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Knowledge and Utilization of Knowledge of Cardiovascular Risk Factors in Women over Age Sixty

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KNOWLEDGE AND UTILIZATION OF KNOWLEDGE OF CARDIOVASCULAR RISK FACTORS IN WOMEN OVER AGE SIXTY

by

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VITA

The author, Darline J. Wilke, is the daughter of Raymond Wilke and Alta (Brandon) Wilke. She was born December 13, 1928, in Chicago, Illinois.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

STATEMENT OF THE PROBLEM AND RATIONALE

Introduction

A rather grim stereotype confronts one who begins to investigate the concepts of aging and health. Some may imagine an individual who is senile, malnourished, unproductive, living alone at poverty levels and unable to cope with activities of daily living.

Society today identifies the aging individual in a variety of ways. Until very recently mandatory retirement in many occupations was sixty-five years of age. Present day legislation first extended retirement to age seventy and now has eliminated all restrictions. Some employers are reluctant to hire persons over fifty years of age. To join the American Association of Retired Persons (AARP), one must be fifty-five years of age. Butler and Lewis (1977, p. 4) state that aging begins with conception but that the selection of sixty-five years for retirement is an arbitrary dividing point. This was derived from the social legislation of Bismark

in the late nineteenth century in Germany. Just how arbitrary this is becomes apparent when one tries to justify it. A logical way to justify would be at that age at which an individual no longer contributes to society -- politically, intellectually, or creatively. Many individuals, however, are noted for their accomplishments in later life.

Grandma Moses began to paint at age seventy-six; Arthur Fiedler was a conductor at eighty-four; George Halas coached the Bears at seventy-three; Mae West starred in "Sexette" (eighty-five); Jane Addams won the Nobel Peace Prize (seventy-one); Winston Churchill was Prime Minister for the second time (seventy-six); George Meany was President of the AFL-CIO (eighty-four); Susan B. Anthony was leader of the suffragettes until her death at age eighty-six; and James T. Farrell wrote his fifty-first book at age seventy-four (GOIA, 1978; Bengtson and Haber, 1975). The fact is that major contributions to art, music, literature and science have been made by people in their seventies and eighties or older. Gold (1979) gives impressive evidence that it is not just the famous who are worthy of note. He interviewed people over age sixty-five who had led affirmative lives. He was not looking for problems. His subjects included a magician, an author, doctors, teachers, a violinist, consultants, a pipe line worker, and a flo-

rist. The majority were in their seventies and eighties. None were senile; all were involved. His interviews discussed: relationships with parents and children, sex, love, marriage, religion, health, travel, art, politics, work, and retirement, passions, hatreds, griefs and death. The result is a volume about a variety of people of undiminished resources.

The proportion of older persons in the American population is increasing. In 1900 one in every twenty-five Americans was sixty-five or over. Every day approximately five thousand Americans reach age sixty-five. In July 1979 individuals over age sixty-five were estimated to be eleven percent of the total population. In 1981 the estimate was 11.3 percent. By the year 2000, the ratio of elderly Americans age sixty-five and over will be one in every eight persons or 12.5 percent of the total population (Botwinick, 1973; C. Harris, 1978; Weg, 1981).

Time, money, research and writing related to the aged individual are also increasing. Much of this effort has been directed toward the problems of physical decline and institutionalization. Demographics, however, indicate that less than 5% of those over sixty-five are institutionalized (Rabuska and Jacobs, 1980). The rest are active in varying degrees and living in their communities. It would seem, then, appropriate to

turn attention to the quality of life as well as the longevity factor. One area of concern that affects the quality of life is the basic health of the individual. To be an active, contributing member of one's own community, one needs to be "healthy" -- that is, free of or at the very least in control of any disease.

While the vast majority of the elderly live in the community, many are living with health problems. Eighty-five percent report at least one chronic condition. Medical expenses of those age sixty-five and over are three and one half times those of younger individuals. The major causes of death are heart disease, cancer and cerebrovascular disease. Eighty percent of those reporting at least one chronic disease still say their health is excellent, good or fair. Only twenty per cent claim poor health (Botwinick, 1979; Rabuska and Jacobs, 1980).

As the numbers of older people increase, they are more visible and more readily heard. The cover story of Time magazine for October 10, 1977 states:

> The 1960's was the decade of aroused youth; the 1970's may well belong to their grandparents. Some twenty-three million Americans, about ten per cent of the population, are sixty-five or older. Numbers alone give them political clout, because they

vote more consistently than younger groups. In addition, they have begun to organize with all the skill and determination of other embattled minorities.

Purpose of the study

The overall purpose of this exploratory study is to attempt to bring together the concepts about aging, about specific disease processes (cardiovascular) and related risk factors. Specifically, the investigation will determine what knowledge the aging person has about cardiovascular risk factors and whether the individual uses that knowledge in daily living. The investigation will also attempt to determine if other conditions (disengagement scores, reported degree of life satisfaction, locus of control, actual diagnosis of disease and life style) affect the amount of and/or utilization of that knowledge. An additional area of interest in the present study is the identification of the source from which the subject individual received information about cardiovascular risk factors (doctor, nurse, media, friends).

Statement of the Problem

This investigation focused on the following research questions:

1. What do the elderly know about cardiovascular risk factors?

2. How do the elderly use information they have about cardiovascular risk factors?

3. What variables (demographic and theoretical) affect how the elderly use information they possess?

4. Which variables (demographic and theoretical) affect the acquisition of knowledge about cardiovascular risk factors?

5. To what source do the elderly attribute information they have about cardiovascular risk factors?

Assumptions

1. There is general information about cardiovascular risk factors that is available to any person.

2. Control of specific external risk factors (not genetic or hereditary) is possible for each individual.

3. Elderly individuals are unique; they differ from each other. The elderly are not a homogeneous group; their differences tend to increase with aging (Palmore, 1976). Maddox and Douglas (1976) note that differences remain stable through time or that in some instances, there are significant increases in individual differences. They confirmed their hypothesis that:

> Individual differences do not decrease with age. Variability on a variety of indicators is at least

maintained, if not increased in later life.

Need for the Study

Studies have been done to determine the effect of cardiovascular risk factors on various populations. Studies have also dealt with the concepts of disengagement, locus of control and life satisfaction. Most of these studies have used populations that were ill, institutionalized, or captive (institutions for the aged, hospitals, schools, prisons, clinics). Many of the studies have combined two or more of the variables. None has utilized the present set of variables completely and focused on an apparently well population.

The results of this study hold implications for health education programs for the elderly. The programs are already a reality. However, the content of the programs is variable and usually at the whim of the presenter. A data base as to what is needed would strengthen them. This same data base is of concern to faculty in schools of nursing. Health education, prevention and control of disease in the elderly are primary areas of concentration. Nurses and other health field workers are accepting this as a mandate and curriculum in schools of nursing must reflect it.

CHAPTER II

REVIEW OF LITERATURE

The areas to be reviewed in the literature deal first with the concept of aging and the theories related to aging. There are numerous theories about aging and an argument could be made for any of them. The major discussion here, however, will be limited to Disengagement, what it is and what it is not and the methods for measuring or classifying an individual according to the theory. The second area to be discussed is the physical/physiological aspects of aging and pathological entities relating to cardiovascular disease. The specific focus of this area is that of risk factors, the knowledge an individual has of those risk factors and how individuals use that knowledge. Other areas to be dealt with in this survey of literature will be those indicated by the variables noted in the introduction: life-satisfaction, locus of control, life-style (urban, suburban or rural) and the implications they have for acquisition and/or utilization of knowledge of cardiovascular risk factors.

An area not found covered in the literature but considered by the author to be of importance is the difference in knowledge held and utilization of that knowledge between persons who have had diagnosed episodes of cardiovascular disease and those who have not. Another related area is the discovery of the source from which persons acquired this knowledge. This has not been found in any tabulated form although persons in many areas are addressing themselves to the matter (nurses, doctors, public service managers, senior citizen leaders, etc.). This has implications for health education of the public in general as well as the senior citizen.

Aging

Many have tried to define the aging process and have tried to give a specific cutoff to the entrance to old age (Dinsmore, 1979; Lenhart, 1976). Brown (1972) classifies aging persons as young-old and vulnerable-old. Chronological age is at best only a rough indicator of the individual's position on any one of numerous physical and psychological dimensions. Neugarten and Hagestad (1976) feel that age is significant only in relational terms. Chronological age is given meaning only when there is knowledge of the particular culture and the social meaning attached to given chronological ages. With these qualifications it is still an indis-

pensible index in our society.

Studies on aging are increasing. They may be global or specific. There are several major studies that consider aging in the global sense. The Kansas City Studies of Adult Life were undertaken by a group of investigators on the Committee on Human Development at the University of Chicago. The Kansas City studies asked the research question: What are the changes in personality associated with chronological age in the second half of life? This involved two series of investigations -- a group of 40-70 year olds and a group of 50-90 year olds who were interviewed regularly over a six year period. The Duke Longitudinal Studies on Aging (Palmore 1970, 1974, 1981) were the outcome of a central research project for the Duke Center for Aging. These were interdisciplinary projects and focused on normal aging. Participants were interviewed in four waves at about three year intervals.

Both series of studies were exploratory. Both of these research groups used subjects who were in generally good health and were economically secure. This was done to eliminate the effects of poverty and illness/disability upon the normal aging process. Information from both study groups will be noted later when discussing the variables selected for the present investigation.

Palmore (1981) notes that most prejudices against the elderly are not true. As a group, they are not sick, disabled, or poverty stricken. The elderly are not senile but, instead, maintain good or adequate mental capacities until shortly before death. They are, as a group, not socially withdrawn, isolated, depressed, or miserable.

Other authors agree that not all aged people are in a negative situation (Neugarten & Hagestad, 1976; Berghorn et al.; Hellebrandt, 1980). A national survey by Louis Harris and Associates (1975) conducted for the National Council on Aging found little evidence of ageism in the public at large. They concur that some problems attributed to the elderly are poverty, poor health, fear of crime, lonliness, boredom, lack of independence, and fear of death. This study also notes that many of the anticipated problems never materialized. They found that older people described their own status more favorably than was presumed to be. The aged in America are coming to enjoy economic privileges (intended to combat the poverty, etc. of the 50's and 60's) that now provide a favored status. Income levels show a tremendous range. Some are becoming a visible and contented leisure class helped by greater permissiveness toward new life styles of the retired and by a change in national values from instrumentality to expressivity and

from the work ethic to the leisure ethic. Many are poorer, but should not be viewed as miserably poor. Income is less, but so are dependents and needs. Only fifteen percent of the elderly cite inadequate funds as problems. The general public sees the older person in a condition much worse than the older person sees himself/herself. It is interesting to note that older people also accept this concept in general, but for others, not for themselves. What is found is financial security, good family life, good health, and general comfort. Notation is made of those individuals living below the poverty level and in poor health but these are not in the majority. The actual problems (except for health and fear of crime) are comparable for both old and young. In spite of these findings, the negative image persists in the minds of both the elderly subgroup and the general public. The elderly agree with the assumption that life is really tough for those over age sixty-five, but each one feels that he or she is the exception.

In an update in 1981, Harris and Associates found the misconceptions about the problems of the elderly persisted. Two additional areas surfacing in 1981 were the high cost of energy (gas, oil, electricity) and transportation to stores, doctors, places of recreation, friends, and family. Again the problems are assumed to

affect the majority of the elderly but they themselves (the individuals responding) are the exceptions.

There are some differences seen between the two samples and the twenty year span. The perception as to what age is considered old has changed from a volunteered median of 62 and 63 in 1974 to a median of 65 and 66 in 1981. Since 1974 the median score for life satisfaction has dropped from 26.Ø to 24.7 (on a scale of Ø-36). The same elements seem to correlate with life satisfaction as in 1974 (increasing age, poor health, lack of adequate income, race, continued employment). The problems seen in 1974 were still seen as problems in 1981. The climate was somewhat more negative in 1981 but the elderly still remain positive in their perceptions.

Harris' study included those aged 18-64 as well as those 65 and over. In each area considered, findings from the sub-group of the aged was compared to the general public. The elderly still feel their condition in life is better economically and socially than the general public believes it to be. The conclusion of the study was that most older people in the United States have the desire and potential to be productive, contributing members of society.

Other studies have dealt with specific aspects of the elderly person. Borges and Duttman (1976) using

similar age groupings to the Harris study found that younger people think that aging is worse than do those who have already aged. In a study where the elderly are asked to "tell it like it is" as they discuss what it means to grow old and be old, Hellebrandt (1980) demonstrated that the negative stereotype of the aged vanishes when the subjects are educated, affluent and healthy. Kjos (1979) looked at reasons elderly persons sought part time work. Taylor and Harned (1978) studied nurses who care for the elderly trying to determine those attitudes which promote effectiveness in providing nursing care to this group of society. Tuckman and Lorge (1953) pioneered research in attitudes toward old people using an extensive questionnaire. Answers to 137 items were classified into thirteen catagories: conservatism, activities and interests, financial, physical, family, personality traits, future orientation, best time of life, insecurity, mental deterioration, sex, interference, and cleanliness. Axelrod and Eisdorfer (1961) administered the Tuckman-Lorge questionnaire to college students asking them to apply the questions to specific age groups (35 year olds, 45 year olds, 55 year olds, 65 year olds or 75 year olds). They found that stereotyping increased with the age of the group. Solomon and Vickers (1979) used the Tuckman-Lorge questionnaire to study the attitudes of three groups of health

workers toward old people. Their discussion is based on the assumption that the attitudes of care givers are directly related to the quality of care given to clients. Their research supported their hypothesis that "Providers of health care hold to stereotypes about the elderly which are similar to those which have been recognized in other groups of the population." The second hypothesis: "There are no intergroup differences among health care givers with regard to stereotyping old people" was supported but not as strongly and with the notable exception of the female house staff. Reasons for this were proposed, but will not be discussed here. Their third hypothesis: "There is less stereotyping of old people by staff members and students in an environment which has a positive care context for the elderly than by staff members and students working in a hospital environment" was supported. Solomon and Vickers conclude that the Tuckman-Lorge questionnaire is still a valid tool after 25 years of use. They do note, that despite the proliferation of studies and literature dealing with aging, there has been little change in attitudes over the past 25-30 years.

Theories of Aging

The two theories of aging that are considered directly opposing are Disengagement and Activity.

Disengagement theory was described by Cumming and Henry (1961) as part of the Kansas City Study of Adult Life, a research project supported by the National Institute of Health, which investigated certain aspects of the aging process. This theory says that aging is "an inevitable mutual withdrawal or disengagement, resulting in decreased interaction between the aging person and others in the social system he belongs to."[1] This theory applies to individuals who are in good physical and mental health. The majority of the Kansas City study sample members belonged to stable and working middle class families; they lived in small household units, were relatively affluent and had no chronic illness. There are social and attitudinal areas or variables involved in the Theory of Disengagment. The social areas involved are: 1) a decrease in the number of social roles played by the individual (an inventory of the number of relationships in which one is currently active), 2) a shrinkage in the size of the "social life space" (number of separate contacts with others during a month), 3) a lessening of the amount of daily interaction with others (amount of time each day spent in normal interaction with others), and 4) a restructuring of social goals

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1. For the complete statement of Disengagement, see Cumming and Henry (1961), Chapter XII.

(description of the best and worst things about their current age).

Attitudinal and orientation change areas include: 1) orientation to interaction (relational rewards and expectations of obligation and responsibility), 2) authoritarianism (higher or lower F-scores), 3) religious piety (increasing or decreasing interest), 4) conformity-alienation (whether or not one's own life is seen as satisfactory and whether or not one agrees with some major values of the culture), and 5) perception of constriction of social life space (the individual's point of contact with his social system).

When disengagement is complete, the equilibrium that existed previously between the individual and society is replaced by a new equilibrium which is characterized by greater distance. The real "opposite" to disengagement (according to Cumming, [1975]) is engagment - the interpenetration oferson and the society to which she/he belongs. A fully engaged person acts in a large number and variety of roles and acknowledges an obligation to meet the expectations of his or her role partners.

Cumming (1963) modified and elaborated the theory of disengagement to take into account variations in individuals that might make a difference in patterns of disengagment. The variations in character and tempera-

ment were not spoken to in the original study. Cumming much more clearly states that the fully engaged individual is bound or constrained by obligations and tasks while the disengaged individual (who has resources and health enough to allow one to exercise it) has freedom. At the time when the individual is becoming disengaged from his social obligations, society is withdrawing from the aging person to the same extent. This provides a place for younger members of society and also frees the elderly to die without disrupting vital affairs. The manner in which all of this takes place and the rate at which it occurs is contingent on the temperament, characteristics, and sex of the individual concerned and the roles and depth of involvement in those roles by the specific individual. It must be noted that Cumming, herself, has identified serious limitations in the theory (1975), namely the lack of empirical base and the need to consider variables such as generational, situational and neurophysiological differences.

Neugarten (1973) redefined disengagment theory by combining it with developmental and social-psychological factors in explaining the process of aging. In this view, psychological disengagment developmentally precedes social disengagment but there are individual variations. Disengagement proceeds at different rates and patterns in different people and places and has dif-

ferent psychological outcomes. These changes are developmental and are affected by all the contingencies that affect other developmental stages.

Palmore (1976) declares that disengagement is not an inevitable and general result of aging, but rather it is a complex phenomenon usually resulting from stress or social breakdown. He later (1981) elaborates that physical disengagement leads to a reduction in the amount of physical activity, slowing down and the conservation of energy. Psychological disengagement is the withdrawing of concern from the wider world to primary concern for people and things directly affecting the self, the shifting of attention from outer world to inner world. This results in a decrease in mental and emotional energy. Social disengagement is the reduction of social activity and involvement -- a mutual withdrawal or disengagement between the aging person and others in the social system. He notes the two parts of the theory that are in controversy: 1) that most people independent of ill health or poverty disengage as they become older and 2) that disengagement is good for both sides -- good for the aged one because it is acceptance of inevitable decline and death and thus is the best way to adapt to declining abilities. Therefore, disengaged elders tend to be happier and healthier than those who try to remain more active.

In acknowledging and addressing the controversies, Cumming (1975) noted that the theory does address itself to the psychological and social aspects of the aging process not biological processes or cultural variations. She states that there is nothing inherently negative in the concept of disengagement and finally that the theory was addressed to normal aging, not to those afflicted by illness and poverty.

Havighurst, Neugarten and Tobin (1968) describe an alternative pattern of aging called the Activity Theory. The activity theory of aging holds that older people have the same psychological and social needs as the middle-aged. There are inevitable changes in biology, but the decreased social interaction is because of withdrawal by society. This withdrawal proceeds against the wishes of the elderly person. The individual who ages successfully (according to the activity theory) is the one who stays active, keeps his/her social world intact, maintains the activities of middle age and finds substitutes for work and lost friends when necessary. This theory is not as well developed as "disengagement" though many have spoken to it. (Shanas & Maddox, 1976; Smith, 1973; Berghorn, 1978; Rose, 1976). Havighurst (1976) used the same data from the Kansas City study as Cumming and Henry and found that support could be given to both theories but felt that neither was adequate. He

found observed facts still unaccounted for. There was a decrease of engagement in the common social roles and some disengaged people were satisfied. At the same time, the majority of those who remained active at the older ages were happier but there were many exceptions. He concluded that neither theory was in itself sufficient to account for the data but that some other elements such as personality type would help explain the relationship between level of activity and life satisfaction.

Tiven (1975, 99), while not giving the actual titles, refers to both when he speaks of retirement and adjustment to it. Here the older person suddenly has much more time available, but less in terms of years. The loss of work results in lost social relationships, lost financial reward and loss of status. This latter is because value is often defined by what one does. Therefore the elderly person needs companionship, mental stimulation, opportunity for self-expression and opportunity to be useful and better himself/herself. The elderly individual needs a framework for activity.

Cumming (1963) notes a problem of contrasting disengagment with activity. Her argument is that engagement and activity are not in the same dimension. An engaged individual will probably not be inactive but a disengaged person could maintain a high level of activi-

ty in a small number or a narrow variety of roles. The result is that active people are judged to be engaged. This may reflect the activity, the health or the temperament of the individual.

Havighurst, Neugarten and Tobin (1968) summarized the findings relating to disengagement and activity. They are:

1) Data shows convincing evidence of decrease in both social and psychological engagement with increasing age. Therefore, disengagement is a useful term.

2) Data support activity as a theory of optimal aging. As levels of activity decrease, so do feelings of contentment regarding present activity.

3) Data also support disengagement as a theory of optimal aging. It provides for all combinations of disengagement and life satisfaction.

4) Neither theory (activity or disengagement) is in itself sufficient. Most individuals regret a drop in roles, but most accept it as inevitable. They still succeed in maintaining a sense of self-worth.

5) There are two sets of values operating simultaneously -- a desire to stay active and a desire to be more leisurly.

6) The relationship between level of activity and life satisfaction is probably influenced by personality types and the ability of the individual to integrate

emotional and rational elements of personality.

7) There is the increased freedom of the aged implied in disengagement theory -- freedom from role obligations and freedom to pursue other areas thought to be important.

These theories, despite the controversies have been used in a variety of ways in scientific endeavor. Fontana (1977) in a participant-observation study of old people and their daily lives describes those individuals lending support to both the theory of Disengagement (Relaxers and Waiters) and the Activity theory (Do-gooders and Joiners.) Henthorn (1975) responding to the negative or laissez-faire attitudes engendered in some institutional settings by the theory (why provide programs for stimulation when the natural expected outcome is disengagement) looked at disengagement and reinforcement. Results indicated that the use of social learning principles and reinforcement may be beneficial in slowing the rate of disengagement in the elderly. Her contention is that this knowledge should effect a change in patient and staff activities and in educational programs for patients and/or staff. Edsail and Miller (1978) looked at the relationship between loss of auditory and visual acuity and social disengagement. They found no relationship between auditory and visual acuity and the variables indicating disengagement. Carp

(1968) used a population sample that was labled poor. His premise and conclusion was that the measurement of disengagement could be broadened to include release of attachment to possessions, to activities and to ideas which impinge upon the person from the environment. He also found that disengagement from family and friends are not simultaneous. As one role becomes less, another becomes more important. Disengagement from the parental role is seen as positive and correlates with engagement with peers. Tissue (1968) reported an attempt to operationalize disengagement potential using a Guttman scale. He later replicated his own study (1971) and found no significant relationship between age and disengagement potential. He did find disengagement readiness more common in middle class than in working class and in healthy participants rather than those who are ill. Mindel and Vaughan (1978) looked at religious behavior in relation to disengagement. Their conclusion was that an individual may be disengaged physically or organizationally but may be fully engaged non-organizationally. Brown (1974) investigated the relationship between disengagement and satisfaction in contacts with family and friends. He found disengagement related to lowered satisfaction with specific relationships (extended family, friends, groups) but that these specific or situational levels of satisfaction were not related to ge-

neral disengagement. This did not hold for immediate family relationships; lack of satisfaction in close family situations was related more to general disengagement. His conclusions were: 1) the elderly voluntarily disengage from those relationships that are not satisfying, 2) that a life style of disengagement does not seem to be preferred by the elderly but that substitutions are made when non-satisfying contacts are dropped and 3) that the elderly progress from formal and group relationships to those more personal and individual with immediate family ties strongest to the end.

Life Satisfaction

Following upon earlier work on attitudes and activities (Havighurst & Albrecht, 1953) and Kuntner's measure of morale (Cumming & Henry, 1961), Neugarten, Havighurst & Tobin (1961) developed the Life Satisfaction Rating Scales. The intent was to develop a measure of life satisfaction that would use an individual's own evaluation as a frame of reference and would be relatively free from dependence on activity and social interaction. The operational definition was developed and included the following components:

> Zest (vs Apathy); Resolution and fortitude; Congruence between desired and achieved goals; Positive self-concept; and Mood tone. . . . An indi-

> vidual was regarded as being at the positive end of the continuum of psychological well being to the extent that he: (A) takes pleasure from the round of activities that constitute his everyday life; (B) regards his life as meaningful and accepts resolutely that which life has been; (C) feels he has succeeded in achieving his major goals; (D) holds a positive image of self; and (E) maintains happy and optimistic attitudes and mood (Neugarten, Havighurst, & Tobin, 1961; pp. 131, 132).

The original rating scales were on a five point scale with 5 high. Intercorrelations of the components showed a positive interrelationship while maintaining a fair degree of independence which support their assumption that more than one dimension is involved in the scales. Data were obtained during 4-5 waves of interviews. The ratings were given by trained judges and reliability was determined by two judges working independently with the same data. Further validation was sought by having a clinical psychologist interview the subjects. A correlation of .64 was interpreted as satisfactory considering the other factors present such as time lapse, attrition from the study, and the fact that the LSR was based on recorded interviews.

While it was deemed a valuable tool, the LSR was

felt to be too cumbersome for many instances. What followed was the derivation of two self-reporting instruments which could be administered in a few minutes. These instruments (LSIA and LSIB) were used with the subjects during their 6th interview. These were again correlated with the previous data and proved "relatively" satisfactory. The suggestion was that the indexes, if used cautiously, "will perhaps be useful for certain group measurements of persons over sixty-five."

Wood, Wylie & Sheafor (1969) reported the relationship between the two measures of life satisfaction -- an LSR based on ratings made by trained judges and the LSIA direct self reporting instrument. The correlation was found to be approximately the same as the original derivation study based on an urban aged population. Wood et al. did an item analysis, dropped seven items and devised an alternative scoring and called the new form LSIZ. This is recommended for use with rural aged "where approximation is adequate."

Harris & Associates (1975, 1981) used Havighurst's Life Satisfaction Index Z which is similar to LSIA. On a scale from Ø-36, the 1981 mean score for individuals over 65 was 24.7. This was a drop of 1.3 points since 1974. The score still indicates greater life satisfaction than not in the elderly.

In a study on In-movers to a retirement community (Lemon, Bengtson & Peterson, 1972) the major dependent variable (life satisfaction) was operationalized by using LSIB devised by Neugarten et al. They were looking at the relationship between activity theory and life satisfaction. None of the hypotheses relating frequency of activity to life satisfaction received consistent empirical support; only informal activity with friends was associated with life satisfaction and this was at an insignificant level. Their conclusion was that neither activity theory nor disengagement can adequately account for optimal aging.

Knapp (1976) took as a basic premise, the multidimensionality of individual well-being. Using the LSIA, he found support for both activity and disengagement. He also concluded that multidimensional modelling of life satisfaction is computationally feasible and theoretically profitable.

Many variables have been used to determine whether or not there is a relationship between them and life satisfaction. The findings are frequently contradictory. Loehman (1980) notes research dealing with marital status, retirement, housing, social activity and socioeconomic status, all of which present "highly inconclusive" findings. Studies dealing with the rela-

tionship between health and life satisfaction did show positive correlation. This was borne out by Medley (1976) who investigated an hypothesized causative chain between financial situation, health satisfaction, satisfaction with standard of living, with family life and with life as a whole. His study was directed toward explaining the mechanisms by which the antecedant influences are translated into satisfaction. It was an empirical study concerned especially with examining patterns of influence among the variables. He found that health satisfaction (rather than actual health status) was the second best predictor for females.

Palmore & Luikart (1972) acknowledge previous research which found substantial relationship between life satisfaction and health, activity, socioeconomic status, and age. They felt that none of the research attempted to assess relative importance or to assess the independent effects of each. They attempted to do this with a sample from the Longitudinal Studies. Their research found substantial relationships between life satisfaction and health, activity, socioeconomic status and age. The more satisfied tend to be healthier, more socially active, have higher incomes, and education. They are also younger. On a multiple regression analysis of eighteen variables that do affect life satisfac-

tion, self rated health was the strongest and accounted for 2/3 of the explained variance. Palmore (1981) notes that it seems reasonable to hypothesize that greater life satisfaction could contribute to better health through betterment of health, better motivation to take care of one's health and through prevention of various psychogenic illnesses (resulting from anxiety, depression, psychologic stress). Greater life satisfaction contributes to more social activity through better mental health, a positive attitude toward people and through prevention of isolation.

Health

Closely linked to the theories of disengagment and life satisfaction are discussions regarding the health of the elderly person. Although Cumming separated disengagement from health, a major idea is that disengagement may be a function of health and illness in that restrictions caused by failing health increase one's level of disengagement. Shanas and Maddox (1976) note that the relationship between chronological age and illness is well known. Chronological age is the best indicator of mortality.

Age is also associated with morbidity as indicated by an age-related incidence and prevalence of disease and disability. Later years of life are characterized

by a series of biological changes which are usually gradual and which result in decreased capacity for functioning. Health per se is looked at in two major ways. The first, the medical model, is in terms of the presence or absence of disease. The second, from the World Health Organization advisory council, is in terms of function -- that is, the degree of fitness rather than the extent of pathology. In reality, the presence of chronic disease increases with age. Eighty-five percent of individuals sixty-five and over, living outside of institutions, report at least one chronic disease and fifty percent report some limitation of normal activity related to chronic health conditions. Illness affects the energy available to the individual and his/her capacity to direct that energy toward achievement of personal goals and meeting of social obligations. Figures of various experts on aging are available as to the extent of illness in the elderly and also to the extent that the elderly are able to function effectively although in a more limited way despite one or more chronic health problems (Sullivan, 1979; Lenhart, 1976; Butler and Lewis, 1977; Growing Old in America, 1978). An important point is made that the present generation of old people in America is the healthiest, best educated and most vigorous in history.

Cardiovascular Disease

Cardiovascular disease is a major cause of death in the United States. Osterbind (1970) states that a total of 14.6 million adults have definite heart disease and another thirteen million are suspect. The most common manifestations are hypertension and myocardial degeneration (Riffle, 1979). The overall effect of the physiological changes is a diminished cardiac reserve (the maximum percentage that the cardiac output can increase above normal). The changes in cardiovascular functioning aligned with aging (decreased rate and decreased stroke volume) help decrease cardiac reserve which, in turn, decreases the ability to adapt. Concurrent with this are changes in heart size and loss of elasticity. These changes in themselves do not constitute disease or ill health. Body needs may well be less as age progresses. What does happen is that the climate is set for problems to occur. Added stress in any form can precipitate a problem. This stress may be physiological as in overweight, pathological as with development of high blood pressure, emotional or any number of other ways. Faulty diet and excess weight may lead to high blood pressure which gives added work to heart and vessel muscles. The end result is a heart attack or stroke. The literature of today -- popular and profes-

sional -- has identified risk factors or areas of control by which to minimize the potential for cardiovascular disease. Control of cardiovascular disease could add four to twenty years to life expectancy (Riffle, 1971; Kart, Metress and Metress, 1978; Corday and Corday, 1976; Weg, 1975; Growing Old in America, 1978). General consensus about risk factors can be seen in the description of the most likely candidate for a myocardial infarction (heart attack). This individual is described as an overweight executive "workaholic" in an urban area who eats well, smokes, and engages in very little physical exercise. Pulling the risk factors from this description, the following are noted:

stress -- overwork, deadlines, decisions

excessive weight

smoking

sex -- male

diet -- high cholesterol

lack of physical exercise

The only obvious missing elements here are heredity, high blood pressure (and most of the risk factors listed are thought to be involved here as well), and lack of medical control of already existent conditions.

Corday and Corday (1976) do suggest that the problem of prevention of cardiovascular disease needs to continue to be studied but that there does seem to be

considerable validity to the risk factor hypothesis. With all the information readily available to the public, even given without being sought (television, newspapers, magazines, radio) it would seem that the problem of controlling avoidable cardiovascular disease would be resolved.

Harris and Associates (1973) conducted a survey for the National Heart and Lung Institute about the public's knowledge of high blood pressure. There was a recent survey conducted by The Saturday Evening Post (1982) to study the factors that contribute to heart attack.

Shekelle and Shugney (1978) report a telephone survey in the Chicago area which indicated that persons younger than sixty have a widespread lack of information about probable causes of heart attacks. The concern of the study was specific to heart attacks and identified the three major areas of concern as smoking, high blood pressure and cholesterol or fat in the diet. Half of those interviewed did not name any of these and only one percent named all three. Three-fourths of the sample believed heart attacks were preventable but few identified behaviors to reduce risk factors except to stop smoking. Even though consensus was minimal, the factors identified in the survey were the same as those describing the likely candidate.

There has been significant work done in identifying and validating risk factors in cardiovascular disease. The Framingham study (Kennel & Gordon, 1978; Dawber, 1980) begun in 1949, explored the epidemiology of cardiovascular disease (coronary heart disease, cerebrovascular disease, peripheral artery disease, and congestive heart failure) in a sample of over 5000 men and women aged 30-62 years on entry. A series of hypotheses were developed. Those hypotheses pertinent to the present study were:

1. Coronary heart disease increases with age.
2. Persons with hypertension develop coronary heart disease at a greater rate than those who are normotensive.
3. Elevated blood cholesterol is associated with an increased risk of coronary heart disease.
4. Tobacco smoking is associated with an increased occurrence of coronary heart disease.
5. Increased physical activity is associated with a decrease in the development of coronary heart disease.
6. An increase in body weight predisposes to coronary heart disease.

The subjects were reexamined at two year intervals to determine development of cardiovascular disease. At each biennial visit, a medical history, physical exami-

nation, laboratory studies (including blood work and electrocardiograms) were completed, reviewed and compared to previous data. Clinical studies revealed a high incidence of cardiovascular disease present in otherwise healthy individuals. The degree of cardiovascular involvement is not dependent on either age or increased risk factors alone; rather it is a combination. The more risk factors present, the more vulnerable the individual. Serum cholesterol levels, amount of cigarette smoking, and blood pressure elevations combined with other variables remain effective predictors of cardiovascular risk for persons aged 65-74. In older individuals, the total serum cholesterol level is not as accurate, but analysis of lipoprotein components (HDL cholesterol which is protective and LDL cholesterol which promotes coronary heart disease) does make it possible to estimate risk of cardiovascular disease for individuals age 50-80. Increased pressure is the major risk factor in all ages, a factor easily identified and generally easily controlled. Blood pressure is seen to rise as the individual ages. In men pressures are initially higher than women with diastolic pressure dropping in late 50's. Women's blood pressure about equals that of men at age 50-60 and then exceeds it. There is evidence that cardiovascular risk for women over the age of 65 is greater than for men over the age

of 65. For men, there is a lessening of risk with this age, not so for women.

The Framingham study found inconsistent data regarding lack of physical activity. Regular physical activity does seem beneficial but it is difficult to find specific evidence that it lowers the risk of cardiovascular disease. The same holds true for excess weight. Benefits can be seen for those who are not overweight but attributing those effects to the cardiovascular system can only be by inference. Cigarette smoking diminishes as a specific cardiovascular risk factor in those over 75 years of age.

The findings at the twenty-four year interval supported all the hypotheses to varying degrees. Dawber's report highlights the impact that epidemiologic studies in cardiovascular disease has had on medical practice -- that of confronting risk factors in the healthy individual before disease is apparant. Kannel & Gordon conclude that preventative measures should start early in life but cautions that it does not mean preventative measures are not of value to the elderly. The short term effects of such preventative measures can prevent cardiovascular events and instead enhance the quality of life. Using these risk factors, it is possible to identify 10% of the elderly who potentially will develop coronary artery disease, congestive heart fail-

ure and strokes. Identification of those at risk does not guarantee success of intervention, but it is a start.

A study project of the National Institutes of Health, Bethesda, Maryland, looking at the concept of normal aging attempted to obtain a sample what was physically healthy and socially independent. Subjects were screened to ascertain that they were free of clinical medical disease. Collected medical data revealed that the goal of a sample of "totally healthy" subjects would not be possible. One segment of the sample consisted of those with asymptomatic subclinical disease states (Granick & Patterson, 1971). A multitude of tests and interviews (medical, physiologic, psychologic, sociologic) were used. Factors relating to mortality were chronic cigarette smoking, elevated blood pressure, weight and age and were in agreement with the Framingham study.

The Multiple Risk Factor Intervention Trial (MRFIT) group (1976, 1977; Sherwin, 1981) identified the group of variables as risk factors in the development of cardiovascular disease -- serum cholesterol level, diastolic blood pressure and smoking. The Framingham study data were used in planning MRFIT. This study used major calculations to determine rates of reduction in risk factors and time intervals needed to demonstrate that

reduction. Participants were randomly assigned to a program of special intervention or to their usual source of medical care. A specific protocol was developed with the first group receiving special education and assistance toward behavior change in those areas identified as risk (Sherwin etal, 1981). Hymowitz (1981) while adding other risk factors (obesity, lack of exercise, stress, coronary prone personality) acknowledges that the original triad is most important because of the "strength and consistency of the data linking them with atherosclerotic heart disease and the large numbers of people affected by them, and because they are modifiable." Hymowitz describes the MRFIT program as drawing "heavily on the traditional literature on health education, health beliefs and patient counseling". The program is an active one aimed at specific changes in behavior and maintenance of these changes. Results of the intervention programs were not as great as was expected but reduction in the risk factors was still significant.

Ware and Black (1982) describe an intervention program sponsored by the Ford Motor Company. Ford Motor insurance investigators had become concerned about the costs of health care benefits, twenty-seven percent of which was related to cardiovascular disease. A screening program was implemented for all employees age 40 and over, high risk individuals were identified and a cor-

rective program was instituted. While the program was discontinued because of finances and long term effects are not conclusive, there were demonstrable short term effects in terms of lowering blood pressure, weight and cholesterol levels. There were some changes in dietary habits, activity levels and smoking, with this last the least successful.

The Pooling Project Research Group (1978) combined data from several studies in an effort to specify predictive factors in coronary heart disease. The five longitudinal studies used in the pooled data were:

The Albany Civil Servant Group

Chicago Peoples Gas Company

Chicago Western Electric Company

Framingham Community

Tecumseh Community

The data confirmed previous reports as to major contributors to coronary heart disease and the findings are consistent in the various groups. Blood pressure, serum cholesterol, cigarette smoking and excess weight were found to have strong relationships to heart disease and to each other, with blood pressure, serum cholesterol and cigarette smoking noted as the major risks. The figures obtained from the data demonstrate

> . . . Not only that the relationships between the major risk factors and susceptibility to CHD are

> consistant, strong, graded and independent, and that they meet the test of temporal sequence (i.e. presence of the trait precedes that of the event in time), but that they hold up excellently when put to the test of predictive ability. With the use of the multiple logistic model to evaluate simultaneously the impact of the three major risk factors, it is possible to show not only that observed numbers of events and event rates correspond well with expected for any given population, but also that the indices of risk derived from one set of populations serve well to predict risk independently in other populations. . . (The Pooling Project, 1978, 266).

The Wallingsford Wellness Project (Fallcreek & Stam, 1982) was a three year research and demonstration project focused on health promotion for the elderly. The risk factors identified for coronary artery disease were diet, smoking, uncontrolled hypertension, excess weight, lack of exercise and stress. The point was made that program design is similar in all groups; differences are in emphasis and adaptation of materials according to the group being addressed. Further,

> . . . Working with an older population requires the acknowledgement that older prople bring to the learning-changing environment the accumulated ha-

> bits, knowledge and experiences of a life time. . . . Effective program design for health promotion with older people demands that staff and participants alike examine critically the prevalent negative stereotypes of aging which suggest a limited capacity for personal change and community contribution (Fallcreek, & Stam, 1982, p. 8).

The evaluation research found the Wallingsford Wellness Project to be effective in "promoting and sustaining increases in participants' health information, positive attitudinal changes toward health, and in instrumenting important behavior changes in life style habits".

Various studies have focused on one or more risk factors: Smoking (Moody, 1978; Chesbro etal, 1982), heridity, stress and increased blood pressure (Schull etal, 1977), physical exercise (Masoro, 1976; MacHeath, 1984), obesity (Nowlin, 1974), diet (Thomson, Nichols & OBriest, 197Ø; Goodman & Smith, 1976; Feldman, 1983; Harper, 1983) and hypertension (Abramson & Hopp, 1976). These are listed for reference but not expanded on at this time. Stamler and Stamler (1984) have reviewed unifactorial clinical trials and data as well as multifactorial trials (including some already reviewed here).

Life Style

In considering the life styles of older Americans, it is first necessary to acknowledge stereotypes. Morgan (1979) lists stereotypes such as 1) a retiree is able to enjoy a full life without pressures of activities of daily living, 2) an older individual is a conservative or conformist, 3) the older one is the wiser, 4) most older people are institutionalized, and 5) old age is a second childhood. Tiven (1975) does the same with his list of "myths". They both describe the realities as a good percentage of older people continuing to be involved in their job roles at least part time, facing successfully any number of stresses (lower incomes, illness, loss of family and friends), living independently or within family settings. There is apt to be less money; there may be changes in living arrangements; there is a decline in physical capabilities. Many writers (Smith, 1973; Rose, 1976; Osterbind, 1970; Wahl, 1976; Weg, 1975) agree on these things but emphasize that complete catagorization is impossible. As with all ages there are educated and simple, wealthy and welfare, well and ill, involved and isolated, productive and independent -- whatever the poles may be. Any or all of these elements are appropriate when considering life styles. Acknowledging this, the variable "life-

style" as considered in this investigation refers to where the subject resides, urban, suburban or rural.

Lowe & Peek (1974) saw problems with traditional strategies of research and proposed conceptualizing the urban-rural variable as both life style and location. They used alcohol consumption as a behavioral variable depicting life style. Combining this with location, they formulated a composite index of urbanism and rurality. The conclusion was that the "comparative predictive ability of the urban-rural variable is significantly improved when it is defined as both location and life style. Lowe and Peek also concluded that urbanism and rurality belong on any list of important sociological variables.

In trying to answer the question of where the elderly live, the figures, to say the least, are confusing. Cutler and Harootyan (1975) note that the largest number of the total population live in urban areas (14.6 million or seventy-three percent). Of these, fifty-five percent are in the heavily urbanized central city and the rest in suburbs. This differs from the general population which has suburbanites outnumbering central city residents. They also state that in terms of proportion of the elderly to the total population, the highest concentration of elderly persons is in small towns of 1000 to 2500 persons. The next highest concen-

tration are those living in urban areas of 2500 to 10,000. The smaller the area, the greater the concentration of older people. The exceptions are farms which have the lowest proportion and suburbs. Weg (1981) notes that the urban-suburban ratio has been reversed for those over sixty-five years of age. In 1970, more than one half lived in the central city; in 1979, more than one half lived in suburban areas. Lee and Lassey (1980) found net migration greater in urban to rural areas for those age sixty-five and older.

There is a traditional belief that there are natural advantages in a rural setting that promote a more healthful way of life (Ellenbogen, 1967). There are certain differences that still exist between urban and rural living but these differences are lessening due to media, technology, and transportation changes. While some of the advantages are in the physical environment (fresh air, sunshine, lack of congestion) many have to do with life styles and socialization. Writers in the field (McKain, 1967; Bauder & Doerflinger, 1967; Butler & Lewis, 1977; Weg, 1975) agree on certain aspects. Rural residents are less likely (than urban) to retire completely. A larger proportion of rural residents are self-employed and there is a gradual progression from work to non-work. The older persons are well known in the community as are their interests, abilities, needs

and problems. The presence of long time friends and neighbors with common interests all add to the plus side of the healthful living scale. There are fewer organizations or clubs designed specifically for the elderly but because of the foregoing it seem they are not needed. Quadragno (1981) cites Bauder and Doerflinger when she says that quality of life is higher in small towns and social adjustment to aging is less difficult; it is a more intimate environment and enhances the individual's ability to maintain control.

Rural residents, on the other hand, are at a disadvantage when it comes to access to medical care. Most health resources, whether the philosophy is health maintenance or, as is most often true, treatment, are located in urban centers. The older person living in a rural area has an added strain on income as well as the stress involved with traveling and possibly living away from home in order to obtain medical care. As a result, the rural aged may make less use of health facilities. Lee and Lassey (1980) note that the rural elderly have poorer health than their urban counterparts and have lower nutritional levels. They relate this to lower income levels as well as to the less available health services. According to Steinhauer (1980), many rural elderly suffer triple jeopardy, they are old, poor and isolated in communities lacking organizations. Forty-

four percent have problems with less income and twelve percent with substandard housing (compared to six percent substandard housing in urban areas). The elderly have poorer health, more disabilities, greater number of chronic health problems and decreased opportunities for health care. Coward (1977) adds his list of special problems faced by rural dwellers: location of services, transportation involved, physical facilities available in the community, ability of area to attract and hold the professionals needed for staffing and the problem of reasonable cost limits.

Lee and Lassey (1980) in reviewing research on differences between elderly living in rural and urban locations found evidence that rural elderly face substantial disadvantages in objective dimensions of quality of life - socioeconomic status, health, nutrition, availability of services. They also found evidence that rural elderly score as high or higher on measures of subjective well-being. The rural elderly do not view themselves as deprived. For example, they see their incomes ad adequate; only one fourth admit to any serious financial difficulties.

Kivett and Scott (1979) conducted an extensive study on status and needs of a "rural by-passed area" of North Carolina. They found a larger percentage of individuals retired than in the general population. Seventy

percent perceived their health as fair or poor but health conditions did not stand in the way of activities. The most important health problem was arthritis. Next was cardiovascular problems. One in every two had elevated blood pressure; one in ten had after effects of a stroke. Others presented various heart and circulatory problems. Kivett and Scott note that eighty-five percent of Americans age sixty-five and over report the presence of at least one chronic condition and fifty percent report some form of limitation of activity. This is even greater in rural aged and is compounded by lack of facilities for, the distance to and the cost of medical care. Despite reported health problem rates being higher, respondents in the study were less likely to rate their health as poor as urban elderly in earlier studies. Kivett and Scott concluded that older rural adults need viable supports available to them that will keep important aspects of their life styles intact while improving overall quality of life.

Rose (1976) noted that rural life today is much less distinguishable from urban except that people in rural areas cut down on occupations gradually rather than abruptly as in industrial communities. Rural areas include farming communities and smaller settlements. The chief occupations range from mining to forestry, to trade, to transport and service. Greater proportions

(than urban) are self employed and thus less likely to retire completely and suddenly at a specific age. This eases some of the problems arising with retirement.

Rose also agrees that rural areas may have a greater proportion of older residents. The young have moved to urban or suburban areas and the community reflects the mind set of the aged. Very little housing actually geared to the elderly is available (units on one floor or accessible by elevator, handrails). There is generally more ready physical access to others in the same age catagory. The elderly rural resident may be dependent on an auto and when he/she can no longer drive, he/she becomes more isolated. Clubs and organizations are not as available in rural areas. Rural people are more apt to be conservative. Even considering these statements, much of rural life is very much like urban life today, perhaps due to radio, television, modern appliances, etc.

Elderly urban residents are more apt to feel isolation. There is an abrupt demarcation between work and retirement. With the cessation of job contracts, many social outlets are also cut off. At the same time, programs for the elderly are much more available and accessible and new relationships can develop. Access to health resources is more readily achieved. It was not apparent in the literature where the suburban resident

fell in relation to these issues. It would seem that the problems of both urban and rural origin would be present without the benefits of either.

Felton, Hinrichsen and Tsemberis (1981) looking at urban-suburban differences in the predictors of morale among the elderly note that differences found that health status plays a different role in the dynamics of well-being in urban than suburban areas. Health status was related significantly more strongly to frequency in visiting friends in the suburban sample. Urban elderly apparently saw their friends as frequently whether they were in poor health or not, while poor health prevented such visiting in suburban elderly. They conclude that suburban morale is contingent on good health while urban morale is contingent on other factors involving the neighborhood and the proximity of friends. It is known that the fastest growing site for United States elderly is the suburbs. In 1960 there were seventeen percent living on the urban fringe while in 1970 there were over twenty-one percent. This reflects the aging of the suburban population rather than the migration of the elderly (Kart, Metress and Metress, 1978). This is an area where investigation must be done.

Cantor and Mayer (1976) in a study of inner city elderly concluded that though age, sex, ethnicity and living arrangements are all important factors, low in-

come and poor health are most closely correlated. They also note that though urban populations appear to have a lower health status level when comparing urban and rural elderly, it is the poorest elderly living in the most deteriorated neighborhoods of the inner city who are in most jeopardy. Their study did not deal with health knowledge or behavior, but only with access to and utilization of medical facilities.

Bild and Havighurst (1976) agree with the Harris poll in ranking of problems as seen by the elderly. Fear of crime is first followed closely by concern for health and low income. Low income and increasing age are highly correleated with poor health - both perceived and measured. Health is also correlated to a large degree (significantly more than housing satisfaction, marital status, income, education or employment status) to life satisfaction. All of these have more influence on life satisfaction scores than age alone.

Donnenwerth, Guy and Norvell (1978) looking at the variables of residence (urban versus rural) and race (white versus black) found that life satisfaction index scores were higher for those living in rural areas than for those in urban areas. They also found life satisfaction for whites higher than for blacks. The interaction between the two variables was itself significant. In the rural setting life satisfaction for blacks was

higher and the urban setting white subjects scored higher. Using income as a covariant, the main effect for race disappeared. The investigators concluded that the variance in life satisfaction produced by race is due to income and not race itself. Differences between rural and urban subjects were not conclusive.

A limitation is seen in the delineation of rural-suburban-urban living. In considering rural, Adams (1975) notes that there are ambiguities that interfere with classification. Older rural persons today are "products of one culture and participants of another". The rural urban continuum has blurred because of technological changes in communication, transportation and home-work-community equipment and materials. A rural community is no longer limited to geographic and technologic boundaries of fifty years ago. Low and Peek (1974) conclude that rural-urban differences still exist raising questions about those theories that postulate these differences have been eliminated or almost so. They feel enough differences are present to question the assumption that ours is a "mass society." The question they had: Is the urban-rural variable useful in explaining attitudinal and behavioral differences in modern western society? -- can be answered yes. Urbanism and rurality are real and are relatively important predictors. Lowe and Peek acknowledge that it raises as many

questions as it answers. Schnore's (1966) central thesis is that rural-urban differences in the United States are diminishing but are still crucial. Whether one examines current data for areas or for individuals, the differences persist. He believe that residence is a fundamental social characteristic and as such merits the same attention as age, sex, ethnicity or socioeconomic status. He goes further and emphasizes that place of origin is fundamental.

Perhaps a case needs to be made for including Appalachia in general rural. Ford (1962) reporting a survey in the Southern Appalachian Region notes that most so called mountain traits are to be found in one form or another throughout the nation particularly in rural areas. There was a shift prior to the 196Ø's in the mountain beliefs and values and regional isolation, the same type of shift affecting rural persons throughout the nation. Growth and improvement of public education, rural electrification, radios, television, motion pictures, newspapers, farm journals, improved roads and migration to and from the north have brought the urban world to the mountains as well as to other rural areas. Ford notes:

> Of all the implications that may be drawn from the survey of attitudes, values and beliefs of the Southern Appalachian people, the most important is

> this that the old stereotypes that have so long guided social action in the region no longer apply to the great majority of the residents (Ford, 1962, p. 196).

They may lag in social and economic development but they are living in the twentiety century. They retain the impress of their rural cultural heritage but for the most part are not radically different from most other Americans. Flaskerud (1980) disagrees and says that the southern white Appalachian is a member of a minority group which has been geographically and culturally isolated and that this particular minority group maintains a belief system incongruent with the rest of the United States. Her study dealt with opinions about mental illness and related behaviors using a group of Appalachians that had migrated to an urban center. This in itself implies many counfounding variables. The two polar opinions are noted here, acknowledging that this may or may not be a limitation.

Locus of Control

Rotter (1966) defined locus of control as the extent to which individuals feel in control of reinforcers relative to their own behavior. Individuals are classified as internal if they feel they are effective agents in determining the outcome of their own behavior.

They are classified as external if they feel outcomes of events are due to chance or to other forces beyond their control. This developed out of expectancy theory. Expectancy is the "probability held by the individual that a particular reinforcement will occur as a function of a specific behavior on his part in a specific situation or situations" (Phares, 1976). In expectancy theory, behavior is contingent upon the likelihood of that behavior's success in attaining some incentive or objective. Behavior is also contingent upon the attractiveness or reinforcement value of the incentive or objective to the individual. The Rotter scale is most often used to measure the locus of control. Rotter (1966) traces the development of the scale to the twenty-nine pair of matched statements (including six filler items) that make up the final version. The score is the total number of external choices. The items "deal exclusively with the subject's belief about the nature of the world". As such the scale is a measure of generalized expectancy rather than specific. According to Phares (1976) locus of control operates both as a belief directed toward a specific situation and as a generalized expectancy covering many diverse situations (personality trait).

Norris (1979) while attempting to develop a standardized, easily administered measure of social disen-

gagement investigated other measures for correlation with disengagement. One of these measures was locus of control. Her research included young as well as old subjects. There was no significant correlation between disengagement and locus of control in the young sample but she did find a significant relationship between the two constructs in the older sample. Phares (1976) noted that with advanced age, one may revert to the helplessness of childhood. If this is true, one would expect elderly persons as a group to exhibit external beliefs.

Belief in predominately external or internal control over consequences of one's behavior is a concept that has wide application. Henthorn (1975, 1979) postulated that behaviors that were reinforced or anticipated to be reinforced would be continued. She supported her hypothesis that the greater the degree of disengagement, the lower the level of reinforcement and anticipated reinforcement. Her concentation was on external reinforcement of individuals and what health care workers can do to enhance that reinforcement. Phares (1976) found internals exhibited a high level of coping and activity. Palmore and Luikert (1972) found that elderly people (internals) score higher on life satisfaction. Wold and Kurtz (1975) came to the same conclusion. Wolk (1976) did find that it was somewhat tempered by environmental constraints. In a study of TB patients,

Seeman and Evans (1962) found internals knew more about their condition and were more inquisitive with doctors and nurses about tuberculosis and their own situations. They also showed less satisfaction with the amount of information obtained from hospital personnel. This was seen as an attempt to get greater control over their life situations. Low generalized expectancy for personal control also contributes to reduced acquisition of information because belief in external locus of control is accompanied by low expectancy that one's own efforts will have impact. Therefore it is not seen as a productive enterprise to work to gain information. Seeman and Evans studies appear clear in the message that internals were more knowledgeable at least in terms of personally relevant information. Knowledge is essential if one is to extert control or effect on surroundings. Phares (1976) states that internals possess a higher level of knowledge because they actively seek it. Studies suggest that internals and externals differ not only in attentiveness to and recall of material present in the environment but also in terms of how actively they seek additional relevant material. Straits and Sechrest (1969) found non-smokers significantly more internal than smokers. This was confirmed by James, Woodruff & Werner (1965). This latter reported that following the Surgeon General's report on the deleterious effects of

smoking, males who quit for a specific period of time exhibited higher internal scores than those who believed the report but did not choose to quit. The internals evaluate the cogency of the influence attempt and act accordingly. The content of the message is what is important. Phares (1976) suggests that internals may be enrolled in more independent, self-regulated education programs while externals profit from programs that rely on prestige suggestion and support from others.

Not all studies have been as definitive. Wennerholm and Zarle (1976) in a study of hypertensive patients hypothesized a difference in locus of control between three groups (psychosomatic, non-psychosomatic medical and a control). While there were differences on some variables, there was no significant difference in locus of control. Lewis, Morisky, and Flynn (1978) attempted unsuccessfully to validate a situation specific health locus of control scale. Page (1982) working with the Health Belief Model and change of behavior found that even if behavior changes were accomplished, they were difficult to maintain. She concluded that achievement behavior is different from maintenance behavior and that the latter may be dependent on the ability to regulate one's own reinforcers, to possess an internal locus of control. In summary, locus of control involves both a person's reality orientation regarding

the amount of control one can actually exercise over outcomes as well as a generalized, relatively persistent, personality trait pertaining to personal control over outcomes. It reflects what a person perceives as success as a result own one's own initiative. If the effort is perceived as instrumental in attaining success, it is internal. If one sees success as unrelated to ability and effort, the orientation is external. It is logical to assume that an individual will not bother to alter his or her behavior with respect to risk factors and cardiovascular disease if the perception is that nothing one does will help.

Health Education

Health education today can be seen on two levels--deliberate or incidental. This may be the reason that so much of the information available to the general public about cardiac risk factors is not "known" as indicated by the Chicago area study (Shekelle and Shugney, 1978). Ausubel (1967, 386) states that "though individuals can acquire much miscellaneous information and some skills incidentally, deliberative effort is required for the efficient learning of most types of academic material." He further notes that motivation is a "highly significant factor" and greatly facilitates learning even if it is not indispensible.

Knowles (1973, p. 11) notes that learning involves change -- that the concept of change is inherent in the concept of learning. Sharmansky and Hamilton (1979) concur by stating that "health education is a process that connects health information and health practices." Nursing literature emphasizes the importance of health teaching and client participation in control of health and disease (Brimmer, 1979; Pyle, 1979; Redman, 1975). Carlson (1979) reports a study in Kentucky of medication behavior in elderly clients. Haynes, Sackett and Taylor (1980) worked to discover how to identify the patient with low compliance with therapy and emphasized the necessity to make the patient an active participant in his therapy.

Literature and information are available to and directed toward the older person. Percy (1974), a member of the Senate Special Committee on Aging and the Select Committee on Nutrition and Human Needs, has written a book for popular consumption citing the many barriers of aging along with some suggestions for coping. He includes a resource section for the use of the aged individuals and their families. Hugh Downs, television host for "Over Easy," presents a parade of individuals who are successfully aging. He confronts the popular problems of aging in today's society (1978). The American Association of Retired Persons is a nation-

wide organization that offers its members benefits such as pharmacy service, retirement guides, discounts on hotels, motels and car rentals, and group health insurance. The official organ of the American Association of Retired Persons, Modern Maturity, keeps its members informed on issues related to aging, be they official or otherwise as well as offering suggestions for daily living (travel, cooking, decorating, fun, economics, etc.). Robert Skeist (1980), a health educator and manager of the Seniors' Health Program of Augustana Hospital, has published a book, To Your Good Health. This book developed out of the program for senior citizens and is described as a practical guide for older Americans, their families and friends. Mr. Skeist and his associates have developed what is considered an exciting and highly utilized program of health education for the elderly.

An extremely important question deals with the ability of the older person to learn new material. The literature is overwhelming in support of this. Birrin (1976) notes that evidence indicates there is no decline with age in general mental ability and others agree (Kart, Metress and Metress, 1978, 1979; Woodruff, 1975; Cross and Florio, 1978; Palcic, 1978; Butler and Lewis, 1977; Riffle, 1979). It is acknowledged that some things can interfere (certain chronic illnesses, extreme

stress or anxiety, and attitudes). The major changes seemed to be in speed of response. The fact is that with good physical and mental health, adequate education levels (and admittedly these are variable) and intellectual stimulation, there is no noticeable decline in intellectual ability with age.

Knowles (1970, 49-54) sums up the question of the (older) adult learning when he notes 1) adults can learn -- the decline is in the speed of learning not the intellectual capacity, 2) learning is an internal process, and 3) there are superior conditions of learning. This last involves (among other facets) motivation and relevance (Walsh, 1970). And finally, Smith (1973) states that health needs (and this is amended in this instance to include health education) ought to have first place in consideration. Any other involvement is dependent on health. And further, individuals should be responsible for their own health.

Recapitulation

The elderly person (one who is over 65 years of age) has been the focus of this review of literature. Two basic theories have been explored as a means of categorizing individuals who will be part of the present investigation. Cardiovascular disease has been selected as an entity involving many elderly persons. Knowledge

and use of knowledge of risk factors have been identified as one way to prevent and/or control cardiovascular disease and its consequences. Other variables included in the study are locus of control and area of residence as life style (urban, suburban or rural).

CHAPTER III

METHODOLOGY

The goal of this research project was to determine whether or not it is possible to differentiate between groups of women over age 60, who have and use knowledge of cardiovascular risk factors from those who have the knowledge but do not use it. In this frame of reference there were two other groups that could be present, and thus needed, at least, to be considered. The first group consisted of those individuals who did not have any concrete knowledge of cardiovascular risk factors and still lived as if they did; the other group were those individuals who have no knowledge of the risk factors and also lived as if they had no knowledge.

In looking at this question, specific variables were considered to see if they influenced how one utilized knowledge one had. The specific variables were:

Diagnosed cardiovascular disease/not diagnosed

High level of life satisfaction/low level

Disengaged/not disengaged

Life style: urban, suburban or rural

Level of locus of control

A second set of variables are those not specifically sought but nevertheless present with the subjects. These include:

Age

Level of education

Social class

Income

General health

Source of information

Risk factor score

Some of these secondary variables are attribute variables; all are present and identifiable. Both sets of variables were used in the data analyses.

Chapter II reviewed the related literature. This chapter describes the methods used to accomplish the purpose of the study.

Subjects

Subjects were 155 individuals over sixty years of age. The sample was limited to females over sixty for several reasons. The first reason is that women live longer than men today and more are available for study.

In 1900 the sex ratio of men to women age 65 and over, was one hundred two; in 1970 it was seventy-two for age sixty-five and over (Cutler and Harootyan, 1979, p. 51). The second reason is that at this age women develop cardiovascular disease at the same rate as men. It is thought that female hormones protect women prior to menopause but once reaching that stage in life, the advantage is gone. Another reason considered here is that women have the primary responsibility for implementation and/or control of one of the risk factors -- the diet. Women still do most of the grocery shopping and cooking of meals in the United States. In addition, there is some evidence (Giesen & Datan, 1980) that women perceive themselves as becoming more assertive, less dependent, capable of resolving their problems, and as shifting from a subordinate role within the family to one of authority. One study quoted said that women believed they had gained in competence over the years through experience. This appears to be true for women who have been housewives as well as those who have led professional lives. The women see themselves as competent and capable, assertive as needed, and capable of coping with whatever problems present themselves.

The subjects were chosen as a quota sample with a similar number of participants from each geographic life

style area. Subjects for the urban and suburban samples were obtained from Chicago and the surrounding suburbs. The rural portion of the sample was obtained in part using an area in the southern Appalachain region of the United States. The particular area is served by the Frontier Nursing Service. This organization delivers health care to families in an area covering five hundred square miles. Affiliation with an organization such as the Frontier Nursing Service assures entry into the communities which would otherwise be closed to outsiders. Another area used for this portion of the sample was rural New England. Entry into this area was facilitated through business persons in the community.

Participation was on a volunteer basis. The investigator publicized the desire for volunteers through bulletin boards, churches, community groups, etc. However, most of the participants were obtained through word of mouth referral and personal contact by someone other than the investigator. Participants had to be living in their own quarters (home or apartment) and be responsible for their own meals, shopping, and general activities of daily living. It is highly probable given the networking involved in obtaining participants that the sample is biased toward middle class -- a group of financially more secure, better educated and of higher

vocational and residential prestige than is true of most individuals of 60 plus years.

Procedure

Data were collected during interviews with each subject. The purpose of the interviews was stated and the subject was given the option of participating or not. If the subject agreed, a mutually acceptable date and time for the interview was established.

The subject was asked not to discuss the interview until the investigation time had elapsed. This was in anticipation that there would be others within the community involved in the study. The subject was assured of confidentiality in the investigation. At the conclusion of the study, participants who so desired were told they would be informed of the results. In addition, for any who so desired, the investigator offered to help them obtain appropriate health education materials.

Instrumentation

The data were obtained using a specially constructed questionnaire which incorporates four previously used psychometric scales. The questionnaire consisted of seven parts divided into two groupings with a separate investigator for each grouping. In order to

facilitate unbiased interviewing, investigator I administered: the demographic data, the questionnaire on foods eaten and health habits, the questionnaire on locus of control and the life satisfaction index A. Investigator II administered the questionnaire on knowledge of cardiovascular disease and risk factors, the disengagement index, the life satisfaction index B and the open ended question "Is there anything I can answer for you?" A risk factor index was computed at the completion of this section.

The area of the questionnaire dealing with knowledge of risk factors and that dealing with food eaten and other health habits were developed using those areas delineated by Scheckelle and Schuguey (1978). One section deals with the specific knowledge and the other deals with the application of that knowledge. A separate score is obtained for each section.

As stated in Chapter II, the Disengagement Index was devised by Barbara Henthorn (1979). Life Satisfaction Indices A and B were developed by Neugarten, Havighurst and Tobin (1961). The Locus of Control questionnaire is that developed by Rotter (1966). The assumption is that Life Satisfaction, Disengagement, and Locus of Control scores will show inverse correlations -- that is a high level of disengagement will correspond to low

levels of life satisfaction and locus of control.

The Risk Factor Index is a computed figure arrived at by adding weighted scores assigned to individual cardiovascular risk factors. The risk factor index used in this study is an adaptation of the one used by Cromwell et. al. (1980) working with post cardiac surgical patients. Similar indices have been used by agencies in health teaching programs offered to the community. See Appendix B for the risk factor index scoring sheet. Certain of the risk factors are uncontrollable (age, sex, and heridity). Others (weight, smoking, exercise, and diet) are controllable by the individual. The index, when used in health education programs, is one way to help the individual see the impact of the various factors for potential cardiovascular episodes.

The adaptations in the risk factor index made for use in this study were threefold. The sample was entirely women so sex was not a comparable factor. Blood pressure and level of cholesterol were not obtained; the interviewers were not in the roles that encompassed this type of information gathering. Numerical weights for the individual factors were adjusted in light of other sections of the interview questionnaire.

The order of the parts of the questionnaire is ar-

bitrary except for the two sections dealing with knowledge of risk factors and how one lives (foods eaten, health habits, etc.). These two are ordered to eliminate the possibility that the latter would give clues as to how to answer the former.

The interview was ended with the repeated assurance of confidentiality. The subject was asked if there was anything else she would like to say, ask or discuss. This material was to be noted in the subject's words. When the data collection had been completed, the unscheduled data were to be checked for commonalities. Should any significant information emerge, this was to be correlated with the identified variables. This final question was eliminated because none of the participants asked questions in this area. Questions instead, were directed to finding out the results of the survey.

The questionnaire/interview schedule was tested in a pilot study using individuals over age 65 but not necessarily fulfilling the quotas specified. A copy of the questionnaire may be found in Appendix A.

Statistical Treatment

In order to determine how one uses the knowledge one has, it is first necessary to determine what knowledge is present. Thus, knowledge becomes the inter-

vening variable. The subject matter being tested for under knowledge is common knowledge and readily available to everyone. Facts, theories and current research results are presented to the public regularly through the various media. This coupled with the national interest in exercise and health promoting diets has enabled individuals, both young and old, to incorporate these elements into their activities of daily living. Despite this, there are no consistent measures indicating what the public knows about cardiovascular risk factors or how this knowledge is used. In this study, the extent of knowledge of cardiovascular risk factors was determined by use of an embedded test. Means and standard deviations of test scores were calculated. High knowledge is identified as being a score over one standard deviation above the mean. Low knowledge is identified as being a score one standard deviation below the mean. Average knowledge is identified by those scores within one plus or minus standard deviation from the mean. This same procedure was used to determine utilization of knowledge. A second test determined how individuals used knowledge of cardiovascular risk factors.

For some early analyses a triple split on the individual variables, knowledge and utilization of know-

ledge was used. Referring to the figure below, nine possible groups can be identified when the two sets are combined on a grid.

UTILIZATION OF KNOWLEDGE

KNOWLEDGE			
	High Knowledge + High Utilization	Average Knowledge + High Utilization	Low Knowledge + High Utilization
	High Knowledge + Average Utilization	Average Knowledge + Average Utilization	Low Knowledge + Average Utilization
	High Knowledge + Does not Utilize	Average Knowledge + Does not Utilize	Low Knowledge + Does not Utilize

Figure 1. Nine Way Split on Knowledge and Utilization of Knowledge

For later analyses four groups were used. In this configuration, the "High Knowledge" and "Average Knowledge" cells were collapsed to "Has Knowledge" and "High Utilization" and "Average Utilization" were collapsed to "Does Utilize" yielding 4 groups (Figure 2).

		UTILIZATION	
		Utilizes Knowledge	Does Not Utilize Knowledge
KNOWLEDGE	Has Knowledge	4	3
	Does Not Have Knowledge	2	1

Figure 2. Four Way Grouping

Descriptive and multivariate statistical procedures were used to analyze the data. Included were means, standard deviations, percentages, multiple regression, and stepwise multiple discriminate analysis. Discriminant analysis was used to determine whether or not specific variables differentiated among the groups. The investigator used multiple regression analysis and discriminant analysis with default parameters to determine the optimum list of variables from those originally listed (both theorized and attribute).

Multiple regression analysis was used on the original continuous data in a stepwise method to determine the variables to be used in the final analysis. The dependent variables were first, knowledge of risk factors (KNOWRF) and then later, utilization of knowledge of risk factors (UTILIZEK). Discriminant analysis was performed using the same two dependent variables. Since the discriminant procedure uses groups rather than continuous data, the previously mentioned three way split of high, medium, and low scoring was used to determine the groups.

Once the appropriate variables had been selected, the scores on the two dependent variables (KNOWRF and UTILIZEK) were combined to form a new dependent variable which was given the name KNOWUTIL. It is at this point the four groups are identified as seen in Figure 3. To answer the question: Is it possible, knowing values on specific independent variables, to determine which individuals will utilize knowledge about cardiovascular risk factors in their daily living and which individuals will not?, the dependent variable is the combined variable KNOWUTIL with four groups. The independent variables are those determined by the previous procedures.

KNOWLEDGE	UTILIZATION: Utilizes Knowledge	UTILIZATION: Does Not Utilize Knowledge
Has Knowledge	KNOWUTIL 4 (Those who have and use it)	KNOWUTIL 3 (Those who have and do not use it)
Does Not Have Knowledge	KNOWUTIL 2 (Those who do not have knowledge but live as if they do)	KNOWUTIL 1 (Those who do not have knowledge and who live accordingly)

Figure 3. Four Groups of Final Analysis

The study can be classified as exploratory using a cross-sectional survey research design. It is an attempt to discover whether or not a specific group of variables can be determined that will identify those individuals who are most likely to utilize knowledge of cardiovascular risk factors in their daily living. The research questions as posed in Chapter I were:

1. What do the elderly know about cardiovascular risk factors?

2. How do the elderly use information they have about cardiovascular risk factors?
3. What variables (demographic and theoretical) affect how the elderly use information they possess?
4. Which variables (demographic and theoretical) affect the acquisition of knowledge about cardiovascular risk factors?
5. To what source do the elderly attribute information they have about cardiovascular risk factors?

As stated previously, the investigator used test performance (knowledge) and self-reported behaviors (utilization of knowledge of cardiovascular risk factors) as the dependent variables. The subjects were volunteers and chosen as a quota sample with a similar number of participants from each geographic life style. The methods for obtaining data were administering psychometric instruments and interviewing using structured questionnaire protocols.

The research design can be justified in terms of the state of the field. There are no known paradigms involving the interaction of the factors under consideration. Rather, the field is still developing and thus is exploratory. The fact is that health education pro-

grams are being developed and implemented without a data base. This study is one way to begin building that data base.

CHAPTER IV

RESULTS

This chapter presents the data beginning with the description of the sample. Included is the process of determining the specific variables to be included in the final analysis. Data are presented using first test scores and behavior scores as the dependent variable. The final section will deal with a dependent variable that is formulated by combining the scores attained on the test for knowledge of cardiovascular risk factors and the scores attained through self-reported behavior using knowledge of cardiovascular risk factors.

Characteristics of the Sample

The sample was a volunteer group of 155 white women 60 years of age and older. The number of women in each age category is presented in Table 1. The median age is in the 71-75 year category. This is in the upper end of the "young-old" as defined by Neugarten (1975) and Brown (1978). The breakdown compares favorably with

the distribution of the older age group in the United States though the parameters are somewhat different.

Table 1 : Age of the Sample

Age	N	Percent
60-65	25	16.1
66-70	40	25.8
71-75	34	21.9
76-80	32	20.6
81-85	15	9.7
Over 85	9	5.8
Total	155	100.0%
Scale 1-6	Mean 2.994	SD 1.426

Harris (1978) gives the breakdown as 65-74 (63%) and 75 and over (37%). The 1981 Fact Book on Aging uses 65-74 (60%) and 75 and over (40%). This present categorization along these lines is 60-75 (64%) and 76 and over (36%). One third of the sample are widowed (Table 2) and one half live alone (Table 3).

Table 2: Marital Status

Status	N	Percent
Single	16	10.3
Married	59	38.1
Separated	0	0.0
Widowed	77	49.7
Divorced	3	1.9
Total	155	100.0%

Table 3: Living Arrangements

Status	N	Percent
Living alone	76	49.0
Living with someone	79	51.0
Total	155	100.0%

Two thirds of the participants had completed high school with over 45% having some college or post secondary education (Table 4). This sample appears to have a higher educational level than the general population of individuals age 60 and over. For example Weg and Loucks (1981) found greater percentages at the lower educational levels.

Table 4: Educational Level

Level	N	Percent
Elementary		
Ø-4 years	3	1.9
5-8 years	3Ø	19.4
High School		
Less than 4 years	18	11.6
4 years	32	2Ø.6
College		
Less than 4 years	33	21.3
4 years	22	14.2
More than 4 years	17	11.Ø
Total	155	1ØØ.Ø%
Scale 1-7	Mean 4.265	SD 1.667

Financially, the sample's income ranged from below $5ØØØ per year to over $2Ø,ØØØ per year (Table 5). Occupations of the sample subjects are listed in Table 6. The occupational category was that which the subject identified as her main life occupation presently or prior to retirement. The category "professional, managerial" included occupations such as nurse, midwife, teacher, as well as various levels of managerial positions. There were no women who claimed to be farmers

Table 5: Income

Income	N	Percent
Under $5000/yr	21	13.5
$5-$9000/yr	31	20.0
$10-14999/yr	27	17.4
$15-19999/yr	23	14.8
$20000 +/yr	53	34.2
Total	155	100.0
Scale 1-5	Mean 3.361	SD 1.463

or to be self-employed, though ten women or 6.5% claimed to own their own business. Almost 75% were, at this time, retired (Table 7). Almost 60% saw their standard of living the same or better than it had been ten years earlier (Table 8).

Table 6: Occupations of Sample

Occupation	N	Percent
Professional, Managerial	61	39.4
Farmer	Ø	Ø.Ø
Owner of own Business	1Ø	6.5
Self-Employed	Ø	Ø.Ø
Clerical, Sales	37	23.9
Skilled worker Crafts	1Ø	6.5
Services, Labor	12	7.7
Housewife	25	16.1
Other	Ø	Ø.Ø
Total	155	1ØØ.Ø%

Table 7: Retirement Status

Status	N	Percent
Retired	114	73.5
Not Retired	41	26.5
Total	155	1ØØ.Ø%

Table 8: Standard of Living (Compared to ten years earlier)

Valuation	N	Percent
Better	12	7.7
Same	79	51.Ø
Worse	64	41.3
Total	155	1ØØ.Ø%

An attempt was made to have a comparable number of subjects from each of the three geographic areas. Table 9 shows the number that was actually included.

Table 9: Geographic Distribution of Sample (Life Style)

Area	N	Percent
Urban	58	37.4
Suburban	47	3Ø.3
Rural	5Ø	32.3
Total	155	1ØØ.Ø%

Table 1Ø shows the number of years subjects have lived in their community. Over 65% live in single family

dwellings (Table 11) and over 76% own their own home (Table 12). This corresponds with Harris (1978) and Weg and Loucks (1981) whose statistics indicate that 70% of the elderly own their own homes. Apartment dwelling may

Table 10: Years in the Area

Years	N	Percent
1-10	15	9.7
11-25	18	11.6
26-40	22	14.2
41 +	100	64.5
Total	155	100.0%

Table 11: Type of Dwelling

Type	N	Percent
Single Family Dwelling	102	65.8
Apartment	53	34.2
Total	155	100.0%

Table 12: Home Ownership

Category	N	Percent
Own	118	76.1
Rent	33	21.3
Other	4	2.6
Total	155	100.0%

indicate either ownership or rental.

The sample's perception of health at the present time was somewhat negative with only a little over 28% viewing their health as good or excellent (Table 13).

Table 13: Perception of Health at Present Compared to 10 years earlier

Valuation	N	Percent
Excellent	18	11.6
Good	26	16.8
Fair	63	40.6
Poor	48	31.0
Total	155	100.0%
Scale 1-4	Mean 2.910	SD .969

Table 14: Health Compared To Others of Same Age

Valuation	N	Percent
Better	17	11.Ø
Same	42	27.1
Worse	96	61.9
Total	155	1ØØ.Ø%
Scale 1-3	Mean 2.51Ø	SD .687

The same was true for comparison of present health status with that of others of the same age (Table 14). Sixty-one percent saw their health status as worse than previously. Perception of health was determined rather than objective health status; this was self-reported. Bild and Havighurst (1976) found concern for health as one of the major problems of the elderly. Several researchers have found perceived health status as important, if not more important than actual health status (Medley, 1976; Palmore & Luikert (1972).

Forty-two percent of the sample had sustained the presence of some form of cardiovascular disease (Table 15) with almost all those so diagnosed being treated with medication (Table 16). This is not to say that

others were not afflicted with cardiovascular disease. Atherosclerosis begins early in life. Atherosclerosis is the process of lipid deposit with subsequent narrowing of vessel lumens. Arteriosclerosis is an aging process whereby the vessels become rigid and tortuous. The individual age 60 or over will have had these processes working whether or not overt symptoms are present. This study refers to those who have been diagnosed as and/or treated for some cardiovascular disease manifestation.

Table 15: Presence of Cardiovascular Disease (Reported by Subject)

	N	Percent
Yes	65	41.9
No	90	58.1
Total	155	100.0%

Medication as a variable was eliminated from further study for two reasons. First, it is dependent upon another variable, the presence of diagnosed cardiovascular disease, and this may be part of the same construct. The second reason was that the exact medication taken

Table 16: Number Taking Medication For Cardiovascular Problem

	N	Percent
Yes	62	40.0
No	93	60.0
Total	155	100.0%

was not identified by name or action and thus there was no confirmation that it (the medication) had been prescribed specifically for cardiovascular problems.

Table 17 presents scores attained by the sample on the two test areas and a risk factor index score. Raw data on knowledge and utilization of knowledge appear comparable. The mean score of utilization of knowledge translates to 59%. A separation of diet and other health habits yields a score of 62.1% (mean 47.203) for diet and a score of 51.6% (mean 9.335) for other health habits. Actual risk factor index is 48.7% (mean 19.039).

Table 17: Scores for Knowledge, Utilization of Knowledge, Risk Factor Index

Item	Mean	SD	Variance	SE
Knowledge of Risk Factors (Poss score Ø-1ØØ) (Range 9-89)	6Ø.69Ø	15.521	24Ø.96	1.247
Risk Factor Index (Poss score Ø-39) (Range 9-3Ø)	19.Ø39	3.185	1Ø.141	.256
Utilization of Knowledge (Poss score Ø-94) (Range 32-8Ø)	56.519	9.272	85.974	.745
Utilization of Knowledge of Diet (Poss score Ø-76) (Range 27-69)	47.2Ø3	8.728	76.178	.7Ø1
Utilization of Other Health Habits (Poss score Ø-18) (Range 4-14)	9.335	2.289	5.237	.184

Some personality characteristics of the sample are presented in Table 18. The group evidenced fairly low scores on the Rotter (1966) Internal-External Locus of Control Scale indicating a relatively high level of internal locus of control. Life satisfaction scores using Neugarten, Havighurst & Tobin scales (1961) indicate positive attitudes with scale B slightly more positive than scale A. Scores on a modified disengagement scale (Henthorn, 1979) indicate that the sample is slightly disengaged, a low score being indicative of disengagement. The second entry labled disengagement is the score of the first entry plus an added section of investigation. This portion was eliminated from the analysis because all subjects answered the same way and it thus did not provide any significant information.

Table 18: Personality Characteristic Variables

Variable	Mean	SD	Variance	SE
Locus of Control (Poss score Ø-23) (Range 1-19)	8.439	3.759	14.131	.3Ø2
Life Satisfaction Index A (Poss score Ø-2Ø) (Range 2-2Ø)	13.742	3.551	12.6Ø8	.285
Life Satisfaction Index B (Poss score Ø-24) (Range 4-24)	18.Ø45	4.426	19.589	.335
Disengagement Index (Poss score Ø-52) (Range 9-41)	24.826	5.612	43.716	.531
Disengagement Index (Above score plus an added section) (Poss score Ø-78) (Range 14-56)	36.548	7.938	63.Ø16	.638

Delineation of the Variables

One of the problems in a study of this type is to determine the optimum list of variables. The primary variables have been discussed previously in Chapter II and designated as theoretical variables. They were: level of disengagement, presence of diagnosed cardiovas-

cular disease, life satisfaction, locus of control, and life style (urban, suburban or rural). Secondary variables were age, level of education, social class, income, perception of one's health, risk factor score, occupation, retirement, marital status, number of occupants in home, ownership of home and standard of living. These secondary variables are for the most part attribute variables and the assumption is that each could affect one's knowledge or use of knowledge of cardiovascular risk factors. These variables have all been presented in the demographic description of the sample.

A multiple regression procedure was performed on the data using a stepwise method with default parameters. Stepwise is a variable selection method (Norusis, p. 48). The first variable selected is the one with the largest positive or negative correlation with the dependent variable, in this instance knowledge of cardiovascular risk factors (KNOWRF). This procedure is repeated for the second variable. After this, at each step, the variables are examined for removal or entry. The process continues until no more variables meet entry or removal criteria. This was done first using KNOWRF as the dependent variable. The variables that were entered before the Ø.Ø5 limits were reached are presented in Table 19.

The same procedure was performed using utilization of knowledge of cardiovascular risk factors (UTILIZEK) as the dependent variable. The variables left in the equation when the default was reached are presented in table 20.

Table 19: Variables Selected Using Multiple Regression Stepwise KNOWRF

Variable	B	SE B	Beta	T	Sig T
EDUCAT	2.624299	.644035	.281916	4.075	.0001
INCOME	1.480372	.851142	.139567	1.739	.0841
AGE	-2.733264	.758599	-.251047	-3.603	.0004
COMPHEAL	3.486818	1.396483	-.154386	-2.497	.0136
GEOGRAPH	-3.218033	1.161911	-.173291	-2.770	.0063
LOC	-.695289	.275574	-.168391	-2.523	.0127
(Constant)	56.091687	7.297965		7.686	.0000

Table 20: Variables Selected Using Multiple Regression Stepwise UTILIZEK

Variable	B	SE B	Beta	T	Sig T
LSA	.862935	.183090	.330464	4.713	.0000
EDUCAT	1.232279	.409676	.221598	3.008	.0031
GEOGRAPH	-2.207216	.778860	-.198967	-2.834	.0052
LOC	-0.356664	.178840	-.144598	-1.994	.0479
(Constant)	46.716178	4.146467		11.267	.0000

The variables EDUCAT, GEOGRAPH and LOC are found in both equations. It should also be noted that the relationship is consistent in direction, LOC and GEOGRAPH having negative signs and EDUCAT having positive signs. Negative and positive signs do not in themselves say anything except to show like direction. In this instance for both KNOWRF and UTILIZEK, EDUCAT appeared to move in one direction while GEOGRAPH and LOC moved in the other direction. As level of education increased, rurality decreased and locus of control became more internal. Regression using KNOWRF as the dependent variable also selected INCOME, AGE, and COMPHEAL with INCOME not meeting the significance level of Ø.Ø5 at the end of the procedure. Regression using UTILIZEK as the dependent variable selected LSA, a life satisfaction index.

Acknowledging that knowledge itself was logically a significant variable when discussing utilization of knowledge, the procedure was again run including the variable KNOWRF in the independent variable list. This confirmed the assumption that knowledge was itself an important variable. The results as presented in Table 21 show that the variables EDUCAT, GEOGRAPH and LOC are no longer in the equation. Instead, only KNOWRF and LSA remain.

Table 21: Variables Selected Using Multiple Regression Stepwise

Variable	B	SE B	Beta	T	Sig T
KNOWRF	.244480	.041425	.409255	5.902	.0000
LSA	.765745	.181080	.293244	4.229	.0000
(Constant)	31.158950	3.147478		9.900	.0000

The next step was to analyze the data using Discriminant Analysis. As noted previously, the scores on the dependent variables were divided into three groups with those scoring higher than one standard deviation above the mean labeled as high, those scoring one standard deviation above or below the mean labeled as average and those scoring one standard deviation below the mean as low. Again a stepwise method was used. In discussing Discriminant Analysis, Kleck (1980, p. 53) noted that it is wise to eliminate variables which are weak or redundant. He further notes that stepwise procedures produce an optimal set of discriminating variables but warns that it is not necessarily the best combination. However, given the problems of cost in time and money, stepwise procedures are a logical and efficient way to determine the best combination of variables even though there is no guarantee that "the end

product is indeed superior to all others". The stepwise procedure used was minimization of Wilks' lambda. Because it is an inverse statistic, at each step the variable that results in the smallest Wilks' lambda for the discriminant function is selected for entry. The criteria (default) are presented in Table 22.

Using KNOWRF as the dependent variable, the procedure entered six variables before reaching the level of

Table 22: Criteria for Stepwise Selection

Selection rule: Minimize Wilks' Lambda
Maximum number of steps.....44
Minimum tolerance level.....Ø.ØØ1ØØ
Minimum F to enter.....1.ØØØØ
Maximum F to remove.....1.ØØØØ

tolerance insufficient for further computation (Table 23). Level of education entered first, followed by locus of control, life satisfaction index B, age, life style, and risk factor index.

Table 23: Summary Table KNOWRF (Wilks' Procedure)

Step	Action Entered	Rem	Vars In	Wilks' Lambda	Sig.
1	EDUCAT		1	.80827	.0000
2	LOC		2	.74577	.0000
3	LSB		3	.70751	.0000
4	AGE		4	.68231	.0000
5	GEOGRAPH		5	.66723	.0000
6	RFINDEX		6	.65796	.0000

Two functions were derived but only one was significant as indicated in Table 24. The classification results show that only 57.42 percent of the cases were correctly classified. See Table 25. This does indicate that those scoring "low" on the knowledge test were classified correctly 75% of the time. Since function 1 differentiates between group one and the rest, this is a significant result. Seventy-three percent of those in group 3 were correctly classified. This is an important percentage, but there is some question as to how significant this is because the second function was not found to be significant.

Table 24: Canonical Discriminant Functions
(KNOWRF - Groups 1,3)

	Eigenvalue	Percent of Variance	Canonical Correlation
Function 1	Ø.51173	98.96	Ø.5818128
Function 2	Ø.ØØ538	1.Ø4	Ø.Ø731310

	After Function	Wilks' Lambda	Chi-Squared	DF	Sig.
Function 1	Ø	Ø.6759561	62.583	12	Ø.ØØØØ
Function 2	1	Ø.9946519	.8Ø169	5	Ø.9769

Table 25: Classification Results
(KNOWRF - Groups 1,3)

Actual Group	# of Cases	Predicted Group Membership 1	2	3
1	24	18 75.0%	6 25.0%	0 0.0%
2	108	19 17.6%	54 50.0%	35 32.4%
3	23	0 0.0%	6 26.1%	17 73.9%

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED:

57.42%

The same procedure was followed for the variable UTILIZEK. The summary table, Table 26 indicates the variables selected for entry. On this procedure ten variables were selected for entry before the default level of tolerance was reached.

Again two functions were derived but only one was significant (Table 27).

Table 26: Summary Table UTILIZEK
(Wilks' Procedure)

Step	Action Entered	Rem	Vars In	Wilks' Lambda	Sig.
1	LSA		1	.84565	.0000
2	EDUCAT		2	.76931	.0000
3	GEOGRAPH		3	.74224	.0000
4	LOC		4	.71734	.0000
5	OWN		5	.69490	.0000
6	MARSTAT		6	.67910	.0000
7	AGE		7	.65808	.0000
8	RESIDE		8	.64565	.0000
9	DISENGIN		9	.63593	.0000

Table 27: Canonical Discriminant Functions
(UTILIZEK - Groups 1,3)

	Eigenvalue	Percent of Variance	Canonical Correlation
Function 1	0.49951	91.12	0.5771621
Function 2	0.04868	8.88	0.2154464

	After Function	Wilks' Lambda	Chi-Squared	DF	Sig.
Function 1	0	0.6359291	66.995	18	0.0000
Function 2	1	0.9535828	7.0343	8	0.5329

The classification results for the dependent variable UTILIZEK (Groups 3) show that only 55.48% of the cases were correctly classified (Table 28). The same general pattern is seen with the dependent variable UTILIZEK as was seen with the dependent variable KNOWRF. The "low" group was classified correctly 78.6% of the time and the "high" group 68.2%. Again it is the low group that has significance with function 1 significant. The high percentage of those categorized as "high" classified correctly is of importance but the statistical significance of this figure remains questionable.

Table 28: Classification Results
(UTILIZEK - Groups 1,3)

Actual Group	#Cases	Predicted Group Membership 1	2	3
1	28	22 78.6%	4 14.3%	2 7.1%
2	105	22 21.0%	49 46.7%	34 32,4%
3	22	0 0.0%	7 31.8%	15 68.2%

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED:

55.48%

The Wilks' Lambda procedure was also run using the combined variable KNOWUTIL. As this is the derived dependent variable (combining the two tested variables KNOWRF and UTILIZEK) around which this study has been designed, only the listing of the Wilks' summary table will be noted at this time (Table 29). Other aspects pertaining to this variable will be discussed later.

Table 29: Summary Table KNOWUTIL (Wilks' Procedure)

Step	Action Entered	Rem	Vars In	Wilks' Lambda	Sig.
1	EDUCAT		1	.81481	.0000
2	LSA		2	.70421	.0000
3	LOC		3	.63953	.0000
4	AGE		4	.59766	.0000
5	DISENGIN		5	.56186	.0000
6	GEOGRAPH		6	.53477	.0000
7	MARSTAT		7	.51226	.0000
8	LSB		8	.49418	.0000
9	OCCUP		9	.48145	.0000
10	RFINDEX		10	.46859	.0000

The variables chosen for the final section of analysis were those delineated by the Wilks' Lambda procedure on the dependent variable KNOWUTIL. The previous procedures of multiple regression and discriminant analysis on the variables KNOWRF and UTILIZEK show an important similarity. See Table 30.

Table 30: Variables Selected by Each Procedure

Multiple Regression KNOWRF	Multiple Regression UTILIZEK	Discriminant Analysis KNOWRF	Discriminant Analysis UTILIZEK	Discriminant Analysis KNOWUTIL
EDUCAT	EDUCAT	EDUCAT	EDUCAT	EDUCAT
AGE	-	AGE	AGE	AGE
LOC	LOC	LOC	LOC	LOC
GEOGRAPH	GEOGRAPH	GEOGRAPH	GEOGRAPH	GEOGRAPH
-	-	LSB	-	LSB
-	LSA	-	LSA	LSA
-	-	RFINDEX	-	RFINDEX
-	-	-	DISENGIN	DISENGIN
-	-	-	MARSTAT	MARSTAT
-	-	-	-	OCCUP
INCOME	-	-	RESIDE	-
COMPHEAL	-	-	OWN	-

Educational level, geographic area (life style), and locus of control were common to all procedures, with age and one of the life satisfaction indices common to four of the five. Of the remaining four variables selected on the KNOWUTIL discriminant analysis, only occupation of the individual was unique to this analysis. Four other variables, whether or not one owns her home, whether she lives in an apartment or a single family dwelling, her income level, and her perception of health compared to others of the same age, appeared on two of the procedures. The decision was not to include these variables. Thus in the final selection for

this study were four of the theorized variables (locus of control, level of disengagement, life satisfaction and life style). Only presence or absence of cardiovascular disease was not selected. It is noteworthy that CVDIS was not selected on any of the procedures. There were four demographic variables (age, level of education, marital status and present or previous occupation) and one pathophysical variable (risk factor index) selected.

KNOWUTIL - The Combined Variable

This portion of the delineation of data presents the discriminant analysis with the dependent variable KNOWUTIL, groups 1 to 4. To recapitulate, the variable KNOWUTIL was formed by combining a score on a test of knowledge of cardiovascular risk factors with a score of behavior indicating utilization of knowledge. Four groups were indicated as:

1. Those who lack knowledge of cardiovascular risk factors and behave accordingly.
2. Those who lack knowledge of cardiovascular risk factors, but behave as if they had the knowledge.
3. Those who have knowledge of cardiovascular risk factors and yet do not act on that knowledge.

4. Those who have knowledge of cardiovascular risk factors and use that knowledge.

One hundred and fifty-five subjects were included in running the Discriminant procedure. There were no cases excluded. Variables meeting the entry criterion are presented in Table 31. The group means and standard deviations are found in Appendix B. Of the variables selected, GEOGRAPH and MARSTAT are strictly nominal and therefore the means must be examined with this in mind. EDUCAT and OCCUP can be considered as quasi-interval. The means for EDUCAT, LSA, LSB, and DISENGIN increased from groups 1 to 4. These means revealed an increase in the level of education, a higher level of life satisfaction and a higher level of engagement for group 4. OCCUP is coded inversly with group 4 having reported the most independent and prestigious occupations presently or prior to retirement. Means for RFINDEX and LOC decrease as they move from 1 to 4. Thus group 4 has the lowest risk factor index and exhibits a greater internal locus of control.

Table 31: Summary Table KNOWUTIL (Wilks' Procedure)

Step	Action Entered	Rem	Vars In	Wilks' Lambda	Sig.
1	EDUCAT		1	.81481	.0000
2	LSA		2	.70421	.0000
3	LOC		3	.63953	.0000
4	AGE		4	.59766	.0000
5	DISENGIN		5	.56186	.0000
6	GEOGRAPH		6	.53477	.0000
7	MARSTAT		7	.51226	.0000
8	LSB		8	.49418	.0000
9	OCCUP		9	.48145	.0000
10	RFINDEX		10	.46859	.0000

The pooled within-groups correlation matrix (Appendix D) indicates very small correlations between variables. This suggests that the variables are independent of each other and their contribution to the total variance accounted for is not shared.

Classification results of the Discriminant Analysis procedure using KNOWUTIL as the dependent variable are presented in Table 32. Nine or 81.8% of the subjects in group 1 were classified correctly with two individuals misclassified. Group 1 had the lowest level of knowledge and the lowest level of utilization of knowledge of cardiovascular risk factors. Group 4, with

79 or 69.3% classified correctly, had the highest level in both areas. Group 3, those who have knowledge but do not use it, had 47.1% correctly classified. Group 2, those who evidence lack of knowledge but live as if they possess it, were classified correctly 61.5% of the time. The classification rate of the total sample was 67.10%.

Table 32: Classification Results
(KNOWUTIL - Groups 1,4)

Actual Group	#Cases	Predicted Group Membership 1	2	3	4
1	11	9 81.8%	1 9.1%	Ø Ø.Ø%	1 9.1%
2	13	1 7.7%	8 61.5%	2 15.4%	2 15.4%
3	17	5 29.4%	2 11.8%	8 47.1%	2 11.8%
4	114	6 5.3%	13 11.4%	16 14.Ø%	79 69.3%

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED:
67.10%

Wilks' Lambda indicates that the ten variables are effective in differentiating among the groups. With the

four groups, there are three canonical discriminant functions. Two of the functions are significant (Table 33). These two functions account for 89.12% of the variance. The first function is the most powerful and accounts for 71.20% of the variance. The second function accounts for 17.92% of the variance and is significant at the Ø.Ø5 level. The third function accounts for the remaining 1Ø.79% and approaches significance.

Table 33: Canonical Discriminant Functions
(KNOWUTIL - Groups 1,4)

	Eigenvalue	Percent of Variance	Canonical Correlation
Function 1	Ø.6626Ø	71.2Ø	Ø.6312954
Function 2	Ø.16656	17.92	Ø.3778622
Function 3	Ø.1ØØ29	1Ø.79	Ø.3Ø19Ø6Ø

	After Function	Wilks' Lambda	Chi-Squared	DF	Sig.
Function 1	Ø	Ø.4685944	111.43	3Ø	Ø.ØØØØ
Function 2	1	Ø.779Ø869	36.696	18	Ø.ØØ57
Function 3	2	Ø.9Ø88528	14.Ø49	8	Ø.Ø8Ø5

The standardized cannonical discriminant function coefficients (Table 34) show the relative importance of the variables on each function. The original scores computed in varying formats or magnitudes were not comparable. By converting these scores to standard scores with a mean of Ø.Ø and a standard deviation of 1, they can be compared.

The structure matrix (Table 35) presents the pooled within-group correlations between the discriminating variables and the canonical discriminant functions. The structure matrix gives information about how closely the variable and a function are related (Klecka, 198Ø, 31). Using the structure matrix, the

Table 34: Standardized Canonical Discriminant Function Coefficients (KNOWUTIL)

	Func 1	Func 2	Func 3
GEOGRAPH	Ø.327Ø8	Ø.16Ø87	-Ø.37994
AGE	-Ø.Ø5989	Ø.92835	Ø.3Ø617
MARSTAT	Ø.32168	-Ø.Ø9371	-Ø.17748
EDUCAT	-Ø.42731	-Ø.47878	Ø.322Ø1
OCCUP	-Ø.Ø3486	-Ø.24515	Ø.6ØØØ6
RFINDEX	Ø.26488	Ø.12834	-Ø.Ø3465
LOC	Ø.32364	-Ø.28119	Ø.5297Ø
LSA	-Ø.26862	Ø.23Ø93	Ø.74418
DISENGIN	-Ø.Ø3711	Ø.8Ø831	-Ø.16258
LSB	-Ø.33244	-Ø.37Ø47	-Ø.22586

function can be named according to the variable with the highest coefficients. In this analysis, Function 1 can be described as "education-life satisfaction-disengagement". These variables load near Ø.5. Risk factor

Table 35: Structure Matrix - KNOWUTIL (Variables ordered by size of correlation within function)

	Func 1	Func 2	Func 3
EDUCAT	-Ø.57254*	-Ø.21646	-Ø.15Ø45
LSB	-Ø.52627*	-Ø.Ø3372	Ø.Ø4934
DISENGIN	-Ø.49752*	Ø.24398	-Ø.218Ø1
LSA	-Ø.48894*	Ø.18419	Ø.42797
RFINDEX	Ø.34625*	-Ø.13192	-Ø.Ø9983
GEOGRAPH	Ø.32337*	Ø.15886	-Ø.16232
MARSTAT	Ø.32167*	Ø.14352	-Ø.Ø1Ø3Ø
AGE	Ø.21978	Ø.62ØØ2*	Ø.33972
LOC	Ø.47981	-Ø.22487	Ø.54558*
OCCUP	Ø.36493	-Ø.Ø4129	Ø.4Ø945*

"*" indicates variable/function relationship

index, life style and marital status are also present but to a lower degree. Function 2 is described by "age" and Function 3 by "locus of control-occupation".

Table 36 presents the group means on each of the functions. On Function 1, means for groups 2 and 3 are

very close. This function appears to distinguish be-

Table 36: Canonical Discriminant Functions Evaluated at Group Centroids

Group	Func 1	Func 2	Func 3
1	2.17516	-Ø.642Ø7	Ø.56Ø94
2	Ø.84813	1.23951	Ø.18231
3	Ø.95854	-Ø.ØØ912	-Ø.8Ø5Ø6
4	Ø.44954	-Ø.Ø6461	Ø.Ø4514

tween groups 1 and 4. On Function 2, group 2 is separated from the others with groups 3 and 4 close to each other. On Function 3, the separation is not as great between groups and no one figure stands out as unique in either closeness or distance. The greatest separation on this function is between groups 1 and 3.

Source of Knowledge

A major facet of nursing today is in the area of health teaching. This includes helping the patient understand his or her particular pathological condition, its treatment and prognosis, and how to cope and live as full and normal a life as possible in spite of its presence. Another area considered of primary importance is the maintenance of health and prevention of disease.

With the assumption that nurses are doing this teaching, the question was posed to subjects asking them where they received their information about cardiovascular risk factors. Acknowledging that there are a variety of sources where such information is available, a grid was devised listing the risk factors vertically and potential sources of information horizontally. Potential sources listed were the doctor, the nurse, media (television and radio), family and other. It was assumed that an individual subject's answers as to the sources would be consistent across the risk factors and that thus individuals could be classified under one of the source categories. An alternative assumption was that an individual would cite a specific source for each risk factor. Neither of these assumptions was borne out. Instead, subjects frequently attributed knowledge of a specific risk factor to several sources yielding multiple types of responses. Table 37 presents these responses. No attempt has been made to total across columns or rows; each would exceed 100% because of multiple answers.

Mass media (television and radio) are cited by most individuals as the source for information about heart attacks, diet, smoking, exercise, and stress. Doctors are cited by most as giving inform-

tion about blood pressure and weight.

In looking at the data for this section, some statements can be made about each source. One hundred and eight (69.67%) subjects attributed some information received to doctors; fifty (32.25%) cited them exclusively. Forty-four (28.38%) did not attribute any information to doctors. Twenty-one (13.54%) attributed information received to nurses; nine (5.8%) listed nurses as the major source and 1 (Ø.64%) listed nurses as the exclusive source. Of a sub-group of twenty-four Appalachian subjects, only 8 (1/3) attributed information received to nurses and these were in the aforementioned group of nine. What makes this figure interesting, is that for the Appalachian group, the primary care giver is the district nurse rather than the doctor as in most communities.

On hundred and ten (7Ø.96%) attributed their information to the media; seventy-four (47.74%) cited the media as the major source and seven (Ø4.51%) cited it as the exclusive source. The media as a source was most often coupled with another source. Eighty (51.61%) attributed information to someone in their own family; twenty-six (16.77%) gave this as the major source and one as the exclusive source.

Table 37: Source of Cardiovascular Information

	Dr	Nse	Media	Fam	Other	Na
HA	(47) 3Ø.9%	(14) Ø9.2%	(55) 36.2%	(5Ø) 32.9%	(19) 12.5%	(Ø3) Ø2.Ø%
DT	(52) 34.9%	(Ø8) Ø5.4%	(67) 45.Ø%	(3Ø) 2Ø.1%	(26) 17.4%	(Ø3) Ø4.Ø%
SM	(27) 18.2%	(11) Ø7.4%	(72) 48.6%	(38) 25.7%	(23) 15.5%	(Ø7) Ø4.7%
BP	(66) 44.9%	(13) Ø8.8%	(47) 32.Ø%	(33) 22.4%	(14) Ø9.5%	(Ø8) Ø5.4%
WT	(67) 45.3%	(1Ø) Ø6.8%	(57) 38.5%	(25) 17.Ø%	(13) Ø8.8%	(Ø7) Ø4.7%
EX	(46) 3Ø.9%	(13) Ø8.7%	(73) 49.Ø%	(2Ø) 13.4%	(27) 18.1%	(Ø6) Ø4.Ø%
ST	(45) 3Ø.2%	(11) Ø7.4%	(69) 46.3%	(28) 18.8%	(26) 17.4%	(Ø6) Ø4.Ø%

Legend: (N) = number who answered affirmatively

HA = Heart attack
DT = Diet
SM = Smoking
BP = Blood Pressure
WT = Weight
EX = Exercise
ST = Stress

DR = Doctor
Nse = Nurse
Fam = Family
Media = Television/ Radio
NA = No Answer

Finally, the category "other" was used for any source not already noted. Sixty-two (40%) attributed some information to this category; seven (10.96%) cited it as the major source and three (1.93%) cited it exclusivly. Subjects were asked to specify what they meant by "other" and the majority were able to do so. Sources cited were friends and neighbors, pastors and lecturers, reading, school and church. A few individuals attributed their knowledge and information to their own experience, thinking and good sense.

CHAPTER V

SUMMARY AND CONCLUSIONS

The overall purpose of this study was to determine a set of variables that would serve to distinguish women who demonstrate knowledge and utilization of knowledge of cardiovascular risk factors from those who possess the knowledge but do not utilize it. The study focused on women over age sixty. Previous studies have considered the individual variables but none have considered the variables simultaneously and none have dealt with utilization of knowledge.

This chapter is divided into five sections. The first section outlines the procedures. The second section is discussion. Conclusions are stated in the third section. Fourth is the implications and finally recommendations for further study are presented.

Summary of Procedures

The study's sample consisted of 155 females, 60 years of age or older. The only additional conditions for subject selection were that the subjects be living

in their own homes or apartments and be responsible for their own activities of daily living. Subjects were interviewed in their homes using a two part questionnaire schedule. A team of two interviewers completed the data collection.

The questionnaire included demographic data, risk factor index, disengagement index (Henthorn, 1975), life satisfaction indices (Havighurst, Neugarten & Tobin, 1968), locus of control (Rotter, 1966), a test of knowledge of cardiovascular risk factors and a test of utilization of cardiovascular risk factors.

Data were analyzed using Discriminant Analysis (SPSS, 1986) with default parameters and a Ø.Ø5 significance level to determine the best set of variables to distinguish among the four groups identified by previous analysis (those who have knowledge and use it, those who have knowledge and do not use it, those who lack knowledge but live as if they possessed it, and those who lack knowledge and live accordingly) identified by previous analyses.

Discussion

This study is important because of the increased number of aging individuals and the prevalence of cardiovascular disease as a major cause of disability and death. The study was exploratory and the sample was not

random. Therefore, all results should be interpreted and accepted with caution, and with this in mind, some observations can be made about the sample.

The study sample was unique in several ways. Participants were better educated than the general population of individuals age 60 and over with more than two-thirds having completed high school, one-third of which having some college or post secondary education. Occupational status of the sample indicated what appeared to be a very high percentage of those in managerial, professional, or ownership of businesses (46%). Reasons for these characteristics of the sample probably have their origin in how the sample was selected. It was a volunteer sample in that individuals were asked if they would like to participate. The investigator publicized the desire for volunteers through bulletin boards, churches and community groups. However, most of the participants were obtained through word of mouth referral and personal contact by someone other than the investigator. Thus all data was obtained from individuals who had agreed to participate prior to meeting with the investigators. The assumption was that those who participated were more interested in the process than those who refused. The participants were not a captive group. They actively chose to participate, thus demonstrated

their interest. Potential "refusers" never responded to the invitation to participate. Potential respondants were informed as to the nature of the study and the educational status of the writer. The only incentive given to the participants was the promise of the writer to share the results. It is not too great a leap of faith to assume that those interested would also be more independent and better educated.

The study sample divided into four groups: (4) those who possess knowledge and use it, (3) those who possess knowledge and do not use it, (2) those who have no knowledge but live as if they do, (1) and those who have no knowledge and live accordingly (Figure 4). The number within each group differed with the largest number by far classified into group 4. One reason for this is the manner in which the groupings were determined. In forming the combined variable (KNOWUTIL), "average knowledge" and "high knowledge" scores were combined into "has knowledge". The same procedure was used with utilization of knowledge. The decision to collapse the scores was made for two reasons. First, the subject matter being tested under knowledge is common and readily available to everyone. Facts, theories, and current research results are presented to the public regularly through the various media. This coupled with

the national interest in exercise and health promoting diets has enabled individuals, both young and old, to incorporate these elements into their activities of daily living. The second reason is that there are no consistent measures to identify what knowledge about cardiovascular risk factors an individual should have or what amount of knowledge could be considered "average". Thus, the scores used are sample dependent.

		UTILIZATION	
		Utilizes Knowledge	Does Not Utilize Knowledge
KNOWLEDGE	Has Knowledge	KNOWUTIL 4 (Those who have and use it) N=114	KNOWUTIL 3 (Those who have and do not use it) N=17
	Does Not Have Knowledge	KNOWUTIL 2 (Those who do not have knowledge but live as if they do) N=13	KNOWUTIL 1 (Those who do not have knowledge and live accordingly) N=11

Figure 4. Number of Subjects in Each Group

Of the four final groups, the one that was classified correctly the greatest percent of time was group 1, those who have no knowledge and live accordingly, with 81.8% of individuals correctly classified. These subjects lived in rural areas more than suburban or urban. They were older with a lower level of education. They claimed the more dependent, less prestigious occupational background. They were more disengaged, had a greater external locus of control, and a lower level of life satisfaction. They also had a higher risk factor index. Group 4, those who demonstrated knowledge and used it, was the next highest correctly classified (69.38%). These subjects were more urban than rural or suburban. They were younger with a higher level of education. Their occupational background claimed more independent and prestigious positions. They were more engaged, had a higher internal locus of control level and a higher level of life satisfaction. They had the lowest risk factor index. These two groups are fairly clearly defined and are at opposite poles in the values of the variables.

The two middle groups do not differentiate as well. Group 2, those women who do not exhibit knowledge but still live as if they possessed it, were classified correctly 61.5% of the time. The lowest rate of correct classification was with those women who have knowledge

but do not apply it. It is difficult to formulate reasons for these differences in percentage of correct classification. It is possible that there was not enough differentiation between the variables or that the choice of variables considered was not appropriate. There are many psychometric measures available and it is possible that using different ones would have differentiated between the four groups more distinctly.

The life satisfaction scales are consistent in direction. The two scales were devised by the same individuals (Havighurst, Neugarten, & Tobin, 1968) yielding somewhat different information and using a different method of scoring. While these scales probably measure the same constructs and thus one scale would be sufficient, they did serve another purpose. As noted previously, two investigators collected the data, one for Part I and the other for Part II. LSA was in Part I and LSB in Part II. This was seen as a check on the consistency of the two investigators. The expected consistency between the two scales was demonstrated.

The variable MARSTAT is included in the discriminant analysis procedure. The frequencies (Table 2, Chapter IV) had demonstrated that the majority (49.7%) were widowed. The next largest percentage was still married (38.1%) followed by those who were single (10.7%) and those divorced (1.9%). The Crosstabs

procedure demonstrated that as the groups moved from 4 to 1, there are a greater number widowed. This is not surprising; the mean age of the sample also increases moving from group 4 to 1. Previous discussion has noted that women live longer than men. An interesting point is that of the sixteen single women, fifteen were in group 4. Chi-Square for MARSTAT was 15.24316 with 9 degrees of freedom and a significance level of Ø.Ø845 (Appendix D).

Income is frequently used when socioeconomic variables are included in a study. In this investigation, however, income did not reach entry criterion for the Discriminant Analysis Stepwise procedure, but the procedure did include previous or past occupation as one of the discriminating variables. There could be several reasons that would explain this. First, the income reported is the present income. Even though obligations are less, (the home is paid for, furnishings and appliances are complete, and children are no longer present) and thus proportional income may be the same or higher, actual income is generally lower than previous income was. Occupation was reported as an individual's main occupation presently or in the past. Thus a woman who had previously been a manager or a professor stated the occupation as such even though the present income would not reflect it. Another reason could be that income and

occupation are part of the same construct. Income is a continuous variable that has been categorized. OCCUP is a nominal variable that has been ordered from the most prestigious and independent to the least prestigious and most dependent. Within limitations, as occupation becomes more prestigious or independent, income rises.

Another variable initially considered by the investigator to be very important was the presence or absence of diagnosed cardiovascular disease, but the discriminant procedure did not include this as a variable. The procedure did indicate that the presence of cardiovascular disease as a diagnosed entity is higher in group 1 and lower in group 4 even though the level of significance did not meet the entry criterion needed to be included as a discriminating variable.

The research questions serve as a focus for further discussion. Question #1 was: What do the elderly know about cardiovascular risk factors?

The test included material that is available to everyone via newspapers, magazines, radio, and television as well as through professional channels such as the doctor, nurse, or organized groups. Using the normal distribution curve and classifying the test scores into three groupings, low, average and high levels of knowledge, the results are as seen in Table 38. The subjects categorized as having average knowledge at-

tained scores between one standard deviation below and one standard deviation above the mean. In the final computation, scores in the high and the average categories were combined for the designation "has knowledge". Thus any subject attaining a score of 45.169 or above was in this category. As already stated, this is a sample dependent score using the mean and standard deviations as dividing points for low, average, and high levels of knowledge. Also as noted previously, there are no consistent measures of knowledge of cardiovascular risk factors.

Some general statements can be made. Women are in possession of common knowledge about cardiovascular risk factors. It is the older, less educated, more isolated individuals who are lacking the information. These are also the most disengaged, the least satisfied with their life situation and have the highest level of external locus of control.

The second research question asked: How do the elderly use information about cardiovascular risk factors? The same procedure was used to determine categories of utilization of knowledge. Table 39 shows that anyone attaining a score of 47.247 or higher was considered as utilizing knowledge. In analyzing utilization of knowledge, a breakdown was made separating diet

Table 38: Normal Distribution of Scores: Knowledge of Cardiovascular Risk Factors

	Low	Average	High
Score	45.168 and below	45.169 - 76.210	76.211 and above
Number in Category	24	108	23
Percent in Category	15.5%	69.7%	14.8%

Mean = 60.690 SD = 15.529 Range = 9 - 89

Table 39: Normal Distribution of Scores: Utilization of Knowledge of Cardiovascular Risk Factors

	Low	Average	High
Score	47.246 and below	47.247 - 65.791	65.792 and above
Number in Category	28	105	22
Percent in Category	18.1%	67.7%	14.2%

Mean = 56.519 SD = 9.272 Range = 32 - 80

from other health habits. The absolute scores seen in Table 40 and Table 41 are not comparable, but the number and percentage of subjects in each category show slight differences. Many women are diet conscious because of concern about personal appearance. Many of the items utilized in reducing diets are the same as for diets appropriate for cardiovascular concerns. Another factor that might have influenced this portion of the study was that the majority of the subjects were interviewed during the summer and fall months when an abundance of fresh fruits and vegetables were available.

Table 40: Normal Distribution of Scores: Utilization of Diet Information

	Low	Average	High
Score	38.474 and below	38.475 - 55.931	55.932 and above
Number in Category	28	100	27
Percent in Category	18.1%	64.5%	17.4%

Mean = 47.203 SD = 8.728 Range = 27 - 69

Table 41: Normal Distribution of Scores: Utilization of Knowledge of Other Health Habits (UHHK)

	Low	Average	High
Score	7.Ø45 and below	7.Ø46 - 11.624	11.625 and above
Number in Category	36	94	25
Percent in Category	23.2%	6Ø.6%	16.1%

Mean = 9.225 SD = 2.289 Range = 4 - 14

Thus not only do women possess knowledge about cardiovascular risk factors, they also claim to utilize that knowledge although the percent of usage is a little below that of possession of knowledge.

The next two questions dealt with the choice of variables: What variables (demographic and theoretical) affect the acquisition of knowledge about cardiovascular risk factors? and: What variables (demographic and theoretical) affect how the elderly use information they possess?

The Discriminant Analysis Stepwise procedure using knowledge of risk factors as the dependent variable selected three demographic variables (EDUCAT, AGE, GEOGRAPH) and three theoretical variables (LOC, LSB, RFINDEX). This combination of variables was determined to be most effective in classifying subjects into high, average and low categories.

The same procedure was run using UTILIZEK as the dependent variable. This time the procedure delineated six demographic variables (EDUCAT, GEOGRAPH, OWN, MARSTAT, AGE, RESIDE) and three theoretical variables (LSA, LOC, DISENGIN).

The final treatment of the data used the combined variable KNOWUTIL as the dependent variable. The Discriminant Analysis Stepwise procedure selected ten variables, five demographic (GEOGRAPH, AGE, MARSTAT, EDUCAT, OCCUP) and five theoretical (RFINDEX, LOC, LSA, DISENGIN, LSB).

There seems to be, then, a set of variables that affects what one knows about a specific entity, in this instance, what women over age sixty know about cardiovascular disease risk factors. There is also a set of variables that affects what one does with the knowledge one has, in this instance, how these women apply the knowledge they possess. The two sets of variables are

not identical. Some of the same variables are present, but they are in combination with others. A third set of variables, again some of the ones selected previously but in still different combination, was selected when the two dependent variables are combined to form a new dependent variable. The discriminant analysis procedure for the combined variable (KNOWUTIL) included all the variables selected by the discriminant procedures for knowledge and those selected for utilization of knowledge with the exception of RESIDE and OWN. This combination of variables (plus OCCUP) resulted in a higher correct classification rate than that found with the original dependent variables.

The final research question asked: To what source do the elderly attribute information they possess about cardiovascular risk factors? An important component in nursing and nursing education concerns the right of the patient to understand the ramifications of his or her health problem and its treatment, and to actively strive toward optimum health. To help the patient attain this right, nurses emphasize health teaching both at the level of nursing education and at the level of nursing practice. In programs of nursing education, student nurses are presented with subject content including pathophysiology, preventative, diagnostic, and curative

measures, as well as teaching-learning principles. The students are expected to include health teaching in any plan of care for any client. Professional registered nurses are employed in hospitals, community health agencies, health maintenance organizations, home health agencies, school systems and doctors' offices. As stated, emphasis in each of these areas is the right of the patient to know and the obligation of the nurse to teach. However, despite the fact that nurses claim health teaching as one of their main foci, they are not recognized as sources of information. The data indicate that even in an area such as that of the Frontier Nursing Service, this is true. The Frontier Nursing Service has been active in a 500 square mile area in southeastern Kentucky for 58 years. During this time, the nurse has been the primary care giver rather than the doctor as is the case in most urban and suburban areas. One reason for this discrepancy might be the age of the sample group. The elderly population's concept of the nurse may be that the nurse is the helper of the doctor and not independent in any manner. The doctor traditionally leads the medical team and is the one with the final authority. It follows then, that any authoritative "medical" or health information originates with the doctor.

Conclusions

The variables selected through the discriminant analysis procedure do exhibit differences that appear consistent. Thus, it appears possible to identify two of the groups using these variables. The groups are #1 (those that do not indicate knowledge of cardiovascular risk factors and live accordingly) and #4 (those that have knowledge and use that knowledge in activities of daily living). It does not seem possible to differentiate between the two remaining groups. Thus, research questions concerning identification of variables that discriminate are only partially satisfied. What is probably most significant, is that it is possible to identify those individuals who need information. The variables are not effective in identifying those persons who have knowledge but do not use it. In fact, individuals who exhibited knowledge but did not use it in daily living, were the least often correctly classified. This group was misclassified 63% of the time with over half of these placed into group 1. Thus, these women who had knowledge but did not use it, were incorrectly classified as not having knowledge and living accordingly.

The relationships were the strongest in predicting

those who did not have knowledge and lived accordingly. They were next strongest in predicting those who did possess knowledge and also applied it in activities of daily living. Next in strength of relationship was the group where the women did not possess demonstrable knowledge but lived as if they did. The group predicted correctly the least often consisted of those women who possesses the knowledge as demonstrated by testing, but did not use that knowledge in their daily lives. It is possible to conclude that these variables do produce some valuable information. The relationships are not as strong as one would like so it does seem as if there are areas with predictive potential that are not included in this research.

The final research question asked: To what source do the elderly attribute information they have about cardiovascular risk factors? The data reveal that it is possible to determine the source to which individuals attribute information they possess. This was done through direct questioning. Media, radio and television, were identified most frequently as the source of information about cardiovascular risk factors with the doctor being the next highest. Nurses were identified the least often as a source of information.

Implications

There is not enough known about the variables that affect learning in the area of cardiovascular risk factors nor is there enough known about the variables that affect the utilization of knowledge. It has been demonstrated that as individuals grow older, the incidence of cardiovascular disease increases, but the data presented here indicate that the presence or absence of cardiovascular disease does not have an effect on either knowledge or its utilization. This would imply that the concentration of effort in teaching about risk factors should be on the general public rather that just on those with a history of cardiovascular disease. This seems to be the direction health education is going. Programs are being developed that deal with the aspect of prevention of cardiovascular disease by actively working toward minimizing the effects of risk factors.

Very few individuals are lacking totally in knowledge of risk factors but there is a great variety in levels of knowledge. There is a consistency in direction when knowledge and/or utilization of cardiovascular risk factors is combined with variables such as age, job, area in which one lives, and level of education. This would seem to be valuable information to have when

developing programs for the elderly.

There is an element which needs to be considered when using any data concerning this population. The increase in the proportion of elderly persons in the United States has enabled them to become visible and important. This group has political and consumer clout. The following scenario is being repeated thoughout the United States. One hospital in a metropolitan area is planning to set up a health care clinic for the elderly as an outreach into the surrounding community. Senior nursing students from a nearby college did a survey for a different hospital serving the same geographic area and found that there is no need. Instead, the community is supersaturated with facilities all serving the Medicare client (Baribeau et. al., 1986). Government funding helps to establish the facility and Medicare pays the bills of those who are ill with the result that agencies are making a concerted effort to obtain a share of the money. Another clinic for care of the ill is not what is needed.

What is needed are programs that will enable the elderly to live as healthfully and disease or disability free as possible. This would dictate programs that concentrate on the well rather than on the sick person. Information is being disseminated through the printed

and visual media. Data from this study supports this fact. However, it cannot be assumed that everyone will get information from media just because it is presented. A concerted effort needs to be made to enhance the public's knowledge. It does not seem that it would be as difficult to design programs for the two extreme groups (1 and 4). Programs for group 1 would need to be basic while group 4 could profit by a more advanced approach. Groups 2 and 3 would be more difficult to design programs for and it would seem that what is needed first is to identify better who falls within these groups.

Recommendations For Future Study

The first recommendation would be to continue this study with increased numbers. This sample consisted of 155 women but when the categorization into groups was made, three of the groups were very small. While using this method of categorization will continue to yield uneven numbers of participants in each group, a sample five to ten times this size would increase the numbers in all categories and yield more reliable data. Increasing the size of the sample in this way could present a different problem for reliability. In this study, all interviews were conducted by the same team of investigators. As numbers in the sample increase, so

would the need to add investigators. The teams would have to be trained carefully so consistency in interviewing is assured.

Another recommendation would be to devise a method to determine what kind of a health education background an individual has had. Has she participated in any specific type of classes dealing with the subject? Has what she knows been acquired incidently? It would be important to know this in order to design programs that would hold interest and build on what is already known.

A strong recommendation would be to determine what level of knowledge and/or utilization of knowledge an individual needs to promote optimal health and prevent disease and disability for any specific entity, in this instance, cardiovascular disease.

The variables chosen did not appear to very strong in ability to discriminate between the groups. The next study could try to identify additional variables. There may well be something in personality patterns that has not been considered. A variable not considered at all was race. Intervening variables need to be identified.

A large number of the group was widowed. An important fact might be whether or not the husband had been a cardiovascular patient with the special needs. Did the woman know about cardiovascular risk factors

because of the husband's diagnosis and not necessarily apply it to her own situation? The same concept could be applied when the husband or other living person is in the home.

The dicotomy between the young-old and the vulnerable-old is a differentiation that might yield valuable information. This is suggested by the results of the present investigation but it needs further study.

And finally, the delineation and identification of sources of information needs to be refined. This could well be explored with different age groups and in different parts of the country.

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APPENDIX A

QUESTIONNAIRE

Part I

(Parts of this questionnaire will be presented visually for the subject to complete: other parts will be given in verbal interview form. This same procedure will occur with Part II of the questionnaire.)

Subject Number_____

Geographic area:

Urban	[]
Suburban	[]
Rural	[]

Release signed: []

Time interview began:
Time interview ended:

Questionnaire

1. Age: 60-65 []
66-70 []
71-75 []
76-80 []
81-85 []
over 85 []

2. How many years have you lived in or around this area?
1-10 []
11-25 []
26-40 []
41-+ []

3. What is your current marital status?
Single []
Married [] Is your husband living here with you?
Separated [] yes []
Widowed [] no [] Where is he?
Divorced [] _____

4. What was the last grade you completed in school?
Elementary 1 2 3 4 5 6 7 8
High School 1 2 3 4
College 1 2 3 4 4+
Degree _____

5. Residence:
Single family dwelling []
Apartment []

Own []
Rent []
Other [] Please specify_____

Number of other occupants _____

6. Which of the following best describes your occupation prior to retirement (or current occupation)? USE CARD A

Professional, managerial	[]	Skilled worker,crafts	[]
Farmer	[]	Services, labor	[]
Owner of own business	[]	Housewife	[]
Clerical, sales	[]	Other, please specify	[]
Self employed	[]	_____	

7. If you were asked to use one of four names for names for your social class, which would you say you belong to?
USE CARD B

Lower class	[]	Middle class	[]
Working class	[]	Upper class	[]

8. How would you estimate your standard of living as compared to ten years ago?
   Better []
   Same []
   Worse []

9. Are you retired?
   Yes []
   No []

10. If retired, what would you estimate that your annual (total family) income is? USE CARD C
   Under $5000/year []
   $5-$9,999/year []
   $10-$14,999/year []
   $15-$19,999/year []
   $20,000+/year []
   Not retired []

11, What would you estimate that your annual (total family) income is? **USE CARD C**
   Under $5000/year []
   $5-$9,999/year []
   $10-14,999/year []
   $15-19,999/year []
   $20,000+/year []
   Retired []

12. All in all how would you say your health is now?
   Excellent []
   Good []
   Fair []
   Poor []
   Note if qualifies "for my age". []

13. Do you think your health is better or worse than that of other people your age?
   Better []
   Same []
   Worse []

14. Have you ever had:
   Chest pain []
   Heart attack []
   High blood pressure []
   Stroke []
   No history of above []

15. If any of the above (question 14), have you been treated by a doctor?
   Hospitalized []
   Doctor's office []
   Never treated []

16. What treatment if any, did the doctor prescribe for you?
Medicine: no [ ]
yes [ ] Name of medicine_____
How often taken_____
Other treatment_____

Questionnaire - Foods Eaten

How often do you eat the following? Include all meals.
USE CARD D

Food Items	Never	Seldom	Three to five times a week	One meal a day	Two meals a day	Three meals a day
Bread	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Cake/Pie	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Chicken	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Fish	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Mean (bacon, beef, pork, etc.)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Potatoes	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Rice	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Vegetables	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Skim Milk	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Whole Milk	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Salad	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Salad Dressing	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Cheese	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Fruit	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Eggs	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Pudding	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Ice cream	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Margarine (Oleo)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Butter	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Soft drinks/regular	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Diet soft drinks	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Can you remember specifically what you had to eat yesterday? Let's start with breakfast.

Food item	How was it prepared? (raw, boiled, baked, fried, or other. If other, please specify.

Next is the mid-day meal:

Food item	How was it prepared? (raw, boiled, baked, fried, or other. If other, please specify.)

Now, what did you have for your evening meal?

Food item	How was it prepared?

Is there any other meal? If so when do you eat it?

Food item	How was it prepared?

Did you have any snacks during the day or evening? If so, what were they? Include candy, nuts, popcorn, etc.

I smoke:

Not at all	[]
Less than a pack a day	[]
One pack a day	[]
More than a pack a day	[]
Other	[] Explain_____

(If subject smokes, ask how many years she has smoked.) _____

I used to smoke:

Not at all	[]
Less than a pack a day	[]
One pack a day	[]
More than a pack a day	[]
Other	[] Explain_____

As far as my weight is concerned, I am:

More than 20 pounds overweight	[]
16-20 pounds overweight	[]
11-15 pounds overweight	[]
5-10 pounds overweight	[]
Just right	[]
5-10 pounds underweight	[]
11-15 pounds underweight	[]
More than 15 pounds underweight	[]

This past year I have:

Gained weight	[]
Stayed the same	[]
Lost weight	[]

My father has/had:

Elevated blood pressure	[]
Heart disease	[]
Stroke	[]

My mother has/had

Elevated blood pressure	[]
Heart disease	[]
Stroke	[]

I have/had a brother or sister with:

Elevated blood pressure	[]
Heart disease	[]
Stroke	[]
No siblings	[]

I have/had children with:

Elevated blood pressure	[]
Heart disease	[]
Stroke	[]
No children	[]

USE CARD E

	Daily	3-5 times a week	Seldom	Never
I exercise	[]	[]	[]	[]
I run or jog	[]	[]	[]	[]
I work out of doors (garden, shovel snow, etc.)	[]	[]	[]	[]
I take a nap	[]	[]	[]	[]
I sleep well	[]	[]	[]	[]
I worry	[]	[]	[]	[]
I have fun	[]	[]	[]	[]

Questionnaire LOC

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternative statements lettered A or B. For each item choose the letter of the one alternative which you believe to be the more correct statement.

1. A. Children get into trouble because their parents punish them too much.
   B. The trouble with most children nowadays is that their parents are too easy with them.

2. A. Many of the unhappy things in people's lives are partly due to bad luck.
   B. People's misfortunes result from mistakes they made.

3. A. One of the major reasons why we have wars is because people don't take enough interest in politics.
   B. There will always be wars, no matter how hard people try to prevent them.

4. A. In the long run people get the respect they deserve in this world.
   B. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. A. The idea that teachers are unfair to students is nonsense.
   B. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6. A. Without the right breaks one cannot be an effective leader.
   B. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. A. No matter how hard you try some people just don't like you.
   B. People who can't get others to like them don't understand how to get along with others.

8. A. Heredity plays the major role in determining one's personality.
   B. It is one's experience which determines one's personality.

9. A. I have often found that what is going to happen will happen.
   B. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10. A. In the case of the well prepared student there is rarely if ever, such a thing as an unfair test.
    B. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11. A. Becoming a success is a matter of hard work; luck has little or nothing to do with it.
    B. Getting a good job depends mainly on being in the right place at the right time.

12. A. The average citizen can have an influence in government decisions.
    B. This world is run by a few people in power, and there is not much the little guy can do about it.

13. A. When I make plans, I am almost certain that I can make them work.
    B. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune.

14. A. There are certain people who are just no good.
    B. There is some good in everybody.

15. A. In my case, getting what I want has little or nothing to do with luck.
    B. Many times we might just as well decide what to do by flipping a coin.

16. A. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
    B. Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.

17. A. As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.
    B. By taking an active part in political and social affairs the people can control world events.

18. A. Most people don't realize the extent to which their lives are controlled by accidental happenings.
    B. There really is no such thing as "luck".

19. A. One should always be willing to admit his mistakes.
    B. It is usually best to cover up one's mistakes.

20. A. It is hard to know whether or not a person really likes you.
    B. How many friends you have depends upon how nice a person you are.

21. A. In the long run the bad things that happen to us are balanced by the good ones.
    B. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22. A. With enough effort we can wipe out political corruption.
    B. It is difficult for people to have much control over things politicians do in office.

23. A. Sometimes I can't understand how teachers arrive at the grades they give.
    B. There is a direct connection between how hard I studied and the grades I got.

24. A. A good leader expects people to decide for themselves what they should do.
    B. A good leader makes it clear to everybody what their jobs are.

25. A. Many times I feel that I have little influence over the things that happen to me.
    B. It is impossible for me to believe that chance or luck plays an important role in my life.

26. A. People are lonely because they don't try hard to be friendly.
    B. There's not much use in trying too hard to please people; if they like you, they like you.

27. A. There is too much emphasis on athletics in high school.
    B. Team sports are an excellent way to build character.

28. A. What happens to me is my own doing.
    B. Sometimes I feel that I don't have enough control over the direction my life is taking.

29. A. Most of the time I can't understand why politicians behave the way they do.
    B. In the long run, the people are responsible for bad government on a national as well as a local level.

Questionnaire LS-A

USE CARD F

	Agree 5	4	3	2	Disagree 1
1. As I grow older, things seem better than I thought they would be.	[]	[]	[]	[]	[]
2. I have gotten more of the breaks in life than most of the people I know.	[]	[]	[]	[]	[]
3. This is the dreariest time of my life.	[]	[]	[]	[]	[]
4. I am just as happy as when I was younger.	[]	[]	[]	[]	[]
5. My life could be happier than it is now.	[]	[]	[]	[]	[]
6. These are the best years of my life.	[]	[]	[]	[]	[]
7. Most of the things I do are boring and monotonous.	[]	[]	[]	[]	[]
8. I expect some interesting and pleasant things to happen to me in the future.	[]	[]	[]	[]	[]
9. The things I do are as interesting to me as they ever were.	[]	[]	[]	[]	[]
10. I feel old and somewhat tired.	[]	[]	[]	[]	[]
11. I feel my age, but it does not bother me.	[]	[]	[]	[]	[]
12. As I look back on my life, I am fairly well satisfied.	[]	[]	[]	[]	[]
13. I would not change my past life even if I could.	[]	[]	[]	[]	[]
14. Compared to other people my age, I've made a lot of foolish decisions in my life.	[]	[]	[]	[]	[]
15. Compared to other people my age, I make a good appearance.	[]	[]	[]	[]	[]
16. I have made plans for things I'll be doing a month or a year from now.	[]	[]	[]	[]	[]
17. When I think back over my life, I didn't get most of the important things I wanted.	[]	[]	[]	[]	[]
18. Compared to other people I get down in the dumps too often.	[]	[]	[]	[]	[]

19.	I've gotten pretty much what I expected out of life.	[]	[]	[]	[]	[]
20.	In spite of what people say, the lot of the average man is getting worse, not better.	[]	[]	[]	[]	[]

Questionnaire

Part II

(Parts of this questionnaire will be presented visually for the subject to complete; other parts will be given in verbal interview form. This was the same procedure that was used in Part I of the questionnaire.)

Subject Number_____

Time interview begun:
Time interview ended:

Questionnaire
Knowledge of Cardiovascular Disease

1. What do you think are the major causes of cardiovascular disease?

2. Repeat the listing as given and ask which one is the single most important.

3. Can heart attacks be prevented, or is there very little that can be done?

4. What would you recommend to someone to help prevent a heart attack?

5. If areas are omitted, ask directly in both risk factors and in prevention.

Areas that questionnaire is looking for are: USE CARD G

Risk Factors	Prevention
Diet	Control calorie
Lack of exercise	Decrease salt
Heridity	Decrease cholesterol
High blood pressure	Exercise
Smoking	Control medical problems
Weight	Stop smoking
Stress	Control weight
	Decrease stress

USE CARD H

Source of Information

I would like to ask you what the source of your information is. In other words, how did you learn about the following items.

Item	Doctor	Nurse	Media	Family	Other
Heart attacks	[]	[]	[]	[]	[]
Diet	[]	[]	[]	[]	[]
Smoking	[]	[]	[]	[]	[]
High blood pressure	[]	[]	[]	[]	[]
Weight	[]	[]	[]	[]	[]
Exercise	[]	[]	[]	[]	[]
Stress	[]	[]	[]	[]	[]

For any item noted as other, please identify the source below.

Heart attacks _____
Diet _____
Smoking _____
High blood pressure _____
Weight _____
Exercise _____
Stress _____

Disengagement Index

A. Family Cluster

1. Which are you, in terms of your living relatives?

Wife	[]	Grandmother	[]
Mother	[]	Aunt	[]
Mother-in-law	[]	Niece	[]
Daughter	[]	Cousin	[]
Daughter in law	[]	Sister	[]
Pet Owner	[]	Other	[]
		specify_____	

Scoring: 9-11 (2)
3-8 (1)
1-2 (Ø)

2. Would you say you have more contact with your relatives now than you did when you were forty-five? Less? Same?
   - More now [] (2)
   - About the same [] (1)
   - Less now [] (Ø)

B. Work Cluster

1. During the past year, were you any of the following?
   a. Full time worker with pay []
   b. Part time worker with pay []
   c. Housewife []
   d. Member of union or professional organization []

   If d is checked, ask for the following information:

Name of Organization	Attendance In Past Year	Financial Contributions	Committee Member (Current)	Current Officer
(1)	(2)	(3)	(4) each Committee	(5) each Office

2. During the past year, were you in contact with anyone with whom you used to work, or with whom your husband used to work?
   - Yes [] (2)
   - No [] (Ø)

3. Were you working more hours a week for pay when you were forty-five than now? Less? Same?

More now	[]	(2)
About the same	[]	(1)
Less now	[]	(Ø)

C. Community Cluster

1. Neighbors

a. About how many neighbors around here do you know well enough to visit with?

Five or more	[]	(2)
Less than five	[]	(1)
None	[]	(Ø)

b. Would you say you have more contact with your neighbors than you did when you were age forty-five? Less? Same?

More now	[]	(2)
About the same	[]	(1)
Less now	[]	(Ø)

2. Friends

a. About how many close friends do you have, that is, people that you do things with, or visit in their homes, or that come to see you?

Five or more	[]	(2)
Less than five	[]	(1)
None	[]	(Ø)

b. Did you have more close friends whom you saw regularly when you were forty-five? Less? About the same?

More now	[]	(2)
About the same	[]	(1)
Less now	[]	(Ø)

3. Citizen

a. During the past year were you any of the following?

Registered voter	[]
Voted in state, national, or primary election	[]
Voted in local election	[]
Did work for some political party	[]
A political office holder	[]
Member of League of Women Voters	[]
Member of Republican or Democrat Women's club	[]

Scoring: 5-7 (2)
1-4 (1)
Ø (Ø)

If item 6 or 7 checked, please ask the following:

Name of Organization	Attendance In Past Year	Financial Contributions	Committee Member (Current)	Current Officer
(1)	(2)	(3)	(4) Each committee	(5) Each office

b. Would you say you are more active in political affairs and vote more often now than you did when you were forty-five? Less? About the same?

More now	[]	(2)
About the same	[]	(1)
Less now	[]	(Ø)

4. Church member

a. Are you a member of any church?

Yes	[]	(2)
No	[]	(Ø)

If yes, ask for the following:

Name of Organization	Attendance In Past Year	Financial Contributions	Committee Member (Current)	Current Officer
(1)	(2)	(3)	(4) Each committee	(5) Each office

b. Do you usually attend Sunday and/or other worship services?

Yes	[]	(2)
No	[]	(1)

c. Would you say you are more or less of a church goer now than you were when you were forty-five or about the same?

More now	[]	(2)
About the same	[]	(1)
Less now	[]	(Ø)

D. Leisure Role

Preface with: Next, I'm going to read you a list that suggests some activities that people do in their leisure time. No one does all of these things -- and they may not interest you at all. Or you may not have the opportunity or energy to do many of them. Tell me which ones describe you.

1. During the past year were you any of the following:

Gardener	[]
Dancer and/or drinker	[]
Participant in a sport	[]
Fisherman or hunter	[]
Craftsman or artist	[]
Tourist	[]
Discussion group member	[]
Student taking classes	[]
Reader of books	[]
Attender of plays,concerts, etc.	[]
Camper	[]
Home repairman	[]
Cooker or baker	[]
Television viewer	[]
Spectator of sports (live or on TV)	[]
Other (specify)	[]
	[]
	[]

Scoring: 11 or more (2)
6-10 (1)
5 or less (0)

a. Would you say you are doing more or less of these activities than you did when you were forty-five?

More now	[]	(2)
About the same	[]	(1)
Less now	[]	(0)

2. Club-Association Member

a. Are you a member of the Senior Citizens Club or any other social, civic club or organization, or lodge?

Yes	[]	(2)
No	[]	(0)

If yes, fill out the following information on:

Name of Organization	Attendance In Past Year	Financial Contributions	Committee Member (Current)	Current Officer
(1)	(2)	(3)	(4) Each committee	(5) Each office

b. Would you say you are more or less active in clubs and organizations now than you were at age forty-five, or about the same?

More active now	[]	(2)
About the same	[]	(1)
Less active now	[]	(0)

E. During an average week, how many hours do you estimate you spend doing the following: USE CARD I

1. Family oriented things like meals together, outings, visiting relatives, talking on phone or writing to relatives.

Over 21 hours	[]	(2)
6-20 hours	[]	(1)
5 or less hours	[]	(0)

2. Work oriented things, like your job, attending professional meetings, seeing former coworkers.

Over 21 hours	[]	(2)
6-20 hours	[]	(1)
5 or less hours	[]	(0)

3. Visiting with, phoning, writing, or going places with friends.

Over 21 hours	[]	(2)
6-20 hours	[]	(1)
5 or less hours	[]	(0)

4. Visiting with, phoning or going places with neighbors.

Over 21 hours	[]	(2)
6-20 hours	[]	(1)
5 or less hours	[]	(0)

5. Politically-oriented things, like talking politics, political group work, reading up on political meetings.

Over 21 hours	[]	(2)
6-20 hours	[]	(1)
5 or less hours	[]	(0)

6. In church or temple, attending devotionals, or doing religious things.

Over 21 hours	[]	(2)
6-20 hours	[]	(1)
5 or less hours	[]	(0)

7. In club or organizational activities, such as meetings or parties.

Over 21 hours	[]	(2)
6-20 hours	[]	(1)
5 or less hours	[]	(0)

8. In leisure-oriented things, such as crafts, sports, T.V., reading, plays, etc.

Over 21 hours	[]	(2)
6-20 hours	[]	(1)
5 or less hours	[]	(0)

F. Overall, compared with other areas of life, how important are the following to you? USE CARD J

1. Family life
   - Important [] (2)
   - Neutral [] (1)
   - Unimportant [] (Ø)

2. Work and work related things
   - Important [] (2)
   - Neutral [] (1)
   - Unimportant [] (Ø)

3. Neighboring
   - Important [] (2)
   - Neutral [] (1)
   - Unimportant [] (Ø)

4. Friendship (being a friend; having friends)
   - Important [] (2)
   - Neutral [] (1)
   - Unimportant [] (Ø)

5. Politics and political things
   - Important [] (2)
   - Neutral [] (1)
   - Unimportant [] (Ø)

6. Church and religion
   - Important [] (2)
   - Neutral [] (1)
   - Unimportant [] (Ø)

7. Club activities
   - Important [] (2)
   - Neutral [] (1)
   - Unimportant [] (Ø)

8. Leisure activities
   - Important [] (2)
   - Neutral [] (1)
   - Unimportant [] (Ø)

Questionnaire LS-B

Would you please comment freely in answer to the following questions? (Scoring key below question.)

1. What are the best things about being the age you are now?
   [] a positive answer (2)
   [] an ambivilent answer (1)
   [] nothing good about it (Ø)

2. What do you think you will be doing five years from now? How do you expect things will be different from the way they are now in your life?
   [] better, or no change (2)
   [] contingent -- "It depends" (1)
   [] worse (Ø)

3. What is the most important thing in your life right now?
   [] anything outside of self, or pleasant interpretation of future (2)
   [] "hanging on"; keeping health, or job (1)
   [] getting out of present difficulty, or "nothing new," or reference to the past. (Ø)

4. How happy would you say you are right now, compared with the earlier periods in your life?
   [] this is the happiest time; all have been happy; or hard to make a choice (2)
   [] some decrease in recent years (1)
   [] earlier periods were better, this is a bad time (Ø)

5. Do you ever worry about your ability to do what people expect of you -- to meet demands that people make on you?
   [] no (2)
   [] qualified yes or no (1)
   [] yes (Ø)

6. If you could do anything you pleased, in what part of _____ would you most like to live?
   [] present location (2)
   [] any other location (Ø)

7. How often do you find yourself feeling lonely?
   [] never; hardly ever (2)
   [] sometimes (1)
   [] fairly often; very often (Ø)

8. How often do you feel there is no point in living?
   [] hardly ever; never (2)
   [] sometimes (1)
   [] fairly often; very often (Ø)

9. Do you wish you could see more of your close friends than you do, or would you like more time to yourself?
   [] O.K. as is (2)
   [] wish could see more of friends (1)
   [] wish more time to self (Ø)

1Ø. How much unhappiness would you say you find in your life today?
   [] almost none (2)
   [] some (1)
   [] a great deal (Ø)

11. As you get older, would you say things seem to be better or worse than you thought they would be?
   [] better (2)
   [] about as expected (1)
   [] worse (Ø)

12. How satisfied would you say you are with your way of life?
   [] very satisfied (2)
   [] fairly satisfied (1)
   [] not very satisfied (Ø)

APPENDIX B

RISK FACTOR INDEX

Item		Values
Sex -	All Female -	6 points
Heredity -	Number of relatives with cardiovascular Disease	
	Ø relatives	1 point
	1 relative	2 points
	2 relatives	4 points
	More than 2 relatives	6 points
Exercise -	Intensive	1 point
	Moderate to large amount	2 points
	Moderate amount	3 points
	Small amount	5 points
	None	6 points
Weight -	5# below standard	Ø points
	5# above or below standard	1 point
	6-2Ø# overweight	2 points
	More than 2Ø# overweight	5 points
Tobacco -	Does not smoke (or chew)	Ø points
	Smokes cigar or pipe	1 point
	Less than 1 pkg per day	2 points
	1 pkg per day	4 points
	More than 1 pkg per day	6 points
Dietary Fat -	No animal fat	1 point
	Small amount animal fat	2 points
	Daily eats animal fat, boiled or broiled	3 points
	Animal fats fried	4 points

Adapted from: Cromwell, V., et al. (1980). Understanding your coronary patient. Nursing 80, 10 (3), 34-45.

APPENDIX C

GROUP MEANS AND STANDARD DEVIATIONS

VARIABLE: KNOWUTIL

	MEANS	ST DEV	MEANS	ST DEV
GRP	GEOGRAPH*		AGE*	
1	2.36364	Ø.92442	3.36364	1.68954
2	2.3Ø769	Ø.85485	4.38462	1.26Ø85
3	2.29412	Ø.68599	2.82353	1.46779
4	1.81579	Ø.8154Ø	2.82456	1.33Ø1
TOTAL	1.94839	Ø.83583	2.99355	1.42563
GRP	OWN		NOOCCUP	
1	1.45455	Ø.52223	Ø.54545	Ø.52223
2	1.3Ø769	Ø.48Ø38	Ø.38462	Ø.5Ø637
3	1.11765	Ø.33211	Ø.47Ø59	Ø.5145Ø
4	1.26316	Ø.51616	Ø.52632	Ø.5Ø151
TOTAL	1.26452	Ø.49775	Ø.5Ø968	Ø.5Ø153
GRP	OCCUP*		INCOME	
1	6.45455	1.96792	1.72727	Ø.9Ø453
2	4.62538	2.98715	2.62538	1.38675
3	3.82353	2.48Ø81	2.94118	1.63824
4	3.39474	2.57496	3.66667	1.348ØØ
TOTAL	3.76129	2.67Ø39	3.36129	1.46333
GRP	RETIRED		HEALTH	
1	1.18182	Ø.4Ø452	2.27273	1.19Ø87
2	1.ØØØØØ	Ø.Ø	2.3Ø769	1.Ø3155
3	1.29412	Ø.46967	2.52941	1.Ø6757
4	1.29825	Ø.45951	3.Ø9649	Ø.86187
TOTAL	1.26452	Ø.4425Ø	2.9Ø968	Ø.96945
GRP	LOC*		CVDIS	
1	13.63636	3.74894	Ø.81818	Ø.4Ø452
2	9.23Ø77	2.48843	Ø.84615	Ø.37553
3	8.58824	3.7259Ø	Ø.7Ø588	Ø.46967
4	7.82456	3.5Ø788	Ø.5Ø877	Ø.5Ø213
TOTAL	8.43871	3.75912	Ø.58Ø65	Ø.495Ø5

*Variables selected for Discriminant KNOWUTIL

GRP	MARSTAT*		EDUCAT*	
1	3.63636	Ø.8Ø9Ø4	2.45455	1.12815
2	3.46154	1.Ø5ØØ3	3.Ø7692	1.32Ø45
3	3.29412	Ø.98518	3.64ØØ6	1.61491
4	2.77193	1.1976Ø	4.66667	1.55527
TOTAL	2.94839	1.17215	4.26452	1.6674Ø

GRP	SOCCLASS		STDLIV	
1	2.36364	Ø.8Ø9Ø4	2.Ø9Ø91	Ø.83121
2	2.84615	Ø.37553	2.23Ø77	Ø.59914
3	2.82353	Ø.63593	2.29412	Ø.58787
4	3.Ø4386	Ø.55479	2.37719	Ø.6ØØ74
TOTAL	2.95484	Ø.59589	2.33548	Ø.61662

GRP	YRSAREA		RESIDE	
1	3.18182	1.4Ø13Ø	1.27273	Ø.4671Ø
2	3.84615	Ø.5547Ø	1.3Ø769	Ø.48Ø38
3	3.47Ø59	Ø.94324	1.23529	Ø.43724
4	3.27193	1.Ø2435	1.36842	Ø.48451
TOTAL	3.33548	1.Ø21Ø6	1.34194	Ø.4759Ø

GRP	COMPHEAL		RFINDEX*	
1	2.Ø9Ø91	Ø.94388	21.45455	2.38175
2	2.3Ø769	Ø.85485	19.38462	3.42876
3	2.29412	Ø.58787	2Ø.35294	3.93Ø7
4	2.6Ø526	Ø.63271	18.57Ø18	2.96877
TOTAL	2.5Ø968	Ø.68725	19.Ø3871	3.18455

GRP	LSA*		DISENGIN*	
1	1Ø.63636	3.93123	16.45455	5.31721
2	13.38462	4.55592	23.84615	6.8Ø498
3	11.ØØØØØ	3.6Ø555	22.82353	5.5Ø267
4	14.49123	3.55Ø82	26.Ø4386	6.23Ø8
TOTAL	13.74194	3.55Ø82	24.82581	6.61182

GRP	LSB*	
1	13.54545	5.78556
2	16.Ø7692	4.73395
3	15.82353	5.28246
4	19.Ø35Ø9	3.64Ø8Ø
TOTAL	18.Ø4516	4.42593

* Variables selected for Discriminant KNOWUTIL

APPENDIX D

POOLED WITHIN-GROUPS CORRELATION MATRIX

	GEOGRAPH	AGE	MARSTAT	EDUCAT
GEOGRAPH	1.00000			
AGE	0.14401	1.00000		
MARSTAT	-0.02600	0.26027	1.00000	
EDUCAT	-0.13580	-0.22908	-0.18119	1.00000
OCCUP	0.23763	0.10846	0.02094	-0.56044
INCOME	-0.2277	-0.47261	-0.28165	0.35778
YRSAREA	-0.00604	0.07566	-0.12323	0.02314
RESIDE	-0.50649	0.03487	0.06840	0.10696
OWN	-0.21451	0.10957	0.03756	-0.19159
NOOCCUP	0.09643	-0.23181	-0.47970	-0.00249
SOCCLASS	-0.29906	-0.13815	-0.01619	0.42093
STDLIV	0.04172	-0.22817	-0.24104	-0.07473
RETIRED	-0.11017	-0.34097	-0.03949	0.09132
HEALTH	-0.22833	-0.13146	0.11342	0.24581
COMPHEAL	0.00780	0.22352	0.06697	0.09709
RFINDEX	0.12078	-0.12578	-0.11516	-0.00828
LOC	-0.03765	0.12601	0.04938	-0.17227
CVDIS	0.04201	0.09795	-0.01324	-0.08436
LSA	0.11410	-0.02297	0.11595	0.00410
DISENGIN	-0.19771	-0.44607	-0.08499	0.36801
LSB	0.10130	-0.07353	0.03034	0.00898

	OCCUP	INCOME	YRSAREA	RESIDE
GEOGRAPH				
AGE				
MARSTAT				
EDUCAT				
OCCUP	1.00000			
INCOME	-0.29742	1.00000		
YRSAREA	0.01396	-0.08338	1.00000	
RESIDE	-0.17112	0.04673	-0.03042	1.00000
OWN	-0.04787	-0.23464	-0.01823	0.41428
NOOCCUP	0.13773	0.34749	0.07224	-0.25140
SOCCLASS	-0.34315	0.32998	-0.19320	0.10615
STDLIV	0.14894	0.17391	0.02357	-0.09455
RETIRED	-0.12041	0.19065	-0.05886	0.05533
HEALTH	-0.26127	0.20819	-0.12083	0.16144
COMPHEAL	0.04881	-0.08599	-0.08399	0.10076
RFINDEX	0.14376	0.01151	0.06610	-0.19836
LOC	0.06875	-0.34841	0.04478	0.17985
CVDIS	0.09265	-0.23415	0.15664	-0.11537
LSA	-0.03160	0.15276	-0.11204	-0.03393
DISENGIN	-0.24497	0.45513	0.05065	0.01377
LSB	-0.01285	0.21349	0.00696	-0.01251

	OWN	NOOCCUP	SOCCLASS	STDLIV
GEOGRAPH				
AGE				
MARSTAT				
EDUCAT				
OCCUP				
INCOME				
YRSAREA				
RESIDE				
OWN	1.00000			
NOOCCUP	-0.18455	1.00000		
SOCCLASS	-0.16663	-0.10618	1.00000	
STDLIV	-0.07078	0.19806	-0.12943	1.00000
RETIRED	0.01686	-0.06999	0.01752	-0.01167
HEALTH	-0.03668	-0.14473	0.22055	-0.15074
COMPHEAL	-0.00853	-0.17059	0.03622	0.00779
RFINDEX	-0.19226	0.10751	0.08296	0.05941
LOC	0.30225	-0.14013	-0.05135	-0.11019
CVDIS	-0.03165	-0.03562	-0.16752	0.00525
LSA	-0.07451	0.01904	0.11494	0.08488
DISENGIN	-0.10308	0.13617	0.23723	0.19016
LSB	-0.10285	0.04360	0.04299	0.15567

	RETIRED	HEALTH	COMPHEAL	RFINDEX
GEOGRAPH				
AGE				
MARSTAT				
EDUCAT				
OCCUP				
INCOME				
YRSAREA				
RESIDE				
OWN				
NOOCCUP				
SOCCLASS				
STDLIV				
RETIRED	1.00000			
HEALTH	0.18828	1.00000		
COMPHEAL	0.00519	0.47007	1.00000	
RFINDEX	-0.04918	-0.27431	-0.18178	1.00000
LOC	-0.07489	-0.06628	-0.00960	0.01943
CVDIS	-0.07692	-0.30770	-0.07802	0.20985
LSA	0.00012	0.34562	0.30404	-0.17226
DISENGIN	0.19030	0.29502	0.12798	-0.14089
LSB	-0.02722	0.40318	0.35825	-0.04505

	LOC	CVDIS	LSA	DISENGIN
GEOGRAPH				
AGE				
MARSTAT				
EDUCAT				
OCCUP				
INCOME				
YRSAREA				
RESIDE				
OWN				
NOOCCUP				
SOCCLASS				
STDLIV				
RETIRED				
HEALTH				
COMPHEAL				
RFINDEX				
LOC	1.00000			
CVDIS	0.12925	1.00000		
LSA	-0.10321	-0.20939	1.00000	
DISENGIN	-0.18450	-0.11979	0.23057	1.00000
LSB	-0.14810	-0.17884	0.62617	0.26258

	LSB
GEOGRAPH	
AGE	
MARSTAT	
EDUCAT	
OCCUP	
INCOME	
YRSAREA	
RESIDE	
OWN	
NOOCCUP	
SOCCLASS	
STDLIV	
RETIRED	
HEALTH	
COMPHEAL	
RFINDEX	
LOC	
CVDIS	
LSA	
DISENGIN	
LSB	1.00000

APPENDIX E

Variables Exhibiting Significance With Chi-Square

Variable	Condition	Chi-Square	DF	Significance
DISENGIN	KNOWRF	18.01623	4	0.0012
	UTILIZEK	14.14989	4	0.0068
	KNOWUTIL	18.98747	6	0.0042
LSB	KNOWRF	15.76925	4	0.0033
	UTILIZEK	11.46372	4	0.0218
	KNOWUTIL	18.95201	6	0.0042
LOC	KNOWRF	13.69871	4	0.0083
	UTILIZEK	24.53561	4	0.0001
	KNOWUTIL	30.27094	6	0.0000
EDUCAT	KNOWRF	36.41162	12	0.0003
	UTILIZEK	25.17990	12	0.0140
	KNOWUTIL	44.59345	18	0.0005
OCCUP	KNOWRF	27.60443	10	0.0021
	UTILIZEK	19.85990	10	0.0306
	KNOWUTIL	29.20644	15	0.0151

Variables Exhibiting Varied Significance With Chi-Square

Variable	Condition	Chi-Square	DF	Significance	
AGE	KNOWRF	21.51535	10	0.0172	
	UTILIZEK	6.58841	10	0.7637	NS
	KNOWUTIL	22.21576	15	0.1023	NS
GEOGRAPH	KNOWRF	11.56378	4	0.0209	
	UTILIZEK	7.67492	4	0.1042	NS
	KNOWUTIL	16.00545	6	0.0137	
MARSTAT	KNOWRF	11.84941	6	0.0654	NS
	UTILIZEK	9.50574	6	0.1471	NS
	KNOWUTIL	15.24316	9	0.0845	NS
RFINDEX	KNOWRF	5.49565	4	0.2401	NS
	UTILIZEK	10.95542	4	0.0271	
	KNOWUTIL	13.96845	6	0.0300	
LSA	KNOWRF	7.56753	4	0.1088	NS
	UTILIZEK	16.24714	4	0.0027	
	KNOWUTIL	18.77589	6	0.0046	

Variables Not Selected Using Stepwise Procedures

Variables Exhibiting Varied Significance With Chi-Square

Variable	Condition	Chi-Square	DF	Significance	
CVDIS	KNOWRF	8.58231	2	Ø.Ø137	
	UTILIZEK	4.Ø2572	2	Ø.1336	NS
	KNOWUTIL	9.82612	3	Ø.Ø2Ø1	
RESIDE	KNOWRF	1.18619	2	Ø.5526	NS
	UTILIZEK	1.51282	2	Ø.4693	NS
	KNOWUTIL	1.51648	3	Ø.6785	NS
OWN	KNOWRF	7.74118	4	Ø.1Ø15	NS
	UTILIZEK	2.12218	4	Ø.7133	NS
	KNOWUTIL	7.Ø3971	6	Ø.3172	NS
NOOCCUP	KNOWRF	Ø.52714	2	Ø.7645	NS
	UTILIZEK	Ø.67899	2	Ø.7121	NS
	KNOWUTIL	1.1ØØ18	2	Ø.777Ø	NS
INCOME	KNOWRF	32.56563	8	Ø.ØØØ1	
	UTILIZEK	21.21966	8	Ø.ØØ66	
	KNOWUTIL	32.61113	12	Ø.ØØ11	
SOCCLASS	KNOWRF	13.35231	6	Ø.Ø376	
	UTILIZEK	11.89561	6	Ø.Ø643	NS
	KNOWUTIL	26.67210	9	Ø.ØØ16	
STDLIV	KNOWRF	4.Ø9966	4	Ø.3927	NS
	UTILIZEK	3.88546	4	Ø.4217	NS
	KNOWUTIL	7.58Ø5	6	Ø.2698	NS
RETIRED	KNOWRF	7.48593	2	Ø.Ø247	
	UTILIZEK	2.77Ø72	2	Ø.25Ø2	NS
	KNOWUTIL	5.58Ø5	3	Ø.1215	NS
HEALTH	KNOWRF	18.52577	6	Ø.ØØ5Ø	
	UTILIZEK	11.7Ø5Ø9	6	Ø.Ø689	NS
	KNOWUTIL	21.72394	9	Ø.ØØ98	
COMPHEAL	KNOWRF	1Ø.78161	4	Ø.Ø291	
	UTILIZEK	8.36876	4	Ø.Ø79Ø	NS
	KNOWUTIL	2Ø.13628	6	Ø.ØØ26	
MEDICAT	KNOWRF	6.33437	2	Ø.Ø421	
	UTILIZEK	3.4136Ø	2	Ø.1874	NS
	KNOWUTIL	7.Ø1847	3	Ø.Ø713	NS

APPENDIX F

CONSENT FORM

I, _____, state that I am willing to participate in a program of research being conducted by DARLINE J. WILKE.

I understand that I will be asked a series of questions, the answers to which will be confidential and in no way identified as to source person. I further understand that no risk is involved and that I may withdraw from participation at any time without prejudice.

Signature_____

Date_____

APPROVAL SHEET

The dissertation submitted by DARLINE J. WILKE has been read and approved by the following committee:

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The final copies have been examined by the director of the disserations and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Education.

12/17/86
Date

Joy Rogers
Director's Signature