VARIABLES WHICH INFLUENCE OLDER WOMEN'S SELF-MEDICATION PRACTICES

A DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

IN THE GRADUATE SCHOOL OF THE

TEXAS WOMAN'S UNIVERSITY

COLLEGE OF NURSING

BY

LYNN WIECK, MSN

DENTON, TEXAS

DECEMBER, 1991

TEXAS WOMAN'S UNIVERSITY
DENTON, TEXAS

July 29, 1991
Date

To the Provost of the Graduate School:

I am submitting herewith a dissertation written by Lynn Wieck entitled "Variables Which Influence Older Women's Self-medication Practices". I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Nursing.

John Fehir
John Fehir, PhD
Major Professor

We have read this dissertation and recommend its acceptance:

Diane Ragsdale

Judith M Parlow

Accepted

Leslie M Thompson
Provost of the Graduate School

ACKNOWLEDGEMENTS

Acknowledgment refers to recognizing those persons who make an endeavor possible. I offer gratitude to my family whose willingness to guide their own ships has hopefully made them better people and has certainly allowed this dream to come to fruition. My husband, Steve G. Wieck, and our three sons, Joseph, Scott, and Doug, have shared the tears of garbled data and the triumphs of significant t-tests. I am grateful.

I wish to acknowledge the ninety gracious ladies who voluntarily shared with me their feelings, their thoughts, and a most precious commodity, their time. Without their input and their interest in making life better for older women everywhere, this project would not have been possible.

My dissertation committee, Dr. John Fehir, Chairperson, Dr. Judith McFarlane and Dr. Diane Ragsdale have offered a perfect blend of support and critique. Their efforts have made this dissertation process one of the highlights of my educational and personal life.

I finally acknowledge my parents, James B. and Maurine Fish, who could not imagine that I would not finish something once I start. Their confidence and love have encouraged me during weak moments and inspired me to complete this endeavor. I am grateful.

VARIABLES WHICH INFLUENCE OLDER WOMEN'S SELF-MEDICATION PRACTICES

ABSTRACT

LYNN WIECK, MSN

TEXAS WOMAN'S UNIVERSITY, COLLEGE OF NURSING

DECEMBER 1991

This descriptive study was designed to investigate the relationship of intrinsic motivation, health perception, and medication knowledge to the self-medication practices of older women. Medication knowledge was the strongest predictor of self-medication practices in 90 women over the age of 60 (M=68.7). The majority of the subjects were widowed black ladies who lived with at least one family member and perceived their economic situation to be less than adequate to meet their needs. Findings included a significant relationship between self-medication practices and medication knowledge (r=.42, p=.01, n=90). Medication knowledge explained 17% (r^2=.16778) of the variance in self-medication scores. Perceived health, intrinsic motivation and demographic parameters did not contribute significantly to the prediction equation. Results indicated that knowledge may be used to predict self-medication practices in older women so that optimal use may be made of time and financial resources.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Figure

CHAPTER 1

INTRODUCTION

The number of Americans 65 years and older is approaching 25 million and will continue to rise until at least 2035. By then the U.S. will have a projected 55 million persons 65 and over (National Center for Health Statistics, 1984). The elderly, who make up approximately 11.4% of the population, receive 31% of all prescription medications. This figure equates to about 11 prescriptions per individual each year (Giannetti, 1983; Baum, Kennedy, Forbes, & Jones, 1984; McCormack & O'Malley, 1986). These medications are being consumed largely by a geriatric population who live in their own homes and have frequent contact with family members (Brody, 1985).

At least 95% of older persons live in community settings. Most elderly patients who are living independently or in a semidependent environment have little or no supervision of their medication-taking behavior (Pavkov & Stephens, 1981). Medications are known to cause iatrogenic complications for both mental and physical health. The elderly are especially prone to adverse drug reactions (Hoppel, 1985). Approximately 3 to 7% of all admissions of older persons into hospitals are a direct

consequence of problems with prescribed medications (Richardson, 1986).

Medications have had a tremendous positive impact on the elderly in alleviating symptoms and curing many disorders, such as life-threatening infections. Nonetheless, there are major problems resulting from inappropriate drug use and the inherent hazards of these drugs (Delafuente & Stewart, 1988). These problems range from simple gastric upset to potentially lethal interactions between incompatible drugs.

The elderly find themselves in a vulnerable position. They are susceptible to violence, fraud, disease, and their own altered physical conditions. Self-medication poses an additional threat to the safety and independence of the elderly. Age-related phenomena make the consumption of drugs and remedies desirable and necessary; yet these life-saving drugs can be dangerous and even lethal if not taken correctly (Simonson, 1984).

Most studies of medication consumption among the elderly are devoted to outcomes, i.e. extent of noncompliance with prescription medications and physiological effects of adverse drug reactions (Cooper, Love, & Raffoul, 1982; Giannetti, 1983; Haynes, Taylor, Sackett, Gibson, Berkholz, & Mukherjee, 1980; Kendrick & Bayne, 1982; Richardson, 1986). The medication practices of

the elderly have also been described by demographic studies (National Center for Health Statistics, 1982). However, the purpose of this study was to focus on the antecedents to dangerous self-medication practices and the parameters explaining polypharmacy in older persons.

Problem of the Study

There is a distinct likelihood that more than one factor is responsible for the way an elderly woman makes decisions about her health and medications. It was proposed that if these factors could be identified, strategies could be developed and implemented which would improve the health of older women and decrease the need for health services consumption.

To this end, the purpose of this study was to determine if there is a relationship between intrinsic motivation, health perception, knowledge of prescribed medications, and self-medication practices in older American women. A homogenous group of older women were tested to determine which factors influenced their medication habits. The ultimate purpose was to develop a model to predict dangerous self-medication practices so that education and resources can be targeted toward susceptible persons.

Rationale for Study

The concern about health care consumption by the aging population is assuming paramount importance in this nation of staggering debt and dwindling resources. From 1970 to 1984, Medicare expenditures rose from $4 billion to almost $40 billion with a 60% increase from 1979 to 1982 (PROPAC, 1986). In 1980, the per capita cost of hospital care services was $308 for those under the age of 65 and $1085 for those age 65 and over (Lewis, 1990). In 1981, prescription costs for the elderly were nearly $4 billion (Waldo, Levit, & Lozenby, 1985) with 84% of the elderly's drug expenditures being paid out of pocket (American Association of Retired People, 1985). With the increasing number of older persons who are particularly susceptible to medication problems and the increasing cost of health care goods and services, health care expenditures for the elderly can be expected to continue in an upward spiral. This nation cannot afford to care for older persons in acute care settings whose health care problems are foreseeable and preventable. Nurses have the ability and opportunity to intervene in this cycle. An understanding of the factors which lead to unsafe medication practices can guide the nurse in planning, administering, and evaluating care.

Today's health care problems center on life styles and behaviors; thus, interventions must be concerned with the

process of facilitating client decisions and behavior to maintain and promote health (Cox, 1982). According to Heiby & Carlson (1986), subjective perceptions of antecedents and consequences to one's behavior are considered to be partially predictive of the target behavior. With regard to self-medication practices, client decisions to take or not take medications can profoundly affect health outcomes. The concern of this study was to determine what factors can be used to predict safe and therapeutic self-medication behaviors.

Elderly patients are more likely than younger patients to receive prescription drugs for the variety of health problems they exhibit. Pharmacologic treatment is especially challenging in the elderly because of the related factors which influence drug effects (O'Brien & Kursch, 1987). Absorption of medication and the volume of distribution may change with increasing age. Drug metabolism is altered and may predispose patients to toxicity. Additional problems focus on the multiple drugs which many elderly take, inappropriate medication consumption, and confusion resulting from inappropriate drug doses or from degenerative disease.

The drugs themselves are responsible for some of the symptoms reported by older persons. In a study of central nervous system symptoms of older persons taking anti-

hypertensive drugs, Hale and associates (1984) found that women who used antihypertensives (n_1) reported significantly more fainting than the control group (n_2) ($\underline{n}_1$=107, $\underline{n}_2$=68, $\underline{p}$<.0001). They also reported more dizziness than the control group ($\underline{n}_1$=140, $\underline{n}_2$=126, $\underline{p}$<.005) and more "blackout spells" ($\underline{n}_1$=52, $\underline{n}_2$=32, $\underline{p}$<.002). However, significantly fewer of the women on antihypertensives suffered from bone fractures ($\underline{n}_1$=60, $\underline{n}_2$=107, $\underline{p}$<.02). Adding to the concern for the additive effects of drugs, Hale also found that women who took a diuretic with their antihypertensive medication reported significantly more fainting episodes than the controls ($\underline{n}_1$=82, $\underline{n}_2$=68, $\underline{p}$<.0001). Similar significance was found when additional drug combinations were present.

Medication susceptibility is compounded by the multiplicity of medications prescribed. Several factors predispose polypharmacy in the elderly. Many elderly simply have a large number of chronic conditions for which medications are indicated. Hospitalization may be responsible for the polypharmacy practices of older persons. A national health survey reported that 13% of persons 55 to 64 were hospitalized at least once a year, 18% of those 65 to 74, and 24.6% of those 75 and over ($\underline{n}$=8,210). (U.S. Department of Health and Human Services, 1987[a]). Beers and associates (1989) found that overall use of medications in low-users (those taking 5 or less medications) increased

significantly after being discharged from a hospital (n=197, 2.89 to 3.75 medications, $p<.001$). The most frequently added medications were narcotics, laxatives, and antibiotics. They concluded that changes made in medications during hospitalization tend to increase the number of drugs older persons take which may place them at risk for polypharmacy.

Polypharmacy and medication abuse may be the predisposing factor for admission to the hospital in the first place. Many physical problems requiring hospitalization and long-term care which have previously been attributed to the degeneration of old age are now being reassessed with an eye toward medications as a possible link. Falls, broken bones, personality changes, and sleep disorders are just a few of the conditions which may be the direct result of improper use of medications. In a study of the admissions to a community hospital, Colt and Shapiro (1989) found that out of 244 patients, 23 were admitted for drug-induced illnesses. The greatest at-risk were those persons who were taking more than five prescription medications. A comparison between the study patients showed a difference of 5.7 (mean) medications for those admitted with drug-induced illness (n_1) and 3.2 (mean) medications for the other patients (n_2) when their average number of prescription medications was considered (n_1=23; n_2=198, $p<.05$)

Abuse of prescription medications in the elderly stems from a number of possible causes. One contributor to this problem may be the health care staff themselves. When patients present in a clinical setting with complaints, there is a tendency to want to "do something" about the problem. Often, medication is the natural outcome of this desire to intervene. Furthermore, there may be a reluctance or oversight in stopping medications when they are no longer needed. Kroenke and Pinholt (1990) determined that by providing feedback to the physicians in a Veteran's Administration Clinic regarding drugs which were no longer needed or could be reduced, they were able to make a significant impact in reducing the number of medications taken (5.9±.2 to 5.4±.2, $p<.001$, $n=89$), the number of doses taken (14.9±.8 to 13.0±.2, $p<.001$, $n=89$), and the complexity scores of the patients' medications (7.2±.3 to 6.6±.4, $p<.007$, $n=89$). There were no changes in the control groups in the number of medications or doses, and the complexity scores even increased slightly during the same time period. They concluded that simply making health care providers aware of the option of decreasing or eliminating medications may help stem the tide of polypharmacy and the many health hazards it poses.

No single factor has not been found to be a satisfactory predictor of safe medication practices.

Variables which influence health promotion practices must be identified. An understanding of these factors will facilitate nurses' efforts to teach, counsel, and assist their clients to an optimal state of well-being. It was proposed that intrinsic motivation, health perception, and knowledge about the drugs being taken may be integrally linked to the self-medication practices of older persons. Exploration of this prospect was the focus of this inquiry.

Conceptual Framework

The conceptual framework used to guide this research was the Science of Unitary Human Beings (UHB) developed by Rogers (1970). The UHB framework provides a holistic approach to observing, assessing, intervening, and evaluating the effectiveness of client health care.

Roger's UHB framework is built on a foundation of three basic principles called the principles of homeodynamics. The principles are helicy, integrality, and resonancy; and together they provide a basis for describing the human being interacting with the environment throughout life.

Within the principle of helicy there is continuous, innovative, unpredictable, change in human and environmental field patterns as the person grows older and becomes increasingly more diverse (Rogers, 1990). Rogers proposes that change is spontaneous and nonrecursive, i.e. a person

does not go back to a previous state, but continues to progress throughout the life span toward new innovative states. These states may resemble former states, but the person is a compendium of previous experiences and does not regress. Helicy has been tested in pregnancy and early postpartum (Brouse, 1985), in relation to power (Barrett, 1986), and in studies of time (Ference, 1986) and mystical experience (Cowling, 1986).

Integrality, the second principle, is a continuous mutual process between human energy field and environmental energy field (Rogers, 1990). Basic to UHB Science is the idea of energy field as a unifying concept, i.e. humans are energy fields which cannot be identified or described by the summation of the various parts (Rogers, 1970). Integrality defines the interaction between humans and their environment as mutual which negates the idea of causation. Integrality has been examined in studies of the family (Fawcett, 1989), self-actualization studies of healthy women (Clarke, 1986), human-animal relationships (Gaydos & Farham, 1988), and personal space boundaries (Meisenhelder, 1982).

The third principle, resonancy, includes a description of the continuous change which occurs in the human and environmental fields in patterns which vary from lower to higher frequency wave patterns (Rogers, 1990). Since change is part of the lifelong progression toward greater

complexity and diversity, some method of predicting change is desirable. Pattern is the distinguishing characteristic of the energy field. Identification and monitoring of wave patterns may be one method of predicting change. Rogers proposes that change is more apt to occur when the wave patterns are of a shorter, higher frequency (Rogers, 1970). An analogy would be the immediacy of change that is likely when a cardiac patient is having ventricular tachycardia (shorter, higher waves) as opposed to anticipated changes when the electrocardiogram shows a normal sinus rhythm (longer, lower waves). Changes in human being's rhythmic repatterning are proposed to occur more rapidly in response to disruptions in person-environment interaction (Floyd, 1983). Therefore, it is anticipated that a disruption to person-environment interaction, such as illness and/or nurse intervention, may allow for repatterning of health-promoting behaviors. Resonancy has been examined in studies involving circadian rhythms (Mason, 1988), therapeutic touch (Jurgens, Meehan, & Wilson, 1987), and hyperactive children (Malinski, 1986). Resonancy, helicy, and integrality are principles that can be used to propose a framework within which nursing problems can be identified and managed.

The problem of interest in this study was self-medication behaviors of older women; the concepts relevant to this study were intrinsic motivation, health perception,

and medication knowledge. These concepts are subsumed within the Rogers framework and are not specifically identified and defined. However, intrinsic motivation is proposed to be described by the principle of resonancy which relates to changing wave patterns as indicative of change (Rogers, 1970), i.e. some periods are reflective of higher motivation and greater change, while others reflect lower motivation and status quo. Intrinsic motivation is based on the premise that choice, desire, and the need for competency and self-determinism are factors which cause behavior (Cox, 1982). Choice, desire, and needs for competency and self-determinism are seen as sensitive to periods of higher wave activity, i.e. the motivated state or lowered wave activity, i.e. a more unmotivated or maintenance state in relation to behavior change. Furthermore, health perception can be inferred to be part of the principle of helicy because it is an accumulation of many past experiences, such as past illnesses, experiences with illnesses in others, personal coping skills, belief in susceptibility to illness (Becker, 1978), and past family experiences with illness (Miller & Winstead-Fry, 1982).

The cumulative result of all past experiences is the way in which the diverse, complex person perceives present health status. Medication knowledge was viewed as a cumulative process over the life span with factors

intervening to make knowledge-acquisition more intensive or less significant as the person progresses toward greater complexity and diversity. The person who has had experience with only one or two medications was proposed to have a less diverse approach to new medication-knowledge acquisition than someone who has taken large quantities of a variety of medications over the life span. The three concepts of interest to this study can be theoretically linked to the UHB framework; however, clear conceptual definitions are not possible. For this reason, a nursing model was used to clarify the concepts in this study.

Conceptual definitions for the concepts of interest to this study were extracted from Cox's (1982) Interaction Model of Client Health Behavior (IMCHB). The IMCHB is seen as consistent with the UHB framework albeit more concrete. Cox's conceptual definition describes intrinsic motivation as recognizing choice, desire, and the need for competency and self-determinism as causal factors in behavior. Health perception and knowledge are described in Cox's elements of client singularity. Client singularity is the term used to describe the configuration of the client's background variables, expression of motivation, appraisal of the health care concern, and the affective response (Cox, 1982). The unique interaction between these areas of concern must be addressed before the health care provider can plan and

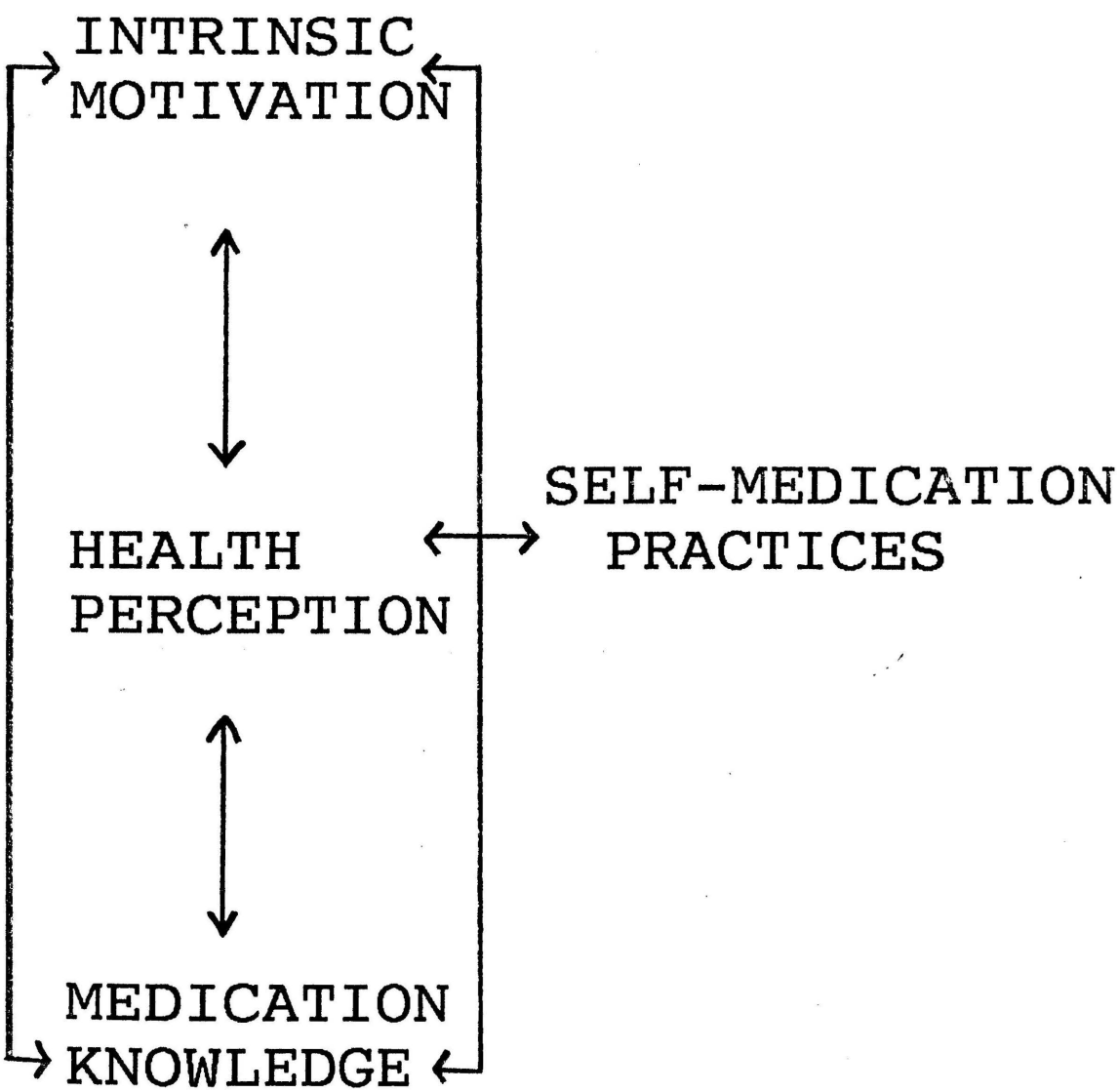
intervene effectively. These client singularity areas, which include health perception and knowledge, interact with the intrinsic motivation component to produce a background against which sound health-related decisions can be made.

Intrinsic motivation is a primary element within the IMCHB (Cox, 1982). As presented in Cox's model, intrinsic motivation is derived from Deci's portrayal of humans' need to experience themselves as competent and self-determining (Deci, Nezlak, Sheinman, 1981). Deci (1975) described human beings as dynamic organisms in constant interaction with their environment. The competence and self-determination described by Deci serves to reinforce motivation to engage in a behavior. Deci's assertion that motivation is not a static trait, but rather a multidimensional situation-specific construct (Deci, 1975, 1980) is consistent with the dynamic, changing nature of humans who become more complex and diverse as they progress through life (Rogers, 1970).

The problem central to this study was self-medication practices in older women. The proposed relationship between the relevant concepts, intrinsic motivation, health perception, and medications knowledge, is depicted in Figure 1. These concepts were assumed to be related and cumulative in their effect on self-medication practices. Intrinsic motivation was believed to have an effect on health

Figure 1

Relationship of Dependent and Independent Variables



medication knowledge. Additionally, intrinsic motivation and health perception were proposed to be related to each other in a contributory sense, such as an assumption that the more motivated a person was, the more positively health would be perceived. These two concepts were proposed as better predictors of self-medication practices than were either one alone. Medication knowledge was believed to have a additive relationship in producing a more reliable predictor model for self-medication practices.

The concepts of intrinsic motivation, health perception, and knowledge acquisition from the IMCHB were used within the framework of Rogers. Clients have the capacity to make decisions regarding health care, and intrinsic motivation is important in making these decisions (Cox, 1982). Cox's description of the pattern(s) of intrinsic motivation, health perception, and knowledge were used to describe the unitary person.

Assumptions

The following assumptions guided this study.

1. The person is an energy field capable of increasing diversity and complexity (Rogers, 1988).
2. Pattern is an abstraction that gives identity to human and environmental fields (Rogers, 1988).

3. Aging is a continuously creative process directed toward growing pattern and organizational diversity (Rogers, 1980).
4. Persons have the capacity to participate knowingly and probabilistically in the process of change (Rogers, 1987).
5. Clients are capable of making informed, independent, and competent choices about health care behavior (Cox, 1982).

Hypotheses

The purpose of this study was to establish and describe a relationship between variables as well as to describe differences between groups. The following hypotheses were tested: H_1. There is a relationship between intrinsic motivation, health perception, knowledge of medications, and self-medication practices in older women. H_2. There is a difference in intrinsic motivation, health perception, medication knowledge, and self-medication practices in older women based on age, socioeconomic status, and/or education level.

Definition of Terms

Self-medication practices:

Theoretical Definition: Self-medication practices are those activities in which people engage to give medications, both prescription and non-prescription, to themselves.

Operational Definition: For the purposes of this study, self-medication practices was operationalized to be the score on the Self-reported Medication-Taking Scale (Morisky, Green, & Levine, 1986) (Appendix A).

Older women:

Theoretical Definition: Older women are women 60 years of age and over (Somers & Fabian, 1981).

Operational Definition: In this study, young-old were considered persons from 60 to 65 years of age. Middle-old were be 66 to 74. Old-old were considered those persons over 75 years of age (U.S. Bureau of the Census, 1982).

Health:

Theoretical Definition: Health is characterized as the client striving toward a state of being whole (Krieger, 1981) in a milieu in which there are no absolutes about what constitutes sickness or wellness; health and illness are part of a continuum (Rogers, 1970). The health goal of each person is that which is desirable enough to motivate goal-specific behavior.

Operational Definition: Health was operationalized as a perceived state of physical and mental well-being and wholeness which is assessed by the Self-Rated Health Sub-index (Lawton, Moss, Fulcomer, & Kleban, 1982) (Appendix B).

Intrinsic motivation:

Theoretical Definition: Intrinsic motivation recognizes choice, desire, and need for competency and self-determinism as causal factors in behavior (Deci, 1975; Cox, 1982).

Operational Definition: Intrinsic motivation was operationalized as the score on the Health Self-determinism Index (Cox, 1985) (Appendix C).

Health Perception:

Theoretical Definition: Health perception is the perceived or subjective view of health as opposed to actual or objective health (Suchman et al., 1958).

Operational Definition: Health perception was operationalized as the score on the Self-rated Health Subindex (Lawton et al., 1982) (Appendix B).

Medication knowledge:

Theoretical Definition: Medication knowledge is defined as an understanding of how certain medications work, their expected results, side effects, and an understanding of what to do if problems occur.

Operational Definition: Medication knowledge for the purpose of this study was operationalized as an understanding of a medication currently prescribed to the subject as assessed on the Knowledge of Medication Subtest (Horn & Swain, 1977) (Appendix D).

Limitations

Limitations of this study resulted primarily from factors related to the sample itself. Sampling was from a convenience population at a clinic serving an indigent population. The sample cannot be considered random, and findings cannot be generalized to other populations. Data collection on older persons may also be influenced by data recall bias and memory impairment.

Summary

Self-medication abuse is growing to epidemic proportions in the United States among the elderly population. The projected increasing numbers of older persons will only compound the problem unless interventions can be found to stem the tide of medication-related problems.

The purpose of this study was to determine if certain factors could be identified as indicators of the self-medication habits of older women. The women selected for study were participants in a public clinic which was ethnically diverse and socioeconomically homogenous. A holistic model was chosen to guide the research with the emphasis being on the positive aspect of knowledgeable decision-making rather than the negative aspect of noncompliance. Terms were defined within the context of the study. Assumptions and hypotheses were related to the

CHAPTER 2

REVIEW OF THE LITERATURE

Drugs have become a boon and a bane to modern society. Responsible use of therapeutic drugs extends life and improves the quality of living for many persons. However, taking medications carelessly or inappropriately can result in adverse reactions and may even be life-threatening.

Persons residing outside of health care facilities who require drug therapy are expected to be responsible for their own medication-taking practices. A review of current literature relevant to the study of factors which influence self-medication practices in older women has been divided into three parts. The first section includes literature related to the health concerns of older females. The second section contains a description of the dependent variable, self-medication behaviors, as they relate to older people in general and older women in particular. The third section reviews literature in the areas of intrinsic motivation, health perception, and knowledge acquisition and utilization by older persons which are considered the independent variables in this study. The intent of this review of current literature is to provide a basis for the significance of this study and a background against which the results may be measured.

Older Women's Health and Medication Practices

After age 65, older women outnumber older men 3 to 2 and after age 85, the ratio is 5 to 2 (Congressional Quarterly, 1990); therefore, the problems of old age are primarily the problems of women. Since most elderly men are married (83% for 65-74 year olds, 72% for men over 74 years of age) while most elderly women are not (50% for 65-74 year olds, 23% for women over 74 years of age) (U.S. Bureau of the Census, 1982), the health care problems of older men are often at least shared, if not totally managed, by their female counterparts.

Geriatric patients are the largest consumers of the principal components of health care. Lowenstein and associates have pointed out that the elderly consume a disproportionate share of the national expenditure on health care (1986). The majority of the older population is comprised of women; however, there is a dearth of research on elderly women.

Physical Health Problems of Older Women

Physical problems which are treated by medication are prevalent in the older female population. Fillenbaum (1979) demonstrated that women report more physical problems, a mean of 3.44 problems with a standard deviation of 2.89, compared to 3.04 problems with a standard deviation of 2.87 for men (t=2.05, p<.05, n=998). This same study showed that

women also took more medications than men (women: M=2.62, SD=1.89; men: M=1.83, SD=1.64; t=6.47, p<.001, n=998). Increased medication consumption to control or alleviate health problems continues to place women at risk of abusing their health and well-being.

The health problems of Americans are often related to lifestyle. Health problems associated with lifestyle are prominent among the elderly. Obesity and lack of exercise add to the health risks of hypertension and cardiovascular disease for the elderly and the necessity of medication-based therapeutic regimens. Hypertension is believed to affect 45% of the older persons in the United States (U.S. Department of Health and Human Services, 1988). In 1980, 35.5% of the women over 65 were reported to have definite elevated blood pressure (n=4,212). Definite elevated blood pressure is defined as either systolic pressure of 160 mmHg or diastolic pressure of at least 95 mmHg or both based on a single measurement. The prevalence rate of hypertension in black Americans is considerably higher than in the white population (Subcommittee on Definition and Prevalence, 1985). Blacks may develop hypertension at an earlier age, and the severity of hypertension in blacks is likely to be higher than that of hypertensive whites. Black women in the population were reported as hypertensive at a rate of 40%

compared to 35% for white women (n=19,113) (U.S. Department of Health and Human Services, 1988). The treatment of hypertension usually involves some type of medication which must be taken on a regular basis. Hypertension often occurs in conjunction with other health problems in older women.

Diabetes is a specific health problem prevalent in older women which is sensitive to nutrition and drug management. This disease poses a multidimensional threat to elderly women because of associated vascular deficiencies and the need to take a potent medication such as insulin. A survey revealed that 8.8% (n=1,788) of white women over the age of 65 had reported to their physician that they had diabetes while an even greater percentage of black women, 10.8% (n=230), had made the same type of report (U.S. Department of Health and Human Services, 1987[b]). Of this same group, 8.3% of the whites reported a medical history of diabetes while 12.8% of the black women showed this historical evidence. Ethnicity places older women at a greater risk for certain age-related illnesses while some chronic problems seemingly strike indiscriminately.

Socioeconomic Issues for Older Women

Life circumstances also influence the health and well-being of elderly women. In a 40-year longitudinal study of 81 women who survived the Depression of the 1930's, Elder and Liker (1982) linked the risk of impaired health to lower

socioeconomic status and especially to the economic setbacks in the lower economic strata. Economic loss diminished the emotional health of lower socioeconomic strata women significantly more than higher socioeconomic women (t=2.4, p<.05, n=81) indicating that loss of self-esteem or personal efficacy can have long term consequences.

Low self-esteem and lack of confidence in oneself to manage daily living may affect the health and functionality of older persons. These deficits in self perception may be linked to actual physical symptoms, such as pain or immobilization. Activity limitations seem to increase with aging. In a comparison by age groups, 10% of the young-old reported their activity was limited to the point that they were unable to do major activities while 12.9% of the middle-olds and 18.8% of the old-olds reported this type of limitation (n=8,210). Of this same group, 61.2% of the younger group reported no limitation of activities, with a decrease to 54.2% of the middle-range elderly and only 41.5% of the oldest respondents reporting no activity limits (U.S. Department of Health and Human Services, 1987[a]).

Assailed on one side by the physical and functional deficits which may accompany increasing age and on the other side by an altered ability and stamina to withstand the socioeconomic pressures of an expensive and demanding society, many older women are faced with the formidable task

of managing their health care needs in the modern world. They often seek advice and remedies from friends, relatives and the health care community. The advice and remedies themselves, including medications, may ultimately contribute to the health problems which are part of the everyday lives of many older American women.

Medication Adherence in Older Women

The problem of adherence and nonadherence to prescribed medication regimen was more complex among the elderly because they were more likely to have two or more chronic diseases and were more likely to be taking several medications at one time. The biological changes of aging also made the effects of nonadherence more critical (Richardson, 1986).

Physical barriers may act as a deterrent to medication adherence in older people. Considerable variability existed in the ability of older people to open different types of child-resistant containers. Medications are often dispensed in child-resistent containers regardless of the age of the consumer. Keram & Williams (1988) found the simpler child-resistant caps could be removed by 98% of the older persons (n=50) in an average of 6.1 seconds. However, the variety of caps increased the time and success rate with the more difficult types taking as long as 22.7 seconds with a 52% success rate. This type of frustration can lead to

undesirable consequences and poor health-promoting decisions by the elderly. McIntire et al. (1987) found that 33% of the persons over age 60 (n=94) had difficulty opening the caps of their medication bottles resulting in 91% of them just leaving the top off of the medication or switching it from its original container and 9% simply discontinuing the medication altogether. Hence, the elderly have a variety of mechanical, physical and emotional barriers to overcome as they attempt to comply with their medication regimens.

Techniques for assessing the adherence rates of patients have become more sophisticated. Cramer and associates (1989) used a microprocessor placed in the lids of medication bottles to assess presumptive doses. Each time the lid was removed, a dose was presumed to have been taken. Compliance rates were 76% overall during the 3,428 days studied for 26 epileptic patients, 87% for once-a-day medications, 81% for twice-a-day medications, 77% for three-times-a-day medications, and 39% for four-times-a-day medications. The poor compliance at the four-times-a-day level compared significantly with the daily medications ($p<.05$) and was also significant when compared with the two- and three-times-a-day medications ($p<.01$). Increasing evidence seems to point to increased numbers of medications as a potentiating factor in nonadherence problems in elderly persons.

Some nonadherence to medication regimen by older persons has been shown to be intentional. Cooper and associates (1982) reported that 73% of nonadherence in their study was intentional (n=111). Those who were intentionally non-adherent to their medication regimen were significantly more likely to use two or more pharmacies for drugs (X^2=3.02, p=.082) and were more likely to get prescriptions from more than one physician (X^2=9.71, p=.0018). The most common reason for nonadherence was that the patient did not believe the drug was needed in the dosage prescribed.

Medication consumption literature deals with the characteristics of the medication recipient and with the medication itself. It has been reported that medication is more likely to be taken if certain antecedent/situational cues are present such as palatability of the medication, simplicity of the regimen, memory prompts in the packaging, and provision of instructions (Heiby & Carlson, 1986, no stats available). Similarly, fewer prescriptions seem to relate to an increased degree of compliance. Kendrick & Bayne (1982) found that compliance rates with one drug were 65%, with four drugs it was 54%, and with six drugs it was 47% (n=40, mean number of prescriptions = 3.8, mean number of over-the-counter drugs = 1.2). Pill counts in this same study demonstrated that overall, patients were taking only 57% of their medications.

Studies of the elderly in relation to their medication practices have historically focused on their compliance or lack of compliance to physician-prescribed regimens. Because of the paternalistic nature of the term "compliance", this study focused on reasons for spontaneous self-medication practices of older women and their relationship to intrinsic motivation, health perception, and medication knowledge.

Intrinsic Motivation

"Health behavior seems so inseparably linked to motivation that logic impels one to orient any discussion of health practices to human needs and human motives" (Knutson, 1965, p.212). The question of what motivates people has been studied by behavioral scientists and researchers for many years. Maslow (1943) identified basic needs which motivate people to act. He believed these needs are hierarchial, and lower needs must be met before higher order needs are considered. The lowest needs are physiological and safety. The higher needs involve belonging, esteem, and self-actualization.

Motivation toward health-promoting behaviors is relevant to the study of self-medication practices of older persons. Rosenstock's (1966) Health Belief Model (HBM) postulated that motivation to engage in a behavior was a function of the perceived benefits of the actions over and

above the costs and barriers. The greater the difference between these two outcomes, the greater the motivation.

Becker and associates (1972) modified the Health Belief Model by the explicit introduction of the concept of general health motivation which implied that different degrees of readiness to undertake a health action are aroused by health cues. In a study involving mothers who were seeking health care for their children, the health cue (perceived level of threat) was significantly correlated with positive health actions, such as administering medications (G=.367, p<.05, n=59) and keeping followup appointments (G=.339, p<.05, n=59). Readiness to administer medications was also significantly correlated to a belief that the diagnosis was correct (G=.463, p=.05, n=59) and to perceived efficacy of the medicine (G=.332, p=.05, n=57). They postulated a multiplicative model of health motivation which proposes that the more health cues present, the more likely the person will be motivated to take positive health action.

Intrinsic motivation of patients was the focus of research by Cox (1986) who proposed to identify factors measuring motivation from a sample of 380 elderly persons living in the community. After regression modeling, Cox found that general well-being (p=.001), perceived health status (p=.001), ethnicity (p=.01), and sex (p=.05) accounted for 15% of the variance in scores. Having a

positive sense of well-being, a positive health perception, and being female contributed significantly to feelings of competency regarding health matters.

Selected demographic differences may account for differences in motivation. Gender differences were demonstrated by Cox and Wachs (1985) when they studied the client's motivation to engage in health promotion, health maintenance, and risk-reduction activities. Women consistently scored more intrinsically motivated than men on total score (F=11.07, p=.001, n=199) and subscales for judgment (F=9.9, p=.002, n=199), behavior ((F=8.8, p=.003, n=199), competency (F=8.1, p=.005, n=199), and internal/external cue responsiveness (F=4.92, p=.0028, n=199). Regression analysis demonstrated that 18% of the variance in the scores were explained by the variables of age, sex, and education. Their work provided evidence that sociodemographic variables were useful in predicting intrinsic motivation scores.

Powers & Wooldridge (1982) pointed out that motivation can be positive or negative. Negative motivation, such as threats of dire consequences, may work with some elderly persons. They found that patients may be motivated to see a physician even when knowledge of the disease is poor provided the person is sufficiently concerned ((X^2=11.63, df=1, p=.001, n=160). Battisella (1971) demonstrated the

relationship between anxiety and motivation to seek medical care. Persons who did not worry about their health delayed seeking physician care more than persons who were concerned about their health (X^2=16.605, df=1, p=.001, n1,345). They concluded that beliefs and knowledge about the illness can influence the behavioral outcomes related to health.

Knowledge was a significant predictor of outcomes, i.e. which patients would continue their follow-up visits (X^2-16.18, df=1, p=.001, n=159), when the patients perceived their illness as actually interfering with the everyday management of their lives (Tagliarozzo & Ima, 1970). However, Padrick (1986, no stats available) pointed out that many of the factors that are believed to motivate people, such as fear, economic status, knowledge, and apathy, were not satisfactory predictors of motivation.

From the literature review, the following critical attributes of intrinsic motivation were drawn.

1. Intrinsic motivation is a goal-oriented activity.
2. Intrinsic motivation stems from a desire to do or be something, to act or not act.
3. Intrinsic motivation is internally-generated, though it may be conscious or unconscious.
4. A reciprocal interaction is involved in intrinsic motivation, and the results must be perceived as worth the effort or the risk.

These attributes are appropriate for contributing to the study of the self-medication practices of older females.

Health Perception

A consensus definition of health has eluded nurses for many years. Twaddle (1974) stressed the relativity of definitions of health, not only to the person's typical social roles, but also to the environment in which the roles were performed. Cox (1982) attributed cognitive appraisal as being responsible for the client's interpretation of an existing health state and the belief that clients act in accordance with their perceptions of reality.

Health status perception has been assessed on a national scale. In a sample of 8,210 persons throughout the nation (U.S. Department of Health and Human Services, 1987[a]), 31.9% of the young-old (ages 55 to 64) rated themselves as in excellent health while only 8% rated themselves as being in poor health. For the middle-old (ages 65-74) and the old-old (over 74), the percentages of poorer health perceptions increased. If the decision to participate in positive health behaviors is related to positive health perception, the gradual decline in health perception with increasing age is a cause for concern for those hoping to assist the elderly in health-promoting activities.

Suchman and associates (1958) pointed out that self-ratings of health are different than physicians' ratings -

what has been called 'perceived' or 'subjective' health as opposed to 'actual' or 'objective' health. Self assessment of health possibly reflected not only personal health status, but also summarized both objective and subjective aspects of health (Fillenbaum, 1979).

Mossy and Shapiro (1982) reported that self-rated health had a relationship to mortality that was independent of objective health status. For persons with a poor self-health rating, the risk of early mortality (within 0-2 years of the study) and late mortality (within 2-4 years of the study) was 2.92 and 2.77 times that of persons whose health ratings were excellent (p=.05, n=3.128).

Older persons exhibiting similar scores on "objective" health indicators often rated their health differently. For example, Ferraro (1980) reported that although women usually scored lower than men on objective indices such as disability (zero-order correlation -.136, p=001, n=3,195) and number of illnesses (zero-order correlation -.052, p=.01, n=3,195) , they generally assessed their health more positively (p NS, n=3,195).

Positive and negative health perception may be related to the amount of anxiety persons feel about their health. Abadie (1988) proposed that anxiety about health may be more closely related to how one perceives present health state than to actual health state. Actual fitness was not shown

to be a reliable predictor of anxiety-proneness. Trait anxiety correlated significantly with perceived fitness (n=32, r=-.39, p<.05). The psychological benefit of health-promoting activities, such as participating in a physical conditioning program, appeared to be unrelated to actual physical improvement but was related to psychological perception of the value of the program to the individual. The notion of perception of health as a unique variable separate from and possibly independent of measurable objective parameters seems plausible.

The possibility to a relationship between perceived health status and common health practices was explored by Horgan (1987). Eighty elderly females between the ages of 60 and 96 (M=72.9) were asked how they viewed their health status. Six (15%) of the subjects rated their health as poor, 23 (28.8%) indicated a fair health rating, 42 (52.5%) indicated their health was good, and 9 (11.2%) rated their health as excellent. There was no significant correlations between self-perceived health and demographic factors such as age, education or income; however, there were positive correlations between self-perceived health status and positive health behaviors (e.g., swimming or long walks (r=.21, p<.05, n=80), working in the garden (r=.25, p<.02, n=80), and weekend auto trips (r=.25, p<.05, n=78). Active

participation in healthy activities can be a result of or a precursor to a positive health perception (Horgan, 1987).

Health perception may be an integral part of a multidimensional health model which considers biopsychosocial aspects of health. Perceived health was strongly intercorrelated with physical health, morale and health belief on Engle's (1984) attempt to establish instruments to measure biopsychosocial health. A strong correlation was found between the physical and mental measures (n=249, r=.34, p<.001), the physical and social health measures (n=249, r=.38, p<.001), and the mental and social measures (n=249, r=.65, p<.001). A factor analysis using .40 as a minimum for factor loading revealed three identifiable factors which were labeled Present Physical Health, Morale, and Vulnerability to Future Illness. Perceived health status showed strong intercorrelation with each factor (p=.001) and all relationships were direct. Engle's work offers support for the notion that "attributes can be viewed together as a composite ... in order to approach the assumption of holism" (p. 20). The preference from this standpoint is to sum scores of dimension-specific measures in order to assess total health. The drawback of this method is the length of time required to complete the wide variety of instruments needed to get a comprehensive view of health perception. This method also violates the

assumption that the whole is more than and different from the sum of the parts and cannot be explained by a description of the parts (Rogers, 1970).

Perception of the efficacy of a regimen has been linked to health promoting activities. Increased scores on self-reported medication behaviors were linked to the perceived benefits of medical advice (X^2, p=.05, df=1, n=132) by Kirscht and Rosenblock (1977). They also found that difficulty adhering to a medication schedule was linked to poor self-reported medication habits (X^2, p=.05, df=1, n=132) as was fear of the likelihood of future disease (X^2, p=.05, df=1, n=132). Simonson (1984) noted that patients' perceptions of their need for medication appears to influence their consumption of medications. Morisky and associates (1986) found that individuals who scored high on their self-perceived health scale were significantly more likely to have their blood pressure under control at the 2-year and 5-year follow-up assessments than those who scored low (r=0.58, p<.01, n=290).

On the other hand, DeVon and Powers (1984) found no significant difference between the health beliefs of persons who had controlled hypertension when compared with those who had uncontrolled hypertension. They did find that those persons whose blood pressure was uncontrolled had significantly less ill-related adjustment (t=2.96, p<.02,

n=28), greater difficulty with their domestic environment (t=3.56, p<.01, n=28), more distress with their extended family (t=2.68, p<.02, n=28), and more psychological stress (t=2.98, p<.01, n=28) than those whose hypertension was controlled. They also found that those who had less adjustment to their illness were also significantly more likely not to comply with their medication regimen (r=.60, p<.02, n=28). The degree of health promotion related to many factors beyond compliance with orders.

While compliance is a term used primarily in medical literature to infer the extent to which a person's behavior conforms or does not conform with the advice of the health care provider (Morisky, 1986), it is not the focus of this study. The term adherence was preferred by Morisky to connote an active democratic partnership between the provider and the client. The goal of adherence was the client becoming as self-sufficient as possible in the management of health. Adherence is more consistent with the intent of this study to determine the role of intrinsic motivation, health perception, and medication knowledge in self-medication practices.

Knowledge of Medications

Knowledge is acquired in much the same way regardless of age once the individual reaches adulthood. Willis (1985) reported that acquisition was the primary mode of learning

in youth, while learning in adulthood increasingly involved application, synthesis, and integration of new learning with prior knowledge as well as the inhibitions of irrelevant or obsolete prior knowledge. There was little question that, on average, older persons demonstrate slower information-processing rates. Petros, Zehr, and Chabot (1983) found that young adults responded faster (M=1132 msec) than older adults (M=1129 msec) in accessing information from memory ($F_{(1,57)}$=26.88, p<.05, n=551). They, nevertheless, found that the process of information analysis was usually qualitatively similar in young and old persons.

In processing of information, both learning and memory were related to how knowledge is stored and utilized in older persons. The most important age-related changes in learning were those involving speed and short-term (recent) memory rather than memory of past events (Moody, 1986). Conceptually, learning and memory could be differentiated. Learning referred to the acquisition of information or skill as a result of experience; memory involved the retrieval of information or skill learned previously (Perlmutter, 1983). Zarit, Cole and Guider (1981) demonstrated significant increase in memory scores from pretest to posttest after training in how to remember unrelated lists ($F_{(1,47)}$=7.47, p<.001) and visual imagery ($F_{(1,47)}$=4.92, p<.01). They also noted a significant decrease in subject complaints about

memory problems after memory training ($F_{(1,53)}=8.53$, $p<.01$), but there was no treatment difference. The authors warn against assuming that the memory training actually decreased the number of subjective complaints. Participation appeared to be sufficient to decrease subjective complaints whether or nor performance improved.

Expectations may play an important part in memory problems of elderly. Zarit and associates (1981) pointed out that although some age-related decline in memory probably occurs, most memory changes that result from normal aging were not as extensive within individuals or as representative within the population as previously has been believed. Bortz (1982, no stats available) also stipulated that at least a portion of the changes commonly attributed to aging were in reality caused by disuse, and as such, were subject to correction.

Most older persons perceive themselves as capable of learning. Check and Wurzbach (1984) found that 75% of the older persons in their study ($n=30$) did not think they were too old to learn. In fact, 13.3% said they would attend college if the opportunity were available. Only 10% of the sample said they believed they were too old to learn. When assessing the effectiveness of an arthritis education program, Dinsmore (1979) found that 80% of the 150 elderly

Older persons are not inherently incapable of acquiring new knowledge. Sterns and Sanders (1980) reported that decline was neither universal nor generalizable to all older adults and all abilities; however, some form of decline was assumed. Data indicated that verbal ability, spatial orientation, and reasoning continue to exceed those of 25-year-olds well into the sixth decade. Even into the eighth decade older adults retained a full 80% of their capacities, except for number skills (Willis, 1985). Regardless of the type of learning intervention, adults in later years do learn. Training studies tended to show that older adults learned more quickly and seemed better able to generalize than younger ones on problem-solving tasks. This finding suggested that older persons may not be learning a new strategy but just "rediscovering" one that was already in their repertoire (Thornton, 1986, no stats available).

Maintaining and supplementing the knowledge repertoire of an older person depends on many factors. Pacing was important in learning and retention of knowledge in older persons. When sufficient time for response was available, performance of older adults was only slightly worse than that of younger adults (Perlmutter, 1983, no stats available). Slow pacing of medical instructions for the elderly (Kim & Grier, 1981) has been shown to have a significant effect on recall of medication information over

a normally-paced group (t=3.543, p<.01, n=28) and to reduce the response errors (t=1.856, p<.05, n=28). Additionally, once the old learned new material, they were likely to remember it as well as younger people; but their ability to learn new information was also influenced by whether the material was meaningful or not (Moody, 1986).

Meaningfulness can be translated into how much significance the information has for the person. Powers and Wooldridge (1982) found that emphasizing the dire consequences of hypertension significantly increased the learning for patients with older diagnoses but actually decreased the learning for newly diagnosed hypertensive patients (r=.51, p<.01, n=160). Tagliarozzo and Ima (1970) found a significant relationship between knowledge of the specific illness and attendance at a follow-up clinic ((X^2=13.08, df=1, p<.001, n=159). Those with greater knowledge of their illness were more likely to return for their fourth clinic visit than those who demonstrated limited understanding of their condition.

Studies of the elderly showed great variability of medication knowledge and compliance rates. Klein and associates (1982) found that when compared with younger persons, 50.3% of those persons over the age of 65 demonstrated knowledge of their conditions which required medications as compared to 72% of those under age 65 (X^2,

$p<.0001$). Similarly, 54.4% of those over 65 knew what the medications were supposed to do as compared with 68.9% of those under 65 (X^2, $p=.004$). However, there was no significant difference between the two groups in compliance rates with prescribed medications. There was also no significant relationship between knowledge of the purpose of the medications and the compliance rates of those over the age of 65.

Baldini (1981) found similar results when only 31% of the 45 elderly persons ($M=77$ years) interviewed knew what normal blood pressure was and 45% knew the names of the hypertensive drug they were taking. None of the subjects were able to name side effects, and only 44% ($n=45$) knew the dangers of cold tablets and nasal sprays for persons with high blood pressure. Forty-four percent ($n=45$) identified heredity as a predisposing factor in hypertension in contrast to 96% who named stress as a factor. Variety in older persons' knowledge regarding their physical conditions serves to point out inconsistencies in current efforts to improve knowledge and outcomes.

Methods to improve knowledge of medications in an effort to increase adherence rates have met with various degrees of success. Hageman and Ventura (1981) operationalized a formal medication program on a nursing unit. They found that patients on the experimental unit scored significantly

better than those on a similar control unit with no education program in the areas of medication knowledge and total instrument score (n=69, p<.01). There was no difference between the two groups of patients on scores for knowledge of special instructions about the medication which included food, fluids and activities to avoid when taking the medication; number of side effects which included knowledge of potential side effects and management strategies; and knowledge of pre-taking activities which included special instructions about activities and materials needed before taking the medications.

Harper (1984) designed a medication self-care program for elderly black hypertensive women. When compared with similar women who had only information about their hypertensive condition itself, the women in the medication program demonstrated a significant improvement in their medication behaviors (n=30, p<.05) and a significant decrease in medication errors (n=30, p<.05). The pretest/posttest design also explored retention of knowledge over time. There was a significant difference in the knowledge level of the medication self-care program participants between their four-day and four-week posttests ($F_{(1,57)}$=237.8, p=.000) with a loss of knowledge from a mean of 35.56 to a mean of 38.6. Higher scores on this

particular instrument indicated a lower knowledge level. These findings indicate a loss of knowledge over time.

Patsdaughter and Pesznecker (1988) found that home health nurses spent a large amount of their time teaching clients about the medication at the expense of other potentially helpful interventions, such as consolidation of pharmacies or creating visual aids to help the patients take their medications properly. Home health nurses submitted tapes describing the intervention strategies employed during a home visit. A one-sample Hotelling' T^2 revealed significant differences between among the means of the four investigated intervention categories (Hotelling's T=7.789, $F_{(3,45)}$=85.689, p=.000): client and family teaching (M 5.33), direct nursing activities (M 2.64), communicating/coordinating (M 1.22), and counseling (M .93). While most of the nurses were teaching, other strategies were not employed to assist the elderly to adhere to medication regimen.

Klein and associates (1982) found little correlation between knowledge and compliance with either frequency of medication taking (n=545, r=-.002) or quantity of medication taken (n=545, r=.003). They concluded that some other factors must be present before high-compliance behaviors can be achieved. Harper (1984) studied 60 black elderly hypertensive women using a pretest/post-test design with the post-test being given four days and four weeks after

intervention. Her findings demonstrated that women whose education included performance testing and safe practices of medication self-care exhibited greater knowledge about medications than those whose education included pathological aspects of their condition only (n=60, $F_{(1,57)}$=237.8, p.≤.000; $F_{(1,57)}$=11.02, p≤.002). The second post-test value demonstrated a loss of knowledge over time. Hecht (1974) demonstrated that tuberculosis patients who received the greatest amount of instruction made fewer medication errors (n=47, Control M=3.6, 53% error rate, Experimental M=1.5, 17% error rate).

The variability of learning styles, knowledge retention and educational backgrounds confound any attempts to measure learning or knowledge. However, client knowledge about the prescribed medication which includes dosage, side effects, safety precautions, and potential problems is an expectation of health care providers when a medication is prescribed. Investigation of the potential relationship of knowledge of medications to actually taking the medication is integral to the comprehensive exploration of factors which influence older women and their medication practices.

Summary

The concepts of intrinsic motivation, health perception, and medication knowledge have an influence on

how clients deal with health matters. Health behaviors were personal and individual. However, working in unison, these factors may have an impact on the decisions people make regarding their health. Health-related decisions are the focus of this study. This literature review provided a background against which the self-medication practices of the older women involved in this study were evaluated.

CHAPTER 3

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

This study was designed to be a non-experimental description of the proposed antecedent behaviors of safe medication-administration practices in older women. The design was a cross-sectional survey for the purpose of description and prediction. Selected demographic and psychocognitive variables were measured in a non-random sample of women 60 years of age and over. These variables were then used to describe the population, propose relationships, and predict outcomes.

The independent variables were intrinsic motivation, health perception, and medication knowledge. The dependent variable was self-medication practices. Demographic data which were used for analysis of variance between and among groups were age, socioeconomic status, education level, marital status, and ethnicity.

Setting

The setting for this study was a public clinic in a large southwestern metropolitan area. This clinic is maintained solely to serve an indigent population from infants to elderly. Physicians and registered nurses routinely see clients on an appointment basis for health

problems or for return check-ups. Approximate return frequency is every three months; however, the older clients have a high drop-in rate. The ethnic breakdown of this clinic is approximately 75% black, 15% Hispanic, and 10% white. Average daily scheduled visits are 60; however, there is a high drop-in rate. The rationale for using this sample was the fact that patients were in a health-seeking posture and were of similar socioeconomic status as defined by requirements of the clinic.

Population and Sample

The sampling procedure used in this study was non-random sampling which consisted of those persons who could be conveniently questioned and who agreed to be in the study. Kish (1965) defined a population as an aggregate of the elements or basic units that comprise or define the population. Survey sampling, or population sampling, deals with methods for selecting and observing a part (sample) of the population in order to make inferences about the whole population.

The sample for this study was 90 women age 60 and over who speak and understand the English language. The selection of this population was used as an aspect of control for the study. Cook and Campbell (1979) have pointed out that it is important not to over-control because

we do not always want to learn about causation in controlled settings. If it is too controlled, it is not generalizable. However, there is some indication that this population allowed control of several factors which have been shown to influence medication practices in older persons, such as age and sex.

The number of women 60 years of age and over who were included in this study was based on statistical recommendations which place the desired number of participants in multiple regression analysis at 30 per independent variable (Nunnally, 1978). This study included 90 older women, or thirty per independent variable. A power analysis done to determine the power of the statistical analysis after data were collected showed a medium effect size ($\underline{f}^2$=.20) and the power level of the $\underline{F}$ statistic to be .94 (Cohen, 1977). Statistical inferences may be made to older women living in the southwestern United States. Older men were not included in the sample.

Due to differences in life expectancy, after age 65 more women survive than men. The majority of older Americans are women. Before the year 2000, the ratio of women to men ages 65 and older will be 150 to 100; for those over 75 years of age, the ratio will become 185 to 100 (National Institutes of Health, 1982). The social, health, and economic problems of old age, especially among the old-old

(over 74), are predominantly those of women. More women than men seek health care and visit physicians; as a result, more women than men use medications (Delafuente & Stewart, 1988, no stats available). Women take more action, more drugs, and more care in terms of days in bed or early retirement as a result of life-threatening and severe acute conditions (Verbrugge, 1985, no stats available). Stroller (1984) noted that older women generally rate their overall health status higher than older men rate theirs in spite of lower objective health scores on path analytic measures (r= -.14, p<.05, n=753). These factors seem to indicate a certain homogeneity to this population which was believed to lend credibility and control to this study.

The rationale for using an socioeconomic status as a means of determining groups for the purpose of analysis of variance derives from a National Health Interview Survey which indicated that 51% of the subjects over age 65 with incomes of $35,000 or more rated their health as excellent compared with others their age, but only 26% of older people with incomes of $10,000 or less did the same (n=19,113) (National Center for Health Statistics, 1989). Since income proved to be a dramatic variable affecting self-assessment of health, socioeconomic status as measured by the perception of adequacy of financial support was used as a parameter for analysis.

Analysis based on age provided some control by limiting the eligible participants. Campbell and Stanley (1963) point out that regression toward the mean is inevitable for groups which are selected for their extremity. This consideration is pertinent to this study since only women 60 years of age and older were being measured. However, the focus of this study was the health and well-being of older women. The need to understand the health needs of this understudied and rapidly expanding group warranted limiting the age range of this study.

Protection of Human Subjects

Protection of subjects was addressed by adherence to the procedure for protection prescribed by Texas Woman's University and those restrictions imposed by the Institutional Review Boards of the institutions in which the testing took place. An written description of the study was given to each potential subject.

The written description of the study contained an explanation of the procedures to be done. It notified the potential participant that she would be interviewed and questioned about her medication practices and general well-being. The subject was told that the entire interview would take approximately 15 minutes. Risks and benefits were explained with emphasis on the fact that the participant

could withdraw at any time without penalty. Due to the age of the participants, fatigue and anxiety were potential problems. The participant were told at the outset that the interview would be delayed or terminated at her request. This did occur in three instances, and the potential participants were assured that no penalty or recriminations would occur because they were unable to complete the interview. Signs of agitation and fatigue (sighing, slumping, increase in respiratory rate, twitching, wringing of hands, inattentiveness, and/or hurrying through the questions) were indications to the investigator that the interview should be delayed or terminated. Benefits were generally stated in terms of producing good for other persons of this age range. A box of cereal was given to each person who completed the interview along with teaching about medications, diet, product-labeling, and other specific aspects of home care.

The subjects were informed that no alternative procedures of equal or greater benefit were apparent at the time the study was being conducted. The subjects were assured of confidentiality of records by omission of names and by the use of aggregate data. Emphasis was placed on the assurance that no goods or services would be withheld nor would any penalties be imposed if the decision was made not to participate or to terminate participation

prematurely. Although no injury was anticipated since the subject were not touched in any way, each subject was informed that first aid was available if injury should occur. Each subject received the name and phone number of the principal investigator with an invitation to call if questions arose or if they or their families had questions about the data collection itself. The participants were asked to sign an informed consent sheet.

Instruments

The intention of this research was to describe the relationship between self-medication practices and three other factors: intrinsic motivation, health perception, and medication knowledge. It is imperative to assess researchable concepts with reliable and valid instruments to assure that correlations do actually reflect relationships between the assumed variables. Instrument selection and development was based on this necessity. Additional analysis was based on specific demographic variables which were assessed during the interviews. Each interview lasted between 10 and 25 minutes depending on the physical condition of the respondent, number of interruptions, and teaching needs of the client. Teaching was done after the questionnaires had been completed.

The research questions were measured with four instruments. Self-medication practices were measured by an adaptation of the Self-reported Measure of Medication Adherence (Morisky, Green, & Levine, 1986). The instrument for measuring intrinsic motivation was the Health Self-determinism Index (Cox, 1985). Health perception was measured with a Self-rated Health Subindex (Lawton et al., 1982). Medication knowledge was assessed by a measurement of general knowledge about medications called the Knowledge of Medication Subtest (Horn & Swain, 1977). Demographic data were also collected (Appendix E).

Self-reported Medication-taking Scale

The Self-reported Medication-taking Scale (SMS) was developed by Morisky, Green, and Levine (1986) as a means of determining adherence to medication regimen. Permission was received from the author to use this scale (Appendix F). The four-item scale derived its score from the number of questions answered negatively. The lower the score, the better were the medication-taking behaviors.

The instrument has been used in a longitudinal study of hypertensive patients which continued for five years (Morisky, Green, & Levine, 1986). Additional studies were not found. The SMS was designed as a part of the patient interview process. Questions were designed to be answered positively by the response "no". Since practitioners

usually phrase their questions to elicit a yes response, this reversal of wording was devised to provide a sum of "yes" answers which would provide a composite measure of nonadherence (Morisky, Green, & Levine, 1986). This instrument depended on self-report as a measure. Studies have indicated that individuals who admit to an adherence problem are generally telling the truth (Morisky, 1986).

The dependent variable of this study was self-medication practices of older American women. This instrument provided a measure of medication-adherence practices. The addition of three questions dealing with using someone else's prescriptions and over-the-counter medications allowed measurement of medication practices as they were operationalized.

The use of self-report allowed measurement of the dependent variable in this study. In previous studies, Haynes and associates (1980) reported that patient self-report of medication adherence correlated best with pill counts as opposed to chemical and mechanical measurements (r=.34, p<.0001, n=134). Studies have shown significant correlation between patients' self-reports and physician reports. Fillenbaum (1979) demonstrated that self assessment was related to objective health measures in 937 community residents when analyzing the number of problems they reported (F=162.79, df=3,929, p<.001), the number of

medications they took (F=85.75, df=3,929, $p<.001$), and the number of illnesses they reported (F=130.07, df=3,929, $p<.001$).

The reliability and validity studies of this instrument were based on use of the four items of medication adherence only. The findings were based on a study by Morisky, Green, and Levine (1986) which involved baseline data with a two-year and five-year follow-up on 290 subjects. They reported the reliability of the scale as an 0.61 measure of internal consistency. Each item in the scale contributed significantly to the overall reliability coefficient with a decrease in the alpha level if any single item was deleted. A principle components factor analysis identified a single factor with convergence being reached after six iterations. The scale demonstrated concurrent validity with blood pressure control.

Health Self-determinism Index

Intrinsic motivation was measured with the Health Self-determinism Index (HSDI) by Cox (1985). Permission was obtained from the author to use the HSDI (Appendix G). This paper-and-pencil measure offered the respondent the opportunity to reflect an extent of agreement or disagreement on a five-point Likert scale. The instrument contained 17 items and took about 10 minutes to administer. Results yielded interval level data. The HSDI has been

proposed as a measure of intrinsic motivation of health behavior by Cox (1985). It has been used and reported in two studies by Cox (1986, 1987).

The HSDI was designed to measure intrinsic and extrinsic motivation. Scoring allowed higher scores to be associated with intrinsically-motivated persons and lower scores with extrinsically motivated persons. The instrument was designed from the Interaction Model of Client Health Behavior which asserts that intrinsic motivation should be a primary construct used to explain health behavior as well as a target for intervention (Cox, 1982).

The purpose of the proposed research was to determine if there is an association between the constructs of intrinsic motivation, health perception, and medication knowledge. It was further proposed to determine if these constructs can be associated with self-medication practices.

Reliability estimates of the total HSDI scale across five studies have resulted in highly acceptable alpha coefficients: 0.84 ($\underline{n}$ = 199), 0.80 ($\underline{n}$=68), 0.87 ($\underline{n}$=54), 0.83 ($\underline{n}$=55), and 0.81 ($\underline{n}$ = 72). The short-term stability of the HSDI was demonstrated through a two-week test-retest correlation of 0.86 ($\underline{n}$ = 54) (Cox et al., 1987). Validity estimates were based on a recent study in which the number and frequency of positive health behavior practiced were measured. Both the total HSDI score and the Competency

subscale were significant predictors (n = 55) of these positive health behaviors: 27% of the variance in these positive behaviors could be explained by the person's total score and Competency subscale scores (Cox et al., 1987). Of particular interest to the proposed study was the finding that examined at-risk elders in which the HSDI was significantly associated with functional status and sense of general well being, i.e. the higher the elder's functional status and level of well-being, the more intrinsically he or she scored on health self-determinism (Cox, 1986).

Self-rated Health Subindex

Health perception was measured with the Self-rated Health Subindex of the Multilevel Assessment Instrument (SHS) developed by Lawton and associates (1982). The SHS was a four-item forced-choice response measure which could be administered in about three minutes. Each of the four questions had either three or four response alternatives in a checklist format. Scores were summed for all responses resulting in a total score for the measure.

The SHS was tested on 615 older persons who were designated as criterion groups because of their presumed general competence. The groups who were recruited contained the following types of clients: two groups of independently-living older people, one group of in-home

service recipients requiring a large number of technical services, and one group of institutional waiting-list clients. Although the overall performance of the instrument met the authors' expectations, they warn about hazards involved in shortening the measures. However, they do note that "because analysis has been done separately for each domain, portions of the MAI may be excerpted for special-purpose use, both full domains and subindices within domains" (Lawton et al., 1982, p 98). Permission was obtained from the author to use the Self-rated Health Subindex as a separate instrument to measure health perception (Appendix H).

The Multilevel Assessment Instrument (MAI) was based on Lawton's early work which viewed behavior as hierarchial in nature depending on the complexity of organization (1972). Domains of behavior range in increasing order of complexity from biological life maintenance to functional health, cognitive, physical self-maintenance, instrumental self-maintenance, effectance, and social behavior. Specific behaviors were arranged hierarchically within each of these domains. The instrument was designed specifically with the older client in mind as the extensive length of previous assessment instruments was a detriment to their use in the geriatric population. The SHS was a part of the physical

health domain. It was adapted from the OARS instrument (Duke Center for the Study of Aging, 1978).

The SHS incorporated the concept of health perception as manifested in perceptions of recent changes in health, perceptions of health status in comparison to peers, and perceptions of the amount of disruption caused by health-related problems. These were the areas of interest in operationalizing the variable of health perception in this study. Lawton and associates (1982) reported correlations of .63 and .52 between the subindex score and independent ratings by a clinical psychologist which supported the subindex's criterion-related validity. Furthermore, an internal consistency of .76 was reported by Lawton et al (1982) with a three-week test-retest reliability of .92).

Knowledge of Medication Subtest

The Knowledge of Medication Subtest (KMS) consisted of 31 items which were administered in an interview format (Horn & Swain, 1977). The data collection period per observation has been measured at 15 minutes. Observers' judgments are used to indicate if a subject's response is correct, mixed (correct and incorrect), does not know, irrelevant, incorrect, or not applicable. Values are given to each of the responses except "not applicable". The score for each category was calculated by adding the values

obtained for each item and dividing by the total number of items rated thus resulting in interval-level data.

The KMS was first developed by Horn and Swain (1977) as a funded project from the National Center for Health Services Research. The KMS was shortened to 21 questions by Hageman & Ventura (1981) to test the effects of a medication teaching regimen on patient outcomes in a hospital setting. Harper (1984) used the modified instrument to test medication compliance in hypertensive black women. Permission was obtained from the author to use the longer version (27 questions) for this study since it related to subjects in the community rather than those in the hospital (Appendix I). The instrument was designed as part of a 559 item measurement of patient outcomes for use by the Public Health Service. The KMS was a subtest of the original instrument and was evaluated by a three or four-level response which was scored as correct, incorrect, mixed response, or don't know. These responses equate to numerical scores which allowed interval data to be generated.

One purpose of this research was to assess the relationship of knowledge about medication to self-reported medication practices. The KMS allowed baseline analysis for homogeneity of subjects. It also provided an assessment of the current status of knowledge about hypertensive

medication for comparison with indicators of intrinsic motivation and health perception, as well as with the dependent variable, medication practices.

Inter-rater reliability of the original instrument for the internally scaled items was established (r=.80). Further reliability testing has been done on the modified version using the interclass correlation coefficient (ICC). The findings of this study showed that two of the 21 items had ICC values of .74 and .79 with the remainder having ICC values ranging from .87 to 1.00. The total scale score ICC value was .99 (Hageman & Ventura, 1981).

Content validity was established by a panel of experts who evaluated each item for its appropriateness in content and method of consideration. Retained items had a minimum inter-rater agreement of 60% (Harper, 1984).

Harper (1984) performed further reliability testing on a 25-item version with a community-based elderly population which resulted in correlation coefficients of .64 and .73 on four of the items and .80 to 1.00 on the remaining 21 items. Interclass correlation coefficient was .47, and test-retest reliability over a two-week period was .92.

Demographics

A demographics sheet was also completed. This psychosocial assessment included age, ethnicity, living

arrangements, years of education, and selected health promotion activities. Socioeconomic level was measured by asking if annual income was perceived as adequate, more than adequate, or less than adequate for needs. This response was intended to complement the self-perception aspect of this study and allowed finer discrimination when analyzing the variables in relation to socioeconomic status. Length of time since last hospitalization was also assessed to control for the possibility of confounding the measurement of medication knowledge and/or health perception.

Data Collection

The research protocol consisted of an interview at the time of the subject's regular clinic appointment. Potential subjects were invited to participate when they came to the clinic or at various points during the day when they were waiting for tests, materials or examination. A complete description of the requirements for participation was given to each subject and their family member if present. Each subject received the written description of the study to keep. Each one was also given a copy of the informed consent and was allowed time to read it, or it was read to them. The interview did not begin until the participants indicated understanding and signed the informed consent. Demographic data were collected first.

Each subject was asked the questions on the Self-reported Medication-taking Scale. After these responses are recorded by the investigator, the subject was given the Self-rated Health Subindex and the HSDI orally. Finally, an interview took place using the Knowledge of Medication Subtest as the format. All ninety subjects were interviewed by the same investigator as a source of reliability. The only scores which were open to interpretation were those on the Knowledge of Medication Subtest (KMS).

Scores and responses on the KMS were recorded during the interview. Responses were compared with medication fact sheets for each of the twenty medications mentioned by subjects to determine correctness (Appendix J). The medication fact sheets were compiled from the Physicians' Desk Reference (1991) and Lippincott's Nurses' Drug Manual (Scherer, 1985). A final analysis of the medication fact sheets for correctness and completeness was performed by a doctorally-prepared pharmacist, and these sheets were used to score the correctness of the respondents' answers.

Pilot-testing of instruments with a similar population resulted in total data collection times of 22 to 35 minutes. The demographic sheet was completed first followed by the instrument measuring self-medication practices. The other instruments followed in order: Health Self-determinism Index, Self-rated Health Subscale, and Knowledge of

Medication Subtest. Since the instrument measuring knowledge of medications involved a more conversational atmosphere, it was optimally left until last. The actual data collection closely paralleled the pilot-test except that the length of time for each interview was approximately 5 to 10 minutes less for the actual research study.

Treatment of Data

Statistical testing was done to determine relationships and differences between data. Statistics are subject to both nonsampling errors and sampling errors. The latter arise because only part of the total population is designated for observation in the sample. The nonsampling errors occur because the procedures of observation are imperfect (Kish, 1965). The data resulting from this experiment will be used to make inferences to a larger population.

An exploratory strategy was applied to the study data. First, descriptive statistics were used to describe the sample regarding demographic information. Group differences were assessed based on age categories (the young-old, under age 65; the middle old, 65-74; the old-old, over age 74). Perceived socioeconomic status was also used to assess group differences. Categories separated respondents into those who perceive their annual incomes to be less than adequate

and those who perceived their incomes to be adequate. None of the respondents perceived their incomes to be more than adequate. The sample was ethnically diverse although disproportional; analysis of variance was done based on ethnicity. The categories were black, Hispanic, white and other.

Correlational analysis of demographic data was done to add rigor to the study. Correlation was done between medication knowledge responses and the length of time since the last hospitalization. Two health practices, self-breast examination and smoking, were correlated with the independent variable to determine if any assumptions may be made about consistency of health promotion activities.

Pearson Product Moment Correlation was done between each of the independent variables, intrinsic motivation, health perception, and medication knowledge and the dependent variable, self-medication practices. These analyses provided the grounds for acceptance or rejection of the hypothesis regarding the presence of such a relationship.

Testing the strength of the relationships and predictive capacity of the independent variables was accomplished through multiple regression and correlation analysis (MRC). MRC is a highly general data-analytic system that can be employed whenever a quantitative dependent variable is to be studied in its relationship to one or

more research factors of interest (Cohen, 1977). Techniques of MRC enable a scientist to use knowledge of two or more independent variables to predict scores on a single dependent variable with greater success than is possible with knowledge of a single independent variable (Roscoe, 1976).

Statistical applications and subsequent data analysis were conducted at Texas Woman's University College of Nursing, Houston Center Computer Laboratory on a digital equipment VAX 63-30 computer using SPSS, Data Analysis System, Release 3.0, copyright 1988 by SPSS.

Summary

Emerging self-reliance of older Americans for their medication needs may be desirable if it is performed safely. The enlightened older health care consumer seems no longer to be satisfied to be a "compliant" pawn in the health care game. Indeed, the proliferation of noncompliance literature in past years suggests they have always relied on self-care and self-regulation of their medication practices. Mindset changes may be in order for the health care community rather than the older population. The purpose of this research is to define what parameters may be useful in assessing how self-medication may be done safely and knowledgeably. The desired result is an older population living up to the fullest range of their health potential.

CHAPTER 4

Analysis of Data

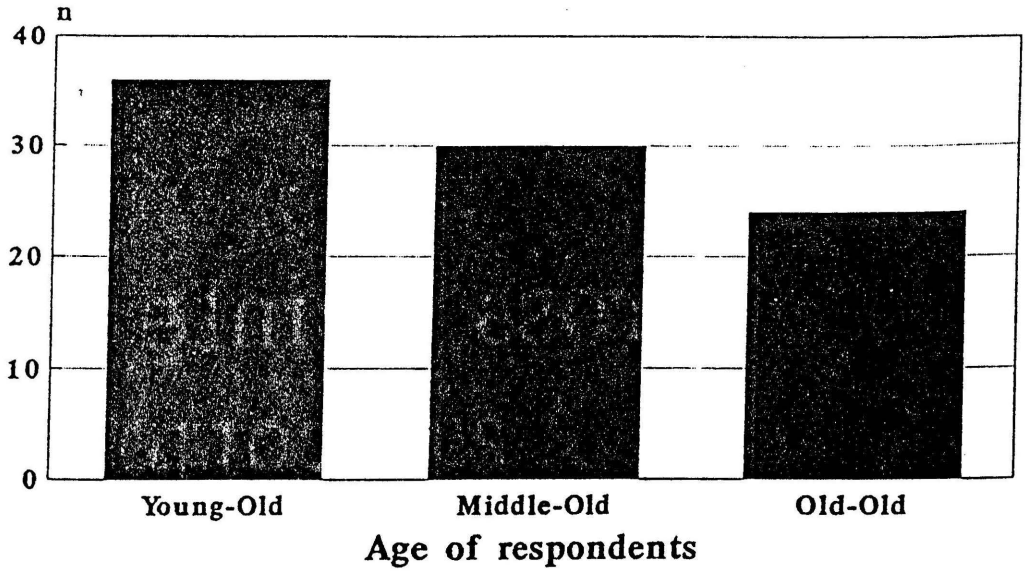
A non-experimental descriptive study was conducted to investigate factors which were proposed to influence the self-medication practices of older women. Statistical analysis of demographic data provided a description of the sample. Univariate and multivariate modeling was used to develop a profile of the differences between subgroups and to develop a predictive model for anticipating self-medication behaviors in elderly women.

Description of Sample

The sample consisted of 90 women 60 years of age and over who use a county health clinic for their health care needs. The youngest subject was 60 years of age and the oldest was 91 with a mean of 68.7 years. As seen in Figure 2, thirty-six of the subjects in the young-old range (60-64 years), 30 in the middle-old range (65-74 years), and 24 in the old-old range (>74). The ethnic mix (Figure 3) was 72% black (n=65), 21% white (n=14), 3% Hispanic (n=3), and 3% other (n=3). Over half of the sample were widows (n=47) while the rest were married (n=27), divorced (n=14), and single (n=2). Most of the subjects lived with family (n=53); however, 37 ladies lived alone (Figure 4).

Figure 2

Age Groups of Sample



Young-old 60-64
Middle-old 65-74
Old-old >74

Figure 3

Age Groups of Sample

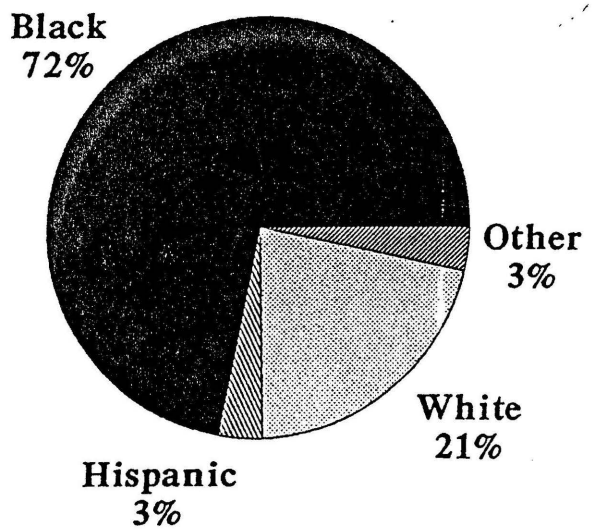
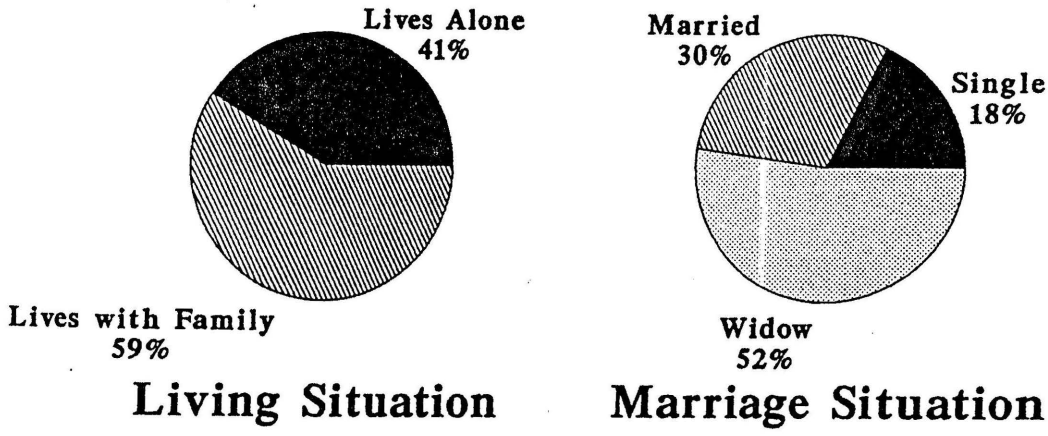


Figure 4

Living Situation and Marital Status



The respondents were asked about their perception of their current financial situation. Since low income level was a criteria for utilization of the clinic, it was not anticipated that persons would report their finances as more than enough to meet their needs, and no one did so. Most of the respondents (n=57, 63%) perceived their finances as less than adequate while the remainder (n=33, 37%) felt they had enough to meet their needs. Many of the respondents noted that they had learned to get by with what they had.

The educational level of the subjects was assessed by asking the respondents for the number of years of formal education (Table 1). The lowest number of years of education was 0 and the highest was 14 (M=8.7, SD=3.3).

Table 1
Education Level of Respondents

Years of formal education	Frequency	Cumulative percent
0	2	2.2
2	2	4.4
3	4	8.9
4	2	11.1
5	9	21.1
7	9	31.1
8	13	45.6
9	9	55.6
10	10	66.7
11	9	76.7
12	14	92.2
13	3	95.6
14	4	100.0
Mean 8.7	SD 3.26	

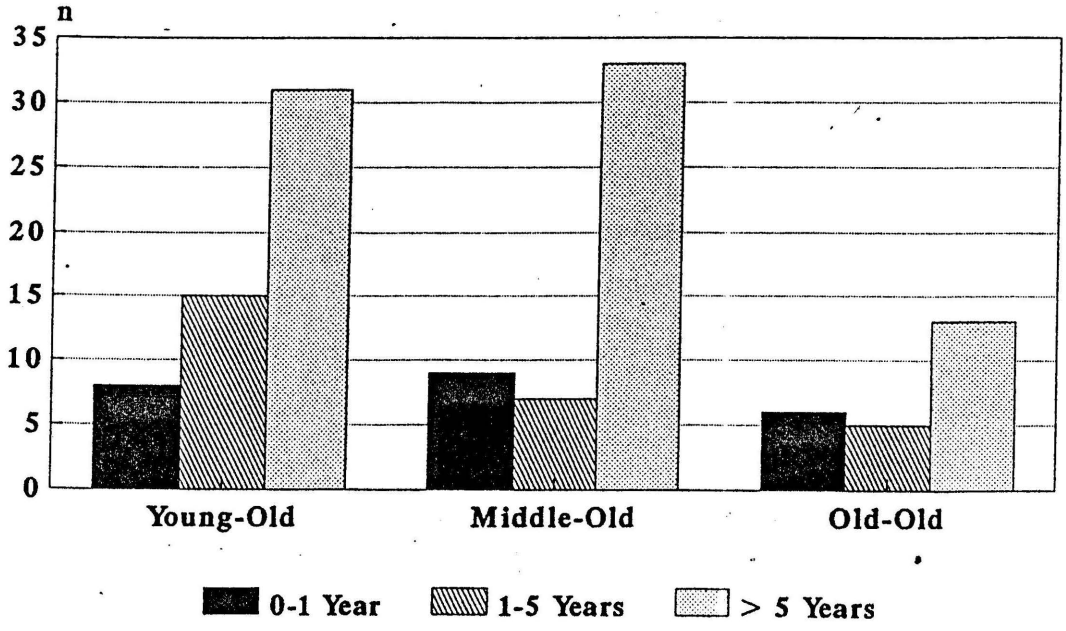
In order to assess the presence or absence of health promotion activities, the respondents were asked several questions. The first was whether or not they smoked. Only 15 or 17% of the subjects smoked while 75 (83%) denied smoking. When asked if they regularly performed self-breast examination, 67 (75%) stated they did while the remaining 23 (25%) denied doing self-breast examination on a regular basis. The respondents were asked how often they did self-breast examination. The most frequent answer was daily (58%), and the next most frequent answer was monthly (37%). It is noteworthy that most of the clients at this clinic received a yearly mammography examination. At this time,

they were advised to routinely check their breasts for lumps or changes each night when they bathe. The daily response was generally accompanied by an explanation that the exam was performed during the bath.

Subjects were asked when they were last in the hospital in order to ascertain whether recent hospitalization had any relationship to amount of medication knowledge. The length of the last hospitalization was also elicited. Seven subjects had been in the hospital within the last month while 6 had never been in the hospital. For 27 of the subjects, it had been over a year since their last hospitalization and 34 had not been hospitalized for five years or longer (Figure 5).

Figure 5

Time Period Since Last Hospitalization

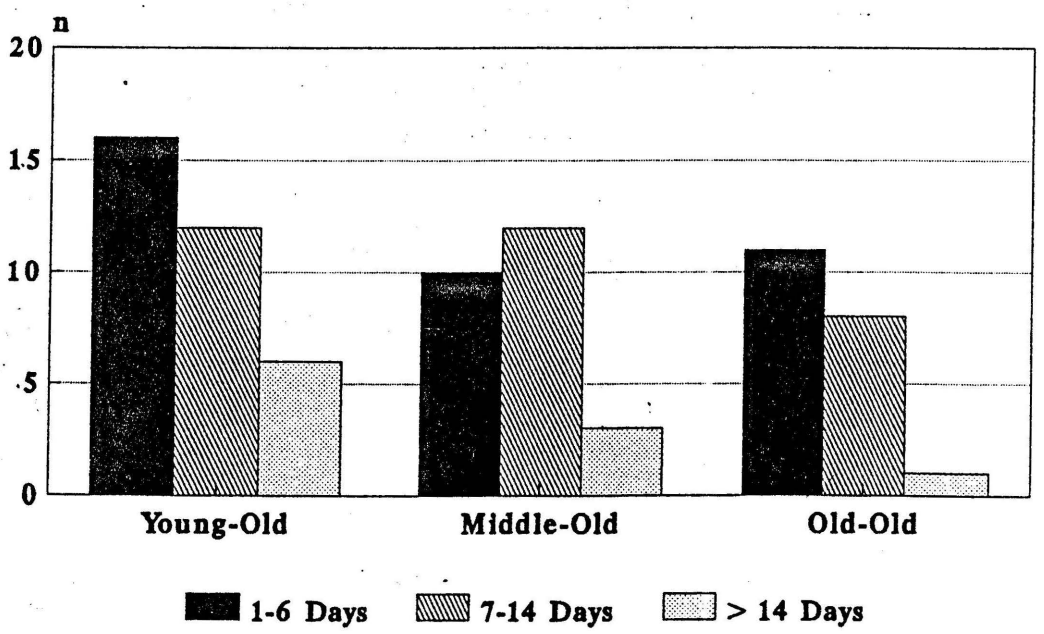


By Age Groups

The number of days of the last hospitalization varied from 1 to 35 with the mean being 8.4. However, the standard deviation was 8.0 indicating a wide range of responses. Thirty-seven subjects had been in the hospital less than a week during their last stay, 32 had been in less than 2 weeks, and 10 had been in for more than two weeks (Figure 6).

Figure 6

Number of Days of Last Hospitalization



By Age Groups

This sample of older women using a health clinic for services was distributed over the three age ranges for elderly persons. The majority of the sample were black with a wide range of educational preparation. They either lived alone and lived with family. Socioeconomic status was perceived as inadequate or barely adequate to meet their needs. The homogeneity of this group leads to caution when generalizing the findings beyond the limitations imposed by this group's characteristics; however, the homogeneity added rigor to the analysis of data and interpretation of findings by eliminating many of the potential confounding variables.

Findings

The dependent variable of this study, self-medication practices of older women, was measured with the Self-reported Medication-taking Scale (SMS) (Morisky, Green, & Levine, 1986). The value range of the original SMS was one to four with higher scores reflecting more positive medication behaviors. Three additional questions were added for the current study to assess the polypharmacy aspect making the highest possible score 7 instead of 4. The three additional question reflected areas of concern for older persons, i.e. use of laxatives, use of prescriptions belonging to other persons, and accumulation of prescriptions from a variety of physicians and pharmacies. These

three additional questions were tested individually and collectively (SMS_1) for correlation to the original four questions (SMS_2). There was a significant correlation between SMS_1 and SMS_2 scores (n=90, r=.55, p=.01). Significant correlation occurred between each score and the SMS_1 total (Table 2). Administration time for the SMS was about five minutes.

Table 2

Pearson Product Moment Correlations of Self-reported Medication-taking Scale Total With Added Items

Question	r
SM5	.2980**
SM6	.4311**
SM7	.3485**

** p=.01, n=90.

The questions on the SMS were designed so that an affirmative health response was actually reflected with a response of "no", i.e. "Do you sometimes forget your medicine?" The rationale behind this method was to decrease the amount of response bias resulting from the subject's desire to agree with the investigator. The SMS score was derived from the number of "no" responses which were scored as 1. A score of zero was given for a "yes" response. The range of possible

scores was 0 to 7. For the study sample, the values ranged from 2 to 7 with the mean being 5.5 indicating generally positive overall health perception (Appendix K, Table K-1).

The independent variables were measured with questionnaires administered in interview format. Intrinsic motivation was measured with the Health Self-determinism Index (HSDI) by Cox (1985). The HSDI is a 17-item questionnaire consisting of Likert-scale responses. The responses ranged from a low of 1 (strongly disagree) to a score of 5 (strongly agree). The middle range answer was "undecided". Nine of the questions were phrased in a negative format. The lowest score was 30 and the highest was 75 with a mean of 52.2, SD=11.9 indicating the study population was more intrinsically than extrinsically motivated (Appendix K, Table K-2). Reliability testing resulted in a Carmines theta value of 0.88. Carmines theta is a special case of Cronbach's alpha which is a measure of internal consistency. The Carmines theta value compared well with the alpha coefficients by Cox of 0.84, 0.80, 0.87, 0.83, and 0.81 in previous use of the instrument.

Health perception was measured by administering the Self-rated Health Subindex (SHS) (Lawton, et al., 1982). The four items required the respondent to make a choice between levels of response. Those responses associated with better health perception received the highest scores (4 for

question 1; 3 for questions 2-4). The author had reported an alpha coefficient of 0.76 in previous testing of the instrument. The current study yielded a Carmines theta of 0.62. The highest score on the SHS was 13 out of a possible 13 and the lowest score was 4, which is the lowest possible score. The mean score was 8.67 with a standard deviation of 2.24 indicating the study population perceived their health more positively than negatively (Appendix K, Table K-3).

The Knowledge of Medication Subtest (KMS) (Horn & Swain, 1977) was administered in an interview format to assess the subject's knowledge of a specific prescribed medication. This 27-question instrument contained one question asking the name of the medication. The remaining 26 questions were scored on a scale of 1 to 3 or 1 to 4 with 1 being the correct answer and 3 or 4 being the incorrect answer. The answers were recoded during statistical analysis so that higher scores were reflective of higher knowledge in order to make this instrument consistent with the other instruments. Horn and Swain reported an interclass correlation coefficient of .74 and .79 for two of the items with the remaining items having correlation coefficients between .87 and 1.00 ($p \leq .05$). Harper (1984) used the modified 25-item scale which was similar to the one used in the present study and reported a correlation coefficient of .64 and .73 on four of the items and .80 to 1.00

($p \leq .05$) on the remaining 21 items. The present study had a Carmines theta of .78. The range on the KMS was 52 to 91 with a mean of 76.822, SD=6.31 (Appendix K, Table K-4).

The four instruments and a demographic sheet were completed for each of the 90 subjects. All of the subjects signed a consent to participate in the study, and each one received a written description of the study. Responses from these instruments were analyzed and used for testing the hypotheses of this study.

Hypothesis #1

The first hypothesis postulated that there is a relationship between intrinsic motivation, health perception, knowledge of medications, and self-medication practices in older women. A significant relationship was demonstrated between self-medication practices and medication knowledge ($r=.46$, $p=.01$, $n=90$) and between health perception and intrinsic motivation ($r=.26$, $p=.05$, $n=90$) (Table 3). There was no relationship between self-medication practices and either intrinsic motivation or health perception.

A goal of the study was to develop an equation for predicting which older women would adhere to their medication regimen based on the independent variables. A multiple regression and correlation analysis (MRC) was done in an effort to develop a predictor equation. Basic

Table 3

Pearson Product Moment Correlation Coefficients of Self-reported Medication-taking Scale (SMS), Health Self-determinism Index (HSDI), Self-rated Health Subindex (SHS) and Knowledge of Medication Subtest (KMS)

	SMS	HSDI	SHS	KMS
SMS	1.000			
HSDI	.0298	1.00		
SHS	.1215	.2589*	1.000	
KMS	.4633**	.0565	.1906	1.000

* $p \leq .05$. ** $p \leq .01$.

assumptions which must be met in order to use MRC include the presence of a statistical rather than a functional relationship, constant variance (homoscedasticity), and uncorrelated error factors (Hair, Anderson, & Tatham, 1987). A statistical relationship was established by using only continuous variables. Constant variance and uncorrelated error factors were demonstrated by plotting the standardized residuals against the criterion which were all within the 0.3 to -0.3 range with no discernible pattern which indicate that the model is a good fit. A histogram of standardized residuals revealed most residuals to be within the hypothesized normal curve. The scatterplot of standardized residuals showed a satisfactory lack of convergence and a

random pattern indicating that development of a prediction equation was appropriate (Hair, Anderson, & Tatham, 1987).

A multiple regression and correlation analysis of the study variables resulted in one predictor variable, medication knowledge, accounting for 17% of the variance in self-medication scores. This amount of variance was significant ($F_{(3,85)}=5.712$, $p=.0013$). The other variables did not significantly add to the explanation of variance and were demonstrated to be inappropriate for inclusion in the regression equation. A common practice when there is correlation of predictor variables is to add other continuous variables in order to increase the amount of explained variance. The addition of age, years of education, and a dummy coded measure of socioeconomic status did not significantly increase the amount of variance explained. Nevertheless, the findings of significant correlation between self-medication practices and medication knowledge and between health perception and intrinsic motivation permitted acceptance of Hypothesis #1.

Hypothesis #2

The second hypothesis postulated that there is a difference in intrinsic motivation, health perception, medication knowledge, and self-medication practices in older women based on age, socioeconomic status, and/or education level. The mean age was 68.7 with a standard deviation of

7.78 years. The age strata were the young-old (60 to 64), the middle-old (65 to 74) and the old-old (over 74). Socioeconomic status was measured as perceived adequacy of present financial situation to meet needs. Since none of the respondents perceived themselves as having more than adequate financial resources, this variable evolved to two categories: those who felt they had adequate financial resources and those whose resources were believed to be less than adequate. Education was measured in years of formal schooling. For analysis of variance, the groups were stipulated as 0 - 6 years for elementary school, 7 - 9 years for junior high school, 10 - 12 years for high school, and more than 12 years was considered post-high school. Means and standard deviations were computed (Appendix L).

Self-medication Practices and Selected Demographic Variables

Self-medication practices were very similar for all of the age groups. Analysis of variance between the three age groups based on self-medication practices demonstrated no significant differences for this variable (Appendix M, Table M-1). No differences in self-medication practices were found based on socioeconomic status (Appendix M, Table M-2). Those respondents with education past high school tended to engage in more positive self-medication practices (M=6.0, SD=1.7), but the difference was not significant (Appendix M, Table M-3).

Intrinsic Motivation and Selected Demographic Variables

Higher HSDI scores are designed to reflect greater degrees of intrinsic motivation. Means and standard deviations on the HSDI based on demographic variables are found in Appendix L. The old-old group had the highest HSDI score (M=54.61) while the middle-old had the lowest score (M=50.83). However, no significant difference was found based on age. Motivation scores were very similar based on socioeconomic state (Appendix L, Table L-2). Those respondents with education past high school had higher motivation scores than other groups (M=60.3, n=6) (Appendix L, Table L-3). Those who completed junior high school were next (M=53.3, n=31). Very similar low scores were reported for those with an elementary education and those with a high school education (M=50.3, n=19; M=50.8, n=33). Analysis of variance between the demographic variables of interest and the HSDI score signifying intrinsic motivation revealed no significant differences between the groups (Appendix M).

Health Perception and Selected Demographic Variables

The middle-old group tended to perceive their health more positively than the other two groups with a mean health perception score of 9.6 (SD=1.9) (Appendix L). The old-old had a mean score of 8.5 (SD=2.1) while the young-old group had the lowest health perception scores with a mean of 7.9 (SD=2.3). A significant difference ($F_{(2,87)}$=4.9881, p=.0089)

was found between the health perception scores based on the age groupings (Appendix M, Table M-1). Post-hoc testing using the Tukey HSD test demonstrated that the difference was between the young-old and the middle-old populations. The old-old group did not significantly differ from the other two groups. When the four health perception questions were considered separately (Table 4), significant differences were found in responses to question #2 regarding a comparison of the respondent's present health to her health three years ago ($F_{(2,87)}$=3.758, p=.0043) and question #4 regarding a comparison of the respondent's health to the health of other persons the same age ($F_{(2,87)}$=2.356, p=.0085). Post-hoc testing revealed the significant differences were between the young-old and the middle-old groups on each of these individual questions. No significant difference was noted between these two groups and the old-old group.

A significant difference in health perception was also noted between those respondents who viewed their financial situation as adequate to meet their needs and those who felt their finances were inadequate to meet their needs (t=2.14, p=.023, n=90) (Appendix M, Table M-2). Those who had adequate financial resources or who had learned to adjust to their amount of income viewed their health more positively than those who viewed their finances as inadequate. None of the subjects responded that their current financial

Table 4

Analysis of Variance for
Health Perception Questions for Three Age Groups:
Young-Old (60-64), Middle-Old (65-74), and Old-Old (>74)

	SS	df	MS	F	p
Question #1					
Between Groups	.1583	2	.0792	.1313	.8771
Within Groups	52.4639	87	.6030		
Total	52.6222	89			
Question #2[a]					
Between Groups	7.5167	2	3.7583	5.7934	.0043*
Within Groups	56.4389	87	.6480		
Total	63.9556	89			
Question #3					
Between Groups	3.4250	2	1.7125	2.3072	.1056
Within Groups	64.5750	87	.7422		
Total	68.0000	89			
Question #4[b]					
Between Groups	5.1167	2	2.5583	5.0388	.0085**
Within Groups	44.1722	87	.5077		
Total	49.2889	89			

[a]Tukey HSD Post-hoc Procedure Question #2

	Group 1	Group 3	Group 2
Group 1 (M=1.6944)	-	.222	.6723†
Group 3 (M=1.9167)		-	.4500
Group 2 (M=2.3667)			-

[b]Tukey HSD Post-hoc Procedure Question #4

	Group 1	Group 3	Group 2
Group 1 (M=2.0278)	-	.389	.5389†
Group 3 (M=2.4167)		-	.1500
Group 2 (M=2.5667)			-

† p=.05

situation was more than adequate to meet their needs. Analysis was also performed based on formal education. No significance difference was noted in the self-perception scores based on grouping by educational preparation (Appendix M, Table M-3).

Knowledge of Medications and Selected Demographic Variables

The middle-old group had the highest knowledge scores (M=78.1, SD=7.2, n=30). Appendix L displays means and standard deviations for demographic variables. The young-old group (M=76.1, SD=5.9, n=36) and the old-old group (M=76.3, SD=5.7, n=24) had knowledge scores that were nearly identical. None of these differences were statistically significant (Appendix M, Table M-1). The two socioeconomic groups had similar scores (M_1=76.7, SD_1=6.1, n=57; M_2=77.1, SD^2=6.7, n=33) with no significant differences (Appendix M, Table M-2). The group with the least education scored only slightly lower than the other groups, and there was no significant difference between any of the groups based on their educational level (Appendix M, Table M-3).

Significant differences in health perception scores were found between groups based on age and socioeconomic groups. No significant differences were found on health perception when the subjects were grouped by educational preparation. Significant differences were not found based on self-medication practices, intrinsic motivation, and

medication knowledge based on the three selected demographic variables (age, socioeconomic status, and education). Nevertheless, the significance of the findings regarding health perception permitted acceptance of Hypothesis #2.

Additional Findings

Demographics

The relationship between selected demographic variables and the study variable, health perception, prompted further investigation of demographic information in relation to the study variables. Other areas of analysis in the demographic section were conducted on ethnicity, marital status, previous hospitalization, the length of time the subject had been on medication, and two health-related activities (smoking and self-breast examination). The differences between scores on the instruments were not significant related to ethnic groups except in the area of health perception (Appendix M). Scores on the SHS indicated that blacks had the most positive perception of their health ($\underline{M}$=9.0, $\underline{SD}$ 2.1) of the four groups ($\underline{F}_{(3,87)}$=2.59, $\underline{p}$=.0578). Post hoc testing revealed that the scores of the black respondents were significantly different from the scores of the white respondents ($\underline{M}$=7.4, $\underline{SD}$=2.1). Black subjects scored slightly lower on the intrinsic motivation index although the difference was not significant. The low number

of subjects in the Hispanic and "other" category precluded meaningful analysis of these groups.

While no significant differences were found based on marital status, living arrangements, previous hospitalization, or time on their medication, one difference of note did emerge. Women who had higher scores on the knowledge of medication subtest also were more likely to engage in self breast examination (t=2.40, p=.028, n=89). No differences were found based on whether or not the women smoked. No group consistently emerged as statistically different from the others.

Independent Variables

To test Hypothesis #1, the independent variables (intrinsic motivation, health perception, and medication knowledge) were correlated with the dependent variable (self-medication practices) as well as with each other. The finding of a significant correlation between medication knowledge and self-medication practices allowed a regression equation to be developed. Although intrinsic motivation and health perception did not contribute to the regression equation, there was a significant correlation between these two independent variables (r=.26, p=.05, n=90). A simple regression model was used to determine the relative strength of this relationship. The intrinsic motivation scores were shown to explain 7% of the variance in the health perception

scores. The amount of variance was significant ($F_{(1,87)}$=6.253, p.0143). A scatterplot of standardized residuals showed random pattern and convergence near the zero axis which indicate an appropriate fit for the model.

Summary of Findings

A total of 90 elderly women who use a public clinic for health services were interviewed regarding their self-medication habits, intrinsic motivation, health perception, and medication knowledge. Hypothesis #1 postulated that there was a relationship between intrinsic motivation, health perception, medication knowledge, and self-medication practices in older women. Hypothesis #2 proposed that differences exist in intrinsic motivation, health perception, medication knowledge and self-medication practices based on selected demographic variables. Based on findings, further analysis of relationships between other demographic variables and the study variables was conducted.

The subjects varied in age from 60 to 91 with a mean of 68.7. The majority of the sample was black (72%), and most were widows (52%). Over half of the sample lived with someone else (59%). Most of the sample (63%) felt that their income was inadequate to meet their financial needs. The highest education level attained was 14 years and the lowest was zero with a mean of an eighth grade education.

Most of the subjects (83%) did not smoke, and the majority (67%) practiced self-breast examination on a regular basis.

The dependent variable of the study, self-medication practices, was measured by the Self-reported Medication-taking Scale (SMS). Out of a possible score range of 0 to 7, the mean for the sample was 5.47. Three independent variables were measured. Intrinsic motivation was measured with the Health Self-determinism Index (HSDI). This Likert-scale instrument had a possible score range of 17 to 85. The lowest score was 30 and the highest was 75 with a mean of 52.2 ($\underline{SD}$=11.9). Health perception was measured with the Self-rated Health Subindex (SHS). The highest score was 13 and the lowest score was 4 ($\underline{M}$=8.67, $\underline{SD}$=2.24). Medication knowledge was measured with the Knowledge of Medication Subtest (KMS) which asked questions about a specific drug the subject was taking. The range of scores on the KMS was 52 to 91 with a mean of 76.82 ($\underline{SD}$=6.3).

A significant positive relationship was demonstrated between self-medication practices and medication knowledge ($\underline{r}$=.42, $\underline{p}$=.01, $\underline{n}$=90). A positive correlation was also found between health perception and intrinsic motivation ($\underline{r}$=.26, $\underline{p}$=.05, $\underline{n}$=90). A multiple regression and correlation analysis of the variables resulted in medication knowledge accounting for 17% of the variance in self-medication scores which was significant ($\underline{F}_{(3,85)}$=5.71, $\underline{p}$=.0013).

A significant difference was found between age groups (young-old 60-64; middle-old 65-74; old-old >74) in their health perception scores ($F_{(2,87)}$=4.9881, p=.0089). Post-hoc testing revealed that the difference was between the young-old and the middle-old groups. The difference in health perception scores between subjects who viewed their financial situation as adequate and those who felt it less than adequate was also significant (t=2.14, p=.023, n=90). Black subjects were found to have significantly higher health perception scores than the white subjects ($F_{(3,87)}$=2.5932, p=.0578).

Correlation among the dependent variables showed a significant correlation between intrinsic motivation and health perception (r=.26, p=.05, n=90). Through a simple regression model, intrinsic motivation scores were shown to explain 7% of the variance in the health perception scores which was significant ($F_{(1,87)}$=6.253, p.0143).

Univariate and multivariate statistics were used to describe the sample, analyze differences, and explore relationships between the variables of the study. Hypothesis #1 which proposed a relationship between intrinsic motivation, health perception, medication knowledge, and self-medication practices was accepted. Hypothesis #2 which proposed a relationship between the study variables and selected demographic variables was also

accepted. The statistical analyses were used to describe and analyze factors which contribute to the self-medication practices of older women.

Chapter 5

The central problem of this study was to determine what factors contribute to the self-medication practices of older women. The variables of intrinsic motivation, health perception, and knowledge of medications were explored as possible contributors to self-medication practices along with certain demographic variables. A holistic approach was employed based on the Rogerian principles of helicy, integrality, and resonancy and on Cox's Interaction Model of Client Health Behavior. These models propose that the complexity and diversity of aging may be accompanied by dynamic interactions and purposeful decisions. Thus, it was proposed that the more motivated a person was, the more positively health would be perceived. Based on this assumption, it was assumed that a more positive health perception would be associated with more positive health decisions (including the decision to take medications properly).

This study was conducted to examine relationships between variables and differences between subgroups in examining the self-medication practices of older women. This chapter explored the findings, offered conclusions, and proposed areas for future research in this area.

Summary

Self-medication practices were proposed to have a relationship to intrinsic motivation, health perception, and medication knowledge in Hypothesis #1. It was further proposed that this relationship was additive and predictive. Interval level scores were obtained on each of the variables by interviewing subjects with four measurement instruments and calculating instrument totals. Correlational analysis indicated relationships between variables. Further analysis using multiple regression was used to explore the possibility that each of the variables had a additive relationship in explaining self-medication scores. Regression analysis was used to develop an equation for future prediction of self-medication practices in similar populations.

Differences in subgroups of the study population based on demographic data were also proposed in Hypothesis #2. Sub-groups based on age, perception of socioeconomic status, and education levels were compared and contrasted for signif-icant differences. Upon finding that differences did exist for these selected variables, other demographic variables, such as groups based on marital status, living arrangements, recentness of hospitalization, ethnicity, and health-promoting behaviors were explored for differences. Descrip-tive, univariate, and multivariate statistical analyses were applied to the data and findings were reported.

Discussion of Findings

Two major hypotheses guided this study of the self-medication practices of older women. These hypotheses are discussed in relation to this study and with regard to current practice in the health care community.

Hypothesis 1

Hypothesis 1 stated that there is a relationship between intrinsic motivation, health perception, knowledge of medications, and self-medication practices in older women. A relationship was found between knowledge of medications and self-medication practices. Much of the research in knowledge and health outcomes has dealt with demonstrating an effective method for manipulating the knowledge variable. Studies have focused on the preferred teaching method (Hageman & Ventura, 1981), preferred intervention strategy (Kroenke & Pinholt, 1990), preferred assistive devices (Cramer et al., 1989, Keram & Williams, 1988), and/or preferred memory prompts (Heiby & Carlson, 1986). This finding supports the practice of addressing knowledge issues in attempts to improves health practices.

The present study demonstrated a relationship between knowledge and health behavior. The relevance or irrelevance of knowledge to health behaviors has been argued in the literature with support for both sides. The findings in this study support the work of Harper (1984) who found a

significant increase in medication behaviors and a reduction in medication errors when the client had more knowledge about the medications being taken. Hecht (1974) found that increased instruction resulted in fewer medication errors. Tagliarozzo and Ima (1970) also found a significant relationship between knowledge of the specific illness and the positive health behavior of returning for a follow-up visit at the clinic. On the other hand, Klein and associates (1982) found that over half of their older sample knew what their medication was supposed to do, but they did not identify any relationship between knowledge of the purpose of the medication and the compliance rate of those over age 65. A similar lack of correlation between knowledge and compliance with blood pressure medication regimen was noted by Sands and Holman (1985). The present study lends support to the idea that knowledge of medications has a positive relationship to self-medication practices in the study population. However, care must be exercised in implementing knowledge-based interventions as the panacea for medication-adherence problems since Harper (1984) demonstrated a significant loss of knowledge over time in older women. Other relationships must be explored.

Intrinsic motivation was proposed as a possible factor which might influence self-medication practices. No relationship was found between this variable and self-

medication practices. Motivation research has relied heavily on positive behavior cues (Becker et al., 1972) and negative behavior cues (Powers & Wooldridge, 1982, Battisella, 1971) as antecedents to positive health behaviors. Cues are more prominently associated with beliefs about disease and outcomes than with knowledge of the condition. In the present study, health beliefs were subsumed within the intrinsic motivation instrument. No relationship was found between intrinsic motivation and the outcome behavior of self-medication practices.

Health perception was the other variable proposed to interact with knowledge in predicting self-medication practices; however, no relationship was found. National health surveys have established a link between perceived health status and positive health behaviors which becomes weaker in the later years (U.S. Department of Health and Human Services, 1987[b]). The lack of a significant relationship between health perception and self-medication practices seems to contradict Kirscht and Rosenblock (1977) who found that increased scores on self-reported medication behaviors were linked to perceived benefits of medical advice. Morisky and associates (1986) also noted positive self-perception was associated with positive physiological outcomes in a five-year longitudinal study of blood pressure control. The reason for the lack of correlation between

health perception and self-medication behaviors in the present study is unclear.

A significant relationship was found between intrinsic motivation and health perception. This finding was consistent with the holistic view supported by Rogers (1971) in which motivation is viewed as a pattern, a distinguishing characteristic of the individual. Self-perception was seen as an encompassing term which connotes perception of the whole. While these two terms are compatible with the idea of holism, knowledge of medication and medication practices may have been too particulate and reductionistic to be consistent with the holistic approach. Past studies have demonstrated a significant relationship between motivation and perceived health status (Cox, 1982; Engle, 1984) which is supported by the present study.

Hypothesis 2

Hypothesis 2 states that there is a difference in intrinsic motivation, health perception, medication knowledge, and self-medication practices in older women based on age, socioeconomic status, and/or education level. Other demographic variables tested were marital status, living arrangements, length of time since last hospitalization, education, and ethnicity.

No differences based on any of the demographic variables were demonstrated when self-medication practices,

intrinsic motivation, and medication knowledge scores were considered. Health perception was the only variable which demonstrated sensitivity to group differences.

Significant differences on health perception scores based on several demographic variables were noted. The middle-old group viewed their health more positively than the other two age strata, the young-old and old-old groups. This is not consistent with the national trend which shows a progressive increase with aging in the percentage of the population who view their health as poor and a progressive decrease, though slight, in the percentage who view their health as good and excellent (U.S. Department of Health and Human Services, 1987[a]). An important aspect of health perception was the subject's perception of how much health problems stand in the way of carrying out activities. Activity limitations reported by the U.S. Department of Health and Human Services (1987[a]) by age groups revealed that severe activity limitations were reported by 10% of the young-old, 12.9% of the middle-old, and 18.8% of the old-old groups. Data collected from this sample showed that 17% of the young old reported severe activity limitation as did 9% of the middle-old and 12% of the old-old groups. However, the national report was done by phone survey of random households of conceivably healthy individuals. Subjects in the current sample were in a health-seeking posture. This

fact may account for the higher percentages of young-old and old-old persons reporting activity limitations. Activity limitations may be associated with the health and economic problems of the sample.

Elder and Liker's study (1982) which linked lowered health perception to economic setbacks was supported by this study. Elder and Liker demonstrated the long-term effects of economic setbacks. In the current study, a significant relationship was demonstrated between health perception and perception of socioeconomic status with a mean score 8.22 for persons who perceived their financial situation to be less than adequate compared to a mean of 9.36 for those whose financial status was perceived to be adequate. Many of the respondents in the current study stated that they had learned to get by on what they had, although if unanticipated expenses arose, "some of the bills just don't get paid." National health statistics also support the trend of increasing health perception scores as family income increases and the decrease of fair and poor reports as the family income increases (U.S. Department of Health and Human Services, 1988).

The black respondents scored significantly higher on self-perception than the white group. There were too few Hispanic and others to offer meaningful analysis. The finding that blacks perceive their health more positively

contradicts the 1987 National Health Survey (U.S. Department of Health and Human Services, 1988) which found that 42% of the white respondents reported their health to be excellent while only 29.5% of the blacks did the same. The fair or poor category contained 8.5% whites and 16.7% blacks.

Self-perception of health status was associated with several of the demographic variables measured in this study. Support for this finding was offered (U.S. Department of Health and Human Services, 1987[a]), although contradictions have been found in the literature (Horgan, 1987; Cox, 1985). For example, in her study of health self-determinism in the elderly, Cox (1985) did not find any relationship between self-assessment of health and age, education, and financial adequacy. The homogeneity of the present sample may have distorted this variable.

The serendipitous finding of a high percentage of respondents who did self-breast examination (75%) and the high frequency rate of those who did this examination daily (58%) are a basis for consideration. These women are referred to yearly mammography examinations where they are shown how to do self-breast examination during their daily baths. The question remains whether the referral and ensuing attention prompt the positive health-promotion action or if there is another antecedent which makes this activity a priority to these women.

Conclusions and Implications

Based on the study findings, the following conclusions are offered. These conclusions relate to women 60 years of age and over.

1. Medication knowledge is a better predictor of self-medication practices than intrinsic motivation and/or health perception
2. The more older women know about their medications, the better self-reported medication practices will be.
3. Older women who are more intrinsically motivated tend to view their health more positively.
4. Positive health perception is related to a positive perception of older women's economic situations.
5. There is a tendency for women in the middle-old category (65-74) to view their health more positively than older (>74) or younger women (60-64).
6. There is a tendency for women in the middle-old age range (65-74) to view their health as improving in the past three years more often than women in the younger (60-64) or older (>74) groups.
7. There is a tendency for women in the middle-old age range (65-74) to perceive their health as better than other people their age.
8. Black women view their health more positively than their white counterparts 60 years and over.

9. Marital status, ethnic group, educational level, and living arrangements do not affect self-medication practices in women age 60 years and over.

Based on the study findings, the following implications for women 60 years of age and older are offered:

1. Nursing interventions to improve the self-medication practices of older women should focus on improving their knowledge of the medications they are taking. Special emphasis should be placed on those areas of greatest potential for problems and least current knowledge: side effects, dosage adjustment, potential for adverse interactions with other medications, and awareness of when to seek professional advice about medications.

2. Improvement of financial situations may increase positive health perception and intrinsic motivation. Improved motivation may have implications for improved physical and mental health; however, it may not be a successful method for improving health behavior outcomes.

3. Women in the middle-old years (64-75) tend to have the most optimistic outlook in relation to their health. This age group should be targeted for health teaching and health promotion to maintain this positive health perception for as long as possible.

Recommendations for Further Study

The following recommendations for further study are proposed based on the findings of this study:

1. This study should be replicated in a population with different ethnic majorities and one in which the subjects are not attending a clinic and seeking health care to determine if knowledge enhancement is appropriate as a broad-based approach to improving medication practices of older women.
2. This study should be replicated in the same population after a medication class addressing the knowledge deficits has been instituted to determine if there are differences in knowledge levels and/or self-medication practices.
3. The effect of written medication fact sheets for older clients which address the knowledge deficits identified in this study should be explored for improvement of knowledge and self-medication practices in a similar population.
4. Since enhancing the knowledge of older women includes teaching them about possible side effects and desired effects of medications, studies should be done to identify the extent that reporting of side effects and confirmation of desired effects increases or decreases after a medication knowledge-enhancing program so that nurses can identify the best teaching strategies.

5. Medication knowledge accounted for 17% of the variance in self-medication scores; the variables responsible for other 83% of the variance in self-medication decisions should be identified and explored.

6. The medication knowledge instrument may be measuring other parameters besides knowledge, such as values, judgments, feelings. A more thorough analysis of the medication knowledge instrument should be undertaken, and other knowledge instruments should be explored to validate the findings of this study.

7. Since knowledge was shown to be predictor of one outcome activity (self-medication practices), it should continue to be explored as a predictor of other positive health outcomes such as dietary management, rehabilitation exercises, smoking cessation, self-breast examination, and stress reduction.

8. Health perception should be explored further in relation to influencing self-medication practices since it has been linked with other positive health outcomes.

9. Since women in the middle age group (65-74) were shown to have a more optimistic outlook in relation to their health, this group should be studied in relation to the impact of health teaching and health promotion as means to prolong this optimism as long as possible.

10. Antecedent behaviors related to presence and frequency of self-breast examination should be explored in this population in relation to the implications of a yearly mammography referral and the incidence and prevalence of breast pathology.

REFERENCES

Abadie, B. (1988). Relating trait anxiety to perceived physical fitness. Perceptual and Motor Skills, 67, 539-543.

American Association of Retired People (1985). Prescription drugs: A survey of consumer use, attitudes, and behavior. Washington D.C.: AARP.

Baldini, J. (1981). Knowledge about hypertension in affected elderly persons. Journal of Gerontological Nursing, 7(9), 542-551.

Barrett, E. (1986). An empirical investigation of Martha E. Rogers' principle of helicy: The relationship of human field motion and power. In V. Malinski, Ed. Explorations on Martha Rogers' science of unitary human beings. Norwalk, CT: Appleton-Century-Crofts.

Battisella, R. (1971). Factors associated with delay in the initiation of physicians' care among late adulthood persons. American Journal of Public Health, 61, 1348-1361.

Baum, C., Kennedy, D., Forbes, M., & Jones, J. (1984). Drug use in the United States in 1981. Journal of the American Medical Association, 251, 1293-1297.

Becker, M. (1978). The health believe model and sick role behavior. Health Education Monographs, 2(4), 409-419.

Becker, M., Drachman, R., & Kirscht, J. (1972). Motivations as predictors of health behavior. Health Services Reports, 87(9), 852-862.

Beers, M., Dang, J., Hasegawa, J., & Tamai, I. (1989). Influence of hospitalization on drug therapy in the elderly. Journal of the American Geriatrics Society, 37(8), 679-683.

Bortz, W. (1982). Disuse and aging. Journal of the American Medical Association, 248, 1203-1208.

Brody, E. (1985). Mental and physical health practices of older people. New York: Springer Publishing.

Brouse, S. (1985). Effect of gender role identity on patterns of feminine and self-concept scores from late pregnancy to early postpartum. Advances in Nursing Science, 7(3), 32-48.

Campbell, D. & Stanley, J. (1963). Experimental and quasi-experimental designs for research. Chicago: Rand McNally College Publishing Co.

Check, J. & Wurzbach, M., (1984). How elders view learning. Geriatric Nursing, 5(1), 37-39.

Clarke, P. (1986). Theoretical and measurement issues in the study of field phenomena. Advances in Nursing Science, 9(1), 29-39.

Cohen, J. (1977). Statistical power analysis for the behavioral sciences. Hillsdale, N.J.: Lawrence Erlbaum Associates.

Colt, H. & Shapiro, A. (1989). Drug-induced illness as a cause for admission to a community hospital. Journal of the American Geriatric Society, 37(4), 323-326.

Congressional Quarterly, (1990). Aging in America: The Federal Government's Role, ed. C. McGuiness. Washington, D.C.: Congressional Quarterly.

Cook, T. & Campbell, D. (1979). Quasi-experimentation. Chicago: Rand McNally College Publishing Co.

Cooper, J., Love, D., & Raffoul, P. (1982). Intentional prescription nonadherence (noncompliance) by the elderly. Journal of the American Geriatric Society, 30, 329-333.

Cowling, W. (1986). The relationship of mystical experience, differentiation, and creativity in college students. In V. Malinski, Ed. Explorations on Martha Rogers' science of unitary human beings. Norwalk, CT: Appleton-Century-Crofts.

Cox, C. (1982). The interaction model of client health behavior: Theoretical prescriptions for nursing. Advances in Nursing Science, 5, 41-46.

Cox, C. (1985). The self-determinism index. Nursing Research, 34, 177-185.

Cox, C. (1986). The interaction model of client health behavior: Application to the study of community-based elders. Advances in Nursing Science, 9(1), 40-57.

Cox, C., Miller, E., & Mull, C. (1987). Motivation in health behavior: Measurement, antecedents, and correlates. Advances in Nursing Science, 9(4), 1-15.

Cox, C. & Wachs, J. (1985). Motivation: Vehicle for public health interventions. Public Health Nursing, 2(4), 202-211.

Cramer, J., Mattson, R., Prevey, M., Scheyer, R., & Ouelette, V. (1989). How often is medication taken as prescribed? Journal of the American Medical Association, 261(22), 3273-3277.

Delafuente, J. & Stewart, J. (1988). Therapeutics in the elderly. Baltimore: Williams & Wilkins.

DeVon, H. & Powers, M. (1984). Health beliefs, adjustment to illness, and control of hypertension. Research in Nursing and Health, 7(1), 10-16.

Dinsmore, P. (1979). A health education program for elderly resident in the community. Nursing Clinics of North America, 14(4), 585-593.

Duke University Center for the Study of Aging (1978). Multidimensional functional assessment: The OARS methodology, 2nd ed. Duke University, Durham, N.C.

Engle, N. (1984). On the vicissitudes of health appraisals. Advances in Nursing Science, 7(1), 13-23.

Elder, G. & Liker, J. (1982). Hard times in women's lives: Historical influences across forty years. American Journal of Sociology, 88(2), 241-269.

Fawcett, J. (1989). Spouses' experiences during pregnancy and the postpartum: A program of research and theory development. IMAGE: Journal of Nursing Scholarship, 21(3), 149-152.

Ference, H. (1986). The relationship of time experience, creativity traits, differentiation, and human field motion. In V. Malinski, Ed. Explorations on Martha Rogers' science of unitary human beings. Norwalk, CT: Appleton-Century-Crofts.

Ferraro, K. (1980). Self-ratings of health among the old and the old-old. Journal of Health and Social Behavior, 21(4), 377-383.

Fillenbaum, G. (1979). Social context and self-assessment of health among the elderly. Journal of Health and Social Behavior, 20, 45-51.

Floyd, J. (1983). Research using Rogers' conceptual system: Development of a testable theorem. Advances in Nursing Science, 5(2), 37-48.

Gaydos, L. & Farham. R. (1988). Human-animal relationships within the context of Rogers' principle of integrality. Advances in Nursing Science, 10(4), 72-80.

Giannetti, V. (1983). Medication utilization problems among the elderly. Health and Social Work, 8, 262-270.

Hageman, P. & Ventura, M. (1981). Utilizing patient outcome criteria to measure the effects of a medication teaching regimen. Western Journal of Nursing Research, 3(1), 25-33.

Hair, J., Anderson, R., & Tatham, R. (1987). Multivariate Data Analysis, 2nd ed. New York: Macmillan.

Hale, W., Stewart, R., and Marks, R. (1984). Central nervous system symptoms of elderly subjects using antihypertensive drugs. Journal of the American Geriatric Society, 32(1), 5-10.

Harper, D. (1984). Application of Orem's theoretical constructs to self-care medication behaviors in the elderly. Advances in Nursing Science, 6(3), 29-46.

Haynes, R., Taylor, D., Sackett, D., Gibson, E., Berkholz, C., & Mukherjee, J. (1980). Can simple clinical measurement detect patient noncompliance? Hypertension, 2, 757-764.

Hecht, A. (1974). Improving medication compliance by teaching outpatients. Nursing Forum, 13(2), 112-129.

Heiby, E. & Carlson, J. (1986). The health compliance model. Journal of Compliance in Health Care, 1(2), 135-153.

Hoppel, C. (1985). The uses and misuses of pharmacology. In M. Haug, A. Ford, & M. Sheafor (eds.), The physical and mental health of aged women. New York: Springer Publishing.

Horgan, P. (1987). Health status perceptions affect health-related behaviors. Journal of Gerontological Nursing, 13(12), 30-33.

Horn, B. & Swain, M. (1977). Development of criterion measures of nursing care. Ann Arbor, Michigan: University of Michigan, vols. 1 & 2.

Jurgens, A., Meehan, T., & Wilson, H. (1987). Therapeutic touch as a nursing intervention. Holistic Nursing Practice, 2(1), 1-13.

Kendrick, R. & Bayne, J. (1982). Compliance with prescribed medication by elderly patients. Canadian Medical Association Journal, 127, 961-962.

Keram, S., & Williams, M. (1988). Quantifying the ease or difficulty older persons experience in opening medication containers. Journal of the American Geriatric Society, 36(3), 198-201.

Kim, K. & Grier, M. (1981). Pacing effects of medication instruction for the elderly. Journal of Gerontological Nursing, 7, 464-468.

Kirscht, J. & Rosenblock, I. (1977). Patient adherence to anti-hypertensive medical regimens. Journal of Community Health, 3, 115-124.

Kish, L. (1965). Survey sampling. New York: John Wiley & Sons.

Klein, L., German, P., McPhee, S., Smith, S., & Levine, D. (1982). Aging and its relationship to health knowledge and medication compliance. Gerontologist, 22, 384-387.

Krieger, D. (1981). Foundations for holistic health nursing practices: The renaissance nurse. Philadelphia: J.B. Lippincott.

Kroenke, K. & Pinholt, E. (1990). Reducing polypharmacy in the elderly: A controlled trial of physician feedback. Journal of the American Geriatric Society, 38(1), 31-36.

Lawton, M., Moss, M., Fulcomer, M., & Kleban, M. (1982). A research and service oriented multilevel assessment. Journal of Gerontology, 37, 91-99.

Lewis, C. (1990). Aging: The health care challenge, 2nd ed. Philadelphia: F.A. Davis.

Lowenstein, S., Crescenzo, C., Kern, D., & Steel, K. (1986). Care of the elderly in emergency departments. Annals of Emergency Medicine, 15, 528-534.

Malinski, V. (1986). The relationship between hyperactivity in children and perception of short wavelength light / an investigation into the conceptual system proposed by Martha E. Rogers. In V. Malinski, Ed. Explorations on Martha Rogers' science of unitary human beings. Norwalk, CT: Appleton-Century-Crofts.

Maslow, A. (1943). A theory of human motivation. Psychological Review, 370-396.

Mason, D. (1988). Circadian rhythms of body temperature and activation and the well-being of older women. Nursing Research, 37(5), 276-281.

McCormack, P. & O'Malley, K. (1986). Biological and medical aspects of drug treatment in the elderly. In Dunkle, R., Petot, G., & Ford, A. eds. Food, Drugs and Aging. New York: Spring Publishing.

McIntire, M., Angle, S., Sathers, K. (1987). Safety packaging: What does the public think? American Journal of Public Health, 67, 169-175.

Meisenhelder, J. (1982). Boundaries of personal space. Image: Journal of Nursing Scholarship, XIV(1), 16-19.

Miller, S. & Winstead-Fry, P. (1982). Family systems theory in nursing practice. Reston, Virginia: Reston Publishing.

Moody, H. (1986). Late life learning in the information society. In. J. Birren and K. Schaie (Eds.), Handbook of the psychology of aging. New York: Academic Press.

Morisky, D. (1986). Nonadherence to medical recommendations for hypertensive patients: Problems and potential solutions. Journal of compliance in health care, 1(1), 5-19.

Morisky, D., Green, L., & Levine, D. (1986). Concurrent and predictive validity of a self-reported measure of medication adherence. Medical Care, 24, 67-78.

Mossy, J. & Shapiro, E., (1982). Self-rated health: Predictor of mortality among the elderly. American Journal of Public Health, 72, 800-808.

National Center for Health Statistics, (1982). The national ambulatory care survey, United States, 1979. Summary, Vital and Health Statistics, series 13, no. 66, DHHS publ. no. PHS 82-1727. Hyattsville, MD: National Center for Health Statistics.

National Center for Health Statistics, (1989). Health, United States, 1988. DHHS Pub. No. (PHS) 89-1232. Public Health Service. Washington: U.S. Government Printing Office.

National Center for Health Statistics, (1984). Health characteristics by geographic region and other places of residence. Series 10, no. 146. Washington DC: U.S. Government Printing Office.

National Institutes on Aging, (1982). Toward an independent old age: A national plan for research on aging. National Institutes of Health Publication

O'Brien, J. & Kursch, J. (1987). 'Healthy prescribing' for the elderly; how to minimize adverse drug effects and prevent 'dementia in a bottle.' Postgraduate Medicine, 82(6), 47-57.

Padrick, K. (1986). Methods for assessing compliance. Topics in Clinical Nursing, 7(4), 17-22.

Patsdaughter, C. & Pesznecker, B. (1988). Medication in the elderly home care client. Journal of Gerontological Nursing, 14(10), 30-34.

Pavkov, J. & Stephens, B. (1981). Special considerations for the community-based elderly. Geriatric Nursing, 2, 422-428.

Perlmutter, M. (1983). Learning and memory through adulthood. In M. Riley, B. Hess, and K. Bond (Eds.), Aging in Society: Selected Reviews of Recent Research. Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Petros, T., Zehr, H. & Chabot, R. (1983). Adult age differences in accessing and retrieving information from long-term memory. Journal of Gerontology, 38, 589-592.

Physicians' Desk Reference, 45th edition (1991). Oradell, N.J.: Charles E. Baker, Jr.

PROPAC, Prospective Payment Assessment Commission (1983). Medicare prospective payment and the american health care system: Report to congress. Washington D.C.: U.S. Government Printing Office.

Powers, M. & Wooldridge, P. (1982). Factors influencing knowledge, attitudes, and compliance of hypertensive patients. Research in Nursing and Health, 5, 171-182.

Richardson, J. (1986). Perspectives on compliance with drug regimens among the elderly. Journal of Compliance in Health Care, 1(1), 33-45.

Rogers, M. (1970). An introduction to the theoretical basis of nursing. Philadelphia: F.A. Davis.

Rogers, M. (1986). Science of unitary human beings. In V. Malinski, Ed. Explorations on Martha Rogers' science of unitary human beings. Norwalk, CT: Appleton-Century-Crofts.

Rogers, M. (1990). Nursing science: A science of unitary human beings. Class handout, New York University.

Rosenstock, I. (1974). The health belief model and preventive behavior. Health Education Monographs, 2, 354-386.

Roscoe, J. (1976). Fundamental research statistics for the behavioral sciences, 2nd. ed. New York: Holt, Rinehart and Winston, Inc.

Sands, D. & Holman, E. (1985). Does knowledge enhance patient compliance? Journal of Gerontological Nursing, 11(4), 23-29.

Scherer, J. (1985). Lippincott's nurses' drug manual. Philadelphia: J.B.Lippincott.

Simonson, W. (1984). Medications and the Elderly: A guide for promoting proper use. Rockville, Md: Aspen Systems Corporation.

Somers, A., & Fabian, D. (1981). The geriatric imperative: An introduction to gerontology and clinical geriatrics. New York: Appleton-Century-Crofts.

Sterns, H. & Sanders, R. (1980). Training and education of the elderly. In R. Turner and H. Reese (Eds.), Life-span developmental psychology. New York: Academic Press.

Stroller, E. (1984). Self assessment of health by the elderly. Journal of Health and Social Behavior, 25, 260-269.

Suchman, E., Phillips, S., & Streib, G. (1958). An analysis of the validity of health questionnaires. Social Forces, 36, 223-232.

Subcommittee on Definition and Prevalence of the 1984 Joint National Committee (1985). Hypertension prevalence and the status of awareness, treatment and control in the United States. Hypertension, 7(3), 457-468.

Thornton, J. (1986). Life span learning and education. In D. Peterson, J. Thornton, and J. Birren, (Eds.), Education and aging. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.

Twaddle, A. (1974). The concept of health status. Social Science and Medicine, 8, 29-38.

U.S. Bureau of the Census, (1982). Statistical Abstracts of the United States, 1982-1983, 103 edition. Washington D.C.: U.S. Government Printing Office.

[a]U.S. Department of Health and Human Services, (1987). An experimental comparison of telephone and personal health surveys. NIH Publication No. 87-1380. Hyattsville, Maryland: National Center for Health Statistics.

[b]U.S. Department of Health and Human Services, (1987). Prevalence of diagnosed diabetes, undiagnosed diabetes and impaired glucose tolerance in adults 20-74 years of age in the U.S. 1976-80. NIH Publication Series 11, #237. Hyattsville, Maryland: National Center for Health Statistics.

U.S. Department of Health and Human Services, (1988). The 1988 report of the joint national committee on detection, evaluation, and treatment of high blood pressure. NIH Publication No. 88-1088. Bethesda, Maryland: National Institutes of Health.

Verbrugge, L. (1985). Gender and health: An update on hypotheses and evidence. Journal of Health and Social Behavior, 26, 156-182.

Waldo, D., Levit, K., & Lozenby, H. (1985). National health expenditures. Health Care Financing Review, 8, 20.

Willis, S. (1985). Toward an educational psychology of the older adult learner: Intellectual and cognitive bases. In. J. Birren and K. Schaie (Eds.), Handbook of the psychology of aging. New York: Academic Press.

Zarit, S., Cole, K., & Guider, R. (1981). Memory training strategies and subjective complaints of memory in the aged. The Gerontologist, 21, 158-164.

Appendix A

Self-reported Medication-taking Scale

	Yes	No
1. Do you ever forget to take your medicine?	____	____
2. Are you careless at times about taking your medicine?	____	____
3. When you feel better, do you sometimes stop taking your medicine?	____	____
4. Sometimes if you feel worse when you take the medicine, do you stop taking it?	____	____
5. Do you ever take someone else's prescription medicine?	____	____
6. Do you regularly take a laxative as a preventive measure whether your bowels have moved or not?	____	____
7. Do you take prescriptions from more than one physician or clinic?	____	____

(Scoring: yes=0; no=1;)
(Range: 0 - 7)

Appendix B

Health Self-determinism Index

The following statements are about health and health-related issues. Please circle one number to indicate how much you disagree or agree with each statement.

	Strongly Disagree	Dis-agree	Unde-cided	Agree	Strongly Agree
1. For me, it takes more willpower than I have to do things that I know are good for my health	1	2	3	4	5
2. Most of the time I know what to do for my health without needing to contact a doctor . . .	1	2	3	4	5
3. Only a doctor really knows whether or not I am in good health . . .	1	2	3	4	5
4. Some people think that a doctor should decide about what to do about their health care, but I feel that I should decide.	1	2	3	4	5
5. I worry about my health .	1	2	3	4	5
6. Whatever a doctor suggests about my health is OK for me to do	1	2	3	4	5
7. I know, without someone else telling me, when I am in good health	1	2	3	4	5
8. I more often agree with what doctors and nurses think instead of my own opinion	1	2	3	4	5

	Strongly Disagree	Dis-agree	Unde-cided	Agree	Strongly Agree
9. I feel good about how I take care of my health.	1	2	3	4	5
10. I do things to help my health even though a doctor or nurse has not suggested these things to me . . .	1	2	3	4	5
11. I'm really never sure that I'm doing the right things for my health until I've checked it out with a doctor.	1	2	3	4	5
12. My own ideas about taking care of my health are often better than the ideas which doctors and nurses have	1	2	3	4	5
13. I don't do as well at taking care of my health as other people I know.	1	2	3	4	5
14. I prefer that doctors and nurses help me plan my health practices. .	1	2	3	4	5
15. I know, without a doctor telling me, that I'm doing the right thing for my health	1	2	3	4	5
16. What a doctor thinks about my health is more important than what I think	1	2	3	4	5
17. I know what I'm doing when it comes to taking care of my health . . .	1	2	3	4	5

Appendix C

Self-Rated Health Subindex of the Multilevel Assessment Instrument (Lawton et. al., 1982)

Please answer the following four questions by placing an "X" next to the answer which you think best describes your own health.

1. How would you rate your overall health at the present time?

_____ excellent
_____ good
_____ fair
_____ poor

2. Is your health now better, about the same, or not as good as it was three years ago?

_____ better
_____ same
_____ not as good

3. Do your health problems stand in the way of your doing the things you want to do?

_____ not at all
_____ a little
_____ a great deal

4. Would you say that your health is better, about the same, or not as good as most people your age?

_____ better
_____ same
_____ not as good

Appendix D

Knowledge of Medications Subtest

Knowledge of the name medication:

1. What are the names of the medicines you will be taking after discharge?
(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

INSERT THE NAME OF THE MEDICATION FOR THE NEXT QUESTIONS.

_____

2. How long have you been on this drug? _____

Knowledge of the condition that necessitates the medication

3. Why is this medication necessary?
or
What condition do you have that makes this medicine necessary?

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

Knowledge of the benefits to be derived from medication

4. What is the medicine supposed to do for your?
or
What are the expected effects of this medicine?
How does this medicine relate to your condition?

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

Ability to identify negative consequences of not taking medication

5. What would happen if you did not take this medication?

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

Knowledge of medication dosage

6. How much of this medication are you supposed to take?

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

Knowledge of times to take medication

7. At what time(s) will you take it?

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

Knowledge of how to modify medication-taking

8. Are there any situations where, on your own, you should change the amount and time you take this medicine?
___ Yes (go to #9) ___ No or ___ Don't know (go to #10)

(1 = Corr 2 = Don't know, irrel 3 = Incorr)

9. Tell me about them.

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

10. Are there any situations when you should not take this medicine?
___ Yes (go to #11) ___ No or ___ Don't know (go to #12)

(1 = Corr 2 = Don't know, irrel 3 = Incorr)

11. Tell me about them.

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

Knowledge of special instructions regarding medication

12. Are there special instructions about fluids because you are taking this medicine?
___ Yes (go to #13) ___ No or ___ Don't know (go to #14)

(1 = Corr 2 = Don't know, irrel 3 = Incorr)

13. What are they?

1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

14. Are there activities you should avoid while taking this medicine?
___ Yes (go to #15) ___ No or ___ Don't know (go to #16)

(1 = Corr 2 = Don't know, irrel 3 = Incorr)

15. What are they?

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

16. Are there other medicines you should avoid while taking this medicine?
___ Yes (go to #17) ___ No or ___ Don't know (go to #18)

(1 = Corr 2 = Don't know, irrel 3 = Incorr)

17. What are they?

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

Knowledge of side-effects

18. Are there any side-effects this medicine might have?
___ Yes (go to #19) ___ No or ___ Don't know (go to #23)

(1 = Corr 2 = Don't know, irrel 3 = Incorr)

19. What are they? ___ Don't know (Go to #20)
IF DK, PROBE AS TO WHETHER PATIENT IS SURE THERE ARE SIDE-EFFECTS (#18)

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

20. Are there things you can do that help you cope with or decrease these side effects?
___ Yes (go to #21) ___ No or ___ Don't know (go to #22)

(1 = Corr 2 = Don't know, irrel 3 = Incorr)

21. What are they?

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

22. For which of these side-effects would you contact your doctor or nurse?

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

23. Before you take this medicine, are there things you are supposed to do first?
___ Yes (go to #24) ___ No or ___ Don't know (go to #25)

(1 = Corr 2 = Don't know, irrel 3 = Incorr)

24. Tell me what you need to do.

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

Knowledge of care of medication

25. What kind of care, if any, does the medicine itself require, i.e. where or how to store it?

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

Ability to incorporate medication administration into daily schedule

26. How do you fit taking this medication into your daily routine?

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

Ability to identify factors that interfere with adherence

27. Are there things that would make you not take or not want to take this medication?
___ Yes (go to #28) ___ No or ___ Don't know
(Mark #28 as NA)

28. What ways have you thought of to take care of (cope with) that?

(1 = Corr 2 = Mixed 3 = Don't know, irrel 4 = Incorr)

Appendix E

Demographic Sheet

1. SEX ___ FEMALE ___ MALE

2. AGE _____

3. MARITAL STATUS ___ Single ___ Married ___ Widow
___ Divorced ___ Living with non-family S.O.

4. LIVING ARRANGEMENT ___ Lives alone ___ Lives with family
___ Lives with friend

5. HOW DO YOU VIEW YOUR FINANCIAL SITUATION RIGHT NOW?
_____ More than adequate for my needs

_____ Adequate for my needs

_____ Less than adequate for my needs

6. HOW MANY YEARS OF FORMAL EDUCATION DID YOU COMPLETE?_____

7. WHEN WERE YOU LAST IN THE HOSPITAL? ___ Never
___ 0-1 mo ago ___ 1.1 to 4 mo ago ___ 4.1 to 6 mo ago

___ 6.1 to 1 yr ago ___ 1.1 to 5 yr ago ___ > 5 years ago

8. HOW LONG WERE YOU A PATIENT DURING YOUR LAST HOSPITALIZATION? _____ days

9. DO YOU SMOKE? _____ Yes _____ No

10. DO YOU ROUTINELY DO SELF-BREAST EXAMINATION?
___Yes ___ NO IF YES, HOW OFTEN _____(per year)

11. ETHNICITY ___ Black ___ Hispanic ___ White ___ Asian
___ Other _____

Appendix F

Permission to Use Self-reported Medication-taking Scale

PERMISSION TO USE COPYRIGHTED MATERIAL

Permission is granted to:

Lynn Wieck RN, MSN, doctoral student

Texas Woman's University, Houston Campus

To use the following copyrighted material:

Self-reported Measure of Medication Adherence

Author: Donald E. Morisky

This material will be used for research in connection with dissertation preparation. I understand that full acknowledgment will be made of proper authorship in the written dissertation and any potential publications thereafter.

PERMISSION GRANTED:

Donald E. Morisky — April 10, 1990

Name — Date

Dear Ms. Wieck:

Thank you very much for your request. I'm appreciative that you went through this process. A complete description of the 4 item scale along with its concurrent & predictive validity appears in Medical Care 1986; 24(1).

Best of success in your academic program - Please continue to keep me informed of your progress concerning this scale.

DE Morisky

Appendix G

Permission to Use Health Self-determinism Index

PERMISSION TO USE COPYRIGHTED MATERIAL

Permission is granted to:

Lynn Wieck RN, MSN, doctoral student

Texas Woman's University, Houston Campus

To use the following copyrighted material:

Health Self Determinism Index

Author: Cheryl Cox RN, C. PhD

This material will be used for research in connection with dissertation preparation. I understand that full acknowledgment will be made of proper authorship in the written dissertation and any potential publications thereafter.

PERMISSION TO USE HSDI GRANTED:

Cheryl A. Cox 1/29/90

Cheryl Cox RN, C, PhD Date

Appendix H

Permission to Use Self-Rated Health Sub-index

LYNN WIECK MSN, RN

1527 Abby Aldrich Katy, TX 77449 Pho 713-347-3242

June 12, 1990

M. Powell Lawton, PhD
Director of Research
Philadelphia Geriatric Center
5301 Old York Road
Philadelphia, PA 19141

Dear Dr. Lawton:

I am a doctoral student in the nursing program at Texas Woman's University in Houston. I am writing to ask your permission to use the MAI Self-Rated Health Index for the purpose of a validation study. I was referred to you by Dr. John Fehir who used your instrument in his dissertation in 1987. He was impressed with the efficiency and simplicity of the instrument and has recommended it to me.

I wish to use a visual analogue scale in my dissertation study of variables which influence the self-medication practices of older indigent women. The visual scale has been validated for the measurement of self-esteem, so I am attempting to see if it has validity in measuring health perception.

I will appreciate any consideration you might give to my request. I have enclosed a self-addressed stamped envelop for your convenience.

With Best Regards,

Lynn Wieck

Lynn Wieck MSN, RN
1527 Abby Aldrich
Katy, TX 77449
713-347-3242

You're free to use the MAI in any way you wish. It is not copyrighted.

Good luck in your research

M Powell Lawton

Appendix I

Permission to Use Knowledge of Medications Subtest

PERMISSION TO USE COPYRIGHTED MATERIAL

Permission is granted to:

Lynn Wieck RN, MSN, doctoral student

Texas Woman's University, Houston Campus

To use the following copyrighted material:

Knowledge of Medication Subtest from
The instrument of Health Status Measures

Author: Barbara J. Horn & Mary Ann Swain

This material will be used for research in connection with dissertation preparation. I understand that full acknowledgment will be made of proper authorship in the written dissertation and any potential publications thereafter.

PERMISSION GRANTED:

Mary Ann Swain 5-22-90

Name Date

Appendix J

Specific Medication Fact Sheets

Table J-1

Aldomet

Population:
Hypertension

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (METHYLDOPA, Aldomet)
3. Why necessary?	Must give one of the following: High blood pressure
4. What medication does?	Must give one of the following: Lowers blood pressure; controls blood pressure
5. Consequences of not taking	Must give one of the following: Stroke; high blood pressure;
6. Dosage	Must know number of pills to take 500 mg to 2 G given in two to four doses daily
7. Time taken	Must know either exact time or time in relation to everyday situations; space times equally
8. Time changes	no
9. Amount changes	no
10–11. When not to take	none
12–13. Special food or fluid	no
14–17. Restricted activities, meds	Cold, cough and allergy meds
18–19. Side effects	Must know one of the following: Edema; dizziness; jaundice; n/v; constipation; diarrhea; edema
20–21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	All, especially hepatic symptoms
23–24. Pretaking activities	none
25. Care of med	none
26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-2

Aspirin

Population:
Arthritics

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (SALICYLATE, Aspirin)
3. Why necessary?	Must give one of the following: Fever; arthritis pain; reduce MI risk (men) blood thinner
4. What medication does?	Must give one of the following: Lowers body temperature; relieves pain; reduces inflammation; thins blood
5. Consequences of not taking	Must give one of the following: Fever; pain; blood clots
6. Dosage	Must know number of pills to take
7. Time taken	Must know either exact time or time in relation to everyday situations:
8. Time changes	OK
9. Amount changes	OK
10-11. When not to take	none
12-13. Special food or fluid	Give with full glass of water, milk or food; restrict alcohol
14-17. Restricted activities, meds	OTC drugs containing ASA; antacids; Coumadin
18-19. Side effects	Must know one of the following: Unusual bleeding or bruising; impaired hearing, tinnitus, n/v/d, rapid deep breathing, headache, thirst, drowsiness, tachycardia
20-21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	All
23-24. Pretaking activities	Eat or drink something
25. Care of med	none

(Table J–2, cont.)

26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-3

Capoten

Population:
Hypertension; congestive heart failure

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (CAPTOPRIL, Capoten)
3. Why necessary?	Must give one of the following: high blood pressure; heart failure; weak heart; CHF; fluid in lungs or legs
4. What medication does?	Must give one of the following: lowers blood pressure increased cardiac output helps breathe better gets rid of fluid in lungs
5. Consequences of not taking	Blood pressure goes up headaches, tingling in fingers Fluid overload, edema
6. Dosage	Capoten 25, 50, 100 mg. tablets
7. Time taken	One hour before meals
8-9. Time and amount changes	Amount - no; Time- no
10-11. When not to take	Yes - signif. decrease in B/P
12-13. Special food or fluid	
14-17. Restricted activities,	Avoid cough, cold and allergy meds medications
18-19. Side effects	GU - proteinuria; renal failure; polyuria; urinary frequency;CV - hypotension; tachycardia; chest pain; palpitations; Other - rash, sore throat, fever, edema of hands
20-21. Coping with or decreasing side effects	Dizziness - rise slowly
22. Side effects to seek help for	All
23-24. Pretaking activities	Take blood pressure
25. Care of med	Do not store above 86 F; keep bottles tightly closed; store away from moisture
26. Daily routine adjustment	Notify physician

Table J-4

Catapres

Population:
Hypertension

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (CLONIDINE, Catapres)
3. Why necessary?	Must give one of the following: High blood pressure
4. What medication does?	Must give one of the following: Lowers or controls the blood pressure
5. Consequences of not taking	Must give one of the following: Blood pressure goes up*; stroke
6. Dosage	Must know number of pills or when to change patch
7. Time taken	Must know either exact time or time in relation to everyday situations:
8. Time changes	No
9. Amount changes	No
10-11. When not to take	Do not skip*
12-13. Special food or fluid	no
14-17. Restricted activities, meds	Cough, cold, allergy OTC meds
18-19. Side effects	Must know one of the following: Dry mouth, drowsiness, sedation,
20-21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	Severe hypotension (drowsiness, fatigue)
23-24. Pretaking activities	none
25. Care of med	none
26. Daily routine adjustment	Notify physician; do not stop abruptly
28. Coping with desire not to take med	Should be appropriate and reasonable*

*(Should know that abruptly stopping without tapering off can cause malignant hypertension.)

Table J-5

DiaBeta

Population:
Non-insulin dependent diabetes mellitus

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (GLYBURIDE, DiaBeta)
3. Why necessary?	Must give one of the following: Diabetes, high blood sugar
4. What medication does?	Must give one of the following: lower blood sugar; controls the level of blood sugar (glucose); helps insulin control sugar
5. Consequences of not taking	Must give one of the following: sugar would go up; sugar would be out of control; diabetes would be out of control
6. Dosage	Must know number of pills to take each day 1 tab OD or 2 tabs (1 in am and 1 in pm)
7. Time taken	Must know either exact time or time in relation to everyday situations: before or with breakfast or first main meal
8. Time changes	No
9. Amount changes	No
10-11. When not to take	Prolonged nausea/vomiting, contact physician
12-13. Special food or fluid	Take just before or with meal
14-17. Restricted activities, meds	OTC sweetened cough and cold meds
18-19. Side effects	None (may have transient GI symptoms, mild skin rash, slight fever)
20-21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	All
23-24. Pretaking activities	May measure blood sugar and ketones
25. Care of med	No special precautions, out of reach of children, keep away from moisture
26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-6

Insulin

Population:
Diabetics

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (INSULIN, Regular, Lente, Semilente, NPH; Humalin)
3. Why necessary?	Must give one of the following: Diabetes; high blood sugar
4. What medication does?	Must give one of the following: Lowers or controls blood sugar; supplies insulin which my pancrease does not make
5. Consequences of not taking	Must give one of the following: Blood sugar goes up; coma
6. Dosage	Must know number of units
7. Time taken	Must know either exact time or time in relation to everyday situations: (Reg) 15 to 30 minutes before a meal; (others) before breakfast
8. Time changes	no
9. Amount changes	no
10–11. When not to take	persistent n/v/d; when fasting for lab work
12–13. Special food or fluid	diabetic diet; avoid excessive sugar intake
14–17. Restriced activities, meds	OTC cough syrups; all non-prescription drugs
18–19. Side effects	Must know one of the following: Fatigue; drowsiness; nausea; restlessness and night-sweats; hunger; numbness; slurred speech; staggering gait; fast pulse; abdominal pain; chest tightness
20–21. Coping with side effects	OJ, honey or sugar source for hypoglycemic sx.
22. Side effects to seek help for	All if glucose does not relieve symptoms in 30 min.
23–24. Pretaking activities	Measure blood sugar and ketones; sterile technique; rotate sites

(Table J-6, cont.)

25. Care of med	Room temp, no extremes heat or cold; refrigerator is preferable
26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-7

Isoptin

Population:
Cardiacs, hypertension

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (VERAPAMIL, Isoptin)
3. Why necessary?	Must give one of the following: Chest pain; high blood pressure
4. What medication does?	Must give one of the following: Lowers blood pressure; stops chest pain
5. Consequences of not taking	Must give one of the following: High blood pressure; stroke; heart attack
6. Dosage	Must know number of pills to take
7. Time taken	Must know either exact time or time in relation to everyday situations:
8. Time changes	no!
9. Amount changes	no!
10-11. When not to take	none
12-13. Special food or fluid	no
14-17. Restricted activities, meds	no
18-19. Side effects	Must know one of the following: irregular or slow heartbeat, shortness of breath, swelling
20-21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	All, also chest pain
23-24. Pretaking activities	none
25. Care of med	none
26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-8

Isordil

Population:
Cardiacs

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (ISOSORBIDE, Isordil) (NITROGLYCERIN, Nitro-Bid)
3. Why necessary?	Must give one of the following: Chest pain
4. What medication does?	Must give one of the following: Relieves chest pain
5. Consequences of not taking	Must give one of the following: Chest pain
6. Dosage	Must know number of pills to take
7. Time taken	Must know either exact time or time in relation to everyday situations: Take on empty stomach
8. Time changes	no
9. Amount changes	no
10-11. When not to take	none
12-13. Special food or fluid	Take on empty stomach
14-17. Restricted activities, meds	Avoid alcohol
18-19. Side effects	Must know one of the following: headache, dizziness, flushing, blurred vision,
20-21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	All
23-24. Pretaking activities	Empty stomach
25. Care of med	none
26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-9

Lanoxin

Population:
CHF

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (DIGOXIN, Lanoxin)
3. Why necessary?	Must give one of the following: Heart failure; fluid on heart; fluid in lungs; heart beats too fast
4. What medication does?	Must give one of the following: Strengthens the heart; regulates the heart; gets rid of the fluid around the heart, around the lungs, or in the legs; helps breathe better
5. Consequences of not taking	Must give one of the following: irregular heart beat; edema; heart attack; death
6. Dosage	Must know number of pills to take
7. Time taken	Must know either exact time or time in relation to everyday situations: equally-spaced doses
8. Time changes	no
9. Amount changes	no
10-11. When not to take	If pulse is <60
12-13. Special food or fluid	Eat light potassium foods
14-17. Restricted activities, meds	Antacids, OTC cough, cold, allergy, antidiarrheal, and diet medications
18-19. Side effects	Must know one of the following: loss of appetite, lower abdominal pain, n/v/d, excessive fatigue, blurred vision, mental depression
20-21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	All
23-24. Pretaking activities	none
25. Care of med	none

(Table J-9, cont.)

26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-10

Lasix

Population:
Congestive heart failure

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (FUROSEMIDE, Lasix)
3. Why necessary?	Must give one of the following: Edema; heart failure; high blood pressure; fluid
or water pill	
4. What medication does?	Must give one of the following: Inhibits absorption of sodium; lowers blood pressure; decreases swelling (fluid)
5. Consequences of not taking	Must give one of the following: Blood pressure goes up; fluid goes up; swelling; heart attack; stroke
6. Dosage	Must know number of pills to take 1 to 2 pills od or bid
7. Time taken	Must know either exact time or time in relation to everyday situations:
8. Time changes	OK
9. Amount changes	no
10-11. When not to take	no
12-13. Special food or fluid	Take with food or milk; eat high potassium foods (tea, coffee, bananas, chocolate, bran)
14-17. Restriced activities, meds	ASA
18-19. Side effects	Must know one of the following: Increased urination; electrolyte depletion (confusion, dizziness, cramps)
20-21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	Sudden weight gain; confusion; cramps
23-24. Pretaking activities	Eat first; take in morning if possible

(Table J-10, cont.)

25. Care of med	Keep out of direct sunlight; may discolor; discard discolored medication
26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-11

Minipress

Population:
Hypertension

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (PRAZOSIN, Minipress)
3. Why necessary?	Must give one of the following: High blood pressure
4. What medication does?	Must give one of the following: Lowers the blood pressure
5. Consequences of not taking	Must give one of the following: Blood pressure will go up; stroke
6. Dosage	Must know number of pills to take 6 to 15 mg/day divided doses
7. Time taken	Must know either exact time or time in relation to everyday situations
8. Time changes	no!
9. Amount changes	no!
10-11. When not to take	none!
12-13. Special food or fluid	no
14-17. Restricted activities, meds	cough, cold, allergy, appetite-suppresants
18-19. Side effects	Must know one of the following: Dizziness, drowsiness, headache, n/v/d
20-21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	All
23-24. Pretaking activities	none
25. Care of med	none
26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-12

Moduretic

Population:
Hypertension; CHF

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (AMILORIDE, Moduretic)
3. Why necessary?	Must give one of the following: High blood pressure; congestive heart failure; water pill
4. What medication does?	Must give one of the following: Lowers blood pressure; gets rid of fluid; conserves potassium
5. Consequences of not taking	Must give one of the following: High blood pressure; swelling
6. Dosage	Must know number of pills to take
7. Time taken	Must know either exact time or time in relation to everyday situations: take with or immediately after meals
8. Time changes	if meals change
9. Amount changes	no
10–11. When not to take	Prolonged n/v
12–13. Special food or fluid	Take with food in stomach; avoid potassium-rich foods in large quantities (tea, coffee, bananas, chocolate, bran)
14–17. Restricted activities, meds	Tasks requiring alertness; potassium supplements
18–19. Side effects	Must know one of the following: Frequent urination, GI upset. Irritability, confusion, weakness, muscle cramps may indicate electrolyte imbalance
20–21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	Those indicating hyperkalemia
23–24. Pretaking activities	Food in stomach

(Table J-12, cont.)

25. Care of med	none
26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-13

Motrin

Population:
Arthritics

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (IBUPROFEN, Motrin)
3. Why necessary?	Must give one of the following: Arthritic pain; joint pain; discomfort; fever
4. What medication does?	Must give one of the following: Eases the pain; stops the pain; reduces fever
5. Consequences of not taking	Must give one of the following: Pain; joint swelling; fever
6. Dosage	Must know number of pills to take
7. Time taken	Must know either exact time or time in relation to everyday situations:
8. Time changes	OK
9. Amount changes	OK
10-11. When not to take	GI Upset
12-13. Special food or fluid	Take with food or fluids
14-17. Restricted activities, meds	ASA; sodium bicarbonate
18-19. Side effects	Must know one of the following: N/V/D; blood in stool, tarry stool; abdominal painskin rash, itching, visual disturbances, weight gain, edema, persistent headache
20-21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	All
23-24. Pretaking activities	Eat
25. Care of med	None
26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-14

Oretic

Population:
CHF

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (HYDROCHLOROTHIAZIDE, Oretic)
3. Why necessary?	Must give one of the following: Heart failure, fluid retention, high blood pressure
4. What medication does?	Must give one of the following: Reduces swelling, removes excess water from body, lowers blood pressure
5. Consequences of not taking	Must give one of the following: Heart failure, stroke, high blood pressure, swelling
6. Dosage	Must know number of pills to take
7. Time taken	Must know either exact time or time in relation to everyday situations:
8. Time changes	Daily doses in am;
9. Amount changes	no
10-11. When not to take	none
12-13. Special food or fluid	Give with food or milk; drink lots of fluids
14-17. Restricted activities, meds	none
18-19. Side effects	Must know one of the following: Dry mouth, thirst, weakness, drowsiness, restlessness, cramps, hypotension, Gi disturbances, tachycardia
20-21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	All (may mean electrolyte imbalance) Excessive vomiting
23-24. Pretaking activities	none
25. Care of med	none

(Table J–14, cont.)

26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-15

Premarin

Population:
Hormone replacement

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (ESTROGEN, Premarin)
3. Why necessary?	Must give one of the following: Menopause; hot flashes
4. What medication does?	Must give one of the following: Controls hot flashes; controls menopause symptoms
5. Consequences of not taking	Must give one of the following: Hot flashes; symptoms of menopause
6. Dosage	Must know number of pills to take
7. Time taken	Must know either exact time or time in relation to everyday situations:
8. Time changes	no
9. Amount changes	no
10-11. When not to take	none
12-13. Special food or fluid	no
14-17. Restricted activities, meds	Restrict sunlight exposure
18-19. Side effects	Must know one of the following: Lumps in breast; missed menstrual period; vaginal bleeding; yellowish tinge to skin; severe depression
20-21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	Pain or tenderness in calf or leg; chest pain; sudden dyspnea; sudden severe headache; dizziness; fainting; visual or speech disturbances; weakness or numbness in arm or leg; personality changes
23-24. Pretaking activities	none
25. Care of med	none

(Table J–15, cont.)

26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-16

Procardia

Population:
Angina; mild to moderate hypertension

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (NIFEDIPINE, Procardia)
3. Why necessary?	Must give one of the following: Chest pain; high blood pressure
4. What medication does?	Must give one of the following: Relaxes blood vessels; lowers blood pressure; stops the chest pain
5. Consequences of not taking	Must give one of the following: Blood pressure goes up; pain in chest; stroke; heart attack
6. Dosage	Must know number of pills to take 10 to 20 mg. tid
7. Time taken	Must know either exact time or time in relation to everyday situations:
8. Time changes	no
9. Amount changes	no, consult physician
10–11. When not to take	none
12–13. Special food or fluid	watch salt intake
14–17. Restriced activities, meds	none
18–19. Side effects	Must know one of the following: dizziness or lightheadedness; edema
20–21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	Severe dizziness; swelling of ankles; n/v
23–24. Pretaking activities	none
25. Care of med	none
26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-17

Robaxin

Population:
Musculoskeletal pain

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (METHOCARBAMOL, Robaxin)
3. Why necessary?	Must give one of the following: Bone pain; joint pain; muscle pain
4. What medication does?	Must give one of the following: Relieves pain
5. Consequences of not taking	Must give one of the following: Pain will recur
6. Dosage	Must know number of pills to take
7. Time taken	Must know either exact time or time in relation to everyday situations:
8. Time changes	OK
9. Amount changes	OK
10-11. When not to take	None
12-13. Special food or fluid	Alcohol;
14-17. Restricted activities, meds	CNS depressants;
18-19. Side effects	Must know one of the following: Skin rash; itching; fever; nasal confestion
20-21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	All
23-24. Pretaking activities	None
25. Care of med	None
26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-18

Tagamet

Population:
Ulcer patients

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (CIMETIDINE, Tagamet)
3. Why necessary?	Must give one of the following: Ulcer; stomach problems
4. What medication does?	Must give one of the following: Decreases acid in stomach; lets ulcer heal
5. Consequences of not taking	Must give one of the following: Ulcer might occur; ulcer might get worse; ulcer might start bleeding
6. Dosage	Must know number of pills to take
7. Time taken	Must know either exact time or time in relation to everyday situations:
8. Time changes	no
9. Amount changes	no
10-11. When not to take	none
12-13. Special food or fluid	Take after meals
14-17. Restricted activities, meds	Take between antacid doses;
18-19. Side effects	Must know one of the following: Confusion; diarrhea; muscle pain, dizziness, rash
20-21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	All
23-24. Pretaking activities	Eat first
25. Care of med	none
26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-19

Tylenol

Population:
Pain relief

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (ACETOMINOPHEN, Tylenol)
3. Why necessary?	Must give one of the following: Pain; fever
4. What medication does?	Must give one of the following: Eases pain; controls or stops pain; reduces fever
5. Consequences of not taking	Must give one of the following: Pain; fever
6. Dosage	Must know number of pills to take
7. Time taken	Must know either exact time or time in relation to everyday situations:
8. Time changes	OK
9. Amount changes	OK
10-11. When not to take	None
12-13. Special food or fluid	None
14-17. Restricted activities, meds	None
18-19. Side effects	Must know one of the following: None
20-21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	None
23-24. Pretaking activities	None
25. Care of med	None
26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Table J-20

Valium

Population:
Anxiety; depression, muscle spasm

MEASUREMENT ITEM	EXAMPLE OF CORRECT RESPONSE
1. Name	Must give generic or trade name (DIAZEPAM, Valium) (ALPRAZOLAM, Xanax)
3. Why necessary?	Must give one of the following: Nerves; anxiety; depressed; muscle relaxant
4. What medication does?	Must give one of the following: Calms; reduces anxiety; reduces depression; relaxes muscles;
5. Consequences of not taking	Must give one of the following: increased anxiety, depression; muscle spasm
6. Dosage	Must know number of pills to take
7. Time taken	Must know either exact time or time in relation to everyday situations: equally-spaced doses
8. Time changes	no
9. Amount changes	no
10-11. When not to take	may alter doses if given for sleep or anxiety is controlled
12-13. Special food or fluid	Alcohol; antacids; may be given with food
14-17. Restricted activities, meds	CNS depressants; cigarettes;
18-19. Side effects	Must know one of the following: Drowsiness; fatigue; headache; syncope; n\v\d; epigastric distress; constipation; suicidal thoughts
20-21. Coping with side effects	Must fit side effect
22. Side effects to seek help for	Suicidal thoughts
23-24. Pretaking activities	May eat first
25. Care of med	none
26. Daily routine adjustment	Notify physician
28. Coping with desire not to take med	Should be appropriate and reasonable

Appendix K

Summary Tables of Data Collection Results by Instrument

Table K-1

Frequencies and Percentages of
Self-reported Medication-taking Scale (SMS)

Scores of Responses	Frequency in sample[a]	Percent	Cumulative Percent
2	2	2%	2%
3	6	7%	9%
4	9	10%	19%
5	27	30%	49%
6	23	26%	74%
7	23	26%	100%

Note: The total number of questions was 7.

[a]M=5.467, SD=1.283, n=90

Table K-2

Frequencies and Percentages of
Health Self-determinism Index (HSDI)

Score of responses	Frequency in sample[a]	%	/ Score of / responses	Frequency in sample	%
30	1	1.1%	53	1	1.1%
31	1	1.1%	54	2	2.2%
32	3	3.4%	55	3	3.4%
33	1	1.1%	56	2	2.2%
34	2	2.2%	57	3	3.4%
35	1	1.1%	58	4	4.5%
36	2	2.2%	59	1	1.1%
37	1	1.1%	60	2	2.2%
38	1	1.1%	61	4	4.5%
39	2	2.2%	62	1	1.1%
40	1	1.1%	63	5	5.6%
41	3	3.4%	64	1	1.1%
42	1	1.1%	65	2	2.2%
43	3	3.4%	66	3	3.4%
44	3	3.4%	68	1	1.1%
45	3	3.3%	69	1	1.1%
46	2	2.2%	70	3	3.4%
47	2	2.2%	72	1	1.1%
48	5	5.6%	73	2	2.2%
49	2	2.2%	74	1	1.1%
51	4	4.5%	75	1	1.1%
52	1	1.1%			

Note: The total number of questions was 17.

[a]M=52.2, SD=11.908, n=89

Table K-3

Frequencies and Percentages of
Self-rated Health Subindex (SHS)

Score of responses	Frequency in sample[a]	Percent	Cum. Percent
4	3	3%	3%
5	4	4%	8%
6	12	13%	21%
7	11	12%	33%
8	11	12%	46%
9	13	14%	60%
10	13	14%	74%
11	15	17%	91%
12	7	8%	99%
13	1	1%	100%

Note: The total number of questions was 4.

[a]M=8.64, SD=2.23, n=90

Table K-4

Frequencies and Percentages of
Knowledge of Medication Subscale (KMS)

Score of responses	Frequency in sample[a]	Percent	Cumulative Percent
52	1	1%	1%
61	1	1%	2%
66	1	1%	4%
67	2	2%	6%
68	1	1%	7%
69	2	2%	9%
70	3	3%	12%
71	7	8%	20%
72	4	4%	24%
73	6	7%	31%
74	2	2%	33%
75	6	7%	40%
76	7	8%	48%
77	3	3%	51%
78	7	8%	59%
79	6	7%	66%
80	3	3%	69%
81	9	10%	79%
82	3	3%	82%
83	2	2%	84%
84	8	9%	93%
85	1	1%	94%
86	1	1%	96%
88	1	1%	97%
89	2	2%	99%
91	1	1%	100%

Note: The total number of questions was 26.

[a]M=76.82, SD=6.31, n=90

Appendix L

Measures of Central Tendency Based on Groups

Table L-1

Measures of Central Tendency for Self-medication Scores, Intrinsic Motivation Scores, Health Perception Scores, and Medication Knowledge Scores Based on Age Strata

	Total Sample	Young-Old	Middle-Old	Old-Old
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Self-medication practices (SMS)	5.47 (1.28)	5.42 (1.36)	5.60 (1.07)	5.38 (1.44)
Intrinsic motivation (HSDI)	52.20 (11.91)	51.81 (12.51)	50.83 (11.88)	54.61 (11.11)
Health perception (SHS)	8.64 (2.23)	7.94 (2.33)	9.60 (1.94)	8.50 (2.06)
Medication knowledge (KMS)	76.82 (6.31)	76.11 (5.93)	78.07 (7.17)	76.33 (5.72)
n	90	36	30	24

Table L-2

Measures of Central Tendency for Self-medication Scores, Intrinsic Motivation Scores, Health Perception Scores, and Medication Knowledge Scores Based on Perceived Income Level

	Total Sample	Less than Adequate	Adequate
	Mean (SD)	Mean (SD)	Mean (SD)
Self-medication practices (SMS)	5.47 (1.28)	5.46 (1.35)	5.49 (1.18)
Intrinsic motivation (HSDI)	52.20 (11.91)	52.84 (12.35)	51.12 (11.22)
Health perception (SHS)	8.64 (2.23)	8.22 (2.42)	9.36 (1.66)
Medication knowledge (KMS)	76.82 (6.31)	76.68 (6.12)	77.06 (6.71)
n	90	57	33

Table L-3

Measures of Central Tendency for Self-medication Scores, Intrinsic Motivation Scores, Health Perception Scores, and Medication Knowledge Scores Based on Educational Level

	Total Sample	Elem. 0-6 yr	Jr. High 7-9 yr	High Sch. 10-12 yr	Post-HS >12 yr
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Self-medication practices (SMS)	5.47 (1.28)	5.68 (1.16)	5.36 (1.29)	5.33 (1.26)	6.00 (1.73)
Intrinsic motivation (HSDI)	52.20 (11.91)	50.32 (12.55)	53.14 (14.21)	51.40 (10.42)	60.33 (9.37)
Health perception (SHS)	8.64 (2.23)	8.79 (2.42)	8.32 (1.94)	8.67 (2.31)	9.14 (2.41)
Medication knowledge (KMS)	76.82 (6.31)	75.00 (2.83)	76.00 (5.56)	78.00 (9.32)	76.67 (4.62)
n	90	19	31	33	7

Table L-4

Measures of Central Tendency for Self-medication Scores, Intrinsic Motivation Scores, Health Perception Scores, and Medication Knowledge Scores Based on Marital Status

	Total Sample	Single/ Divorced	Married	Widow
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Self-medication practices (SMS)	5.47 (1.28)	5.00 (1.55)	5.56 (1.30)	5.58 (1.21)
Intrinsic motivation (HSDI)	52.20 (11.91)	56.67 (9.60)	50.82 (13.82)	51.46 (11.29)
Health perception (SHS)	8.64 (2.23)	8.44 (2.45)	9.07 (2.22)	8.47 (2.18)
Medication knowledge (KMS)	76.82 (6.31)	74.63 (9.03)	77.85 (5.39)	76.98 (5.63)
n	90	2	27	47

Table L-5

Measures of Central Tendency for Self-medication Scores, Intrinsic Motivation Scores, Health Perception Scores, and Medication Knowledge Scores Based on Ethnicity

	Total	Black	Hispanic	White	Other
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Self-medication practices (SMS)	5.47 (1.28)	5.54 (1.29)	6.00 (1.00)	5.21 (1.23)	5.00 (2.00)
Intrinsic motivation (HSDI)	52.20 (11.91)	51.41 (11.54)	45.67 (8.62)	53.42 (12.34)	68.00 (11.27)
Health perception (SHS)	8.64 (2.23)	8.97 (2.14)	8.67 (3.22)	7.42 (2.14)	9.33 (2.08)
Medication knowledge (KMS)	76.82 (6.31)	77.03 (6.02)	78.33 (2.52)	76.05 (7.83)	75.67 (6.41)
n	90	65	3	19	3

Appendix M

Statistical Analysis Based on Differences Identified in Demographic Data Collection

Table M-1

Analysis of Variance for Self-Medication, Intrinsic Motivation, Health Perception, and Medication Knowledge for Three Age Groups: Young-Old, Middle-Old, and Old-Old

	SS	df	MS	F	p
Self-medication practices (SMS)					
Between Groups	.8250	2	.4125	.2465	.7821
Within Groups	145.5750	87	1.6733		
Total	146.4000	89			
Intrinsic motivation (HSDI)					
Between Groups	195.0757	2	97.5379	.6829	.5097
Within Groups	12283.2838	86	142.8289		
Total	12478.3596	88			
Health perception (SHS)					
Between Groups	45.5333	2	22.7667	4.9881	.0089*
Within Groups	397.0889	87	4.5642		
Total	442.6222	89			
Medication knowledge (KMS)					
Between Groups	70.4000	2	35.2000	.8818	.4177
Within Groups	3472.7556	87	39.9167		
Total	3543.1556	89			

* Tukey HSD Post-hoc Procedure

	Group 1	Group 3	Group 2
Group 1 (M=7.944)	-	.556	1.656*
Group 3 (M=8.500)		-	1.100
Group 2 (M=9.600)			-

*p=.05

Table M-2

Student's T-test for Differences Between Self-Medication, Intrinsic Motivation, Health Perception, and Medication Knowledge for Two Socioeconomic Groups

		Mean	(SD)	t-value	p
Self-medication practices (SMS)	Grp 1	5.46	(1.35)	1.32	.402
	Grp 2	5.49	(1.17)		
Intrinsic motivation (HSDI)	Grp 1	52.84	(12.35)	1.21	.569
	Grp 2	51.12	(11.22)		
Health perception (SHS)	Grp 1	8.23	(2.42)	2.14	.023*
	Grp 2	9.36	(1.66)		
Medication knowledge (KMS)	Grp 1	76.68	(6.12)	1.20	.541
	Grp 2	77.06	(6.71)		

Note: Group 1 Subjects perceived their financial situation as less than adequate to meet their needs; Group 2 Subjects perceived their financial situation as adequate to meet their needs.

Table M-3

Analysis of Variance for Self-Medication, Intrinsic Motivation, Health Perception, and Medication Knowledge for Four Educational Levels

	SS	df	MS	F	p
Self-medication practices (SMS)					
Between Groups	3.1740	3	1.0580	.6324	.5962
Within Groups	140.5419	84	1.6731		
Total	143.7159	87			
Intrinsic motivation (HSDI)					
Between Groups	482.6950	3	160.8983	1.1175	.3468
Within Groups	11949.9256	83	143.9750		
Total	12432.6207	86			
Health perception (SHS)					
Between Groups	4.2447	3	1.4149	.2822	.8381
Within Groups	421.1985	84	5.0143		
Total	425.4432	87			
Medication knowledge (KMS)					
Between Groups	43.3160	3	14.4387	.3481	.7907
Within Groups	3485.0476	84	41.4887		
Total	3528.3636	87			

Table M-4

Analysis of Variance for Self-Medication, Intrinsic Motivation, Health Perception, and Medication Knowledge for Three Marital Groups: Married, Widowed, Single/Divorced

	SS	df	MS	F	p
Self-medication practices (SMS)					
Between Groups	4.2440	2	2.1220	1.2987	.2781
Within Groups	142.1560	87	1.6340		
Total	146.4000	89			
Intrinsic motivation (HSDI)					
Between Groups	399.4349	2	199.7175	1.4220	.2469
Within Groups	12078.3596	86	140.4526		
Total	12478.3596	88			
Health perception (SHS)					
Between Groups	7.1307	2	3.5654	.7123	.4934
Within Groups	435.4915	87	5.0056		
Total	442.4565	89			
Medication knowledge (KMS)					
Between Groups	107.0194	2	53.5097	1.3548	.2634
Within Groups	3436.1361	87	39.4958		
Total	3543.1556	89			

Table M-5

Analysis of Variance for Self-Medication, Intrinsic Motivation, Health Perception, and Medication Knowledge for Four Ethnic Groups: Black, Hispanic, White, and Other

	SS	df	MS	F	p
Self-medication practices (SMS)					
Between Groups	3.0883	3	1.0294	.6177	.6054
Within Groups	143.3117	86	1.6664		
Total	146.4000	89			
Intrinsic motivation (HSDI)					
Between Groups	945.6238	3	315.2079	2.3232	.0808
Within Groups	12283.2838	85	142.8289		
Total	12478.3596	88			
Health perception (SHS)					
Between Groups	36.7188	3	12.2396	2.5932	.0578*
Within Groups	405.9034	86	4.7198		
Total	442.6222	89			
Medication knowledge (KMS)					
Between Groups	20.7923	3	10.3962	.2042	.7761
Within Groups	3435.5525	86	40.8994		
Total	3456.3448	89			

* Tukey HSD Post-hoc Procedure

	Group 3 (Black)	Group 2 (Hispanic)	Group 1 (White)	Group 4 (Other)
Group 3 (M=7.4211)	-	1.246	1.548*	1.912
Group 2 (M=8.6667)		-	.303	.666
Group 1 (M=8.9692)			-	.364
Group 4 (M=9.3333)				-

*p=.05

Appendix N

Agency Approval

HARRIS COUNTY HOSPITAL DISTRICT

DISTRICT ADMINISTRATION
726 GILLETTE
HOUSTON, TEXAS 77019
652-1200

COMMUNITY HEALTH PROGRAMS
726 GILLETTE
HOUSTON, TEXAS 77019
652-1240

SERVICE CENTER
5656 KELLEY
HOUSTON, TEXAS 77026
636-5650

P.O. BOX 66769 - HOUSTON, TEXAS 77266 (713) 751-8500

BEN TAUB GENERAL HOSPITAL
1504 TAUB LOOP
HOUSTON, TEXAS 77030
739-2000

LYNDON B. JOHNSON GENERAL HOSPITAL
5656 KELLEY
HOUSTON, TEXAS 77026
636-5000

QUENTIN MEASE COMMUNITY HOSPITAL
3601 N. MACGREGOR WAY
HOUSTON, TEXAS 77004
528-1499

MEMORANDUM

February 28, 1991

TO: Lynn Wieck, MSN, RN

FROM: George L. Jordan, Jr., M.D.
Chief of the Medical Staff

Your protocol entitled, Variables which influence older women's self-medication practices, was approved by the Board of Managers at the February meeting.

A report should be submitted at the completion of the project. This may be a simple statement of the findings, or a copy of a manuscript if one is prepared for publication.

GLJ:srh