2 One<br>☐3 Two<br>☐4 Three or Four<br>☐5 Five to Eight<br>☐6 Nine or more |
| B-6. How often do you hear from the friend with whom you have the most contact? | ☐1 Less than Monthly<br>☐2 Monthly<br>☐3 A few times a month<br>☐4 Weekly<br>☐5 A few times a week<br>☐6 Daily |

| | |
|---|---|
| B-7. When you have an impo.tant decision to make, do you have someone you can talk to about it? | ☐1 Always<br>☐2 Very often<br>☐3 Often<br>☐4 Sometimes<br>☐5 Seldom<br>☐6 Never |
| B-8. When other people you know have an important decision to make, do they talk to you about it? | ☐1 Always<br>☐2 Very often<br>☐3 Often<br>☐4 Sometimes<br>☐5 Seldom<br>☐6 Never |
| B-9. Does anybody rely on you to do something for them each day? For example: shopping, cooking dinner, doing repairs, cleaning house, providing child care, etc. | ☐1 Yes. Skip to question B-11<br>☐2 No. Go on to question B-10 |
| B-10. Do you help anybody with things like shopping, filling out forms, doing repairs, providing child care, etc.? | ☐1 Always<br>☐2 Very often<br>☐3 Often<br>☐4 Sometimes<br>☐5 Seldom<br>☐6 Never |
| B-11. Do you live alone or with other people? Note: Include in-laws with relatives | ☐1 Live with spouse and perhaps others<br>☐2 Live with other relatives or friends<br>☐3 Live with other unrelated individuals e.g. paid help<br>☐4 Live alone |
| B-12 How many hours a day are you home alone? | ☐1 Zero to four hours<br>☐2 Five to ten hours<br>☐3 Eleven to fifteen hours<br>☐4 Sixteen or more hours |

| For each item below, circle the most appropriate answer | Less than 1 year ago | 1 year ago | 2 years ago | 3 or more years ago | Never |
|---|---|---|---|---|---|
| H-1. About when was the last time you saw a dentist about your teeth? | L | 1 | 2 | 3 | N |
| H-2. About when was the last time you had your hearing checked? | L | 1 | 2 | 3 | N |
| H-3. About when was the last time you had an eye exam? | L | 1 | 2 | 3 | N |

| For each item below, circle the most appropriate answer that best describes your corrected vision (with glasses or contacts). | Yes | No | Don't Know | Does Not Apply |
|---|---|---|---|---|
| H-4. Can you see well enough to recognize a friend across the street? | Y | N | DK | NA |
| H-5. Can you see well enough to recognize a friend across a room? | Y | N | DK | NA |
| H-6. Can you see well enough to recognize a friend who is at arms length away? | Y | N | DK | NA |
| H-7. Can you see well enough to recognize a friend if you get close to his/her face? | Y | N | DK | NA |
| H-8. Can you see well enough to read ordinary newspaper print? | Y | N | DK | NA |
| H-9. Can you see well enough to read large print such as newspaper headlines? | Y | N | DK | NA |
| H-10. If you wear glasses, is your prescription up-to-date? | Y | N | DK | NA |
| H-11. When looking straight ahead, can you see well enough to realize if a friend is standing directly on either side of you? | Y | N | DK | NA |

| | | | | |
|---|---|---|---|---|
| H-12. Does a hearing problem cause you to feel embarrassed when you meet new people? | Y | N | DK | NA |
| H-13. Does a hearing problem cause you to feel frustrated when talking to members of your family? | Y | N | DK | NA |

| For each item below, circle the answer most appropriate. | Yes | No | Don't Know | Does Not Apply |
|---|---|---|---|---|
| H-14. Do you have difficulty hearing when someone speaks in whisper? | Y | N | DK | NA |
| H-15. Do you feel handicapped by a hearing problem? | Y | N | DK | NA |
| H-16. Does a hearing problem cause you difficulty when visiting friends, relatives, or neighbors? | Y | N | DK | NA |

| For each item below, circle the answer most appropriate. | Yes | No | Don't Know | Does Not Apply |
|---|---|---|---|---|
| H-17. Does a hearing problem cause you to attend religious services less often than you would like? | Y | N | DK | NA |
| H-18. Does a hearing problem cause you to have arguments with family members? | Y | N | DK | NA |
| H-19. Does a hearing problem cause you difficulty when listening to television or radio? | Y | N | DK | NA |
| H-20. Do you feel that any difficulty with your hearing limits or hampers your personal or social life? | Y | N | DK | NA |
| H-21. Does a hearing problem cause you difficulty when in a restaurant with relatives or friends? | Y | N | DK | NA |
| H-22. Do you wear dentures? | Y | N | DK | NA |

| For each item below, circle the most appropriate answer for in and around your home. | Yes | No | Don't Know | Does Not Apply |
|---|---|---|---|---|
| E-1. Do you have enough lighting to get rid of shadowy areas? | Y | N | DK | NA |
| E-2. Do all rugs, runners, and mats have non-skid backing? | Y | N | DK | NA |
| E-3. Do you have any carpet edges which are curling, uneven, or loose? | Y | N | DK | NA |
| E-4. Are all small object always put away so that they are never out in walkways and stairways? For example, glasses, magazines, cords, garden tools, etc. | Y | N | DK | NA |
| E-5. Do you have any areas where you typically go around your house which can be slippery when wet or icy? | Y | N | DK | NA |
| E-6. Do you typically use any bathtubs or showers with slippery surfaces or without non-skid mats? | Y | N | DK | NA |
| E-7. Do you typically use any bathtubs or showers that do not have grab bars? | Y | N | DK | NA |
| E-8. Are any stairs or steps you typically use poorly lit? | Y | N | DK | NA |
| E-9. Are any of the stairs or steps you typically use rough or uneven? | Y | N | DK | NA |
| E-10. Are any of the stairs or steps you typically use without sturdy handrails? | Y | N | DK | NA |
| E-11. Are all ladders and step stools you typically use sturdy? | Y | N | DK | NA |
| E-12. Does your home have a smoke dectector? | Y | N | DK | NA |
| E-13. Is the hot water in your house hot enough so that it could burn you? | Y | N | DK | NA |

| For each item below, circle either Yes or No | YES | NO |
|---|---|---|
| n-1. Do you now have a illness or condition that interferes with your eating? | Y | N |
| n-2. Do you have an illness that has cut down on your appetite? | Y | N |
| n-3. Do you have trouble biting or chewing any kind of food? | Y | N |
| n-4. Are there any kinds of foods that you don't eat because they disagree with you? | Y | N |
| n-5. Do you wear dentures? | Y | N |
| n-6. Have you had any spells of pain or discomfort for 3 days or more in your abdomen or stomach in the past month? | Y | N |
| n-7. Did you have any trouble swallowing at least three days in the last month? | Y | N |
| n-8. Did you have any vomiting at least 3 days in the last month? | Y | N |
| n-9. Do you have any trouble with your bowels that makes you constipated or gives you diarrhea? | Y | N |
| n-10. Have you gained or lost any weight in the last 30 days? (Note: net gain/loss must have exceeded 10 pounds) | Y | N |
| n-11. Have you ever had an operation on your abdomen? | Y | N |
| n-12. Have you ever been told by a doctor that you were "anemic" (had iron poor blood)? | Y | N |
| n-13. Do you smoke cigarettes regularly now? | Y | N |
| n-14. In the past month, have you taken any medicines prescribed by a doctor? | Y | N |
| n-15. In the past month, have you taken any other medicines that were not prescribed by a doctor? | Y | N |
| n-16. Are you now on any kind of a special diet? | Y | N |
| n-17. I have an illness or condition that made me change the kind and/or amount of food I eat. | Y | N |
| n-18. I eat fewer than 2 meals per day. | Y | N |
| n-19. I eat few fruits or vegetables, or milk products. | Y | N |
| n-20. I have 3 or more drinks of beer, liquor or wine almost every day. | Y | N |
| n-21. I have tooth or mouth problems that make it hard for me to eat. | Y | N |
| n-22. I don't always have enough money to buy the food I need. | Y | N |
| n-23. I eat alone most of the time. | Y | N |
| n-24. I take 3 or more different prescribed or over-the-counter drugs a day. | Y | N |
| n-25. Without wanting to, I have lost or gained 10 pounds in the last 6 months. | Y | N |
| n-26. I am not always physically able to shop, cook and/or feed myself. | Y | N |

(14) Please Turn to Next Page

| **First**, For each statement below, circle the most appropriate responses to describe your feelings during the past week. | | | | | **Second**: Now go through and place a √ next to those state-ments that describe how you have felt for more than 3 months |
|---|---|---|---|---|---|
| | **Rarely** or none of the time | **Some** or little of the time | **Occasionally** or a moderate amount of time | **Most** or all of the time | |
| M-1. I was bothered by things that usually don't bother me. | R | S | O | M | |
| M-2. I did not feel like eating; my appetite was poor. | R | S | O | M | |
| M-3. I felt that I could not shake off the blues even with help from my family or friends. | R | S | O | M | |
| M-4. I felt that I was just as good as other people. | R | S | O | M | |
| M-5. I had trouble keeping my mind on what I was doing. | R | S | O | M | |
| M-6. I felt depressed. | R | S | O | M | |
| M-7. I felt that everything I did was an effort. | R | S | O | M | |
| M-8. I felt hopeful about the future. | R | S | O | M | |
| M-9. I thought my life had been a failure. | R | S | O | M | |
| M-10. I felt fearful. | R | S | O | M | |
| M-11. My sleep was restless. | R | S | O | M | |
| M-12. I was happy. | R | S | O | M | |
| M-13. I talked less than usual. | R | S | O | M | |
| M-14. I felt lonely. | R | S | O | M | |
| M-15. People were unfriendly. | R | S | O | M | |
| M-16. I enjoyed life. | R | S | O | M | |
| M-17. I had crying spells. | R | S | O | M | |
| M-18. I felt sad. | R | S | O | M | |
| M-19. I felt that people dislike me. | R | S | O | M | |
| M-20. I could not "get going". | R | S | O | M | |

| | |
|---|---|
| D-1. What state do you live in? | ___ ___ |
| D-2. What is your Zip Code? | ___ ___ ___ ___ ___ |
| D-3. What is your current marital status? | ☐1 Married ☐4 Widowed<br>☐2 separated ☐5 Never married<br>☐3 Divorced |
| D-4. What is your annual income? | ☐1 $5,000 or less<br>☐2 $5,001 - $9,999<br>☐3 $10,000 - $19,999<br>☐4 $20,000 - $29,999<br>☐5 $30,000 - $39,999<br>☐6 $40,000 or more |
| D-5 Are you currently employed? | ☐1 Yes ☐2 No |
| D-6. What is your main health insurance coverage? | ☐1 No coverage<br>☐2 Medicare only<br>☐3 Medicaid/Access only<br>☐4 Both Medicare & Medicaid<br>☐5 MediGap/Supplemental insurance<br>☐6 Veterans —B—C<br>☐7 Private insurance<br>☐8 Employer insurance<br>☐9 Other (please specify) _____ |
| D-7. Would you like to have an additional copy of this report to give to your health provider, family member, or a support person? | ☐1 Yes ☐2 No |
| D-8. Would you be interested in free information on how to prepare for difficult health decisions (e.g. living wills)? | ☐1 Yes ☐2 No |

| |
|---|
| D-9. Last Name _____ First Name _____ MI ___ |
| D-10. Address _____ |
| City _____ State ___ Zip ___ ___ ___ ___ ___ |

(16) THANK YOU.

# APPENDIX B

## COMPARISON OF POPULATION
## 1970 & 1990

Comparison of U.S. and Tennessee Populations

United States

| | 1970 | 1980 | 1990 |
|---|---|---|---|
| 60-64 | 8,648,931 | 10,134,804 | 10,616,167 |
| 65-74 | 12,432,097 | 15,590,108 | 18,106,558 |
| 75-84 | 6,153,981 | 7,715,599 | 10,055,106 |
| 85+ | 1,515,091 | 2,192,679 | 3080165 |

Total population as of 1990.....248,709,873

Tennessee

| | | | |
|---|---|---|---|
| 60-64 | 174,181 | 201,947 | 213,637 |
| 65-74 | 242,016 | 323,027 | 357,423 |
| 75-84 | 113,374 | 153,118 | 202,061 |
| 85+ | 28,816 | 41,446 | 58,794 |

Total population as of 1990.....4,877,185

U.S. Census, 1970, 1980, 1990, U.S. Census Tracts, 1980, 1991, Tn Statis. Abs., 1991.

# APPENDIX C

## EAST TENNESSEE DEVELOPMENT DISTRICT
## PERCENT OF POPULATION OVER SIXTY-FIVE
## 1975-1980-1990

EAST TENNESSEE DEVELOPMENT DISTRICT

| County | % of Population Over Sixty-Five | | |
|---|---|---|---|
| | 1975 | 1980 | 1990 |
| Anderson | 9.7 | 11.0 | 15.4 |
| Blount | 10.5 | 11.7 | 14.7 |
| Campbell | 12.4 | 12.8 | 14.7 |
| Clairborne | 11.3 | 11.2 | 13.0 |
| Cocke | 9.5 | 11.0 | 12.9 |
| Grainger | 10.3 | 11.6 | 12.9 |
| Hamblin | 8.3 | 9.1 | 12.0 |
| Jefferson | 10.2 | 11.4 | 13.3 |
| Knox | 10.7 | 11.2 | 12.7 |
| Loudon | 10.9 | 13.2 | 14.6 |
| Monroe | 10.7 | 11.6 | 13.7 |
| Morgan | 10.9 | 11.1 | 11.8 |
| Roane | 10.2 | 10.8 | 14.9 |
| Scott | 10.2 | 10.7 | 12.0 |
| Sevier | 10.3 | 11.0 | 12.6 |
| Union | 10.2 | 10.7 | 11.0 |

# APPENDIX D

## DATA FOR SAMPLE SIZE BY COUNTY

Sample Size By County
Population 60 Plus

| County | Total # in County | % of Area 02 Total | # Needed Actual | # Needed Rounded |
|---|---|---|---|---|
| Anderson | 14,101 | .0879 | 23.57 | 24 |
| Blount | 16,560 | .1023 | 27.99 | 28 |
| Campbell | 6,830 | .0426 | 11.54 | 12 |
| Clairborne | 4,528 | .0282 | 7.65 | 8 |
| Cocke | 5,190 | .0323 | 8.77 | 9 |
| Grainger | 3,016 | .0188 | 5.09 | 5 |
| Hamblin | 8,390 | .0523 | 14.28 | 14 |
| Jefferson | 6,027 | .0375 | 10.18 | 10 |
| Knox | 57,690 | .3598 | 97.51 | 98 |
| Loudon | 6,156 | .0383 | 10.40 | 10 |
| Morgan | 2,757 | .0171 | 4.66 | 5 |
| Monroe | 5,549 | .0346 | 9.38 | 9 |
| Roane | 9,718 | .0606 | 16.42 | 16 |
| Scott | 2,955 | .0184 | 4.99 | 5 |
| Sevier | 8,816 | .0549 | 14.90 | 15 |
| Union | 2,025 | .0126 | 3.42 | 3 |
| | 160,308 | | | 271 |

Sample Size by County
Age Sub-sets

| County | Age Sub-sets | Actual Census # | Sample Size |
|---|---|---|---|
| Anderson | 60-64 | 3,616 | 6 |
| | 65-74 | 6,431 | 11 |
| | 75-84 | 3,279 | 6 |
| | 85+ | 775 | 1 |
| | | | 24 |
| Blount | 60-64 | 3,952 | 7 |
| | 65-74 | 7,498 | 13 |
| | 75-84 | 4,008 | 7 |
| | 85+ | 1,079 | 2 |
| | | | 28 |
| Campbell | 60-64 | 1,670 | 3 |
| | 65-74 | 2,967 | 5 |
| | 75-74 | 1,743 | 3 |
| | 85+ | 450 | 1 |
| | | | 12 |
| Clairborne | 60-64 | 1,130 | 2 |
| | 65-74 | 2,024 | 3 |
| | 75-84 | 1,057 | 2 |
| | 85+ | 317 | 1 |
| | | | 8 |
| Cocke | 60-64 | 1,440 | 2 |
| | 65-74 | 2,132 | 4 |
| | 75-84 | 1,292 | 2 |
| | 85+ | 326 | 1 |
| | | | 9 |
| Grainger | 60-64 | 810 | 1 |
| | 65-74 | 1,254 | 2 |
| | 75-84 | 756 | 1 |
| | 85+ | 196 | 1 |
| | | | 9 |

| | | | |
|---|---|---|---|
| Hamblin | 60-64 | 2,354 | 4 |
| | 65-74 | 3,728 | 6 |
| | 75-84 | 1,814 | 3 |
| | 85+ | 402 | 1 |
| | | | 10 |
| Jefferson | 60-64 | 1,628 | 3 |
| | 65-74 | 2,618 | 4 |
| | 75-84 | 1,375 | 2 |
| | 85+ | 402 | 1 |
| | | | 10 |
| Knox | 60-64 | 15,000 | 25 |
| | 65-74 | 24,818 | 42 |
| | 75-84 | 13,829 | 23 |
| | 85+ | 4,043 | 7 |
| | | | 98 |
| Loudon | 60-64 | 1,603 | 3 |
| | 65-74 | 2,717 | 5 |
| | 75-84 | 1,455 | 2 |
| | 85+ | 192 | 1 |
| | | | 5 |
| Morgan | 60-64 | ,723 | 1 |
| | 65-74 | 1,168 | 2 |
| | 75-84 | 674 | 1 |
| | 85+ | 192 | 1 |
| | | | 5 |
| Monroe | 60-64 | 1,360 | 2 |
| | 65-74 | 2,475 | 4 |
| | 75-84 | 1,337 | 2 |
| | 85+ | 377 | 1 |
| | | | 9 |
| Roane | 60-64 | 2,663 | 4 |
| | 65-74 | 4,386 | 7 |
| | 75-84 | 2,090 | 4 |
| | 85+ | 579 | 1 |
| | | | 16 |

| | | | |
|---|---|---|---|
| Scott | 60-64 | 755 | 1 |
| | 65-74 | 1,266 | 2 |
| | 75-84 | 713 | 1 |
| | 85+ | 221 | 1 |
| | | | 5 |
| Sevier | 60-64 | 2,408 | 4 |
| | 65-74 | 3,957 | 7 |
| | 75-84 | 1,902 | 3 |
| | 85+ | 558 | 1 |
| | | | 15 |
| Union | 60-64 | 515 | 1 |
| | 64-74 | 855 | 1 |
| | 75-84 | 514 | 1 |
| | 85+ | 142 | 1 |
| | | | 4 |

# APPENDIX E

# LETTER OF INFORMED CONCENT

## University of Tennesssee

**INFORMED CONCENT**

As a doctoral student in Health Education at the University of Tennessee, I am conducting significant research on the present health profile of East Tennessee's Community Dwelling Elderly Aged 60 Plus. I would like you to participate in this study.

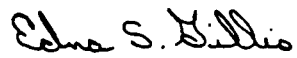
The study involves a computerized health risk appraisal which was developed by the Healthier People Network in Decatur, GA. This is a pilot program of an instrument that deals directly with the concerns of the elderly population.

This research is important in gathering information about the health needs of East Tennessee elderly. As a result of participating in this study, you will receive an individualized computer printout with advisory messages based on your answers. Your responses will be completely confidential, identified only by number.

Participation is completely voluntary and you may withdraw at any time. There are no anticipated risks. Nonparticipation is without penalty.

If you are willing to participate in this study, please complete the form at the bottom of this page. Feel free to ask me any questions now or while completing the survey. Thank you for your cooperation.

Sincerely,



Edna S. Gillis, M.S., CHES
doctoral student

---

I, _____ ,agree to participate in the "healthy Living" study. I have been informed as to the nature of the study and the report form I will receive. I understand that in order to obtain my report, I will need to produce the numbered tab I will receive upon turning in the form.

_____

Signature Date Form Number

---

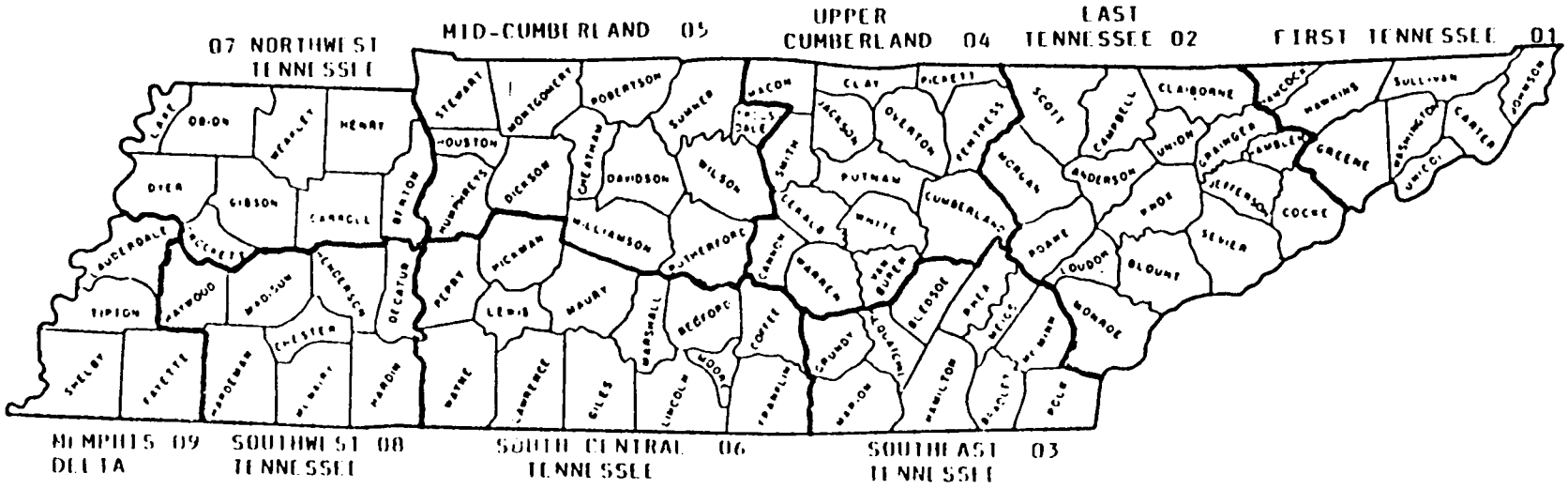
Keep this tab with the number to identify your report form and your individualized computer analysis. Thank you again for your cooperation.

_____

Form Number

# APPENDIX F

## MAP OF EAST TENNESSEE DEVELOPMENT DISTRICT




MAP OF EAST TENNESSEE DEVELOPMENT DISTRICT

# APPENDIX G

# HEALTH RISK APPRAISAL
# INDIVIDUAL REPORT

Healthier Living

37520
Female Age 78

Sat Apr 02 1994
Version 4.0

| | NOW | TARGET | |
|---|---|---|---|
| YOUR RISK AGE: | 75.26 years | 75.13 years | <-- Risks are elevated due to family breast cancer. |

THIS REPORT CONTAINS ESTIMATES DUE TO MISSING ITEMS, INCLUDING THE FOLLOWING:
Total Cholesterol, HDL Cholesterol.

Many serious injuries and health problems can be prevented. Your Health Risk Appraisal lists factors you can change to lower your risk. For causes of death that are not directly computable, the report uses the average risk for persons of your age and sex. More technical detail about the report is on page 2.

| MOST COMMON CAUSES OF DEATH | NUMBER OF DEATHS IN NEXT 10 YEARS FOR 1000 WOMEN AGE 78 | | | MODIFIABLE RISK FACTORS |
|---|---|---|---|---|
| | YOUR GROUP | TARGET | POPULATION AVERAGE | |
| Heart Attack | 88 | 85 | 150 | Weight |
| Stroke | 34 | 34 | 59 | Don't Smoke, Keep your Blood Pressure Low |
| Breast Cancer | 27 | 27 | 11 | A Low-Fat Diet and Regular Exams Might Reduce Risk |
| Influenza Pneumonia | 20 | 20 | 23 | Continue to Avoid Tobacco Smoke |
| Artery Disease | 14* | 14* | 14 | Don't Smoke, Keep your Cholesterol Low |
| Colon Cancer | 12* | 12* | 12 | A High-Fiber and Low-Fat Diet Might Reduce Risk |
| Diabetes Mellitus | 11 | 11 | 11 | Control Your Weight and Follow Your Doctor's Advice |
| Hypertensive Disease | 10* | 10* | 10 | Ask Your Doctor or Nurse for Things You Can Do |
| Kidney Failure | 6 | 6 | 7 | Ask Your Doctor or Nurse for Things You Can Do |
| Lymphoma | 6* | 6* | 6 | |
| Pancreas Cancer | 5 | 5 | 6 | Continue to Avoid Smoking |
| Ovary Cancer | 4* | 4* | 4 | Get Regular Exams |
| All Other | 181 | 180 | 204 | |
| | | | | * = Average Value Used |
| TOTAL: | 417 | 413 | 515 | Deaths in Next 10 Years Per 1,000 WOMEN, Age 78 |

For Height 5'7" and Medium Frame, 170 pounds is about 25% Overweight. Desirable Weight Range: 129-142

| GOOD HABITS | TO IMPROVE YOUR RISK PROFILE: | RISK YEARS GAINED |
|---|---|---|
| + You don't smoke | - Bring your weight to desirable range | 0.11 |
| - Low alcohol risk | - Always wear your seat belts | 0.02 |
| + Regular breast exams | | |
| + Safe blood pressure level | | |
| - Safe driving speed | | |
| - You don't use smokeless tobacco | | |

Total Risk Years you could gain = 0.13

37520
Female Age 78

Sat Apr 02 1994
Version 4.0

ROUTINE PREVENTIVE SERVICES FOR WOMEN YOUR AGE

Blood Pressure
Mammogram
Rectal exam (or Sigmoidoscopy)
Eye exam for glaucoma
Influenza vaccine (every year)
Pneumococcal vaccine (one time)
Tetanus-Diphtheria booster shot (every 10 years)

GENERAL RECOMMENDATIONS FOR EVERYONE

* Exercise briskly for 15 - 30 minutes at least three times a week
* Use good eating habits by choosing a variety of foods that are low in fat and cholesterol and high in fiber
* Learn to recognize and handle stress - get help if you need it

ADDITIONAL MESSAGE FROM: Edna Gillis: CT Department of Health, Leisure & Safety

Wellness is a positive approach to health that emphasizes self-responsibility. It is an ongoing process of striving for personal well-being - an idea that is increasingly important because today's leading causes of death are lifestyle induced. Following simple health practices results in a healthier body and a longer life.

It is better to do what we can to prevent an illness from happening, rather than expending time and monetary effort for the cure once the illness has occured.

ABOUT THIS REPORT

This Health Risk Appraisal is different from a check-up or a health exam that you would get from a doctor or a nurse. It cannot tell if you are sick or have a medical problem. It only gives you some ideas for lowering your risks of getting sick or injured in the future.

Average rates are based on United States death certificate data as adjusted for certain personal factors, and reflect current health patterns, medical practices and environmental conditions. Appraised rates (YOUR GROUP) are computed for persons with your current health and safety practices. Achievable rates (TARGET) are computed for persons who can reduce risk factors to a lower level. All of the risks are computed from data of the Carter Center of Emory University HEALTHIER PEOPLE Project, with technical support from 25 other major health agencies.

CAUTION: If anything in your printout doesn't seem right to you, ask your interpreter to check your printout. The HEALTHIER PEOPLE report should always be interpreted by a qualified health professional.

# APPENDIX H

## HEALTH RISK APPRAISAL
## GROUP REPORT

Sat Apr 02 1994 HEALTHIER PEOPLE

SUMMARY OF GROUP RESPONSE TO THE HEALTH RISK APPRAISAL

GROUP ID = KNOXVL36
NUMBER RESPONDING = 142

---

GROUP DEMOGRAPHICS

| | NUMBER RESPONDING | PERCENT OF TOTAL RESPONDING |
|---|---|---|
| AGE | | |
| 17 to 25 | 0 | 0.0 |
| 26 to 35 | 0 | 0.0 |
| 36 to 55 | 0 | 0.0 |
| 56 & OVER | 141 | 100.0 |
| SEX | | |
| MALE | 38 | 27.0 |
| FEMALE | 103 | 73.0 |
| RACE | | |
| NATIVE AMERICANS | 1 | 0.7 |
| ASIAN | 2 | 1.4 |
| BLACK | 9 | 6.5 |
| PACIFIC ISLANDER | 1 | 0.7 |
| WHITE | 124 | 89.9 |
| OTHER | 0 | 0.0 |
| DON'T KNOW | 1 | 0.7 |
| OF HISPANIC ORIGIN | 1 | 0.7 |
| EDUCATION | | |
| GRADE SCHOOL OR LESS | 5 | 3.7 |
| SOME HIGH SCHOOL | 17 | 12.5 |
| HIGH SCHOOL GRADUATE | 36 | 26.5 |
| SOME COLLEGE | 8 | 5.9 |
| COLLEGE GRADUATE | 31 | 22.8 |
| POST GRADUATE OR PROF. | 39 | 28.7 |
| WEIGHT | | |
| 10% UNDERWEIGHT | 0 | 0.0 |
| NORMAL | 48 | 34.0 |
| 10% OVERWEIGHT | 24 | 17.0 |
| 20% OVERWEIGHT | 69 | 48.9 |
| BODY FRAME SIZE | | |
| SMALL | 30 | 21.3 |
| MEDIUM | 100 | 70.9 |
| LARGE | 11 | 7.8 |

Sat Apr 02 1994 HEALTHIER PEOPLE

SUMMARY OF GROUP RESPONSE TO THE HEALTH RISK APPRAISAL

BEHAVIORIAL RISK FACTORS

| | NUMBER RESPONDING | PERCENT OF TOTAL RESPONDING |
|---|---|---|
| TOBACCO USE | | |
| CIGARETTE SMOKING | | |
| NEVER SMOKED | 89 | 63.1 |
| USED TO SMOKE | 49 | 34.8 |
| STILL SMOKE | 3 | 2.1 |
| CIGARS | | |
| NONE | 141 | 100.0 |
| SOME | 0 | 0.0 |
| PIPES OF TOBACCO | | |
| NONE | 140 | 99.3 |
| SOME | 1 | 0.7 |
| SMOKELESS TOBACCO | | |
| NONE | 141 | 100.0 |
| SOME | 0 | 0.0 |
| ALCOHOLIC BEVERAGES PER WEEK | | |
| NONE | 120 | 85.1 |
| 1 TO 7 | 17 | 12.1 |
| 8 TO 14 | 1 | 0.7 |
| 15 OR MORE | 3 | 2.1 |
| TIMES PER WEEK FOR PHYSICAL EXERCISE | | |
| LESS THAN 1 TIME | 24 | 20.9 |
| 1 OR 2 TIMES | 22 | 19.1 |
| AT LEAST 3 TIMES | 69 | 60.0 |
| NUTRITIONAL HABITS | | |
| EAT FOODS HIGH IN FIBER | | |
| YES | 114 | 99.1 |
| NO | 1 | 0.9 |
| EAT FOODS HIGH IN FAT | | |
| YES | 25 | 21.7 |
| NO | 90 | 78.3 |

Sat Apr 02 1994 HEALTHIER PEOPLE

SUMMARY OF GROUP RESPONSE TO THE HEALTH RISK APPRAISAL

CLINICAL MEASURES

| | NUMBER RESPONDING | PERCENT OF TOTAL RESPONDING |
|---|---|---|
| EVER HAD DIABETES | | |
| NO | 127 | 90.1 |
| YES | 14 | 9.9 |
| BLOOD PRESSURE MEDICINE | | |
| NO | 84 | 57.9 |
| YES | 61 | 42.1 |
| BLOOD PRESSURE | | |
| SYSTOLIC | | |
| UNDER 140 | 49 | 61.3 |
| 140 AND OVER | 31 | 38.8 |
| DIASTOLIC | | |
| UNDER 90 | 70 | 87.5 |
| 90 AND OVER | 10 | 12.5 |
| SYSTOLIC AND DIASTOLIC | | |
| OVER 140/90 | 1 | 100.0 |
| DESCRIPTION IF NOT KNOWN | | |
| NORMAL OR LOW | 41 | 85.4 |
| HIGH | 7 | 14.6 |
| CHOLESTEROL | | |
| TOTAL CHOLESTEROL | | |
| LESS THAN 200 | 19 | 30.6 |
| 200 TO 219 | 17 | 27.4 |
| 220 TO 239 | 10 | 16.1 |
| 240 OR GREATER | 16 | 25.8 |
| HDL | | |
| NORMAL | 5 | 45.5 |
| LOW | 6 | 54.5 |

Sat Apr 02 1994 HEALTHIER PEOPLE

SUMMARY OF GROUP RESPONSE TO THE HEALTH RISK APPRAISAL

MOTOR VEHICLE ACCIDENT RISK FACTORS

| | NUMBER RESPONDING | PERCENT OF TOTAL RESPONDING |
|---|---|---|
| MILES TRAVELED NEXT 12 MONTHS | | |
| BY CAR | | |
| 0 TO 12,000 | 115 | 82.7 |
| 13,000 TO 25,000 | 22 | 15.8 |
| GREATER THAN 25,000 | 2 | 1.4 |
| BY MOTORCYCLE | | |
| 0 TO 12,000 | 141 | 100.0 |
| 13,000 TO 25,000 | 0 | 0.0 |
| GREATER THAN 25,000 | 0 | 0.0 |
| TYPICAL MODE OF TRAVEL | | |
| WALK | 4 | 2.8 |
| BICYCLE | 0 | 0.0 |
| MOTORCYCLE | 0 | 0.0 |
| SUBCOMPACT OR COMPACT | 32 | 22.7 |
| MID OR FULL-SIZE CAR | 92 | 65.2 |
| TRUCK OR VAN | 9 | 6.4 |
| BUS, SUBWAY, OR TRAIN | 4 | 2.8 |
| MOSTY STAY HOME | 0 | 0.0 |
| PERCENT TIME BUCKLE SAFETY BELT | | |
| 90 TO 100 PERCENT | 112 | 82.4 |
| NONE TO 89 PERCENT | 24 | 17.6 |
| DRIVING RELATIVE TO SPEED LIMIT | | |
| WITHIN 5 MPH | 103 | 79.8 |
| 6-10 MPH OVER LIMIT | 24 | 18.6 |
| 11-15 MPH OVER LIMIT | 1 | 0.8 |
| MORE THAN 15 MPH OVER | 1 | 0.8 |
| NUMBER TIMES PER MONTH DRIVING AND DRINKING | | |
| NONE | 139 | 99.3 |
| ONE OR MORE | 1 | 0.7 |
| PERCENT TIME WEARING A HELMET WHILE RIDING MOTORCYCLE OR ATV | | |
| 75% TO 100% | 0 | 0.0 |
| 25% TO 74% | 0 | 0.0 |
| LESS THAN 25% | 1 | 0.9 |
| DOES NOT APPLY | 114 | 99.1 |

Sat Apr 02 1994 HEALTHIER PEOPLE

SUMMARY OF GROUP RESPONSE TO THE HEALTH RISK APPRAISAL

WOMEN'S PREVENTIVE MEASURES

| | NUMBER RESPONDING | PERCENT OF TOTAL RESPONDING |
|---|---|---|
| TIME SINCE LAST MAMMOGRAM | | |
| UNDER 40 YEARS OLD | | |
| 1 YEAR AGO OR LESS | 0 | 0.0 |
| 2 YEARS AGO | 0 | 0.0 |
| 3 OR MORE YEARS AGO | 0 | 0.0 |
| 40 YEARS OR OLDER | | |
| 1 YEAR AGO OR LESS | 72 | 71.3 |
| 2 YEARS AGO | 16 | 15.8 |
| 3 OR MORE YEARS AGO | 13 | 12.9 |
| TIME SINCE PAP SMEAR TEST | | |
| 1 YEAR AGO OR LESS | 60 | 59.4 |
| 2 YEARS AGO | 16 | 15.8 |
| 3 OR MORE YEARS AGO | 25 | 24.8 |
| TIME SINCE BREAST EXAM | | |
| 1 YEAR AGO OR LESS | 75 | 74.3 |
| 2 YEARS AGO | 17 | 16.8 |
| 3 OR MORE YEARS AGO | 9 | 8.9 |
| TIME SINCE RECTAL EXAM | | |
| 1 YEAR AGO OR LESS | 58 | 65.9 |
| 2 YEARS AGO | 17 | 19.3 |
| 3 OR MORE YEARS AGO | 13 | 14.8 |
| NEVER | 13 | 14.8 |

MEN'S PREVENTIVE MEASURES

| | NUMBER RESPONDING | PERCENT OF TOTAL RESPONDING |
|---|---|---|
| TIME SINCE RECTAL OR PROSTATE EXAM | | |
| 1 YEAR AGO OR LESS | 30 | 83.3 |
| 2 YEARS AGO | 2 | 5.6 |
| 3 OR MORE YEARS AGO | 4 | 11.1 |
| NEVER | 2 | 5.6 |

Sat Apr 02 1994 HEALTHIER PEOPLE

SUMMARY OF GROUP RESPONSE TO THE HEALTH RISK APPRAISAL

PERSONAL FACTORS RELATED TO HEALTH

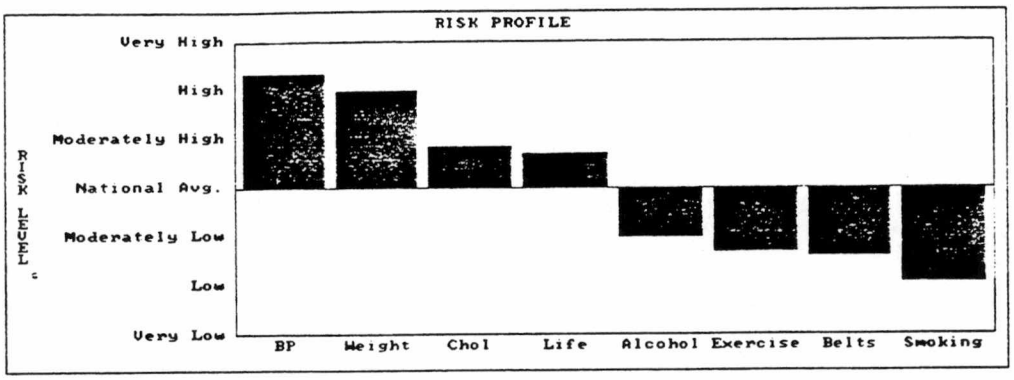
| | NUMBER RESPONDING | PERCENT OF TOTAL RESPONDING |
|---|---|---|
| SELF PERCEPTION OF OVERALL HEALTH | | |
| EXCELLENT | 24 | 20.9 |
| GOOD | 65 | 56.5 |
| FAIR | 22 | 19.1 |
| POOR | 4 | 3.5 |
| SATISFACTION WITH LIFE | | |
| MOSTLY SATISFIED | 94 | 81.7 |
| PARTLY SATISFIED | 16 | 13.9 |
| NOT SATISFIED | 5 | 4.3 |
| SUFFERED PERSONAL LOSS OR MISFORTUNE | | |
| NO | 101 | 74.8 |
| YES, 1 SERIOUS LOSS | 25 | 18.5 |
| YES, 2 OR MORE SERIOUS LOSSES | 9 | 6.7 |
| WITNESS OR INVOLVEMENT IN VIOLENT FIGHT | | |
| NOT SURE | 8 | 7.2 |
| 1 TIME IN LAST YEAR OR NEVER | 101 | 91.0 |
| 2 OR 3 TIMES IN LAST YEAR | 2 | 1.8 |
| 4 OR MORE TIMES IN LAST YEAR | 0 | 0.0 |

Sat Apr 02 1994 HEALTHIER PEOPLE

SUMMARY OF GROUP RESPONSE TO THE HEALTH RISK APPRAISAL

GROUP ID = KNOXVL36

The following graph shows how your group compares to national data on eight measures that represent important areas for health promotion programming.




These measures are based only on those members of your group who responded to the questionnaire. The measures are the percent of the group who:

- are currently smokers. The bar represents whether your group is above or below the national norm.
- wear their seat belts less than 90% of the time.
- are 20% or more overweight.
- have total cholesterol levels at or above 240.
- have a systolic blood pressure at or greater than 140 and/or have a diastolic blood pressure at or greater than 90.
- consume eight or more alcoholic beverages per week.
- exercise less than three times per week.
- are not satisfied with their life.

After each of these measures has been computed and compared to a national norm, the deviations from average are rank ordered from highest risk to lowest risk and plotted as shown. This should help to identify areas of importance to work on to help your group members reduce their risks.

# VITA

Edna Gillis was born in Sapulpa, Oklahoma and raised for the most part in Southern California. Edna married before graduating from high school and eventually received her high school diploma through the Adult Basic Education Program in Redondo Beach, California while pregnant with her second child.

She received her Associate in Arts Degree from Coffeyville Community College in Coffeyville, Kansas in 1970. She then attended Pittsburg State University in Pittsburg, Kansas to receive a Bachelor of Science in Physical Education (1972) and a Masters of Science in Secondary Education (1979).

After teaching twenty years in the Unified School District #445 in Coffeyville, Kansas, Edna received a position as a Graduate Teaching Associate at the University of Tennessee, Knoxville, and was awarded the Doctor of Education degree in May of 1994.

She is married to W.E. Gillis of Knoxville, Tennessee.