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MODIFICATION OF THE STUDY: THE RELATIONSHIP BETWEEN PERCEIVED BARRIERS TO TREATMENT AND COMPLIANCE WITH THE HYPERTENSIVE THERAPEUTIC REGIMEN: URBAN AMERICAN PLAINS INDIANS

By

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ABSTRACT

MODIFICATION OF THE STUDY:
THE RELATIONSHIP BETWEEN PERCEIVED BARRIERS
TO TREATMENT AND COMPLIANCE WITH THE
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A cross sectional survey of 24 hypertensive urban American Plains Indians was undertaken to determine the relationship between perceived treatment barriers and stated compliance with therapy. Interviews, questionnaires and medical record audits based on the original instruments by Given and Given: Patient Contributions to Care: Link to Process and Outcome: 1983 were used to collect data from a convenience sample of adults. The Health Belief Model and I. King's theory of goal-attainment were the organizing frameworks for the study.

Univariate and correlational statistics were used to describe the sample and analyze the relationships between perceived barriers to treatment and stated compliance with prescribed diet, exercise and medication. The sample was composed of middle to older-aged adults whose blood pressure was in control. The majority was obese; twenty percent treated their illness with folk or traditional medicines. One subject stated non compliance to the medication regimen. There was a low negative relationship found between perception of barriers to diet and stated compliance with a dietary regimen. Twenty percent of the sample stated an exercise regimen was followed.

No correlation between variables was computed for exercise due to small sample size. A low negative relationship was found between age and compliance with deit. Reliability of the instruments for internal consistency were not reported due to limitations imposed by the sample size.

DEDICATION

The present study is dedicated to Mr. Edward M. LaMere, past Director of the Great Falls Native American Center. The Indian Health Clinic was started and continued with Ed's support and direction. He was committed to improving the health and cultural integrity of Great Falls Indians. His untimely death from cardiovascular disease at age 53 will cause a great loss to his family, his tribe and his community. Ed was an enthusiastic supporter of my research, which helped me to appreciate the unique needs and strengths of the Native American.

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Lastly, I wish to thank my husband, Russ, and daughter, Dana, for their patience and support.

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MODIFICATION OF THE STUDY:

THE RELATIONSHIP BETWEEN PERCEIVED BARRIERS

TO TREATMENT AND COMPLIANCE WITH THE

HYPERTENSIVE THERAPEUTIC REGIMEN:

URBAN AMERICAN PLAINS INDIANS

CHAPTER I

Introduction

Hypertension has been established as a major contributor to morbidity and mortality from heart disease, stroke and renal failure in the white and black American populations. Heart disease ranks second as the leading cause of death among the North American Indian population in 1973-75 (D. H.E.W. Publication). The two leading causes of diseases of the heart among Indians in 1975 were acute myocardial infarction and chronic ischemic heart disease, 43% and 32% respectively (I.H.S. Publication No. 78-12009). In 1981-83 diseases of the heart were the leading cause of death for Native Americans (Rhoades, 1987).

Alterations in rates of these serious illnesses may be achieved by reduction in blood pressure in all races. Adherence to a therapeutic regimen to manage hypertension may alter morbidity and mortality due to heart disease (American Heart Association, 1987).

Harmon's study dealt with the relationship between perceived barriers to treatment and compliance with the

hypertensive therapeutic regimen done in Michigan with caucasians (Harmon, 1983). The present study will focus on the relationship between perceived barriers to treatment and compliance with the hypertensive therapeutic regimen using a culturally-diverse group of North American Plains Indians. Native Americans from the Chippewa-Cree, Gros-Ventres, Blackfeet and Northern Cheyenne tribes who live in an urban environment will be included. (Approximately 51% of all Native American Indians live off the reservation at this time) (LaMere, 1985). The purpose is to explore the influence certain variables exert upon the hypertensive client altering his compliance with a therapeutic regimen. Additionally, data will be utilized from the study done by B. Given and C.W. Given (1982).

The health belief model (Becker, 1985) will provide the framework for exploration of perceived barriers to treatment and the relationship to compliance with the hypertension control regimen. Application of the health belief model to a culturally-diverse group will be explored in the literature review.

Background

Cardiovascular disease was the cause of death for 987,000 persons or 49% of all causes of death in 1983 (Fact Book, 1984). Over 63 million Americans suffer with some form of heart or blood vessel disease (1986 Heart Facts, A.H.A.). Hypertensive disease had the greatest prevalence rate (57,710,000) of all the major cardiovascular diseases (1986 Heart Facts, A.H.A.). The risk for

cardiovascular events: coronary heart disease, stroke and congestive failure, is related to the height of the blood pressure. Based on 1983 projections, the increased risk of morbidity and mortality associated with hypertension necessitates the use of specific therapies and systematic monitoring (Final Report of Subcommittee on Definition and Prevalence, 1984).

A review of medical and nursing literature for the last five years demonstrates a paucity of information available regarding the Native American populations experience with cardiovascular disease (Gillum, 1984; Alfred, 1970; Torrey, 1979, DeStefano, 1979; Sievers, 1977; Hollow, 1978; Rhoades, 1987).

The prevalence of hypertension has been increasing in certain tribal populations. Hollow (1978) reports a prevalence rate of 12.6% for urban Indians seen in Seattle, Washington in 1977. This prevalence rate compares to the general population prevalence rate of 14.7% for whites and 27.6% for blacks in that same year (Hollow, 1978). "Cardiovascular disease is the leading cause of death among Minnesota Indians, both urban and rural" (Gillum, 1984, p. 724). Heart disease and stroke combined account for 26% of the 1,100 deaths in 1968-73 among Indians (age-adjusted rate 448.7/100,000 compared to 455.2 for all races). A survey of residents 18-84 years of age in a Minneapolis Indian-operated public housing project occupied almost exclusively by American Indian families demonstrated a prevalence of systolic BP $\geq$140mm Hg of 15%, and a prevalence of diastolic BP $\geq$90mm Hg of 14% (Gillum, 1984).

"The leading cause of death for Navajo men in 1974 was motor vehicle accident followed by diseases of the heart, respiratory diseases, cirrhosis of the liver, and cerebrovascular diseases. The leading cause of death for the American population in general in the same year was diseases of the heart, followed by malignant neoplasms, cerebrovascular diseases, accidents and respiratory diseases." (Markides, 1983).

DeStefano (1979) studied 640 Navajo men and women in New Mexico and Arizona. He reported prevalence rates of elevated DBP $\geq$90 per decade of life; the ranges included: 27% in 20-29 year old males to 4% in 60 years and older. For females the lowest prevalence was in the 20-29 year olds: 3%; 10% in 30-39 year olds; and, 5% in 60 years and older (DeStefano, 1979).

DeStefano's survey conducted on the Navajo reservation demonstrated that over the last twenty years "diastolic blood pressure and the prevalence of elevated pressures have remained essentially the same for women, but for men there has been a slight rise in both parameters" (p. 340). DeStefano's study further substantiated that hypertension occurred more frequently among off-reservation Indians " with fewer traditional customs than Indians who have remained on the reservation" (p. 343).

A survey of Aleuts on St. Paul Island, Alaska in 1976, yielded a hypertension prevalence rate of 51%. Conversely Alaskan Eskimos have systolic and diastolic blood pressures "below the mean for the United States population as a whole, and

thus much lower than the Aleut blood pressures." (Torrey, 1979, p. 11).

In the studies available, major differences exist among various Indian tribes in regard to cardiovascular disease. Sievers (1977) believes it is meaningless to consider the general "frequency of hypertension among Indians." He states that "no comprehensive prevalence data exists for hypertension among the Native Americans" (p. 607). Additionally, specific data regarding the prevalence of hypertension, heart disease, stroke and renal failure for the North American Plains Indian residing in Great Falls, Montana is not available at this time. An estimate of prevalence of hypertension for Indians seen at the Native American Center was given at 30% by the Director of the Center (LaMere, 1986). The 30% is estimated on clients seen, not necessarily the population of urban Indians.

Alfred (1970) studied the effects of migration from a rural to an urban environment on male Navajos and found a significant rise in blood pressure in those who lived in the urban environment. Few studies are available at this time which deal with migration of the Plains Indians. The effects of urban lifestyle changes on blood pressure of these tribes has not been studied. Specific demographic information will be sought using a modification of Harmon's tool (Harmon, 1983).

No direct effort will be made in this study to relate migration, city-dwelling vs. reservation lifestyle. Prevalence rate for the current population of Plains Indians using the

Native American Center will be estimated. Based on the latest United States Census for Cascade County, prevalence rates will be estimated for whites, blacks and Native Americans residing in this area.

The magnitude of hypertension is well documented for the United States population (Final Report of Subcommittee on Definition and Prevalence, 1984, National Heart, Lung and Blood Institute Fiscal Year 1984, Fact Book). In the report from the Subcommittee on Definition and Prevalence of the Joint National Committee on Detection, Evaluating and Treatment of High Blood Pressure, 1984, the prevalence estimate is 57.7 million hypertensive adults (Final Report of Subcommittee on Definition and Prevalence, 1984).

Personal and public costs in terms of chronic illness, disability and death from hypertension and associated cardiovascular disease and target organ damage has also been well established (National Heart, Lung and Blood Institute, 1984; Framingham, 1978; Levy, 1982; Grundy, 1987). In the expanded survey conducted to update the 1973 study, "The Public and High Blood Pressure", issues of knowledge, control, treatment, awareness and compliance are presented for "other minorities." "Other minorities" include those persons who do not identify themselves racially as white or black. The composition of the group is 68% Hispanic, 20% Asian, and 11% American Indian. It is, therefore, difficult to determine the application of this information to the Plains Indian.

Rhoades (1987) published a survey which described the impact of mortality and morbidity for Indians served by the Indian Health Service (IHS). Cardiovascular disease accounted for 1,362 deaths annually, or 192 deaths per 100,000 population (age-adjusted death rate) (Rhoades, 1987). Rates of potential life lost before age 65 was reported by each IHS service area. The Montana/Wyoming service area reported 12 years of productive life lost before age 65 due to death from cardiovascular disease (Rhoades, 1987).

Summary

Cultural and genetic heritages of the 507 Federally-recognized Indian entities differ widely (Rhoades, 1987). The prevalence rates of hypertension and related cardio-vascular disease varies among tribes. Although the magnitude, as well as, personal and public costs are well known for the general U.S. population, less is known about the Native American minority.

Definition of Hypertension

Since this is an expansion of Harmon's study, the definition of hypertension will be used as outlined by Harmon (1983) and Given and Given (1982): "hypertension not under control is operationalized as a systolic pressure above 140mm Hg and/or a diastolic pressure above 95mm Hg on two occasions at least two months apart" (p. 61).

The World Health Organization in the past identified hypertension as a blood pressure of 160/95 mm Hg. In 1984 the Joint Committee on Detection, Evaluation and Treatment of High

Blood Pressure issued a new classification of blood pressure. Diastolic blood pressure 90 - 104mm Hg is considered mild hypertension and follow up confirmation is necessary within two months (Archives of Internal Medicine, 1984).

Definition of Compliance

The health-illness values, beliefs and patterns of behavior of the Native American with hypertension will have an impact on the long term care of hypertension, which is based on compliance with a therapeutic management regimen. Compliance is defined as "the extent to which clients follow recommendations of health providers" (Harmon, 1983, p. 7).

Linden offered several definitions of compliance related to the client's performance, attitude and habits. The most often used is "standard compliance," which is defined as the client's "performance in relation to general medical expectations which defines optimum performance" (Linden, 1981, p. 87). Levy states that "compliance" is essential to reduce the risk of heart disease, stroke and renal failure (1982).

Non-compliance with the hypertensive therapy is high in the population studied by Webb (1980), and seen as a significant threat to health due to cardiovascular consequences. Neither compliance nor non-compliance behavior in regard to hypertension has been studied in the Native American population.

It is reasonable to assume, based on studies with different cultural groups, that chronic illness, treatment, and or care may be perceived differently (Ludell Snow, 1983). For example, Snow

(1983) found that the blacks she studied believed all illnesses have a cure and one must search to find it. Historically, Blackfeet Indians believed disease was caused by an evil spirit entering into a person's body and it could be cured by a doctor who possessed the power to expel the spirit (Eivers, 1958, p. 184).

Definition of Health Belief Model

The Health Belief Model (H.B.M.) was developed to analyze an individual's beliefs about health conditions or illness, and his decision-making to take action weighed against perceptions of "costs" or barriers of the proposed action (Maiman, 1974). The conceptual model devised by Rosenstock, Hochbaum, Leventhal, and Kegeles defines client perception factors as: perception of illness threat, susceptibility and seriousness, and perceptions of treatment benefits or barriers (Maiman, 1974). Rosenstock (1974) described the potential use of the model as a way of testing what action an individual would undertake to prevent illness, respond to symptoms in specified ways, and/or would follow professional recommendations. Compliance is the extent to which an individual will carry out therapeutic recommendations from health care providers (Linden, 1981). Therefore, the model can be used as a predictor of compliance. Although the "set of beliefs" possessed by an American Indian may differ culturally from other populations, the decision to act or not act in regard to health-related situations will still be dependent upon the "set." Perceptual factors may also be culturally influenced.

Perception of barriers to treatment may vary from other cultural groups since medical services, medications, and educational resources are provided through the Indian Health Service. Compliance may be positively or negatively influenced by the dominant social group, which may disagree with certain elements of the therapeutic regimen, i.e., Indian-folk medicines to control hypertension. Janz (1984) states that the assumption is made that diverse demographic, sociopsychological and structural barriers might affect the individual's perception, and thus indirectly influences health-related behavior.

The component of the health belief model duplicated in this study is perceived barriers to treatment; and perceived barriers effect on compliance behavior. Becker's model offers a multiplicity of possible interrelationships which will not be explored in this study. No research is currently available to support the use of the H.B.M. with a culturally diverse population. Therefore, an additional purpose of this study will be to use the components of the H.B.M., barriers to treatment and compliance with the hypertensive regimen to determine if the findings from this group are similar to groups previously explored.

Research Question

This study is a modification of Harmon's study in which the question studied was: "How do clients' perceptions of barriers to treatment relate to their stated compliance with the hypertension therapeutic regimen?" (Harmon, 1983, p. 9). The

problem is germane for nurses, in that, health-related behavior is based on unique beliefs and perceptions which must be comprehended by the care-giver. Sociocultural factors are inherent in the client's perception. No other study is currently available that deals with the Plains Indians of Montana. Furthermore, cultural factors have not previously been explored as an integral component of client perception.

Harmon further states that the health belief model approach "implies that attempts to influence the behavior of clients must be based on knowledge of client's health beliefs and perceptions" (p. 9). For optimal health outcomes, issues of compliance behavior must be appropriately managed.

Concepts Defined

The definition of concepts are replicated from Harmon (1983), and Given and Given (1982) with the addition of cultural concepts. The variables to be included are:

INDEPENDENT

1. Perceived barriers to treatment;

DEPENDENT

2. Stated compliance with the therapeutic regimen.

Perceived Barriers are those potentially negative aspects of taking health action. Individuals generally perform a cost-benefit analysis before taking action. The potential impediments may be perceived as expensive, dangerous, unpleasant, inconvenient, time-consuming, painful or other (Janz, 1984).

Perception is the individual's world view based on his interface with his environment. Reality awareness of persons, objects and events is influenced by self concept, biological inheritance, past experience, educational background, and socioeconomic (and cultural) group (King, 1981). Each person's encounters with his world are personal and selective based on his unique characteristics: growth and development, context, integrity of his biological organism, concept of spatial-temporal relationships (King, 1981).

King defines perception as a process of organizing, interpreting and transforming information from sense data and memory. It is a process of human transactions with environment. It gives meaning to one's experience by reporting one's image of reality and influences one's behavior (King, 1981).

King does not specifically include cultural variables in her definition. Leininger, however, points out that each cultural group can and does "classify their universe" according to their perceptions (Leininger, 1978).

Given defined "client perceptions of barriers to treatment as the expressed beliefs and attitudes of the client concerning the barriers to undertaking aspects of the therapeutic regimen" (Given, p. 27). Harmon further delineated separate "dimensions of barriers to implementation of therapy" that are taken from the study by Given and Given. The dimension relevant to exercise was added for this study. The separate dimensions are defined as follows:

Beliefs about difficulties with medications refer to the confusion of taking a number of medications, the habit changes required, the concern over medication dependence, the disruption of daily activities to take medications, and the necessity of continued medication.

Specific beliefs about difficulties with changes required for diet include interference with normal activities and personal life, feelings of hunger, dislike of the taste of allowed foods, the time required to follow a diet, and the need for family support.

Specific beliefs about difficulties with changes required for exercise including: interference with normal activities and personal life, feelings of fatigue, dislike of the specific exercises recommended, the time necessary to follow an exercise plan, physical discomfort associated with exercise and the need for supportive others.

Compliance with therapy to control hypertension prevents target organ damage and complications. Therefore, it is necessary to include compliance behavior as a study variable. Given and Given's definition, combined with Harmon's, of "stated compliance with the therapeutic regimen as the extent to which the client carries out the therapeutic recommendations of health care providers concerning prescribed medications, diet, and exercise" will be used for this study (Given and Given, 1982).

Compliance will be accessed during the research interview by questioning whether "medication was taken"; whether "the

prescribed dosage was taken", and the recommended schedule for dosage was followed. Similar questions regarding "stated compliance" with diet and exercise will be asked. The same five point scale as originally used will be employed.

Hypotheses

In this study, the primary hypotheses with subsets will be patterned similar to Harmon's:

Primary hypothesis. 1. There is a relationship between client perception of barriers to treatment and stated compliance with the therapeutic regimen.

Secondary hypotheses:

a. There is a relationship between perception of barriers concerning medications and stated compliance with a medication regimen.

b. There is a relationship between perception of barriers to diet and stated compliance with a diet regimen.

c. There is a relationship between perception of barriers to exercise and stated compliance with an exercise regimen.

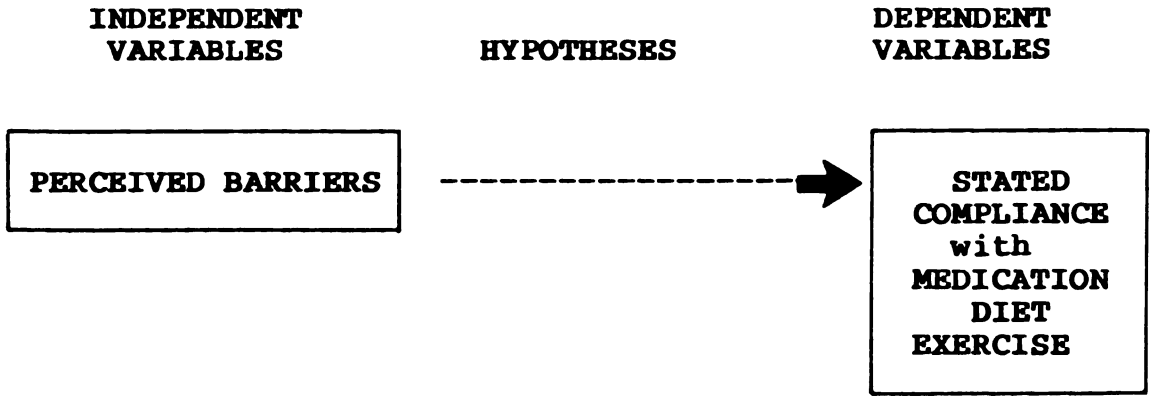

Figure 1. Primary Hypotheses

Extraneous variables examined for possible relationships to stated compliance are: age, sex, income, marital status, blood pressure, percentage overweight, and duration of hypertension.

Sample

The voluntary sample for study will be obtained from accessible hypertensive clients under the care of local physicians and Indian Health Service physicians at the Native American Center in Great Falls, Montana. The sample subjects will parallel the characteristics in Harmon's study with the exception of unique demographic characteristics. The sample will include Plains Indians of several tribes residing in Great Falls city limits; able to speak and comprehend the English language; have an established medical diagnosis of essential hypertension; 18-85 years of age; no evidence of stroke, end-stage renal disease, blindness, cancer, psychiatric problems, pregnancy or lactation, and on a prescribed medication and/or a dietary regimen (Given & Given, p. 61). Subjects screened into the study will have had two elevated blood pressure readings $\geq$140/95 mm Hg within six months prior to the interview. The results of the study will not be generalizable due to convenience sampling.

Assumptions

The following assumptions are replicated from Harmon, with alterations specific to the sample. The seventh assumption was added.

1. Compliance with a therapeutic regimen is a health behavior that will improve present and future health states.

2. Health-related perceptions affect compliance and other health-related behavior in the Indian culture.

3. The concepts of perceived barriers to treatment, and compliance as defined in this study are real and measurable phenomena.

4. Measurement of stated compliance is a reliable method of measuring compliance in Indian hypertensive clients.

5. The testing instruments are sensitive to the concepts of perceived barriers to treatment and stated compliance of the Indians.

6. The sample is unique and represents a portion of North American Plains Indians of the Chippewa-Cree, Gros-Ventres, Blackfeet and Northern Cheyenne tribes residing in an urban environment in the northwest.

7. Sociocultural variables will affect health-related perceptions.

Limitations

1. A convenience sample of available hypertensive adults will be participating in this study, therefore, bias may be introduced by inclusion of only those accessible and willing to participate.

2. The findings of the study will not be generalized to other populations since the cultural group to be studied does not represent all Plains Indians, nor is the group necessarily representative of all North American Indians living in an urban environment.

3. The type of compliance assessed is limited to stated compliance to medication, diet and exercise. Compliance with culturally-specific modalities may interfere with prescribed therapies.

4. The one point in time in the chronic-illness trajectory at which data was collected may not be representative of the usual perceptions and behavior of this sample. Other points in time may be more typical.

5. Different, individual perceptions of the meanings of answer choices may have affected individual responses.

6. The need to express a socially desirable response may have affected the responses of participants.

7. All possible factors affecting compliance are not addressed in this study. Findings may be due, in actuality, to an inter-relatedness of other factors with the ones identified. Examples of factors which are not included are: other aspects of the health belief mode, provider-patient relationships, developmental stages, and social support.

Overview of Chapters

In Chapter I the present study was described as a modification of E. Harmon's (1983) , which used data from the original study by B. Given and C. W. Given (1982). The rationale and purpose of the study has been outlined. The problem statement, definition of terms, hypotheses, assumptions and limitations consistent with replication have been presented.

The specific characteristics of the population sample were described as unique and not included in previous research.

A conceptual framework designed to integrate the health belief model, I. King's theory of nursing, and concepts from Leininger's theory of transcultural nursing will be presented in Chapter II. There will be a brief review of essential hypertension.

In Chapter III the review of literature will focus on updated materials available since Harmon's study in 1983. There will be an exploration of literature relevant to the nature of hypertension in the Native American, as well as, an expansion of nursing theory into the transcultural dimensions. The purpose of the review is to expand on the findings of others concerned with hypertension, compliance and application of the information to a culturally diverse group.

In Chapter IV the methods of research design, instrumentation, procedures and human rights protection, as used in Harmon's study, will be outlined.

A description and presentation of data including analysis will be presented in Chapter V.

The final chapter, VI, will include a summation and discussion to include: research findings, implications, and recommendations.

CHAPTER II

CONCEPTUAL FRAMEWORK

Overview

In Chapter II there will be a discussion of the pathophysiology of hypertension, the H.B.M., nursing theory by King (1981) with supportive concepts from Leininger (1978), and the integration of the concepts for the nursing care of the hypertensive Native American client. Perceived barriers to treatment and compliance behavior as described by the H.B.M. are organized within King's theoretical framework. Social variables are included as influencing perceptions.

The purpose of this study is to examine the relationships of the variables within the framework to determine which significantly influence the hypertensive client's compliance with the therapeutic regimen. The conceptual framework is consistent with Harmon's study with the addition of social and cultural parameters.

Pathophysiology of Hypertension

Blood pressure is a function of cardiac output and peripheral resistance represented by the formula: blood pressure = cardiac output x peripheral resistance (Kochar, 1981; Plunkatt, 1984; Kaplan, 1978; Marcinek, 1980; Somermeyer, 1986). Blood pressure is regulated by several interacting body systems: cardiovascular, renal, neurologic and endocrine (Guyton, 1984; Price, 1982; Kochar, 1981; Kaplan, 1978; Somermeyer, 1986).

Alterations in cardiac output or peripheral resistance will affect systemic arterial blood pressure (Marcinek, 1980).

To further define the formula for blood pressure, cardiac output is the volume of blood ejected into the pulmonic and systemic circulation by each ventricle per minute. The average output is five liters per minute (Price, 1982). Cardiac output is the product of heart rate and stroke volume which is dependent upon cardiac contractility and the intravascular fluid volume (Marcinek, 1980; Somermeyer, 1986). "Heart rate is largely under the control of the autonomic nervous system" (Price, p. 315). "Control of stroke volume is a function of the interaction of three variables: preload, contractivity (of myocardial muscle) and after load" (Price, p. 317). Further refinement of definitions will not be done since this is not the focus of the study.

Peripheral blood flow is dependent upon properties of the vascular bed and the volume and viscosity of circulating blood. Metabolic needs and functional demands of tissues determine the distribution of blood flow. Both extrinsic and intrinsic neural and humoral regulatory mechanisms exert control in the distribution of blood (Price, 1983; Kaplan, 1978).

Kochar (1981) states that cardiac output (heartrate x stroke volume) is the major determinate of the systolic blood pressure. Systolic blood pressure is the measure of peak cardiac ejection; wherein, diastolic blood pressure is the low point at the end of

cardiac relaxation (Somermeyer, 1986). Diastolic blood pressure is primarily determined by resistance in the arteriole (Kochar, 1981).

Long-term arterial pressure control may be achieved by the renal-body fluid control system aided by the renin-angiotensin system, the nervous system and the aldosterone system (Guyton, 1984). The kidneys will retain fluid when arterial pressure falls, and will cause diuresis when arterial pressure rises. Increases in renal artery pressure changes the blood pressure flowing through the afferent arteriole into the glomerulus. Juxtaglomular cells in the walls of the arteriole are activated by stretch receptors near the JG cells and secrete the enzyme renin (Price, 1983). Renin catalyzes the conversion of angiotensinogen from the liver to angiotensin I (Chobanian, 1982). Angiotensin I is converted to angiotensin II by an enzyme found in lung and other capillary beds. Angiotensin II stimulates the production of aldosterone by the adrenal cortex (Chobanian, 1983). Aldosterone promotes renal tubular reabsorption of sodium, volume expansion, and a rise in arterial pressure. Afferent arteriolar pressure rises which shuts down the production of renin (Price, 1983). The renin-angiotensin system also may cause marked total peripheral resistance.

Nervous control of cardiac output and the peripheral vascular system is achieved by sympathetic innervation. Sympathetic stimulation increases heart rate and contractility,

thereby, cardiac output. Further, arterioles will be stimulated by the sympathetic adrenergic fibers to either dialate or constrict to redistribute blood flow to capillary beds according to need (Price, 1983).

In addition, Price (1983) states that "the adrenal medulla secrets catecholeamines, epinephrine and norepinephrine in response to sympathetic activity" (p. 319). "These hormones elicit sympathetic responses in the peripheral vasculature" (p. 319).

The chronic elevation of systolic and/or diastolic blood pressure is classified as hypertension. The two main classifications of hypertension are: primary, idiopathic or essential indicating no known cause; and secondary in which the etiology is known. At this point in time, 90-95% of all persons with hypertension are classified as essential (Chobanian, 1982; Kaplan, 1978; Kochar, 1981; Harrison, 1983; Guyton, 1984). The category of essential hypertension is heterogenous, in that, the population differs in probable mechanisms of action, underlying factors, i.e. aging, and genetic predisposition, i.e. blacks and Native Americans (Somermeyer, 1986). The focus of this study will be essential hypertension in the Native American population seen in a primary care setting.

Multiple changes in the aforementioned physiologic mechanisms that control blood pressure take place in the hypertensive individual. Guyton (1984) describes two

determinants of arterial pressure: 1) The pressure range of the renal output curve and 2) the net rate of fluid intake. Changes in one or both of these determinants will change arterial pressure levels. In the person with essential hypertension, the renal output curve is shifted to a higher level. Urinary output remains normal as long as the arterial pressure remains high. The cause of the shift is unknown; however, changes in the afferent arteriole or the glomerulus of the kidney is suspected. Renal retention of sodium with a concomitant rise in blood volume and an increase in cardiac function are two mechanisms causing pressure elevation (Kaplan, 1978; Chobanian, 1982). High volume and retention of sodium and water may reflect a failure of the kidneys (Kaplan, 1978). The "renal perfusion pressure-sodium excretion control mechanism" may have an inherited defect which may respond to high salt intake over years resulting in hypertension (Kaplan, 1978).

Kaplan (1978) also indicates there may be an imbalance between vasopressor hormones: renin + angiotensin II and vasodepressors: prostaglandins and kalliken. The role of each of these is not completely understood, but is currently being researched (Kaplan, Hollenberg, 1984; Taimarco, 1985; Chobanian, 1982; Tuck 1985).

Cardiac output and peripheral resistance are elevated in some hypertensives. Increased peripheral resistance may be due to an increase in vascular wall thickness or vascular smooth muscle sensitivity (Kaplan, 1978).

Sympathetic nervous activity may be enhanced by emotional stress causing changes in heart rate, cardiac output, stroke volume and decreased plasma volume. Renin release is stimulated by the sympathetic system (Kaplan, 1978; Chobanian, 1982). Kaplan (1978) states this possible sequence of events: "stress ---> a genetically determined autonomic hyperactivity ---> intermittent rise in blood pressure ---> structural changes in resistance vessel ---> permanent tension" (p. 59).

Additional factors which may influence the development of hypertension include increasing age, race, obesity, physical activity, smoking, medications, genetics (Chobanian, 1982; Kochar, 1981; Harrison, 1983). A multifactoral approach to describe essential hypertension is necessary. No single theory adequately represents all the known facts about essential hypertension (Mendlowitz, 1979).

Hypertension may be very damaging by causing an increased workload on the heart and destruction of the arteries by excessive pressure (Guyton, 1984). High pressure in the arteries causes sclerotic changes. Target organs most prone to vascular changes and resultant damage are the heart, brain and kidney (Marcinek, 1980; Guyton, 1984).

Destruction of brain tissue results from cerebral blood vessel changes. Atherosclerosis and microaneurysms cause strokes. The early symptom of occipital early morning headaches progress to fatigue, forgetfulness and irritability consistent

with extending damage (Marcinek, 1980). Hypertension causes 50% of all strokes (Labunetz, 1986).

Renal blood vessels are also affected, which in turn cause destruction of the nephron. Inability of the kidney to concentrate and form urine is evidenced by changes in the B.U.N. and serum creatinine. Protein in urine may also occur in some patients (Marcinek, 1982). "Cardiac disease is the leading cause of death among persons with high blood pressure" (Marcinek, 1982). Coronary atherosclerosis causing reduced perfusion may lead to myocardial infarction, left ventricular strain and congestive heart failure (Marcinek, 1982).

An index to the severity and prognosis for vessel damage in body organs is the retina. Hypertension causes focal spasms and progressive narrowing of the arterioles. Hemorrhages, exudates and papilledema are apparent. Significant positive changes can occur with reduction in blood pressure (Harrison, 1983).

To summarize, multiple factors and body systems are involved in the regulation of blood pressure. No single defect can be implicated in the cause of essential hypertension. The complications of hypertension are related to target organ damage; myocardial infarction and congestive heart failure; strokes, renal failure, blurred vision and blindness.

Treatment for the patient with hypertension includes a program tailored to controlling arterial pressure with a minimum of side effects (Harrison, 1983). General measures employed could include diet, regular exercise, control of risk factors and

medication (Harrison, 1983). Diet, exercise and medication are the usual treatments for hypertension (Chobanian, 1982; Kaplan & Liebeiman, 1987; Harrison, 1983). Medication, diet and exercise are the therapeutic recommendations selected as compliance variables for this study. Non pharmacologic approaches for the control of hypertension are weight control, alcohol restriction and sodium restriction, (A.H.A. Report, 1984).

Medication therapy includes five classes of drugs: diuretics, adrenergic inhibitors, vasodialators, angiotensin converting enzyme (A.C.E.) inhibitors, and calcium channel blockers (Chobanian, 1982; Kaplan, 1978; Harrison, 1983; Somermeyer, 1986). Diuretics are the first step of therapy and provide a normal BP in 50 to 60% of hypertensives (Chobanian, 1982). The second class of drugs are adrenergic inhibitors which may be used initially or added to diuretic therapy. Adrenergic inhibitors may produce sexual dysfunction and exercise intolerance influencing patient compliance (Somermeyer, 1986). Often the drug of choice is an A.C.E. inhibitor which has limited side effects and provides optimal BP control. Calcium channel blockers and vasodialators were grouped together for this study. Both drugs lower peripheral vascular resistance. The fifth category was used for combined drugs, such as tenoretic, which is a diuretic and beta-blocking agent combined . Combined drugs simplify regimens for patients who may be noncompliant, however, flexibility in prescribing and dosage is limited (Becker, 1985).

Dietary management has three aspects: 1) sodium reduction (A.H.A. Report, 1984; Harrison, 1983; Langford, 1981; Reisen, et al., 1978; Stamler, et al., 1978); 2) caloric restriction for weight loss/control; and, 3) restriction in cholesterol and saturated fats which decreases the incidence of athlerosclerotic complications (A.H.A. Guidelines, 1984; Harrison, 1983). "Exercise may be an adjunct prescribed for its usefulness in weight control, cardiovascular disease risk control, and stress reduction, as well as, for normalizing the blood pressure through physical conditioning of the body (Horton, 1981; American Heart Association, 1984; Harmon, 1983; Harrison, 1984).

Psychosocial, as well as, physiological factors would need to be included when individualizing nursing care for the hypertensive client. The health belief model provides a way to assess the psychosocial needs of the hypertensive client. The present study uses the process outlined in the H.B.M. to describe the interaction of psychosocial variables which influence the individual's behavior.

Health Belief Model

The health belief model is a psychosocial model which describes the subjective world of the acting individual in decision-making about health-related concerns (Maiman, Becker, 1974; Rosenstock, 1974) (Figure 2). The foundation of the model is phenomenological (Van Doren) in that "the world of the perceiver determines what he will do and not the physical environment, except as the physical environment comes to be

represented in the mind of the behaving individual" (Rosenstock, p. 329). Furthermore, in the model the orientation is on current or present dynamics acting on the perceiver with past experiences only important insofar as the impact on current behavior. (Rosenstock, 1974).

The variables of the health belief model (H.B.M.) are translated from original work by Kurt Lewin. Lewin's theory postulated that "behavior depends mainly upon two variables: 1) the value placed by an individual on a particular outcome; and 2) the individual's estimate of the likelihood that a given action will result in that outcome" (Maiman, p. 9). In addition, Lewin described individuals as existing in life-space regions composed of positive, negative or neutral valence. Life-space regions of negative valence, of which disease is a part, would exert force upon the individual to move away from that region (Rosenstock, 1974). An individual's daily activities could then be viewed as a process of movement influenced by positive or negative forces.

Using Lewin's theory, the original H.B.M. was developed to include the concepts of susceptibility, severity and barriers to action. In order for an individual to take a health-related action he must feel personally susceptible to the disease; the disease would have at least moderate <u>severity</u> on some component of his life; and taking a specific action would benefit the individual by risk reduction in either acquiring the disease or reducing its severity. Negative aspects of health action, such

as cost, inconvenience, unpleasantness, pain or distress serve as barriers to action. Resolutions of these conflicts are weighed against the possible benefits of action (Rosenstock, 1974).

Susceptibility and severity combined provide the energy or force to act, and the perception of benefits less barriers provide a preferred path of action. An instigating event, stimulus or cue sets the process in motion (Rosenstock, 1974). Cues may be internal, perception of bodily states, or external, interpersonal interaction or impact of media or communication. The intensity of the cue necessary to obtain action varies with the levels of susceptibility and severity (Rosenstock, 1974).

Also included in the original model are modifying variables which served to condition both individual perceptions and the perceived benefits of actions. These include demographic variables such as age, sex, race, ethnicity; sociopsychological: personality, social class, peer and reference group pressure, and structural variables such as knowledge about the disease and prior contact with the disease, complexity and cost and duration of the regimen (Rosenstock, 1974).

The original H.B.M. was formulated to explain preventive health behavior, but has been expanded to be used with illness behavior, and chronic illness behavior (Rosenstock, 1974; Kirscht, 1974; Beck, 1974; Kasl, 1974). Cogent to this study are the studies which have used one or more of the H.B.M. variables to predict patient compliance with the therapeutic regimen for

chronic illness (Becker, et al., 1977; Cummings, et al., 1982; Given & Given, 1982; Greene, et al., 1982; Hershey, et al., 1980; Morisky, et al., 1982; Taylor, 1979; Nagy, 1984; Janz, 1984). Janz (1984) reported that the perceived barriers component of the model "proved to be the most powerful of the H.B.M. dimensions across the various study designs and behaviors" (p. 1).

Motivation was added to the original H.B.M. to describe the necessary condition and action (Maiman, 1974). "Motivation has been operationalized as a state of readiness to take specific action: (1) concern about health matters in general, (2) willingness to seek and accept medical direction, (3) intention to comply, and (4) positive health activities" (Harmon, 1983, p. 28). Cues for action differ for prevention behavior and illness behavior. The presence of symptoms provide motivation for compliance in illness behavior (Kasl, 1974). The motivational goal for preventive behavior is that of maintaining health (Rosenstock, 1974). One motivation for compliance in chronic illness is risk-reduction (Kasl, 1974).

The H.B.M. will be used as a framework to study the hypertensive clients' perceived barriers as they relate to compliance with the therapeutic regimen. Figure 2 is the original H.B.M. for use as a predictor for compliance for hypertensive clients (Becker, 1974; Kasl, 1974).

Individual perceptions of illness include perceived susceptibility and perceived severity of illness, Figure 2. The concept of perceived severity of illness refers to the person's

subjective estimate of how serious the illness may be (Becker, 1974). "The perception of illness severity includes the overall consequences of having hypertension and the extent of interference with social roles (Becker, 1974; Kasl, 1974)" (Harmon, 1983). Nelson, et al., (1978) found that patients who believed their BP would be substantially higher and would more likely have a stroke or heart trouble if treatment was ignored tended to be compliant with therapeutic regimens. Glanz (1980) stated in her review of studies of severity of nutritional problems that greater cooperation was found among patients with more serious disorders. The concept of perceived severity of illness will not be used in the present study.

Three components of the H.B.M. will be used in the present study: modifying factors: demographic and sociopsychological variables; perceived barriers to treatment; and, compliance with a therapeutic regimen (Figure 3).

Rosenstock defines demographic and sociopsychological variables as conditioners of individual perceptions (1974). Age, sex, race and ethnicity are included as demographic variables. Social class, peer and reference group are grouped under sociopsychological variables. Studies done in the early 1960's and 1970's provided by Rosenstock indicated differences in patterns of utilization of medical services (1974). Services were used most by younger or middle-aged, white females, who were relatively better educated and had higher incomes (p. 28). In 1984 Janz reviewed current studies of H.B.M. variables. In the

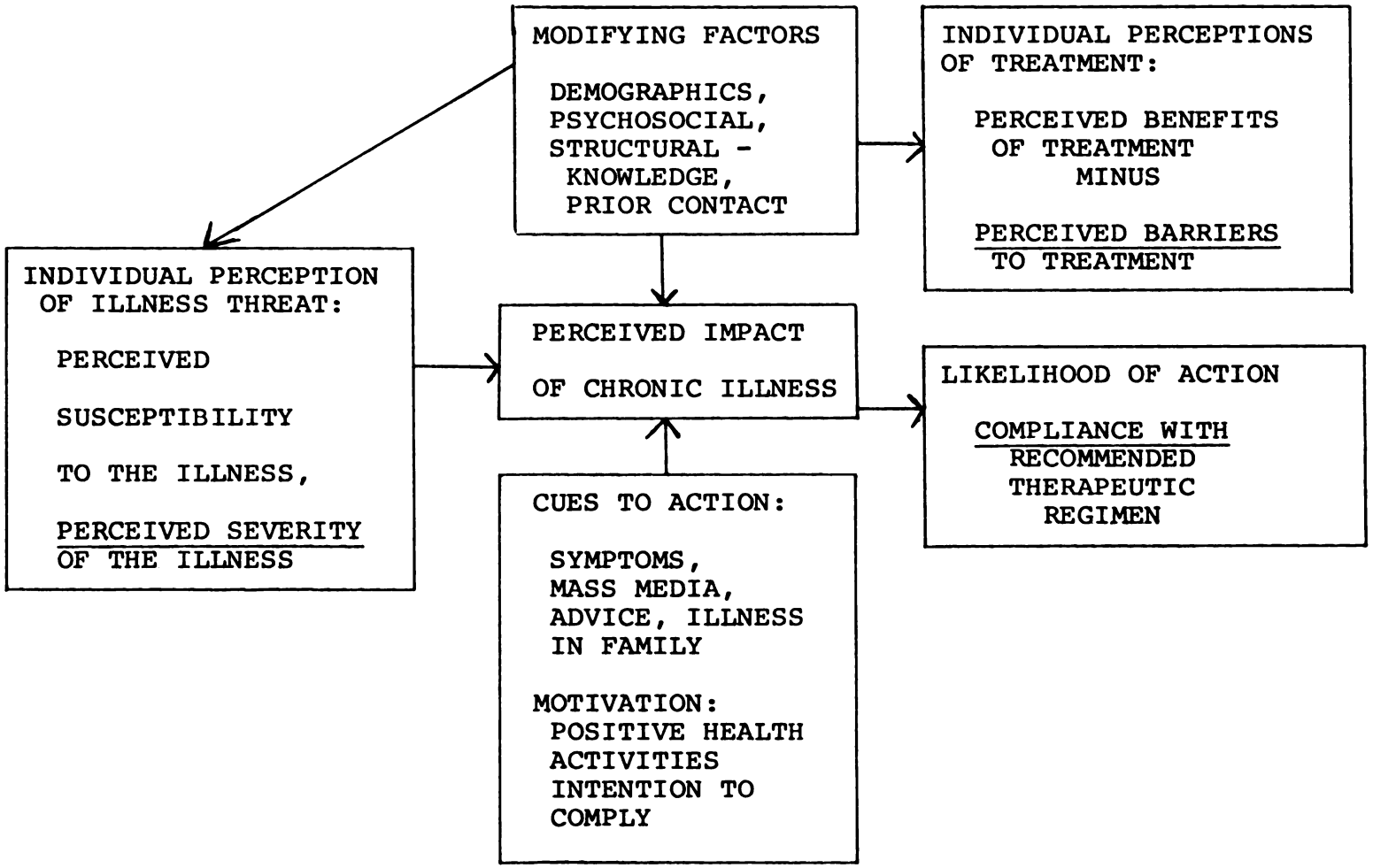

Figure 2. Health Belief Model
adapted from Becker, 1974 and Kasl, 1974

review of the Randall and Wheeler study, Janz indicated the sociodemographic variables had statistically significant "direct" affect on utilization of medical services, and significant "indirect" affect on barriers (Janz, 1984). No specific studies on ethnic variables are available at this time (NARIS, 1987).

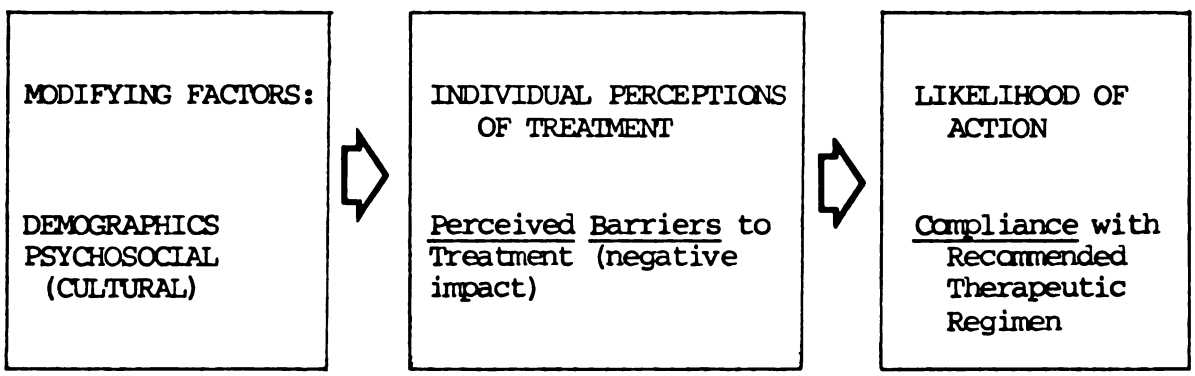

Figure 3. Variables used in Present Study: Modified from Original Model Figure 2 Becker, 1974 and Kasl 1974.

Perceived barriers to treatment, under individual treatment perceptions, were selected for study to address beliefs related to the need for new patterns of behavior required for treatment. Studies have dealt with the concept of barriers to treatment in regard to the tangible, cost, side effects, and accessibility (Brand, et al., 1977; Logan, et al., 1979; Nelson, et al., 1980) and to the intangible and effective barriers to measurements of compliance (Cummings, et al., 1982; Hershey, et al., 1978). In Janz' decade review of the H.B.M., studies of hypertension were grouped under sick-role behaviors. "Cost of following advice"

was identified as a barrier to compliance in the Kirscht and Rosenstock (1977) study. In the Nelson (1980) study "perceived side effects from taking hypertension medications" were significantly associated with medication-taking (p. 25). Taylor (1979) and associates studied Canadian steelworkers' beliefs about drug safety as a barrier to compliance. Sociodemographic variables could have had a major impact on this study, but were not reported (Janz, 1984).

The present study is directed to beliefs about intangible barriers to treatment: difficulties incorporating required changes into life style and problems with diet, medication or exercise. Potential barriers to compliance for Native Americans may be specific ethnic food preferences. Medication as recommended by health care providers may not be in concert with traditional folk medicine beliefs. Daily habits may preclude adherence to a drug regimen, i.e., being away from home when its time to take medications. Exercise may not be perceived as a legitimate component of the therapeutic regimen. Two additional barriers: job/regimen conflicts and doubt concerning treatment efficacy dealt with in Harmon's study will not be included in this research.

In Figure 3 the section "Likelihood of Action: Compliance with recommended therapeutic regimen" is defined as the extent to which the client carries out the therapeutic recommendations of health care providers concerning prescribed medications, diet, behavior modifications and follow-up care (Given and Given, 1983;

Harmon, 1983). As in Harmon's research, "measures of client compliance are based on client report of compliance with medication, diet and exercise recommendations" (p. 30).

Compliance implies either a positive or negative connotation: follow-through, adherence, participation or conversely resistance, drop out, or deviation (Linden, 1981). Adherence and compliance are often used interchangeably with no difference in their intended meaning (Glanz, 1980). Several definitions related to patient and provider performance have been outlined by Linden. Performance is the observed and actual behavior whereas the evaluative judgment using a frame of reference is compliance. One frame of reference may be the patient's. Aspirational compliance is the extent to which the patient or client performs in regard to his own expectations. Standard compliance is the medical frame of reference which defines performance or behavior by present medical knowledge. Standard compliance or the patient performance evaluated in terms of general [therapeutic] medical expectations or standards will be the accepted definition for this study (Linden, 1981). This is the most common and often used definition. When standard compliance cannot be used because of insufficient knowledge for medical standards, therapeutic compliance can be utilized. Therapeutic compliance is defined as the relationship between patient performance and the therapeutic expectations established by the provider (Linden, 1981).

Patient compliance performance will be accepted as stated by the patient. There is no perfect method of measuring compliance, however, Rudd (1979) stated that "patient interview supplies the most useful, practical information" (p. 627). Inui (1981) and Sackett (1979) found that clinician verbal inquiry/patient self-report is highly predictive for non-compliance. Compared with self-report, measurements of blood pressure, urine or blood tests for metabolites of medication or unobtrusive pill counts, were more variable and less accurate (Haynes, 1980; Becker, 1980; Craig, 1985; Caldwell, 1984).

Summary

The chronic, asymptomatic and complex nature of hypertension presents management problems for the client (Braithwaite, 1981). Often clients are not prepared for the part they must play in their own care. Control of hypertension is imperative to decrease the risk of complications: stroke, myocardial infarction and kidney failure. Blood pressure is controlled by pharmacologic and non pharmacologic modalities.

The H.B.M. could be used to identify client behaviors that indicate compliance or non compliance. Specific interventions could be designed to support or alter client behaviors. Further, the nurse needs to take responsibility for educating and assisting the client in active management of a regimen designed to meet the individual's unique lifestyle, priorities and beliefs (Foster and Kousch, 1978).

Facilitation of the nursing process in concert with the H.B.M. may be achieved by use of King's theory of goal attainment. Several concepts and definitions will be used from Leininger to more fully explain King's description of social systems. Social systems will be incorporated as a modifying factor which impinges upon perception. Further, modifying factors impinge upon both the client and the nurse.

Nursing Theory

An overview of King's theory with specific descriptions of personal, interpersonal and social systems will be presented. Leininger's definitions consistent with social structure and culture will be used to expand King's theory of social systems. The H.B.M. will be integrated into the personal system. The impact of the social system upon the personal and interpersonal system, as well as, the H.B.M. will be indicated. King's theory of goal attainment which is an elaboration and refinement of the nursing process will be used to describe the process of care of a hypertensive client.

King's theory is an open-systems approach based on the premise that human beings are open systems interacting with their environment (King, 1981). She stated that there is a "dynamic state of a human being which involves an exchange of energy and information between the person and the environment for regulation and control of stressors" (p. 98).

The focus of nursing is care of the human being. Care is defined by Leininger (1978) as those "assistive, supportive or

facilitative acts toward or for another individual or group with evident or anticipated needs to ameliorate or improve a human condition" (p. 9). Therefore, the domain of nursing includes the "promotion of health, maintenance and restoration of health, care of the sick and injured, and care of the dying" (King, p. 4, 1981).

King (1981) identifies health as the "way individuals deal with the stresses of growth and development while functioning within the cultural pattern in which they were born and to which they attempt to conform" (p. 4). Obtaining a "level of health" that allows the person to lead a "useful, satisfying, productive and happy life" is dependent upon "harmony" and balance in each person's environment (p. 4). Conversely, illness is defined as a "deviation from normal" or "imbalance in a person's biological structure or in his psychological make-up, or a conflict in a person's social relationships" (p. 5).

King identities three interacting dynamic systems: personal, interpersonal and social. Individuals are identified as personal systems; whereas, individuals forming groups are called interpersonal systems. Social systems are created when groups with common interests and goals come together within a community or society (p. 10). (Figure 4).

Personal systems are elaborated by six concepts: perception, self, growth and development, body image, time and space. The concept of perception is critically important to explain in relation to the model (Figure 4). "Perception is each

human being's representation of reality...awareness of persons, objects, and wants" (p. 20). King describes perception as a person's transaction with the environment in which sensory data and memory organize, interpret and transform information (p. 24). Perception is an individual's representation of reality which influences his behavior (p. 24).

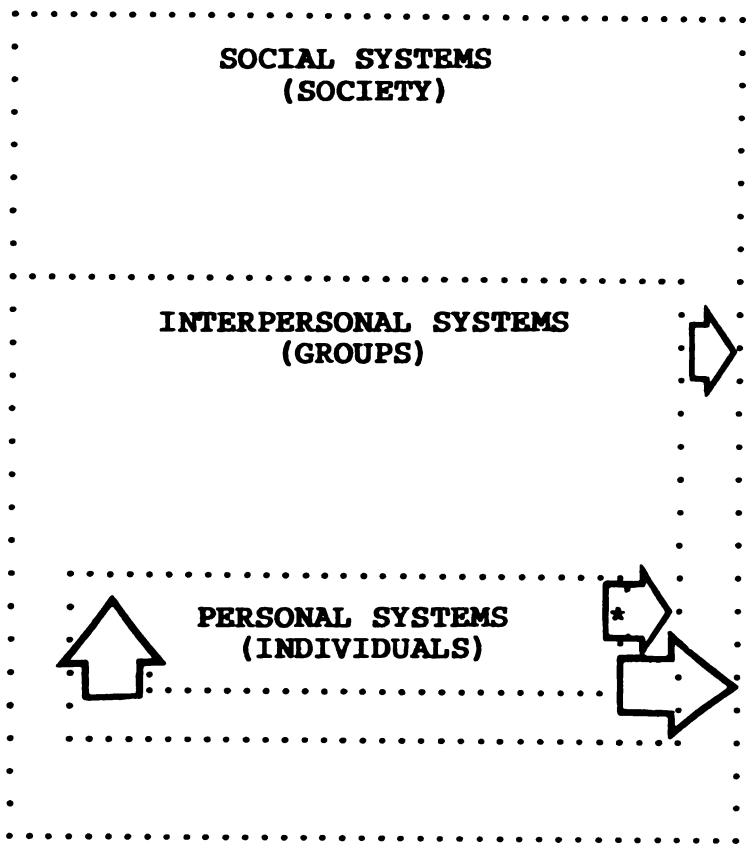

Figure 4. King's conceptual framework for nursing: dynamic interacting systems. * indicates the interface of personal with interpersonal systems, which is specifically outlined in Figure 5. Process of Human Interactions

Two or more persons interacting in a situation comprise the interpersonal system (King, 1981). (Figure 5.) This system is the major focus of the theory and the basis for derivation of the theory of goal attainment (Gonot, 1983). "Perceptions, communication, and transactions are the major concepts presented as fundamental for understanding human interactions as interpersonal systems" (Gonot, p. 232). Communication is the transfer of information between two or more persons and transaction is the transfer of value. Transactions are considered to be goal-directed behaviors (Gonot, 1983).

Social systems are the suprasystem within which the interpersonal systems are experienced (Gonot, 1983). King defines social systems as an "organized boundary system of social roles, behaviors, and practices developed to maintain values and the mechanisms to regulate practices and rules" (King, p. 115). Leininger describes the structure of social systems as "interrelated and interdependent systems which determine how it functions with respect to major elements: political (legal), economic, social (kinship), educational, technical, religious and cultural systems" (Leininger, 1978, p. 61). Commonalities in structure and function are found in all social systems. A few include: values, behavior patterns, prescribed roles, status and authority.

A social system is a configuration of relationships within a culture (King, p. 115). Culture refers to patterns of learned behaviors and values which are shared among members of a

designated group which are usually transmitted to others over time (Leininger, 1978). This pattern of behaving, thinking, believing, valuing and feeling changes in the process of cross-cultural contact (King, 1981).

Critical variables that enter into perception and interaction are social class, role, status, and ethnic values (King, 1981). Furthermore, at the personal level, King emphasizes that behavior is influenced by not only biological inheritance but the social system into which a person is born, grows and develops. "Beliefs, attitudes, values and customs are learned within social systems" (King, 1981, p. 114). Psychosocial variables are identified as modifiers of perception in the H.B.M. Psychosocial variables are identified as modifiers of perception in the H.B.M. Both models are consistent in identifying social factors as influencing perception which impinges upon interaction. King believes that personal systems and social systems influence the quality of care (1981).

The theory of goal attainment is derived from interpersonal systems and offers a systematic approach to problem-solving for both client and nurse. King (1981) described the nature of client-nurse interaction as one which leads to goal achievement. Concepts from the theory are perception, judgment, action, reaction, interaction, and transaction. "These concepts are congruent within the nursing process whereby human interaction between nurse and client take place, goals are set, ways to

achieve them are explored, and interventions are implemented and evaluated" (Harmon, 1983, p. 34).

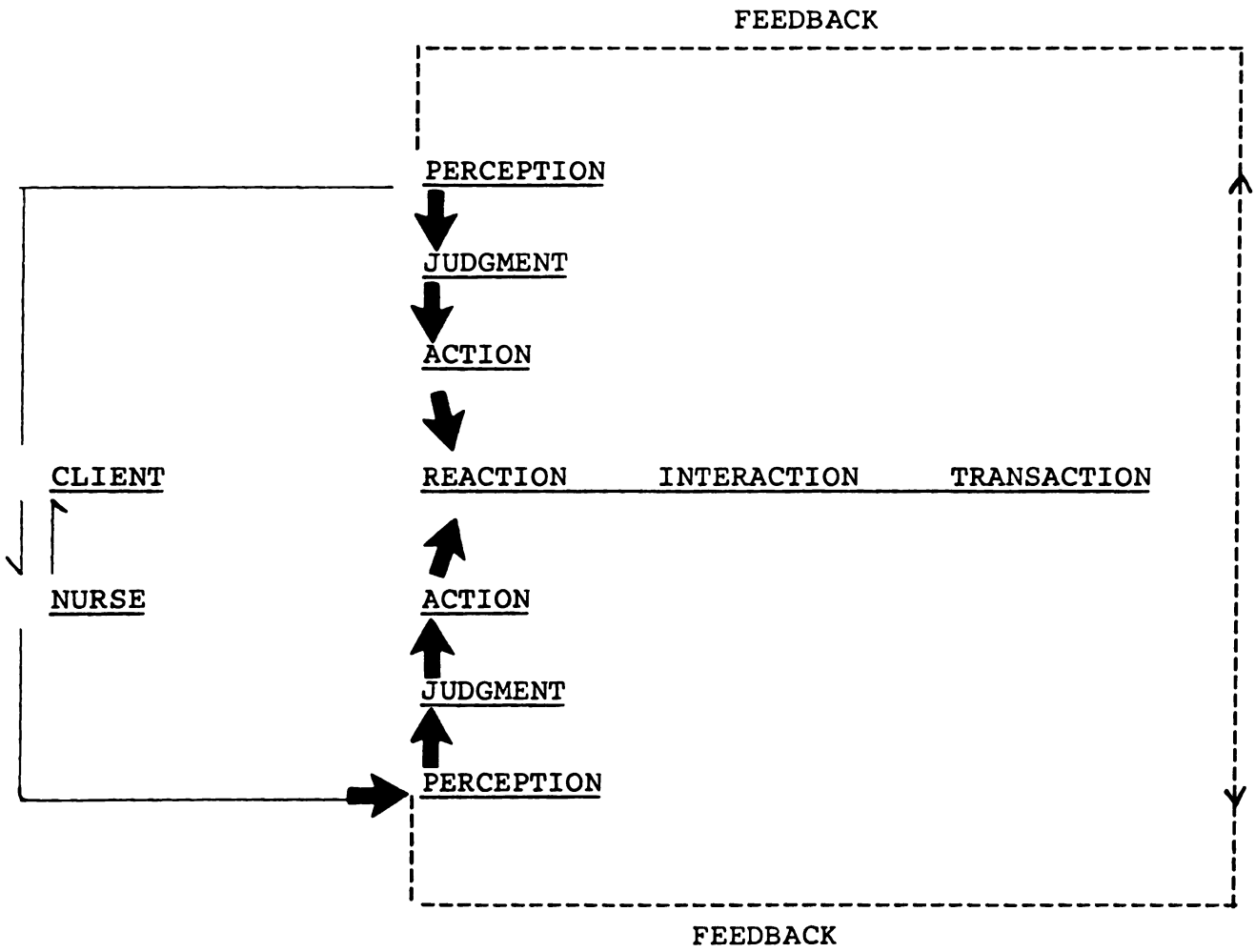

Figure 5. King's Model: Process of Human Interactions

Integration of the H.B.M. with King's Theory for Nursing (Figure 6)

The H.B.M. and King's theory of goal attainment are psychosocial models which attempt to describe behaviors. The H.B.M. has been used extensively to provide evidence for the

importance of health beliefs in understanding patient compliance. King's (Becker, 1985) model is not limited to specific personal beliefs, but describes the individual, the interfaces between and among individuals and further outlines the impact of the larger social system.

The interface between the personal system and interpersonal system has been further refined by King as the process of human interaction. The personal system is defined as the self, body image, and others. The H.B.M. identifies these attributes as modifying factors or demographic and psychosocial variables. These personal attributes influence perception, or the person's interpretation of his reality. Conditioners of the individual's perception are cues. Cues are the stimulus to act.

Judgment according to King (1981) means to "evaluate a situation and the person in it and to make decisions based on conclusions drawn from that evaluation" (p. 88). Essentially the H.B.M. is a decision-making model, wherein the individual determines which actions he will take regarding health. Actions to be taken are weighed in a cost-benefit analysis determining preferred behaviors.

Reaction, interaction, and transaction represent the communication phase of the human interaction process. During the reaction and interaction phases, knowledge and skills are taught and learned, relationships are developed, and socialization occurs. Transaction is the final phase and is defined as goal attainment. An assumption of the H.B.M. is that health is a

highly valued goal for most individuals. Both models are focused on similar goals.

Compliance by the individual could be assumed in attitudinal or behavioral contexts. Measurement of compliance can be done using behavioral parameters. Both the nurse and the client are considered compliant when moving toward mutually determined health-care goals. The closed-loop diagram indicates that the interaction process is continuous and self-correcting. Transactions will impact modifying factors: psychosocial and cultural introducing change to the system. Personal systems are depicted as interaction with interpersonal and social systems in King's conceptual framework, therefore, changes at each level will affect all others.

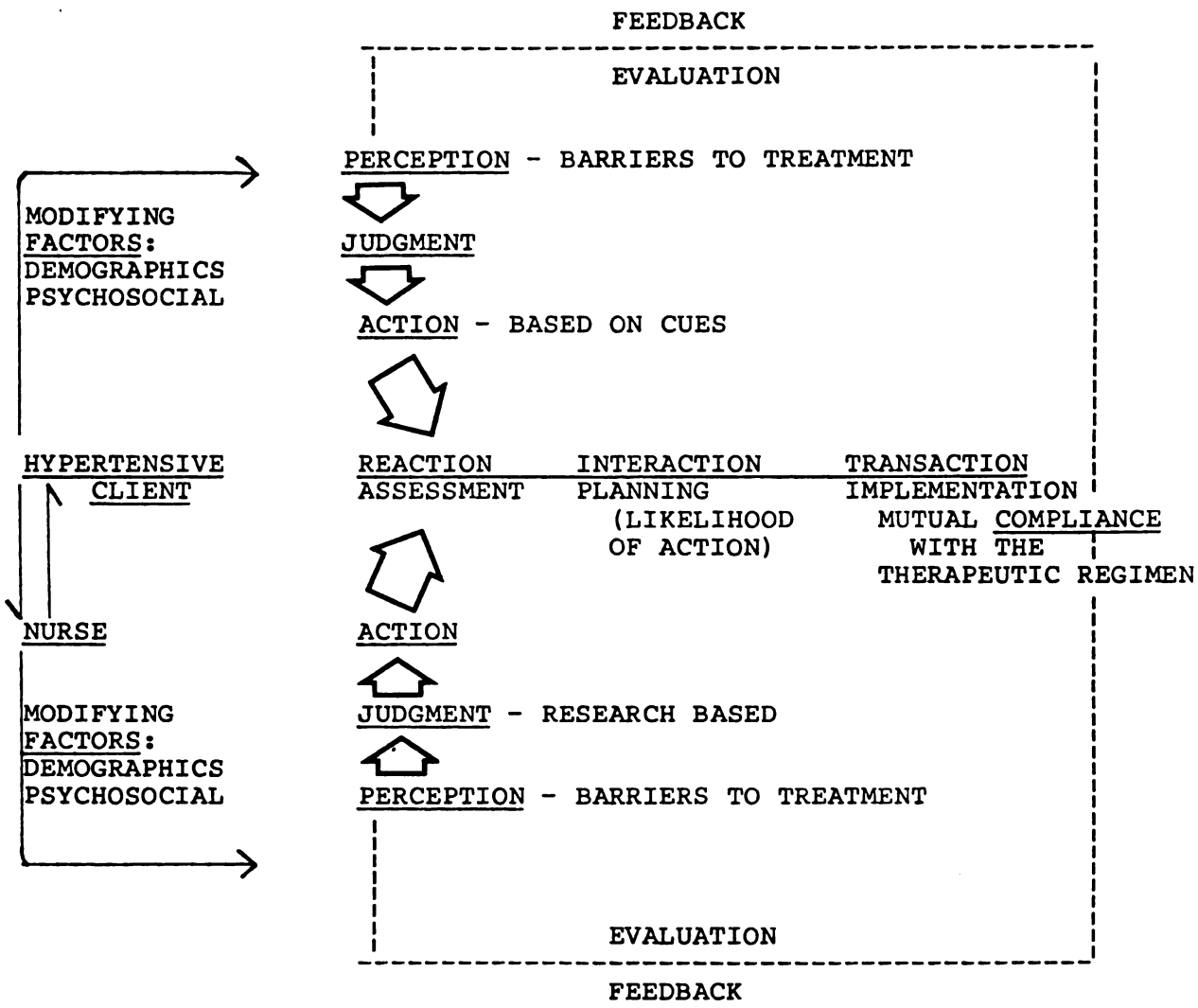

Figure 6. King's Model with H.B.M. Components: Modifying factors, perceived barriers to treatment, and compliance with the therapeutic regimen.

Nursing Process of Care

Compliance with a therapeutic regimen for management of hypertension by a Native American presents several complex issues. Use of the H.B.M., King's theory for nursing with

support from transcultural care concepts affords the nurse a myriad of interrelated variables to assist in problem recognition and resolution.

Both the nurse and client bring to the relationship perceptions based on personal, interpersonal and social interactions. Each is a part of the other's experiential milieu. Both are considered equal partners in working toward goal attainment.

Goal attainment is considered mutual compliance. Compliance for the client means following through with recommendations for lifestyle adjustments, diet, exercise, and medications. Compliance for the nurse is following through with recommendations based on standards of care for hypertension management. Furthermore, compliance also indicates a consistently supportive care role in long-term behavior change.

Assessment includes ascertaining the client's perceptions of illness severity and susceptibility. The following questions might be asked: What kinds of problems have you had recently? Do other members of your family have high blood pressure? Has anyone in your family had a heart attack? a stroke? What will high blood pressure do to you? To assess barriers to therapy several specific questions might be asked: Where do you obtain your medications? How do you feel when you take your medications? Who prepares your food? What kinds of food do you prefer? What foods are you able to eat? Are you able to walk in your neighborhood? How do you feel when you exercise?

Critical to the Native American, the nurse would need to know how the therapeutic regimen has been accepted by family members (Goins, 1985). The nurse also needs to assess which behaviors are most resistant to change versus those the individual is willing to add or delete. It is also helpful to know which family members provide support and will help the individual sustain change.

Planning, negotiating and mutually identifying goals with the family/client are important. Planning interventions will be based on the client's perception of barriers. For example, simplification of the medication regimen and changing drugs to minimize side effects may improve compliance. Integrating ethnic food preferences in meal planning is evidence of mutual goal setting. Adding components of an exercise program to an existing activity may encourage the individual to make minor changes toward fitness. As conditioning improves, aerobic exercise consistent with preference, could be added. Intervention at each phase of learning supports behavior change, thereby, reducing barriers which impact compliance. Transaction occurs when both the client and the nurse have mutual values regarding the maintenance of the hypertension regimen. Evaluation of the progression toward control of hypertension would be on-going. Compliance on the nurse's part is focusing on acceptable standards of blood pressure control with consideration of the demographic variables and possible alleviation of intangible barriers.

Summary

King's theory for nursing was described as the overall framework into which Leininger's cultural concepts and the H.B.M. were integrated. The nursing process is outlined through the interpersonal system, which describes the client's and nurse's interaction. The interaction process proceeds from assessment of the client's perceptions of illness severity, susceptibility and perceptions of barriers to treatment so there is mutual establishment of goals (transaction) and compliance with the therapeutic regimen.

CHAPTER III

REVIEW OF THE LITERATURE

Overview

The review of literature will include relevant studies from Harmon's study, updated materials concerning the H.B.M., the nature of hypertension in the Native American population, and nursing theory as applied to a culturally diverse group. Literature specific to the study variables of perceived barriers and compliance with the therapeutic regimen will be reviewed. Both expert opinion and research findings will be presented to support these concepts. No studies are available demonstrating the use of the H.B.M., or any of its components with Native Americans (Computer Searches: Med-line 1987, Psych-Soc 1986, NARIS, 1987).

The discussion will be divided into the following sections: the nature of hypertension in the Native American, treatment of hypertension: including diet, exercise and medication; the health belief model, including treatment barriers and compliance behavior; and lastly, nursing care of the Native American client with hypertension.

The Nature of Hypertension in the Native American

Several studies available are surveys of Indian communities in large cities. Gillum (1984) conducted a survey of "Little Earth of United Tribes, Inc." which is an Indian-operated public housing project in Minneapolis, Minnesota. Adults 16-24 years of age were included; 242 completed a 30 minute interview and 173

had blood pressure measurements taken in their homes. Several other parameters were included: blood drawn for serum lipids and glucose; height, weight and triceps skinfold measures; and a brief medical history was done. The prevalence rate for SBP $\geq$ 140 mm Hg was 15%, DBP $\geq$ 90 mm Hg was 14%. Among those residents reporting previously diagnosed hypertension 33% had DBP $\geq$ 90 mm Hg and 26% had SBP $\geq$ 140 mm Hg. Only ten persons reported taking medication for hypertension. Blood pressures tended to increase with age and were slightly higher among men.

Of the 242 persons interviewed, 84% added salt to their food; 43% added salt before tasting the food. Weight reduction diets had been tried by 47%; only 9% had ever enrolled in a formal weight reduction program. All age groups and both sexes demonstrated greater weight than the white population of similar age. In regard to activity, 33% engaged in strenuous exercise in leisure and 21% at work. The assumption was made by the author that "Indian adults probably have low physical activity levels--unemployment is high and participation in recreational sports is low" (Gillum, 1984, p. 773).

Cigarette smoking was found to be more prevalent among Indians than whites (Twin Cities' whites) in both men and women. Of the persons interviewed 60% responded to questions regarding alcohol consumption; 48% claimed to be non-drinkers; the remainder consumed alcohol at least two days per week (neither the amount of alcohol consumed nor the number of cigarettes

smoked was included). The author commented that heavy alcohol usage was a major problem in this community (Gillum, 1984).

Several questions in the survey were included to ascertain the knowledge of cardiovascular symptoms and risk factors. Interestingly, of those diagnosed with hypertension 46% said medicines could cure high blood pressure; 93% of those with no history of hypertension felt medicines could cure hypertension. Both groups listed over weight, smoking and stress as major factors causing heart attack and stroke (64% of hypertensives, 66% of non-hypertensives listed stress as the most important cause of heart attack and stroke) (Gillum, 1984).

Gillum concluded by stating that the risk factors for cardiovascular disease are undesirably high among Minneapolis Indians. He recommended that "various cardiovascular risk factors and chronic disease control programs, as well as, mortality, morbidity, and risk factor surveillance are urgently needed among urban American Indians" (Gillum, p. 775).

In 1980, Gillum et al., surveyed children in Minneapolis schools in grades 1, 2 and 3, comparing whites, blacks and Native Americans. He measured blood pressures, height, weight, pulse rates and triceps skinfold thickness. Native American children were found to have had consistently higher systolic blood pressures, but lower diastolic blood pressures. The Native American children had lower pulse rates, greater pulse pressures, similar height, and greater weight than either black or white

children. Gillum concluded that the higher SBP could be explained statistically "almost entirely by greater ponderosity" (p. 748).

Obesity has been a consistent finding in studies of Native American populations (Gillum, 1984; DeStefano, 1979; DePrez, 1985; Torrey, 1979). Borhani (1981) reported that the prevalence of hypertension is positively associated with excess body weight. In the discussion of risk factors, Borhani also pointed out that the probability of a major complication of hypertension depended upon age, sex, race, level of serum cholesterol, cigarette smoking habit, and an abnormal electrocardiogram (Borhani, 1981).

The Joint National Committee (1984) reviewed recommendations for young hypertensive clients stating that weight control and reduction of dietary sodium "are strongly encouraged in children with marginal or higher BP elevations and a high risk for development of hypertension, e.g., children with hypertensive parents (1984, p. 1055). In the Framingham study, Kannel pointed out that families experiencing a cluster of cardiovascular diseases share inherited, as well as, environment factors. "Spouses tended to share obesity, hypercholesterolemia and blood pressure as well as the cigarette habit" (1978, p. 101). Offspring of the original cohort studied in Framingham had higher levels of some risk factors, but tended to have lower blood pressure and cholesterol levels which had been influenced by environment (Kannel, 1978).

One additional study done in Minneapolis compared anthropometric measurements of children between those living on a reservation and those within the city. Compared to United States standards, as well as to a reservation sample, the urban sample was found to be slightly shorter and consistently heavier. Johnston, et al., (1978) stated that his study supported the existing data that environmental factors attribute to physiologic changes. Higher caloric intakes result in a much higher incidence of obesity with its concomitant problems (Johnston, 1978).

Hollow (1978) reported a prevalence of 12.65% of hypertension ($\geq$ 140/90) in urban Indians seen at the Seattle Indian Health Board. He noted that females have a greater prevalence rate in younger ages when compared to white and black females. Females also have almost twice the prevalence of Indian males. The rate for both peaks at middle age and declines, unlike the black and white populations.

In Hollow's study, charts of patients with confirmed hypertension were audited for risk factors and complications. Those cardiovascular-related risks and complications included: diabetes 21%, anxiety-psychological problems 45%, obesity 58%, smoking history 37%, alcoholism 22%, hyperlipidemia 6%, CHD 20%, MI's 8%, CVA's 4.9%, TIA 2.6%, CHF 11%, ventricular hypertrophy 11%, and retinopathy 7%.

Hollow also reported changes in BP control from 1977 to 1979; for confirmed hypertensives, 56% were in control < 90 DBP

in 1977; 63.7% were in control in 1979. He made no reference to therapies used for maintaining control Further, he indicated that a computer service was used to "track" those patients with elevated BP and those with confirmed hypertension. It is unclear from his study what "tracking" implies.

Three studies of Southwestern Indians were published in the 1970's. Alfred (1970) conducted BP surveys of male Navajos before and after migration to "investigate the effects of migration on a particular characteristic, blood pressure" (1970, p. 190). The assumption was made by Alfred that "general tensions" exist when people leave a rural agrarian culture for an "urban industrial culture dominated by 'foreigners'" (p. 190). This entire study is fraught with inconsistencies. Blood pressures were gathered on two groups: a reservation sample of "healthy" males and the second group who applied for and received relocation (the migrants). The two groups were not randomly selected nor were they matched for any specific characteristics. Blood pressure readings were taken from B.I.A. (Bureau of Indian Affairs) charts for pre-migration physicals and post migration readings were taken by six trained observers. Blood pressure readings were compared before and after migration and with the reservation group. Since the reservation group tended to be older, their readings were consistently higher. The migrants "after" blood pressure readings were significantly higher. No correlation was found regarding length of urban residence compared with blood pressure elevation. In the

discussion Alfred reviewed possible causes: dietary changes in fat and sodium intake, calcium carbonate in drinking water, altitude changes, diurnal variations and environmental changes. No where else are these factors entered into the study variables. Factors Alfred related to the act of migration included cultural rest patterns, urban pollution, and separation from kin. His conclusion was that "urban migration is a possible cause of stress for Navajos which is independent of at least some of the differences in the physical environment" (p. 200).

Considering Alfred's sampling procedure, testing of only BP at various times with a variety of observers, no relationships could be measured. Another implicit assumption is that elevations in blood pressure are caused by stress. Evidence has been gathered since 1970 which implicates a myriad of factors involved within the pathophysiology of hypertension, none of which is stress, per se (Harrison, 1984; Kochar, 1981; Kaplan, 1978: Chobanian, 1983).

Prevalence data from DeStefano's study was reviewed in Chapter I in order to substantiate hypertension as a problem in the Native American population. The survey was conducted on the Navajo reservation at several sites wherein 640 Navajos over 19 years of age were screened. Contrary to the findings in Hollow's study in Seattle, blood pressure elevations are more prevalent in Navajo men than women (24% and 11% respectively).

Comparisons were made between height, weight and blood pressure. Consistent with other surveys, there was a significant

association between blood pressure elevation and body weight (Gillum, 1984; Gillum, 1980; Johnston, 1978; Torrey, 1979). One unique finding was that no subjects were more than 20% above the optional weight for height (DeStefano, 1979).

Alcohol use was also found to be associated with high blood pressure. However, cigarette smoking among Navajos is minimal: 13% smoke; 94% of the smokers smoke less than one pack per day (DeStefano, 1979).

DeStefano used an acculturation index based on five categories: residence, language spoken at home, employment, alcohol use and smoking, to determine the similarity of lifestyle between the Navajo and "modern, white Americans" (DeStefano, p. 345). The index calculated for each subject found that males were more acculturated than females. Further, no consistent pattern of change in blood pressure was found with the acculturated group, except that SBP in women decreases with increasing acculturation. One could argue that the acculturation index categories are not indicators of modern white Americans' however, Alfred's (1970) study of migrant Navajo Indians used no tool to determine cross cultural interface and the effects on blood pressure changes. There are no studies available regarding Native Americans in which reliable and valid tools are described to measure the impact of acculturation on specific physiologic parameters. In the present study there will be a survey of urban Native Americans, but only length of residence within the urban setting will be reported. No attempt will be made to correlate

exposure to the majority population group and the study variables.

Strotz (1973) reported prevalence and associated target organ disease for hypertensives in the Papago tribe studied from 1969 to 1972. In a population of 11,411, 19.75% were hypertensive, using $\geq$ 95 DBP or $\geq$ 160 SBP as the definition of hypertension. According to Borhani (1981), the "actual" prevalence of hypertension depends upon the arbitrary cut-off point used for the purpose of screening. In the Hypertension Detection and Follow-up Program (HDFP) conducted in 1973-74 in several communities across the United States, the prevalence of hypertension was found to be 25.3% when the cut-off point was DBP $\geq$ 90 mm Hg; it was 14.5% with DBP $\geq$ 95 mm Hg; and only 5.0% when the cut-off point was $\geq$ 110 mm Hg (Borhani, 1981). Therefore, the prevalence of hypertension in Papago Indians would be higher if the cut-off point for DBP was lowered to $\geq$ 90 mm Hg, thereby approximating the national level reported in 1973-74. According to Strotz (1973) twenty years earlier the prevalence rate was approximately 2%, a dramatic change in two decades.

Changes in the dietary and cultural habits were implicated as factors which have increased the rate of hypertension. Dietary studies during the same period show the diet to be primarily cooked carbohydrates, 20% of the diet composed of animal protein, and liberal use of salt and lard in cooking (Strotz, 1973).

Physical labor decreased when farming was abandoned. Food was made available through governmental sources. Strotz described the changes as parallel to those in West Africa where rapid change in lifestyle has occurred (1973).

Prevalence of associated diseases was also presented by Strotz (1973). Significant increases were noted for congestive heart failure, cerebrovascular and renal disease. Prevalence was markedly increased when hypertension and diabetes were rated together.

In a recent study done in Maine (DePrez, 1985), Penobscot Indians were noted to have a prevalence rate of 26% compared to 24% for the statewide population (hypertension defined as DBP $\geq$ 90 mm Hg or on hypertensive medication). Body weight was not a significant factor in this tribe. Further, no description of daily habits was included.

Awareness of disease was studied and found to be lower in the Penobscot Indians than in the statewide sample. The low awareness rate was ascribed to "lack of detection opportunities in medical and community settings" (DePrez, 1985, p. 654). The control rate (DBP $\leq$ 90 mm Hg) for hypertension was 56% compared to 80% in the statewide sample. DePrez speculated that "poor physician relationships can be a factor in poor control among some treated Indian hypertensives and are a critical factor in the maintenance of long-term chronic disease therapy" (DePrez, 1985, p. 654).

One of the comments with import to the study of compliance behavior was made by DePrez with unsubstantiated references or study data: "ethnic differences can compromise the communication between the physician and Indian patients and ultimately affect patient compliance with medical regimens" (DePrez, p. 654).

A geographically remote group of Indians, Aleuts, were surveyed in 1966 and 1976. These island dwellers had the highest rate of hypertension in the entire United States, 61% in 1966 ($\geq$ 140/90) and 51% in 1976 (Torrey, et al., 1979). There was a demonstrated correlation between hypertension and obesity in the 1966 study. Salt intake was not quantified, but Torrey estimated the intake to be high due to consumption of food preserved in brine. Hypertension was found to be present in both children and parents of the same family indicating a possible association with genetic factors.

A unique finding in this survey was that the Aleuts have an exceedingly high level of cadmium intake since seal liver is a dietary staple. A possible causal relationship between cadmium and hypertension has been confirmed in animal studies (Torrey, 1979).

To summarize, several surveys of Native Americans have been done since 1970. The review discussed Native American groups from the Southwest, Midwest, Northeast, Northwest and Alaskan islands of the United States. All of the studies are descriptive surveys. Prevalence rates range from 12.6% in urban Seattle

Native Americans to 51% in Aleuts of Alaska. Various factors have been described as contributors for the development of hypertension in Native Americans: genetic predisposition, diet high in sodium, obesity, substance abuse (alcohol and tobacco), reduced physical activity and acculturation.

Only one author, DePrez, mentioned the negative impact health care providers may have on compliance behavior. No studies are available at this time which deal with health beliefs and compliance behavior in Native Americans. Therefore, the health beliefs held by Native Americans need to be explored. The present research seeks to elucidate cultural beliefs which may have an impact positively or negatively in following therapeutic recommendations. Non compliance by Native Americans is assumed by some providers, but valid evidence is lacking (LaMere, 1986).

Treatment of Hypertension

Nonpharmacologic and pharmacologic therapies are used to treat hypertension. Nonpharmacologic approaches are generally used first and as an adjunct to drug therapy (Chobanian, 1982; Joint National Committee, 1984; Kaplan, 1978). Dietary management, exercise and habit modification are consider nonpharmacologic treatments (Harrison, 1983; Chobanian, 1982; Joint National Committee, 1984).

Dietary management has three agents: weight reduction by calorie restriction, moderate sodium restriction, and reduction in saturated fats (Harrison, 1983; Joint National Committee, 1984). Weight reduction results in a substantial decrease in BP

even if ideal body weight is not achieved (Chobanian, 1982; Joint National Committee, 1984). Chobanian (1982) equates a 25 pound weight loss in an obese hypertensive to a 10 mm HG drop in systolic blood pressure. Riesin (1978) had also found a significant correlation between reduction in blood pressure and weight loss. The Joint National Committee (1984) recommends that weight reduction be an integral part of therapy for all obese persons (> 115% of ideal weight) with hypertension.

The Joint National Committee (1984) has also recommended that alcohol consumption should be moderate. Alcohol consumption is not a study variable but may be considered a confounder, in that, heavy consumption (> 56.8 g/day or > 2 oz. of ethanol/day) may elevate arterial blood pressure (Joint National Committee, 1984). Some Native American populations are heavy consumers of alcohol; however, the urban group in Great Falls has not been studied for alcohol consumption.

In the review of literature regarding sodium restriction, there was evidence that the ingestion of 2 gm or less of sodium daily may reduce or prevent hypertension (Fries, 1976; Joint National Committee, 1984). The recommendation from the Joint Committee (1984) is that all those persons with essential hypertension receive proper counseling for moderate restriction of sodium. Information regarding food labeling, as well as, blood pressure monitoring should be done.

Luft (1984) conducted a randomized cross-over trial of 32 patients to study the usefulness of a qualitative chloride

titrator strip in facilitating compliance with a reduced sodium intake diet. Most of the subjects (N=28) were hypertensive; however, patients with other illnesses were also included. During the initial three weeks, the subjects received instruction in use of the titrator strip and dietary instructions regarding a 85 mEg/day or less sodium intake. Practice sessions and access to the dietitian were provided. An eight week study period began following instruction, which included daily early morning urine testing with the titrator strip; biweekly visits with a research nurse; and blood pressure measurements. A lab technician also performed independent chloride titrator strip determinations to permit comparison with the measurements by the subjects. There was significant correlation between the technician and all but three subjects. During the course of the study the subjects had significantly lower values while using the titrator. Nine subjects reduced their sodium excretion to 28 mEq (95% confidence interval for those with < 85 mEq/day ingestion) without the strips. One-third of the population was compliant with or without the strips. One-third of the non-compliers showed improvement with use of the strips. No change was noted in the remaining one-third. There was a moderate reduction in blood pressure related to the dietary intervention. Luft concluded that the use of the titrator strip may not serve to "motivate the unconcerned, but rather to facilitate and sustain behavior changes of those committed to it" (Luft, 1984, p. 1965).

No specific recommendations have been made regarding the reduction of dietary saturated fats. However, the Joint National Committee (1984) does state that abnormal levels of blood cholesterol should be reduced when feasible to minimize the risk of cardiovascular disease. Similar guidelines were given for avoidance of cigarette smoking. There is no "definitive" evidence that identifies the prolonged use of tobacco with increased risk of hypertension.

A regular program of isotonic exercise as an aid to weight control may be helpful in reducing blood pressure for the patient with uncomplicated essential hypertension. "Professionals should advise hypertensive patients initiating an exercise program to do so gradually and after appropriate evaluation" (Joint National Committee, 1984, p. 1048).

McMahon and Palmer (1985) reviewed clinical trials that utilized exercise as antihypertensive therapy. The trials included untreated borderline essential hypertensives and those on consistent therapeutic management. All of the trials were of short duration from 10 weeks to one year; all included limited numbers of 5 - 37 persons. Consistently, lowering of systolic and diastolic blood pressure occurred both in normotensives and hypertensive persons. In one of the trials, (Kukonen, 1982) a reduction in blood pressure was found at rest and during exercise after four months of dynamic (isotonic) training.

Cade, et al. (1984), studied 105 persons with established diastolic hypertension $\geq$ 90 mm Hg after three months of running

for two miles per day. There was a significant decline in arterial blood pressure for all but four subjects. Four male patients had decreases of less than 5 mm Hg in the calculated mean blood pressure. (A decrease of 5 mm Hg or greater was considered a positive response to the exercise program).

Twenty four patients discontinued medications and of the 23 patients who were still taking medications after three months of exercise, four were receiving diuretics alone, and 14 had either decreased or discontinued one major antihypertensive drug (Cade, 1984). Weight loss was not the focus of this study, nevertheless, 60% of the patients lost weight, no change was seen in 10%, and 30% gained weight. The author commented that "the decrease in blood pressure was as great in those patients who gained weight as in those whose weight decreased" (Cade, 1984, p. 788).

To summarize, Cade found that in young patients with short duration of illness, control with exercise alone could be achieved. The dosage of major antihypertensive drugs could also be decreased.

A point of interest was Cade's estimate of cost savings for those 24 patients who were able to discontinue all medications. The daily expenditure average of $3.36 for medication was compared to the cost of one pair of running shoes per year; for those 23 persons still receiving medications after three months of exercise, the average cost dropped from $4.12 per day to $2.52 per day, plus the cost of running shoes (Cade, 1984).

McMahon and Palmer (1985) reviewed diuretics, sympathetic-inhibiting drugs and vasodialators interactions with the hemodynamic responses to exercise. Some diuretics have potentially adverse effects associated with hypokalemia, or depletion of extra cellular volume that may impair the function of cardiac and skeletal muscle. Potassium depletion is further promoted through exercise in hot weather which causes increased sweating. "Adequate potassium levels are necessary for intracellular enzyme activity, electrical membrane potential, muscle cell contraction, structural integrity, and increased blood flow during exercise" (McMahon, et al., 1985, p. 63).

Beta-adrenergic blocking agents reduce blood pressure by decreasing heart rate and cardiac output with slight increases in total peripheral resistance. Strenuous exercise stimulates a beta-adrenergic response which is blunted by the beta-blockage agents. The aerobic conditioning effect of intensive dynamic training has been shown to be decreased in some subjects (McMahon, 1985).

Specific drugs which reduce total peripheral resistance may not interfere with the physiologic response to exercise. Pragosin, as reported by Lund-Johansen, is a post-synaptic alpha-adrenergic blocking drug, which reduces total peripheral resistance without concomitant changes in cardiac output or heart rate. In the subjects studied, systolic and diastolic blood pressure dropped during rest and during dynamic exercise (McMahon, 1985). "The ideal drug would reduce peripheral

vascular resistance without adversely affecting cardiac output, muscle blood flow, or exercise capacity" (p. 67).

McMahon, et al., recommended that patients with moderate or severe hypertension receive antihypertensive drug therapy in order to reduce blood pressure before participating in an exercise training program. Although currently available antihypertensive drugs can produce side effects, none are contraindicated during exercise. Maximum target pulse rates will be decreased by beta blockers. "Perceived" exertion, as well as, heart rate can be used as an index of training intensity (McMahon, 1985).

The remaining nonpharmacologic therapy is considered modification in behavior through various relaxation and biofeedback techniques. The Joint National Committee states that behavioral therapy be considered "in the context of a comprehensive treatment program" that may include both pharmacologic and nonpharmacologic therapies (Joint National Committee, 1984). Clinical trials to demonstrate the efficacy of behavioral therapies are not available.

In 1984, the Joint National Committee indicated that the benefits of drug therapy outweighed the known risks from therapy in those persons whose DBP was persistently elevated above 95 mm Hg. In persons with 90-94 mm Hg BP range, drug therapy was recommended when high risk factors were present: target organ damage, Diabetes Mellitus, and other risks for coronary heart disease. When risk factors were not apparent, aggressive use of

nonpharmacologic therapy was recommended while BP's were carefully monitored.

"Stepped care is suggested as a guide for treating hypertensive patients when drug therapy is indicated" (Joint National Committee, 1984, p. 1051). The intent of a stepped care approach is initiation of a small dose of an antihypertensive drug, increasing the dose of the drug, and then adding or substituting one drug after another in gradually increasing doses as needed until 1) the goal BP is reached; 2) side effects become intolerable; or, 3) the maximum dose of each drug has been reached (Joint National Committee, 1984).

Recent reports advocate therapy be based on different pathophysiologic abnormalities (Laragh, 1985; Somermeyer, 1986). Combinations of drugs at low dosage may achieve blood pressure control by matching the pharmacologic properties of the drugs with the physiologic needs and lifestyle preferences of the patient (Somermeyer, 1986). Both approaches will be described.

Pharmacologic management of hypertension may be achieved by a "stepped care" approach as recommended by the Joint National Committee (1984), or by an individualized approach based on pathophysiologic abnormalities (Laragh, 1985; Somermeyer, 1986). There are five classes of drugs which may be used. They are diuretics, adrenergic inhibitors, vasodialators, A.C.E. inhibitors and calcium channel blockers (C.C.B.). Diuretics are considered the initial step in pharmacologic management. Diuretics may be combined with adrenergic inhibiting drugs, or

A.C.E. inhibitors to attain maximal control (Somermeyer, 1986). Adrenergic inhibiting agents, or A.C.E. inhibitors, may be added in a step-wise progression to attain control, or may be individually matched to the patient's plasma renin and sodium excretion level. The fifth class of drugs, calcium channel blockers, may be used with patients who have athlerosclerotic heart disease and hypertension.

Therapeutic modalities for Native Americans include programs for the control of obesity and cessation of tobacco use. Rhoades (1987) reports that the Zuni Diabetes Project in New Mexico has involved Native Americans in aerobic exercise and minor changes in eating habits, which have encouraged fitness and weight loss. The Indian Health Service (I.H.S.) should initiate aggressive interventions to prevent the upsurge of Diabetes, hypertension and cancer according to Rhoades (1987).

No studies are currently available which describe the use of pharmacologic therapies with Native Americans. Tobacco use is unique to certain tribes, however, nearly all I.H.S. facilities are smoke-free. The I.H.S. "encourages" smokers to stop (Rhoades, 1987).

Summary

In summary, management of essential hypertension is achieved by non pharmacologic and pharmacologic modalities. Dietary management entails weight control, sodium restriction and reduction in saturated fats. Exercise is used as an adjunct to weight control, as well as, a method to reduce blood pressure.

In two studies subjects were able to reduce or discontinue medications after participating in isotonic exercise programs.

The use of pharmacologic and non pharmacologic modalities entail behavior change. Psychosocial variables which influence behavior may be explored through the H.B.M. Many studies using components of the H.B.M. have been done; however, a review of only barriers to compliance follows.

The Health Belief Model: Barriers to Treatment and Compliance Behavior

As described in Chapter II, the health belief model (H.B.M.) is a psychosocial framework developed to explain health-related behavior at the level of individual decision making. The model variable included in this study is perceived barriers to treatment which influences the likelihood of action or compliance. Modifying factors: demographic characteristics and psychosocial variables will be included as extraneous variables.

Perceived barriers to treatment have been shown to be the "most powerful" of the H.B.M. variables in studies reviewed from 1974 to 1984 by Janz and Becker (1984). In the decade review, studies were grouped under preventive health behaviors, sick-role behaviors and clinic visits. Significant to this study are those studies dealing with sick-role behaviors. Janz reviewed four studies which dealt with hypertension and components of the H.B.M.

In three of the studies the variable of barriers to compliance was included. Kirscht and Rosenstock (1977) conducted

interviews with 132 patients to ascertain compliance with medication regimens and dietary recommendations. The levels of adherence or compliance were explained by the following belief measures: perceived severity, perceived susceptibility, efficacy of intervention and "perceived cost of following advice" (Janz, p. 25). "Cost" is a tangible barrier to compliance. Statistical significance was not reported for perceived cost of following advice, thereby limiting the interpretation of barriers impact on compliance.

In the Nelson study relationships between H.B.M. variables and compliance with medication and appointment-keeping were studied. One hundred forty-two (142) interviews were conducted to assess medication adherence. "Perceived severity of own hypertension" and "perceived side effects from own hypertension medications" were significantly associated with medication-taking (Janz, 1984). Nelson viewed side effects as "modifying factors" instead of barriers, which is the traditional conceptualization (Janz, 1984). Janz stated the study was fraught with "serious measurement/analytic difficulties," which made measurement of compliance difficult. A subject was listed as <u>non</u> compliant if a single dose of medication was missed during a 28 day period. Nelson also altered the H.B.M. by adding variables, i.e., "priority of health in life" and changing the definition of barriers.

Janz also reviewed the Taylor (1979) study of 230 Canadian steelworkers. Medication compliance was determined at six and

twelve months post treatment. Barriers were listed as beliefs about drug safety. At six months "drug safety" was significantly related to adherence (Janz, 1984). Taylor included no sociodemographic data which could have been of potential benefit to the present study. Since education booklets were provided to the steelworkers in English, Italian and Croatian, ethnic-group beliefs could have had significant impact on the findings.

Janz (1984) stated that research since 1974 demonstrated that "barriers" had the highest significance ratios (91%) in studies of preventive health behaviors and sick-role behaviors. Moreover, Janz' intent was to provide evidence supporting the H.B.M. dimensions as "important contributors to the explanation and prediction of individual's health-related behaviors" (Janz, p. 41). This posture supports the use of the H.B.M. dimension, barriers, in the present study.

Studies from 1983 to the present will be included in the review of compliance behavior. Direct measures of compliance in patients taking antihypertensives have been studied. Craig (1985) reported a study of 40 patients with essential hypertension who were treated exclusively with hydrochlorothiazide for at least six months. A quantitative urinalysis was done three times at monthly intervals to detect the presence of hydrochlorothiazide. Blood pressure readings, pill counts and patient interviews were also done to compare accuracy of the techniques. The urine assay indicated a non-compliance rate of 25%. No one measure was found to have both

high sensitivity and specificity. Patient interviews asking "directly and in a non-threatening manner about medication consumption" correctly classified the largest number of individuals as compliant and non-compliant (Craig, 1985, p. 65).

Caldwell (1984) measured plasma propranolol levels in 50 ambulatory hypertensives to determine the plasma level relationship to the dose prescribed. There is a predictable relationship between the dose and plasma levels and therefore, measures represent a "reasonable" indication of compliance with prescribed medication (Caldwell, p. 689). In addition, patients were interviewed using a standardized questionnaire: the Compliance Index, and a medical record review was done.

As with Craig's study, Caldwell found patient interviews the best means to determine compliance with medication. Poor blood pressure control was associated with a low correlation between dose and propranolol levels, which was felt to be an indicator of poor compliance. However, physiologic mechanisms (alteration in hepatic metabolism of the drug) could offer an alternate explanation. Caldwell measured plasma propranolol levels in patients receiving the same dosage which demonstrated twenty-fold differences in concentration. This finding prohibited showing a relationship between the plasma level/dose ratio and the compliance index.

Both Craig and Caldwell used biochemical methods to estimate compliance within specific antihypertensive medications. However, the most reliable indicator for compliance was patient

interview. Craig stated 85% of the patients in her study were correctly classified as either compliant or non compliant by the patient interview.

Nagy (1984) conducted a study to analyze psychosocial variables in predicting compliance behavior in chronically ill patients: Type II Diabetes Mellitus, hypertensives, and those with pulmonary disease. The locus of control construct and the H.B.M. were used as the structural frameworks for the study. Forty-nine hypertensive patients were interviewed to assess demographic information, value of health to the patient, subjective perception of the medical problem (perceived severity, experienced symptoms and long-term outlook), satisfaction with clinic treatment, social support for treatment, and health locus of control beliefs. A second interview was done six months after the initial interview to ascertain from the patient the medication and self-management procedures prescribed for him. The patient was asked to indicate his own degree of compliance with the prescribed regimen. A health care provider was also asked to describe the patient's prescribed regimen and level of compliance.

Nagy administered several scales to the patients to measure the following study variables: three scales measuring locus of control, severity of medical problem, four scales from Ware's Patient Satisfaction Questionnaire, two concerning patient's evaluation of medical care services, and two measures of social

support. Three indexes of compliance were used: self-report, provider-report and on-time pharmacy refills.

Stepwise multiple regression analyses were conducted to determine the degree of relationship between predictor variables an indexes of compliance. Satisfaction with the medical care services, as measured by the Ware's Patient Satisfaction Questionnaire, was the only variable significantly related to all three indexes of medication compliance.

Compliance with self management was most strongly associated with symptoms. Fewer reported symptoms were associated with greater compliance. Compliance with medication was high when patients were satisfied with the medical care they received.

No relationship was found between health locus of control scales and compliance measures. In conclusion, Nagy stated that "evidence suggests that cognitive variables in general and health locus of control beliefs specifically play a limited role in determining compliance in chronic disease patients" (Nagy, p. 920).

Nagy recommended further research focus on "perceived custom barriers" rather than beliefs or intentions. The author's intent was to re-emphasize the "multidimensional nature of compliance", which was achieved. (Nagy, p. 920).

Due to the inclusion of many variables based on two separate behavioral constructs, the study is difficult to follow. Patient satisfaction and lack of symptoms were indicated as predictors of

compliance; however, the statistics only indicated a "very modest proportion of the variance" was explained (Nagy, 1984). Variance may be further explained by additional factors, such as, the seriousness of the illness, the long-term chronicity of hypertension, and cognitive deficits, i.e., loss of memory or interpretive error by the patient.

DeVon and Powers (1984) studied the effects of modifying factors in compliance, health beliefs and psychosocial adjustment to illness. This study included 15 hypertensives in control and 15 matched hypertensives who were not in control. Compliance was evaluated with the Standardized Compliance Questionnaire by Sackett, et al. (1976); and psychosocial adjustment was assessed by the Psychosocial Adjustment to Illness Scale (PAIS) (Derogatis, 1976). No significant correlations were found between compliance scores and demographic variables (age, sex, marital status) or duration of hypertension. Regarding psychosocial adjustment scores, uncontrolled hypertensives had higher mean scores indicating that overall the group experienced more psychosocial maladjustment to illness. Devon (1984) reported a significant negative relationship between the total compliance score and the total PAS score in the uncontrolled group ($r = .60$ $p < .02$); the correlation indicated less compliance with less adjustment. No differences in health beliefs affecting compliance were found between the groups, suggesting that control of hypertension is not necessarily synonymous with compliance.

DeVon (1984) concluded that psychosocial distress may be a significant moderating variable to consider in the development of the H.B.M. Further refinement would support recognition of adjustment problems which may assist providers in promoting more effective treatment modalities. Thus far, this was the only study located which dealt with modifying factors as a study variable.

One hundred sixteen (116) hypertensives were involved in a study by Kerr (1985) to determine whether education, monitoring or a combination of both without supervision or support from providers would promote compliance to antihypertensive regimens (Kerr, 1985). The volunteers were randomly assigned to one of four groups 1) control group; 2) education and self-monitoring; 3) self-monitoring only; and, 4) the education only group. After instruction and demonstration for the appropriate groups, no further contact occurred with the subjects for three months. At the end of this time interval, final blood pressure readings were taken; BP cuffs and tally sheets upon which the number of pills taken and blood pressure readings were recorded were collected. There were no significant differences in compliance rates among the four groups three months after the initiation of the interventions. In addition, there were no significant differences in age, sex, number of pills prescribed, or mean DBP at the end of three months. The number of subjects who were < 80% compliant were evenly divided between the self-monitoring

only and education only groups. The study had a high attrition rate (68%) possibly related to no contact or follow-up until the final BP readings and collection of tally sheets. Kerr (1985) indicated that follow-up or special attention may be a principal factor in promotion of compliance to hypertension regimens.

Summary

The H.B.M. has been extensively studied to explain health-related behavior. Janz' decade review (1974-84) provided support for the study of barriers to compliance. "Barriers" has been shown to be the most powerful of the H.B.M. dimensions.

Studies of compliance have been reviewed from 1983 to the present. Studies of direct and indirect measures of compliance have been included. Plasma propranolol levels and urinalysis for hydrochlorothiazide were done in two studies to verify patients' reports of medication adherence.

Nagy and DeVon studied psychosocial variables in predicting compliance. A variety of measurement tools was used. Nagy found that patient satisfaction with medical services was a significant predictor of compliance.

The final study reviewed discussed education and provider support as promoting compliance behavior. Kerr (1985) indicated that "special" attention from the provider of care may be a principal factor in promoting compliance.

Becker (1985) reported that in a review of literature approximately one-third of patients follow physicians'

directions. Significant to the nurse is the identification of "determinants" of patient non compliance. The barriers to compliance dimension of the H.B.M. helps to identify the impediments to compliance with the hypertension regimen. Regimens which are complex, of long duration, dependent on an alteration in lifestyle, and are inconvenient, or expensive encourage non compliance (Becker, 1985). Methods for monitoring regimen compliance offer inconclusive evidence. Patient report is the most reliable measure of compliance. The provider of care has a pivotal position in interpreting health beliefs and influencing compliance behavior.

Nursing Intervention for the Hypertensive Native American

Early attempts to control hypertension through education were instituted in 1972 by the National High Blood Pressure Education Program. In 1982, the National Institute of Health published a review of the same education program activities in minority populations. Formal channels of communication between the NHBPEP and minorities occurred through the 1975 Forum on Hypertension in Minority Populations. A committee was then established to oversee implementation of the Forum's recommendations. A series of conferences were held between 1975 - 1980 to help develop prevalence data and to "facilitate information sharing between minority health professionals and organizations" (N.I.H. Pub. No. 82-2188, p. 4).

Two national conferences on high blood pressure control in Native Americans have been convened, 1977 and 1980. Specific recommendations issued in 1977 that have relevance to this study include:

> Epidemiologic studies on the prevalence of high blood pressure and its impact on mortality and morbidity in Native American populations be implemented in order to provide a data base for future planning.
>
> Increased research be instituted in the area of non-pharmacological treatment of hypertension and that special consideration be given to traditional Native American health beliefs.
>
> The Association of American Indian Physicians review the Joint National Committee report on Detection, Evaluation and Treatment of High Blood Pressure and determine its applicability to Native American populations. (Accepted, 1980) (N.I.H. Pub. No. 82-2188, 1982).

There have been no additional national conferences held in cooperation with the National Institute of Health (National Office, N.I.H., Phone Communication, Sept., 1987).

General guidelines published by the Department of Health, Education and Welfare in 1978 define the activities of the community health nursing staff of the Indian Health Service, which, in part, include: "strengthening of health teaching in homes, hospitals, clinics, schools, and the community with the goal of preventing disease or reducing the ill effects of unavoidable disease; teaching a member of the family to give nursing care to the non-hospitalized sick and handicapped; development of habits conducive to health, and increasing the

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capabilities of families, groups, and communities to cope with health problems that arise and with problems of daily living." (I.H.S. Publication No. 78-12009, 1978).

The practice area of the community health nurse includes responsibility for providing "primary health care." (p. 25). This definition of practice could, therefore, be used to indicate the nurse's role in "delivering health care services to those with hypertension" (Harmon, p. 5) in the Native American population.

The advanced practice role of the nurse complimented with transcultural nursing education would provide well qualified primary care of the hypertensive American Indian. Transcultural nursing focuses on an analysis of different cultures with "respect to their caring behavior, nursing care, health-illness values, beliefs and patterns of behavior" (Leininger, 1978, p. 8). The goal of transcultural nursing as defined by Leininger is to develop a "scientific and humanistic body of knowledge in order to provide culture-specific and culture-universal nursing care practices" (p. 8).

The objectives for professionals caring for hypertensives may be based on the recommendations from the National High Blood Pressure Education Program. The Committee states that emphasis must be on 1) identification of at-risk persons, early detection and prompt treatment; 2) lifestyle modification; 3) dietary management and counseling; 4) effective, tolerable, affordable

treatment; 5) achievement of goal blood pressure; and, 6) long-term, periodic monitoring (Coordinating Committee, National High Blood Pressure Education Program, 1984).

An interdisciplinary team approach which includes the patient and family as active participants provides an organizing framework to achieve blood pressure control. "Inter-professional collaboration offers benefits to patient care because it can bring all of the perspectives and skills of different disciplines to bear on a common goal" (NHBPEP, 1984, p. 394). The unique contributions of the nurse can be organized into four categories: clinical service, research, education, and community activities (Grimm, 1981).

The advanced nurse practitioner may adopt a person-centered approach to the client. A person-centered orientation allows the care-giver to consider the client in both institutionalized and individualized ways, and consider how each patient's attitudes, beliefs and values are likely to influence health behavior (Kausch, 1985). Strategies for enhancing adherence to regimens for hypertension would be based on persuasion rather than control by the care-giver. Reason, logic and rationale for treatment would be a necessary component of the treatment regimen (Kausch, 1985). "The defining characteristic of person-centered communication is that it focuses direct and explicit attention on the needs, feelings, and psychological character of the patient or others involved in the situation" (Kausch, 1985, p. 56).

Goins (1985) states that Native Americans seek group approval before committing to follow-through with therapy. They tend not to follow protocols if treatments do not coincide with those treatments other members of the group are receiving, or if they do not sound reasonable. Further, there is a strong family orientation. Designing therapies that coincide with their lifestyle is more effective (Goins, 1985).

Culture affects health care practices. Beliefs about causes of illness and ways to care for the illness, family dynamics and interactions, and patient expectations of the provider and the health care system may influence the course of an illness (Kristal, 1983). The advanced nurse practitioner needs to incorporate specific knowledge and skills of ethnic variations into the process of care. Utilization of family assessment and intervention skills, as well as, consideration of health beliefs and traditional practices will assist the nurse and client in planning individualized interventions.

Summary

In this chapter literature has been reviewed regarding the nature of hypertension in the Native American population. Prevalence data was discussed. Factors contributing to the development of hypertension was also included. Non pharmacologic and pharmacologic therapies for the treatment of hypertension have been described.

Studies of barriers to treatment and compliance with therapeutic regimens were reviewed. Janz' decade review dealt with studies from 1974-1984. Compliance studies were reviewed from 1983 to the present.

In the final section there was a discussion of the nursing care of the Native American client with hypertension.

CHAPTER IV

METHODOLOGY AND PROCEDURES

Overview

A cross-sectional survey will be employed for this study to examine the relationship between perceived barriers to treatment and stated compliance with the hypertensive therapeutic regimen. The foundation for the hypotheses and concepts are based on the studies by Given and Given (1982) and Harmon (1983). Modification of the variables will be delineated and the unique population sample will be described. One ambulatory care site in Montana will be used to gather data.

In the following chapter are the research question, descriptions of hypotheses, instruments, operationalization of the variables, sample selection, data collection procedures, human rights protection, and statistical analysis techniques.

Research Question

As previously described in Chapter I, the present study is a modification of Harmon's study in which the research question was: "How do clients' perceptions of barriers to treatment relate to their stated compliance with the hypertension therapeutic regimen?" (Harmon, 1983, p. 9). Information will be sought from urban Plains Indians who have not been involved in prior studies.

Research Hypotheses

Primary hypothesis. The client's perception of barriers to therapy will be negatively related to stated compliance with the therapeutic regimen.

Secondary hypotheses:

a) There is a negative relationship between perception of barriers concerning medications and stated compliance.

b) There is a negative relationship between perception of barriers to diet and stated compliance with a dietary regimen.

c) There is a negative relationship between perception of barriers concerning an exercise program and stated compliance.

d) The percent overweight will be negatively related to compliance with diet and/or exercise regimens.

e) The duration of hypertension will be negatively related to compliance with medications and/or diet.

f) Age, sex and alcohol consumption will be related to a higher level of blood pressure (e.g. young adult males who consume more than 1 to 2 ounces of ethanol per day will have higher blood pressures) and will be negatively related to compliance with medications.

g) Consumption of predominantly high carbohydrate or high fat foods will be positively related to percent overweight and negatively related to compliance with diet.

h) Lower education level will be negatively related to compliance with medication, diet and exercise.

Instruments

The instruments used in this study were designed for Patient Contributions to Care: Link to Process and Outcome (Given and Given, 1982). Additional questions have been developed to assess barriers and compliance with an exercise

program. The questions are 20 - 28 on the Perceived Barriers to Therapy Questionnaire (Appendix E). Questions have been added to the patient interview scale which seek specific ethnic preferences regarding diet, food choices, and folk or "Indian" medicines. All questions related to job and impact on work have been deleted due to the age of the population and the high rate of unemployment. Severity and efficacy of treatment were also deleted in order to focus the study on the dimension of barriers to compliance. Additional questions have been added to the sociodemographic questionnaire in order to better describe the sample subjects. Question #3 was added to explore ethnic background by identifying Native American tribal affiliation. Lower classifications of income status (5) were added based on preliminary interviews with the nurse clinician at the Native American Center. Four lower categories of income from $2,000 - $8,999 annually were added to the questionnaire. The nurse clinician indicated that a significant number of clients would have less than an income of $8,900 annually. Education classifications (6) were also lowered based on preliminary interviews with the Director of the Center and the nurse clinician. Household composition and length of residence were added to ascertain available composition of family members and the stability of residence. Smoking and alcohol consumption were added to estimate the extent addictive behaviors influence compliance to therapy.

Validity Reliability

Validity and reliability of the original instruments have been established. Validity, a measure of quality of an instrument, refers to the extent to which a testing instrument measures what it purports to measure. Several methods may be used to establish validity for the replicated instruments. Content validity was chosen. Content validity is based on expert analysis of the items to determine the adequacy of coverage and proportion of inclusion of the "hypothetical content universe" (Polit and Hungler, 1983, p. 396). For the scales replicated in this study content validity was established by literature review, interviewing of hypertensive clients, pretesting with two samples of hypertensive clients, and knowledge and judgment of the principal investigators (Given and Given, 1982).

Specific questions have been added to the patient interview scale in order to expand the information available regarding Native Americans. Validity is supported by review of the literature: salt ingestion (Gillum, 1984, Torrey, 1979), alcohol consumption (Gillum, 1984, DeStefano, 1979), activity level (Gillum, 1984, Johnston, 1978, Hollow, 1978) and obesity (Gillum, 1984, DeStefano, 1979, DePrez, 1985, Torrey, 1979).

The instruments were also evaluated for reliability. Reliability refers to the accuracy, consistency, dependability and precision of the measuring instrument. Cronbach's alpha is a statistical method for interpreting the internal consistency of an instrument. The higher the coefficient, the more stable the

measure (Polit and Hungler, 1983). A satisfactory coefficient is 0.70 or higher (Borg, Gall, 1979). The reliability coefficient for the perceived barriers to treatment scale was .91 in the Given study, whereas the reliability for the total stated compliance score was .76.

Polit and Hungler state that "reliability of an instrument is not a property of the instrument, but rather of the instrument when administered to a certain sample under certain conditions" (1983, p. 386). Therefore, the alpha coefficients will be computed for the instruments completed by the Native American sample. Comparisons will be made between the original and Native American samples.

Operationalization of Study Variables

Perception of barriers to treatment is defined as the expressed beliefs and attitudes of the client concerning the barriers to undertaking aspects of the therapeutic regimen" (Given and Given, 1982). Three dimensions of barriers to implementation of therapy will be measured: 1) beliefs about difficulties with medication; 2) beliefs about difficulties with changes required for diet; and, 3) beliefs about difficulties with changes required for exercise.

Dimension 1, beliefs about difficulties with medications, refers to habit change required, concern with dependency, disruption of daily activities, and duration of therapy. Barriers to medication therapy are proposed to be measured by items 1-9 (Appendix E). Dimension 2, beliefs about difficulties

with changes required for diet, will include interference with normal activities, personal life, feelings of hunger, dislike of allowed foods, time required to follow a diet, and need for family support. Diet barriers are proposed to be measured by items 10-17. Dimension 3, beliefs about difficulties with changes required for exercise, will include interference with normal activities and personal life, feelings of fatigue, dislike of the specific exercises recommended, the time necessary to follow an exercise plan, physical discomfort associated with exercise, and the need for supportive others. Exercise barriers will be measured by items 19-27 (Appendix E).

The scoring will be done similar to the original instrument. A Likert-type response scoring method will be used for the Perceived Barriers to Therapy Questionnaire. Strongly agree will be assigned a 1, ranging to a 5 for strongly disagree. A low numerical score will be indicative of a high degree of perceived barriers for questions 2 - 6 regarding medications; 12, 13, 15 regarding diet; 21, 22, 24, 28 regarding exercise questions. Reversed scoring for a high degree of perceived barriers will be done for questions 7, 8, 9 regarding medications; 11, 14, 16, 17, 18 regarding diet; 20, 23, 25, 26 and 27 regarding exercise. The three dimensions of barriers to treatment will be scored separately, i.e., difficulties with medications, difficulties with diet, and difficulties with exercise; and, may be combined for a total score for barriers.

Stated compliance with the therapeutic regimen is defined as the extent to which the client carries out the therapeutic recommendations of health care providers concerning prescribed medication, diet, behavior modifications, and follow-up care (Given and Given, 1982, p. 28). The interview will be a verbal report by clients regarding their frequency of compliance with prescribed medications (questions 1, 2, 3), diet (questions 6 and 7), and exercise program (questions 15 and 16) (Appendix C). A high degree of stated compliance will be indicated by a low numerical score on the Patient Interview Scale. A Likert-type response scoring for perceived barriers to therapy will also be used for the stated compliance response. "All the time" will be assigned a 1, ranging to a 5 for "none of the time." The compliance scores will be totaled separately for medication, diet and exercise; and will be combined for a total compliance score.

Short-answer and open-ended questions have been added to the patient interview to access unique cultural beliefs regarding diet, exercise, and medications. Question 4 will be stated: "Do you use any traditional 'Indian' or 'folk' medicines to treat your high blood pressure?" "If yes, please describe what it is and how it works." Question 4 will be content analyzed. A description and rationale as provided by the participant will be included. Direct quotations will be used for clarity. Similarities in responses will be grouped, classified, if feasible, and described. Inquiries about diet will be descriptive of what is usually eaten and how often. Specific

questions focus on sodium ingestion and types of beverages consumed (questions 8 through 13). Questions 8 and 9 are evaluations of dietary composition: predominantly carbohydrate, protein or fats. Questions 10, 11 and 12 indicate frequency and amount of nutrients consumed. Sodium consumption will be reported on a scale from "always" to "never." "Always, often, or seldom" will be further defined by indicating when sodium is added: while cooking, at the table, or both. "Always" is ranked as a 4 ranging to a 1 for "never." The higher the number, the higher the intake of sodium. When 4 (always) or 3 (often) is combined with adding while cooking (1), at the table (2), or both (3), the addition will elevate the sodium past the recommended 2 gm. of sodium per day. Estimated ranges and percent of over consumption of sodium will be reported.

Three questions to elicit information on type, duration and frequency of physical activity (17, 18, 19) are included. Frequency is written in as number of times per week engaged in a recommended physical activity. Duration is indicated by number of minutes per week expended doing the recommended activities. Ranges will be reported. Type of exercise is indicated by light (1), moderate (2), or vigorous (3). Type refers to activity that uses large muscle groups that can be maintained for a prolonged period, and is rhythmical and aerobic in nature (American College of Sports-Medicine, 1986). Light, moderate, or vigorous are

indicators of work determined by heart rate during exercise. Estimates of work were made by the researcher; data on HR was not collected.

Extraneous variables are defined as independent variables that may influence the results of the study (Polit and Hungler, 1983). Sociodemographic data of age, sex, marital status, race and tribal affiliation, yearly income, educational background, residence, members of household, and personal habits; smoking, food consumption, physical activities and alcohol ingestion are included on the sociodemographic questionnaire. The medical record audit which identifies the duration of hypertension, the level of blood pressure and the weight of the client will also be included as an extraneous variable. Possible correlations among selected extraneous variables and the major study variables will be examined.

Population and Sample

The sample for the study will be volunteers from among hypertensive clients seen at the Native American Center in Great Falls, Montana. Fifty adults with the following characteristics will be included: 1) ages 18-85; 2) male or female; 3) ability to read and write in the English language; 4) an established diagnosis of essential hypertension; 5) a prescribed diet and/or medication regimen; and, 6) no evidence of the following: stroke, end-stage renal disease, blindness, cancer, psychiatric problems, pregnancy or lactation.

Recruitment of subjects will be done with the assistance of the nurse clinician at the Native American Center. The initial contact with the client will be made by the nurse clinician at the Native American Center to ascertain permission for inclusion in the study. A follow-up phone call by the researcher will be done to further describe the study. The purpose of the study will be described, as well as, the potential benefit to the client, the length of time necessary to complete the instruments, and requirements for participation will be explained. The client will be requested to come to the Native American Center at an arranged time to sign a written consent. After written consent to participate is obtained from the client by the researcher, a medical record audit will be done by the nurse clinician at the Native American Center. Appropriateness for inclusion of the client will be determined.

Data Collection Procedures

Subjects meeting the requirements for eligibility and willing to participate will be interviewed at the Native American Center. Confidentiality of subjects will be protected through the use of pre-coded instruments. Interviews will be held in privacy with strict confidence maintained. The instruments will be completed during the interview.

Data will be collected from two sources: 1) a structured interview with questionnaires administered by the researcher to the client; and 2) the client's medical record. Subjects will be interviewed in a private office provided at the Native American

Center. The interview will be conducted by the researcher alone with the subject. A quiet room, without interruptions, will be maintained during the interview. Each subject will be thanked for his/her participation, and will be offered a summary of findings upon completion of the study. All questions will be checked for completion by the researcher before coding for computer analysis.

Reports of the findings will be in group form only. Consent forms from the subjects will be used only for verification of consent or withdrawal of a participant from the study. The protection of the rights of the participants will be assured using the standards of M.S.U. Committee on Research Involving Human Subjects.

Statistical Analysis

Univariate and correlational statistics will be used to describe the sample and test the hypotheses of the research. Univariate distributions will be used to describe the sociodemographic and medical audit variables and responses to certain patient interview questions: range, distribution, percentages and means. Correlations (Pearson r) will be used to describe the relationship between selected extraneous variables and the major study variables, e.g., alcohol consumption related to stated compliance, educational level related to stated compliance. The Pearson r is a correlation coefficient which expresses in numerical terms the direction (+ or -) and magnitude of a relationship between variables (Polit and Hungler, 1983).

The hypotheses will be tested by correlation techniques. Scores for the subscales of perceived barriers and stated compliance will be completed. (Frequencies, means and standard deviations will be calculated.) The correlation of perceived barriers and stated compliance with each of the components of the therapeutic regimen will be computed using the Pearson r statistic. The Pearson r expresses the direction and magnitude of a relationship from -1.00 to 1.00. Negative relationships are those values falling between -1.00 and 0.00; whereas, positive relationships are those correlations falling between 0.00 and 1.00. The strength of correlations for this study will be set the same as those for Harmon's, which were taken from Borg and Gall. No relationship is indicated by 0.00 to 0.20, a low relationship as 0.20 to 0.35, a moderate relationship as 0.35 to 0.85, and a high to perfect relationship as 0.85 to 1.00 (Borg and Gall, 1979, p. 513-514).

Summary

Research methodology was described in Chapter IV. The specific areas discussed were: the research question, the hypotheses, instruments, operationalization of variables, extraneous variables, sample, human rights protection, data collection procedures, and statistical analysis techniques.

CHAPTER V

DATA PRESENTATION AND ANALYSIS OF RESULTS

Overview

Chapter V is structured to include five components. A description and analysis of the study sample will be presented initially. There will be a discussion of the reliability measures for each of the scales. The relationships between perceived barriers to treatment and stated compliance with the hypertensive therapeutic regimen will be described using the sample data. Extraneous variables and sociodemographic findings will be included. Lastly, there will be a summary of the results of the statistical procedures.

Study Sample: Descriptive Findings

The sample for the study was composed of 24 volunteers. The extraneous variables addressed were: age, sex, marital status, income, education, duration of hypertension, blood pressure and percentage overweight. Additional variables were included to further describe the subjects: smoking, drinking alcohol, dietary habits, exercise, household composition and residence, and tribal affiliation.

Age. The age of the sample subjects ranged from 37 to 83 years. The mean age was 60.8 years, standard deviation 11.25. The average age of men ranged from 42 to 74 years, mean age 60.2 years, standard deviation 8.7. The age of the women ranged from 37 to 83 years, mean 61.3 years, standard deviation 12.4.

Table 1. Distribution & Percentage of Subjects by Age

Age	Number of Participants	Percentage
30-40	1	4.17
41-50	3	12.50
51-60	6	25.00
61-70	10	41.67
71-80	3	12.50
81-90	1	4.17
Totals	24	100.00%*

*Totals may be slightly above or below 100% due to rounding.

Sex. There were more females (N=14, 58.3%) than males (N=10, 41.7%) in this sample.

Marital Status. Half of the sample was married (N=12, 50%). No single persons participated; N=3 or 12.5% were divorced, and N=9, or 37.5% were widowed.

Income. Five persons (20.8%) did not respond to the question regarding income. Of the nineteen reporting, 58.3% reported less than $11,000 annually; N=3 (12.5%) earned $2,000-$2,999 annually; N=5 (20.8%) earned $3,000 - $4,999; N=4 (16.6%) earned $5,000 - $6,999, one person earned $7,000 - $8,999, and one person earned $9,000 - $10,999 annually. None earned over $17,000 annually.

Table 2. Distribution & Percentage of Income Annually

Income	Participants	Percentage
$ 2,000 - $ 2,999	3	12.50
$ 3,000 - $ 4,999	5	20.83
$ 5,000 - $ 6,999	4	16.67
$ 7,000 - $ 8,999	1	4.17
$ 9,000 - $10,999	1	4.17
$11,000 - $12,999	2	8.33
$13,000 - $14,999	1	4.17
$15,000 - $16,999	2	8.33
No Response	5	20.83
Totals	24	100.00%

Education. Most of the sample subjects attended only grammar school (< 7th grade) N=10 (41.7%); N=6 (25%) graduated from high school; N=2 (8.3%) attended some college but did not graduate; and, 1 (4.2%) attended a technical, business or trade school.

Table 3. Distribution & Percentage of Education

Education	N=24	Percentage
None or Some Grammar School	10	41.7
Junior High School	3	12.5
Some High School	2	8.3
Graduated High School	6	25.0
Techn., Bus. or Trade School	1	4.2
Some College	2	8.3
Totals	24	100.0%

Duration of Hypertension. The duration of hypertension was determined for 23 subjects. The range of years of duration was 1 to 19 years. The mean was 7.3 years, standard deviation 5.2. The highest percent 47.8% (N=11) had been diagnosed 1 - 5 years ago; N=3 (13%) had been diagnosed 15 - 20 years.

Table 4. Distribution & Percent for Years of Diagnosed Hypertension

Years	N=23	Percentage
1 - 5	11	47.3
5 - 10	5	21.7
10 - 15	4	17.4
15 - 20	3	13.0
Totals	23	100.0%

Blood Pressure. Blood pressure readings during the past six months were obtained for 22 subjects. Two blood pressure readings from each subject were averaged for the six months time interval. The grand average systolic blood pressures

ranged from 110-168 mm Hg; mean of 137.5, standard deviation 16.1. Diastolic blood pressures ranged from 70 - 96 mm Hg., mean of 81, standard deviation 7.6.

Table 5. Average Systolic Blood Pressures During the Past Six Months

mm Hg.	N=22	Percentage
110-116	2	9.1
117-122	3	13.6
123-128	3	13.6
129-134	2	9.1
135-140	3	13.6
141-146	1	4.6
147-152	4	18.2
153-158	2	9.1
159-164	1	4.6
165-168	1	4.6
Totals	22	100.0%

Table 6. Average Diastolic Blood Pressures During the Past Six Months

mm Hg.	N=22	Percentage
69-75	5	22.7
76-81	5	22.7
82-87	5	22.7
88-93	6	27.3
94-99	1	4.5
Totals	22	100.0%

Percentage Overweight. The sample subjects' current weight and height were recorded and compared to the ideal body weight for men and women. The percentage overweight was calculated using the Metropolitan Life tables for men and women (1983). The tables are not structured for use in culturally-diverse groups, therefore, percentage overweight may be over estimated. Five subjects (20.8%) of the sample were at ideal body weight; N=2

(8.3%) were overweight, but less than 20% overweight; N=17 (70.8%) were 20% or greater than ideal body weight.

The following formulae were used to calculate ideal body weight: women, 100 pounds for the first five feet plus 5 pounds for each additional inch of height; men, 106 pounds for the first five feet plus 6 pounds for each additional inch of height. The ideal weight was divided into the actual weight to determine percent overweight.

Dietary Habits: Food Consumption. Sample subjects indicated that foods "liked best" and "eaten most often" are carbohydrates (79.2% and 66.7% respectively). Proteins are "eaten most often" by 20.8% of the subjects. Eating patterns varied: N=3, 12.5% eat only once a day, N=12 (50%) eat twice daily, N=7 (29.2%) eat three times a day, N=2 (8.3%) eat five or more times per day. Three subjects (12.5%) get up to eat at night. N=17 (70.8%) of the subjects consume over the daily requirements of certain nutrients; N=6 (25%) include all nutrients in recommended quantities; only one consumed less than the recommended quantities.

Consumption of nutrients was estimated from a twenty-four hour diet recall. The participant was asked to state "typical" or "usual" daily intake. The information was used to calculate the number and types of exchanges consumed in a day; nutrients were estimated from the total exchanges.

Table 7. Dietary Habits: Estimates of Percentages of Food Consumption

Dietary Habits	N=24	Percentage
Foods Liked Best:		
Predominantly Carbohydrates	19	79.17
Proteins	5	20.83
Fats	0	0
Totals	24	100.00%
Foods Eaten Most Often:		
Predominantly Carbohydrates	16	66.67
Proteins	6	25.00
Fats	2	8.33
Totals	24	100.00%
Foods Eaten in a Typical Day:		
All nutrients included in recommended amounts	6	25.00
Over consumption of certain nutrients	17	70.83
Under consumption of certain nutrients	1	4.16
Over & under consumption of certain nutrients	0	0
Totals	24	100.00%

Salt Intake. Fifty percent, N=12, indicated they seldom added salt to their food; N=4 (16.7%) often added salt; N=2 (8.3%) always added salt. Six (25%) subjects indicated they never added salt. Of those 18 persons adding salt to their food: 9 (37.5%) added while cooking; 7 (29.2%) added while at the table; and 8 (33.3%) added both while cooking and at the table. Over consumption of salt may be assumed by those (25%) always and often adding salt to their food.

Liquid Intake. Of the 24 sample subjects surveyed only 3 (12%) consume liquids in recommended quantities. Five (34%) subjects consume recommended "kinds" of fluids, i.e., water, fruit juices, etc.; 24% or 6 subjects consume in excess of recommended quantities of fluids (i.e., coffee, tea); 16% or 4 subjects consume less than recommended quantities; six or 24% consume excesses of some fluids and too little of other fluids.

Alcohol Consumption. Twenty-three subjects responded to the question about alcohol consumption. Fourteen or 58.33% indicated they did drink alcoholic beverages; 9 (37.50%) indicated they did not drink; 1 subject did not respond. Of those drinking alcohol 9 consumed less than 1 ounce ethanol per day; 4 consumed 1 - 2 ounces ethanol per day; only 1 consumed more than 2 ounces ethanol per day.

Smoking. N=11 (45.83%) of the sample subjects did not smoke. Five (20.8%) smoked 10 - 19 cigarettes per day; 7 (29.1%) smoked 20-29 cigarettes per day; and 1 (4.1%) smoked 30 or more cigarettes per day. Two non smokers had indicated they quit smoking in the past year.

Exercise. The majority of the sample subjects indicated no participation in exercise (N=18, 75%). Of the remaining 6, one exercised twice weekly, one exercised three times weekly, two (8%) exercised four times weekly, one exercised five times weekly; and, one subject exercised daily. All subjects performed light exercise from 10 to 30 minutes per session.

Residence/Household Composition. The length of residence within Great Falls ranged from 4 to 66 years. The mean range was 30-40 years; N=11 (45.8%) of subjects resided in Great Falls for this interval; N=6 (20.8%) of subjects had lived in Great Falls for 50-60 years. Length of residence at the same house is: N=12 (50%) lived in the same house 0-5 years; N=3 (12.5%) lived in the same house 5-10 years; N=3 (12.5%) resided in the same house 20-25 years.

A description of household composition demonstrated: N=8 (33.33%) of subjects lived alone; N=12 (50%) lived with a spouse, no children still live at home; however, N=2 (8.3%) have other relatives living with them; and N=2 (8.3%) have non-related persons residing in their homes.

Table 8. Length of Residence in Great Falls in Years & Percentage of Distribution

Residence in Great Falls Years	N=24	Percentage
0 - 10	2	8.3
11 - 20	2	8.3
21 - 30	2	8.3
31 - 40	11	45.8
41 - 50	1	4.2
51 - 60	5	20.8
61 - 70	1	4.2
Totals	24	100.0%

Table 9. Length of Residence at Same Residence in Years & Percentage of Distribution

Residence at the Same Address Years	N=24	Percentage
0 - 5	12	50.0
6 - 10	3	12.5
11 - 15	2	8.3
16 - 20	2	8.3
21 - 25	3	12.5
36 - 40	1	4.2
41+	1	4.2
Totals	24	100.0%

Traditional or Folk Medicine. Of the 24 subjects interviewed, N=5 (20.8%) indicated they took "Indian" or folk medicine to treat their hypertension. The most frequently indicated medicines were garlic and unidentified herbs.

Tribal Affiliation. Twenty-two of the Native Americans who participated were Chippewa-Cree, two were Sioux, and one was Assiniboin. Tribal registry is required for care at the Native American Center. Blood quantum was not asked since it is not significant to this study.

Summary of Descriptive Findings

To summarize the descriptive statistics, the sample is composed of middle to older-aged adults, with slightly more females than males. The majority of the sample are married, have low incomes, and have a grade or high school education. The average duration of hypertension is about seven years. The mean Systolic pressure is 138 mm Hg., and the mean Diastolic pressure is 81 mm Hg. Seventy percent (70%) of the sample are overweight and consume a diet high in carbohydrates. Twenty-five percent

(25%) of the sample consume more salt than recommended. Only one subject consumes more than two ounces ethanol per day. The majority of the sample smokes cigarettes. Only six (25%) of the subjects participate in light exercise. The majority of subjects have lived in Great Falls for 30-60 years. However, the subjects are mobile within the city, remaining at the same house: 0-5 years for 50%; 5-10 years for 12.5%; and, 20-25 years for 12.5%. Half of the sample live with a spouse and 33% live alone. Approximately 20% of the sample indicated they took traditional medicines to treat hypertension.

Reliability

Statistical procedures to establish internal consistency of the instruments were not done due to the limited sample size. Internal consistency is an indication that the subparts of the instruments measure the same characteristic (Polit and Hungler, 1983). Correlation between the subparts could not be done within the exercise and medication subscales. Correlational statistics could be done between the barriers to diet subparts, however, the sample size precludes accuracy. A Cronnbach's alpha can be computed for the barriers to diet subscale but may also be considered to be inaccurate.

Hypotheses Testing Results

The primary hypothesis as presented in Chapter IV, the client's perception of barriers to therapy will be negatively related to stated compliance with the therapeutic regimen, cannot be tested as explained by the following results. Specific

secondary hypotheses will be discussed. Nineteen individuals stated they were taking medications. One subject taking diuretics (med #1) stated he took the medication more than half the time; the remainder stated the medication was taken all the time. One subject taking a betablocker stated she took her medication less than half the time; the remainder took the medications all the time. One subject took an A.C.E. inhibitor more than half the time; the remainder took this medication all the time. Therefore, only one subject could be defined as non compliant.

Table 10. Compliance with Medications
N=19

Medication	Mean	Standard Deviation	Range	Median
Diuretic	1.07	.27	1 - 2	1
Betablocker	1.75	1.50	1 - 4	1
ACE Inhibitor	1.25	.50	1 - 2	1
Vasodialator	1	0	1 - 1	1
Others	1	0	1 - 1	1

Descriptive statistics for the barrier to medication variables were calculated. The questions follow with mean, standard deviation, range and median. A Likert response option: strongly agree, agree, undecided, disagree, strongly disagree (1-5) was used. No correlations can be computed due to lack of variance in compliance with medication.

Table 11. Barriers to Medication
N=19

Barriers to Meds	Mean	Standard Deviation	Range	Median
Confused	3.63	.76	2 - 4	4
Change Habits	4	0	4	4
Become Dependent	2.89	1.10	2 - 5	2
Not Interested	3.94	.62	2 - 5	4
Interferes	3.89	.46	2 - 4	4
Must Take Meds	3.78	.73	2 - 5	4
Believe Control	3.84	.76	2 - 5	4
Meds How Hard	3.89	.74	2 - 5	4

All respondents disagreed that "I would have to change too many habits to take my medication." Conversely, the greatest variability in response was to the question: "If I take my medications, I may become dependent upon them." Responses ranged from agree to strongly disagree. Scores for compliance with diet were calculated for: "would you say you follow the diet as suggested" (at home) (31), and "when you are away from home, have you followed the diet as prescribed" (32).

Table 12. Compliance with Diet
N=18

Compliance	Mean	Standard Deviation	Range	Median
Diet at home	2.67	1.15	1 - 5	2
Diet away fr. home	3.14	1.35	1 - 5	3

Scores for compliance with diet variables were correlated obtaining a correlation coefficient (r) = 0.66. Since the correlation is moderate, the variables were combined. Descriptive statistics were calculated: mean 5.5, standard deviation 2.14, range 8, N=18.

Descriptive statistics were calculated for each of the barriers to diet questions and scored the same as barriers to medications. A Likert response option: strongly agree, agree, undecided, disagree, strongly disagree (1-5) was used.

Table 13. Barriers to Diet
N=20

Barriers to Diet	Mean	Standard Deviation	Range	Median
Does Not Interfere	3.67	.84	1 - 4	4
Always Hungry	3.33	.94	2 - 4	4
Dislike Foods	3.25	.97	2 - 4	4
Personal Life	3.68	.75	2 - 4	4
Difficult to Diet	3.16	1.06	1 - 4	4
Time to Diet	3.67	.66	2 - 4	4
Family Help	3.21	1.13	1 - 5	4
Spouse Helps	3.28	1.09	1 - 5	4

A correlation matrix was designed to evaluate whether diet compliance (combined variables 31 and 32) was a function of diet barriers. The dependent variable: diet compliance was correlated initially with each barrier to diet (independent variable).

Table 14. Relationship Between Diet Compliance and Barriers to Diet
N=18

Barriers to Diet	Diet Compliance
Does Not Interfere	-.29
Always Hungry	-.44
Dislike Foods	-.12
Personal Life	-.38
Difficult to Diet	-.43
Time to Diet	-.50
Family Help	-.13

The correlation coefficient (r) = 0.70 explained a moderate correlation between compliance with diet and the total barriers

to diet variables: $r^2 = 0.48$, which is the proportion of variance accounted for by the combined influence of the independent variables.

Twenty-five percent (25%) or six subjects indicated they followed an exercise or activity program. Descriptive statistics have been calculated for the barriers to exercise questions. A Likert response option: strongly agree, agree, undecided, disagree, strongly disagree (1-5) was used. No correlations could be computed due to the small number of subjects who exercise.

Table 15. Barriers to Exercise
N=6

Barriers to Exercise	Mean	Standard Deviation	Range	Median
Does'nt Interfere	4	0	4	4
Always Tired	3	1.09	2 - 4	3
Dislike	2.66	1.03	2 - 4	2
Personal Life	4	0	4	4
Difficult	2.66	1.03	2 - 4	2
Time to Follow	4	0	4	4
Family Helps	3.66	.82	2 - 4	4
Spouse Helps	4	0	4	4
Body Aches	2.83	1.33	1 - 4	3

No variability was found for four of the nine barriers to exercise questions; whereas, the remaining five questions were widely varied.

Summary of Descriptive Data by Hypotheses

a) There is a negative relationship between perception of barriers concerning medications and stated compliance. Only one subject was classified as non-compliant. Therefore, no

relationship between barriers to medication and stated compliance could be calculated.

b) There is a negative relationship between perception of barriers to diet and stated compliance with a dietary regimen. There are low inverse relationships between each of the barriers to diet variables and the combined stated compliance with diet variables. The combined barriers to diet variables have a moderate correlation (r = .70) with the combined compliance with diet variables.

c) There is a negative relationship between perception of barriers concerning an exercise program and stated compliance. The relationship could not be computed due to small sample size.

Extraneous Variables

Bivariate correlations were performed on the extraneous variables, percent overweight, age, and duration of hypertension with compliance with diet.

Table 16. Extraneous Variables to Compliance with Diet

Compliance	Percent Overweight	Age	Duration of Hypertension
Diet (at home)	.29	-.02	-.18
Diet (away)	-.02	-.09	-.05
	N=17	N=17	N=20

A low relationship exists between percent overweight and following the diet when at home (r = .29). A low inverse relationship exists between age and following the diet at or away from home. Duration of hypertension has a low inverse relationship to each diet compliance variable.

Bivariate correlations were performed for diet preferences, "foods liked best" and "eaten most often" with diet compliance. Education level was also correlated with diet compliance. Very low relationships exist between diet compliance and foods liked or eaten often. There is a weak inverse relationship between education and diet compliance.

Table 17. Additional Variables to Compliance with Diet
N=21

Compliance with Diet	Foods Liked Best	Eaten Often	Education
Diet (at home)	.17	-.23	-.13
Diet (away)	.02	.09	-.05

The extraneous variables of overweight and age cannot be correlated with exercise due to the small sample size. The effect of alcohol consumption related to medication compliance cannot be computed since only one subject drank greater than two ounces of ethanol per day. Age, sex, and medication compliance correlations could not be computed due to small sample size.

Summary of Results

Since the primary hypothesis could not be tested, descriptive statistics were used to evaluate each subscale for barriers and compliance to the therapeutic regimen. Only one subject indicated non compliance for taking medications. Seven subjects (39%) indicated non compliance to diet recommendations. Exercise was performed by six of the twenty-four subjects.

Compliance with diet variables were correlated with the extraneous variables of percent overweight, age, duration of hypertension, and food preferences, finding low relationships.

Limitations of the Findings

Interpretation of the results of the data needs to be done with recognition of several limitations. A non-probability approach to sampling was done. The subjects were volunteers who represented the most readily available persons. A "sample of convenience" is not necessarily representative of the population with regard to the variables being measured (Polit and Hungler, 1983). Twenty-four subjects were included, constituting a small sample size. Generalization of the findings from the sample to the population cannot be done with these conditions.

Several problems with the instruments occurred. Negatively worded questions were confusing, for example: "I am not interested in taking my medications regularly," with a response of strongly agree, agree, undecided, disagree, or stronly disagree, gives the subject a double negative response if he does take medication. Language in the instruments needed to be simple enough for the least educated (Polit and Hungler, 1983). Forty-one percent of the sample had less than a seventh grade education, wherein the instrument was constructed to test at approximately eighth grade level.

Response set factors may have biased the measures on several variables. The social desirability response set refers to giving answers that are consistent with prevailing social mores (Polit

and Hungler, 1983). Finding only one person reporting over consumption of alcohol may be an example of this type of bias. Additionally, questions which used words associated with authority, i.e., "prescribed," "as recommended," may have elicited socially desirable responses.

The acquiescence response set may have also been operational due to cultural differences. Native Americans represent a minority population (which is 1% of the U.S. population), which may influence agreement with statements independent of the actual content of the question.

Data was collected by an interview method, which has both strengths and weaknesses. Anonymity is not possible which may limit socially unacceptable answers. The presence of an interviewer of a different cultural background may introduce bias which may affect the subject's response. Interaction between the interviewer and the respondent may also affect the subject's response.

Strengths of the interview method for this study included: obtaining additional data by observation, exposure to a different cultural context, clarifying ambiguous and/or confusing questions and obtaining a greater response rate than with questionnaires. Based on the education level, the interview method facilitated accuracy and completion of the instruments.

Cognizant of the limitations of the data the writer makes the following interpretations: sociodemographic data provides a description of subjects not previously studied. Compliance with

the medication regimen is unexplained for this sample. Barriers to compliance with medications could not be correlated with compliance due to lack of variability. Correlational techniques used to describe relationships between compliance with diet and barriers to diet explained 70% of the variability. The low number of responses to the exercise questions indicated few subjects participated in an exercise regimen. Exercise may not be viewed as a therapeutic modality for blood pressure control by this sample.

Extraneous variables, percent overweight, age and duration of hypertension correlated weakly, although in the expected direction with diet compliance. Education also had a low inverse relationship with diet compliance. The expectation of the relationships, as strongly correlated, was not found.

Summary

In Chapter V is the presentation of statistical analyses relative to the sociodemographic data, extraneous variables and hypotheses. No attempt was made to test the hypotheses based on limitations of the data. The reliability of the instruments was not done due to limited sample size. Correlations were calculated to determine relationships between compliance with medication and diet and specific extraneous variables.

A discussion and interpretation of findings will be in Chapter VI. Specific implications for nursing practice, education and research will also be included in the final chapter.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Overview

In Chapter VI there will be a summary of the research findings, recommendations for future research, and conclusions based on description statistics. A discussion of nursing implications for practice, education and research will be presented. The chapter is organized in the following manner: initially there will be a summary of the findings, which will include a description of the problem, sociodemographic characteristics, and an analysis of the hypothesis testing results. In the "Recommendations" section there will be a discussion of potential future research and the contributions of the present study. Finally, there will be a presentation of the conclusions and a discussion of implications for nursing practice, education and theory.

Summary of the Findings

Summary of the problem. A descriptive study of 24 Native Americans was undertaken to determine the relationship between perceived barriers and stated compliance with the hypertension control regimen. Interviews were conducted using the instruments originally designed by Given and Given (1983). The purposes for conducting this study were:

1) A great deal of information is known about Caucasians' experience with hypertension, whereas, little research

has been published regarding the Native Americans' health problem of hypertension .

2) No known studies are available using the Health Belief Model (H.B.M.) with Native Americans.

3) Barriers to compliance in following a control regimen for Native Americans with hypertension may or may not be similar to the majority population.

4) Sociocultural factors impact the client's perception and therefore will influence perception of barriers and stated compliance.

The nursing conceptual framework for this study is King's theory of goal attainment. King offers a definition of perception as the individual's world view based on his interface with his environment. This broad view compliments the components of the Health Belief Model; perceived barriers and stated compliance utilized in this study. The major focus of King's theory is the interpersonal system which forms the foundation of the theory of goal attainment. "Perceptions, communication, and transactions are the major concepts presented as fundamental for understanding human interactions..." (Gonot, p. 232). The theory of goal attainment is an elaboration of nursing process which provides assistance to the nurse and client in recognizing and resolving health problems.

King's theory and the H.B.M. were used to define the research question "How do clients' perceptions of barriers to

treatment relate to their state compliance with the hypertension therapeutic regimen?" Information from the sample subjects, relative to this question, was sought using the Hypertension Patient Interview, barriers to therapy, and sociodemographic instruments.

The 24 subjects between the ages of 37 and 83 were seen at the Native American Center in Great Falls, Montana. All participants met the characteristics for inclusion, which were, in part, established diagnosis of hypertension and a prescribed diet or medication regimen. Confidentiality was assured and procedures for obtaining consent were followed. A medical record audit was performed to designate those persons meeting the characteristics for inclusion. An interview was conducted to obtain the information sought.

Unexpectedly, the hypotheses could not be tested. Only one subject indicated non compliance to the medication regimen, therefore, no variability in response was evident. Six (25%) subjects indicated participation in exercise. The limited response prevented statistical analysis of barriers to compliance. Dietary variables were evaluated; 11 complied with recommendations while 7 did not comply. Regression analysis was done with the barriers to diet and diet compliance subscales to detect any relationships. No significant relationships were found. Specific extraneous variables: percent overweight, duration of hypertension, and level of blood pressure were

correlated with compliance with diet variables, finding no significant relationships. Descriptive statistics were performed on each of the barriers and compliance subscales.

Sociodemographic Characteristics

Sociodemographic information for the study subjects included age, sex, marital status, income, education, household composition and residence, tribal affiliation, dietary habits, smoking, and alcohol consumption. Additional clinical characteristics of duration of hypertension, blood pressure, and percentage over ideal body weight were included as extraneous variables.

Age and Sex. The sample indicated 14 females (58.3%) and 10 males (41.7%); the group was distributed over a wide age range from 37 to 83; the greatest number being 61 years of age (58.3%). Gillum's (1983) survey included 16 through 84 year olds with the majority below the age of 64. In Torrey's survey of Aleuts the mean age was 40, with individuals 18 years and older included. No pattern for more males vs. females is demonstrated in the studies of Native Americans.

More females (58.3%) were included in the present study than were in Harmon's (50.6%). However, The Public and High Blood Pressure (1981) sample had almost the same percentage of females (58.0%) as the present study.

Age, sex, and medication compliance could not be computed for this sample. In Harmon's study, low, significant

relationships were found between age and medication compliance, and age and dietary barriers (Harmon, 1983).

Marital Status. In the present study, half of the sample was married. Gillum found 41% of his population unmarried; possibly related to the inclusion of 16 to 24 year olds in the study. Sixteen percent in the Gillum study were divorced, while 15% were listed as "separated." No category for "separated" is included in the present study; however, 12.5% were divorced. Marital status was not included in the remaining studies of Native Americans. No relationships were calculated between marital status and the study variables. Harmon (1983) and Cummings (1982) found that no relationships could be demonstrated between marital status and compliance. Conversely, Nelson's (1980) study showed living alone to be positively related to non compliance.

Income. Consistent with Gillum's study, in this research the majority of the sample earned less than $11,000 annually (58.3%). Twelve percent earned less than $3,000 annually, while no one earned over $17,000 a year. Gillum reported 45% of his sample earned less than $5,000 annually; 72% earned less than $10,000 a year. Harmon (1983) reported a mean income range of $17,000 to $19,000, which is higher than the PHBP sample, which reported 61.6% below $10,000 annually and 19.0% above $15,000. Studies of Native Americans demonstrate considerably lower levels of income when compared to the majority population. (N.B.

Services, supplies, and alternative sources of revenue were not specifically sought in this study; therefore, a standard of living cannot be assumed without further investigation.)

Education. The greatest number of subjects attended only grammar school (41.6%), while 25% graduated from high school, and 8.3% graduated from college. Gillum (1983) reported that 41% attended seventh through eleventh grades; 25% graduated from high school; and, 4% graduated from college. Apparent in these two studies are the lower levels of formal education attained by the samples. Gillum reported that Native Americans had "much lower levels of education, income, and employment than whites in 1960, 1970, and 1980" (p. 768). Education level was not reported in Harmon's or other studies of Native Americans.

Education was negatively correlated to compliance to diet in this research.

Duration of Hypertension. For the sample subjects the largest number had been diagnosed with hypertension between one and five years (N=11 or 47.3%). Five subjects (21.7%) had been diagnosed for 5 - 10 years; 17.4% were diagnosed for 10 - 15 years; and 3 or 13% had been diagnosed 15 - 20 years. Harmon categorized her subjects slightly differently, however, 54.6% were diagnosed for 1 - 5 years, 27.7% for 6 - 11 years and 14.5% for 15 or more years. A total of 54% of the subjects in the PHBP survey had hypertension for 1 - 5 years, 20% for 6 - 10 years, and 25% for more than ten years. Duration of hypertension was

correlated with diet compliance in this research finding no significant relationship. A regression analysis was done with duration of hypertension to compliance with diuretics, and no significant relationship was found. In addition, Harmon found no relationships between the study variables and duration of diagnosed hypertension.

Blood Pressure. The range of blood pressure readings for the subjects was 110 to 168 mm Hg systolic (mean 137.5) and diastolic 70 to 96 mm Hg (mean 86). Correlation with barriers to medications or compliance with medications was not done in this study. Harmon (1983) found that diastolic blood pressure (DBP) readings correlated in the expected direction (although not significant) with job/therapy barriers; i.e., as barriers increased, systolic blood pressure (SBP) also increased. In the Harmon study, 62.9% of the participants had SBP >141 mm Hg; and 85.40% had DBP >90 mm Hg. By contrast, 41.1% had SBP >140 mm Hg, and 31.8% had DBP >87 mm Hg in this research. Compliance with medication may have been over-reported, however, blood pressure control is significantly greater in this sample. Gillum (1983) reported the prevalence of SBP $\geq$140 mm Hg as 15%, and DBP $\geq$90 mm Hg as 14% of his sample in Minneapolis.

Correlation between level of blood pressure and medication barriers or compliance scores was not attempted.

Percentage Overweight. Estimates of obesity or percent overweight are included in almost all studies of Native Americans

for both adults and children. For this study 70.8% of the subjects were 20% or greater than ideal body weight. Two-thirds of Harmon's participants were also 20% overweight. Torrey (1979) studied one island of Aleuts stating that the subjects were 10 - 15 pounds heavier than their neighbors (Aleuts and Eskimos) of similar heights. There was a significant correlation in Torrey's study between SBP and triceps skinfold ($p < .05$) and DBP correlated with both triceps skinfold and weight ($p < .01$ for both). DeStefano (1979) reported a significant relationship between overweight and DBP $\geq$90 mm Hg in his study of 640 Navajos. Harmon (1983) found in her study that overweight significantly correlated with less stated dietary compliance, increased perceptions of dietary barriers, and increased perceptions of doubt of therapy efficacy (p. 142). Percent overweight was the "prevailing" problem for Harmon's sample. For this study, compliance with diet did not significantly correlate with percent overweight. Neither did exercise correlate with percent overweight, although the correlations were in the expected direction (negative).

Evidence to support the high rate of obesity is found in analysis of dietary habits. This sample consumed a diet high in carbohydrates. Foods eaten in a typical day demonstrated that 70.8% of the sample consumed over the amount of recommended nutrients per day. There was over consumption of salt by 25% of the sample.

Alcohol consumption was minimal as reported by this sample. Only one subject reported drinking more than 2 ounces ethanol per day. Rhoades (1987) stated that "Indians have the highest frequency of drinking-associated problems of any ethnic group" (p. 364). Four of the top ten causes of death among Indians are alcohol-related injuries, chronic liver disease and cirrhosis, suicide and homicide. Gillum (1983) reported that of the 60% of the subjects responding to the question about alcohol consumption, 48% claimed to be non-drinkers, the remainder consumed alcohol at least two days per week (amount was not noted). Considering the nature of this question, estimates on consumption for this research are tentative.

Smoking. Fifty-four percent of the sample smoked cigarettes and 29.1% smoked 20 - 29 cigarettes per day. In Gillum's study, 70% of the respondents smoked cigarettes, 45% smoked 20 or more cigarettes per day. However, DeStefano's study revealed that few Navajos smoke (13%), and of those who smoke, 94% smoke less than one pack per day. The 1984 Joint National Committee specifically states that nicotine consumption does not chronically elevate blood pressure; however, deaths due to hypertension are more common among smokers, and "smokers have a higher frequency of malignant hypertension and subarachnoid hemorrhage" (p. 456).

Exercise. Related also to the level of obesity is the overall lack of participation in exercise by this sample. Only six (20.8%) of the sample participated in light physical

activity. The limited response prohibited correlation with other study variables. Exercise was not included as a study variable in Harmon's research. Gillum (1983) stated in his survey that 33% of the sample engaged in strenuous exercise in leisure and 21% at work.

Residence/Household Composition. The length of residence within Great Falls had a wide range, 4 - 66 years; however, the mean range was 30 - 40 years. The most meaningful information relates to the length of residence in the same house, which is extremely short compared to the length of residence in the city (50% lived in the same house 0 - 5 years). This mobility leads to difficulty with tracking for blood pressure management.

Traditional or Folk Medicine. Twenty percent of the subjects indicated they took Indian medicine to treat their hypertension. The mechanisms of actions for the medications were not explained. Access to the drugs was not disclosed.

Tribal Affiliation. The majority of subjects were Chippewa-Cree. A possible explanation for this representation is that the Native American Center obtains its medications and I.H.S. physician and dental services through the Rocky Boy Health Clinic. The clinic is located on the Rocky Boy Reservation designated for the Chippewa-Cree Tribe. Most of the subjects seen were of mixed ethnic background, Caucasian and Native American. Specific details regarding degree of Native American was not asked, nor of significance to this study.

Summary of Statistical Procedures

Within this section will be the results of findings related to the primary and secondary hypotheses. Due to the limitations imposed by the data, hypothesis testing was not done. Descriptive statistics were used to describe the instruments. Correlation and regression analysis was used to describe the relationships among extraneous variables and specific diet variables.

Primary Hypothesis 1: There is a negative relationship between total barriers to treatment and stated compliance with the hypertensive regimen.

The Null hypothesis was not tested; however, Harmon found a "moderate statistically significant" correlation between total perceived barriers and total stated compliance (Harmon, 1983). Her findings are consistent with several researchers who have addressed intangible barriers (Nelson, 1978, Kirscht and Rosenstock, 1977, and Foster, 1978, Taylor, 1979, Janz, 1984).

Secondary hypothesis a: There is a negative relationship between perception of barriers concerning medications and stated compliance scores.

Of the 19 subjects taking medications, only one was classified as non compliant. Descriptive statistics were calculated for this subscale. Mean scores and standard deviations were similar for all but two questions. All respondents strongly disagreed they would have to change too many

habits to take medications. The variability in response was greatest for: "If I take my medications, I may become dependent upon them", standard deviation 1.10.

Secondary hypothesis b: There is a negative relationship between perception of barriers to diet and stated compliance with a dietary regimen.

Scores for compliance to diet were calculated for 18 subjects. The variability for these scores was greater than those for compliance with medications (with the exception of betablockers). The subscale for perception of barriers to diet was evaluated with descriptive statistics. The mean, standard deviation and range were similar for each question. Greatest agreement of response was for: "I have time to follow the diet the doctor ordered for me", standard deviation .66; greatest variability for "I can count on my family when I need help following my diet", standard deviation 1.13. A subset for compliant and non compliant responses was calculated for each of the compliance with diet questions. Variability in each of these scores is very small. A correlation between barriers to diet and compliance with diet demonstrated a moderate relationship ($r = .73$). Harmon also found a moderate ($R = .43$) relationship between perceived barriers to diet and compliance. Since 70% of the sample are overweight, this would be an expected outcome. Analysis of dietary habits also supports the relationship of barriers to diet and compliance. Twenty-five percent of the

sample also consumed excess amounts of salt. Several researchers noted high salt intake in Native American populations (Gillum, 1984, Torrey, 1979, Strotz, 1973).

Secondary hypothesis c: There is a relationship between perception of barriers concerning an exercise program and stated compliance.

Twenty-five percent (six subjects) indicated participation in an exercise or activity program. Descriptive statistics were calculated for each of the questions in the exercise subscale. Respondents were in total agreement on four of the nine items included in the subscale. The greatest variability was found in response to: "my body has aches and pains after I exercise" (standard deviation 1.33). The small number of responses prohibited meaningful correlation with other variables.

Secondary hypothesis d: The percent overweight will be negatively related to compliance with diet and/or exercise regimen. No significant relationship was found with compliance to diet scores and percent overweight. There was a negative, but not significant relationship, between exercise and percent overweight, as well as, age and exercise. The correlation is in the expected direction, i.e., as weight increases, exercise decreases, and as a person ages, activity drops.

Secondary hypothesis e: The duration of hypertension will be negatively related to compliance with medications and/or diet. An analysis to test the relationship of duration of hypertension

to compliance with diuretics was done. No significant relationship was found. Compliance to diet also does not correlate with duration of hypertension.

Secondary hypothesis f: Age, sex, and alcohol consumption will be related to a higher blood pressure. This analysis was not computed due to small sample size.

Secondary hypothesis g: Consumption of predominately high carbohydrate or high fat foods will be positively related to percent overweight and negatively related to compliance with diet. Analysis was performed for diet preferences and diet compliance variables. Following the diet is negatively correlated, not significantly, with foods eaten most often. Following the diet when away from home is correlated with diet preference: foods liked best (.02).

Secondary hypothesis h: Lower education level will be negatively related to compliance with medication, diet and exercise. Education level was tested against diet compliance. There is a negative relationship between education and compliance with diet. Both compliance variables are negatively correlated as expected; only "following the diet when away from home" is significant, however.

Recommendations for Future Research

Suggestions for future research will be grouped and discussed under three main areas: the instruments, the population, and the design.

The Instruments. The instruments were originally designed to extract data from the medical record using the hypertension information medical record audit; to interview the subject using the hypertension patient interview; and a self-administered sociodemographic form and self-administered perceived barriers to therapy instrument. The process was altered in the present research by using all the instruments (except the audit) in a face-to-face interview. Each instrument will be critiqued and recommendations for future use stated.

The hypertension patient interview tool specifically asks for the names of medicines taken. There is no question structured to obtain the dosage and timing of each prescribed drug which would be important in judging compliance. (Knowledge of the drug, its action, duration, and interaction with additional medications would be a significant question to ask subjects.) Specific numbers of times of missed medications or missed dosage or timing would be a more refined judgment of non compliance. Considering this is the first question in an initial encounter with a culturally diverse group, it is not surprising that compliance is over-reported. Sequencing this question to the middle or end of the interview may yield more meaningful results.

The writer is in agreement with Harmon in that two items are not "sufficient to tap the complex parameters of dietary compliance" (Harmon, 1983). A generally negative response from

the sample was elicited by the use of the word "diet." Meal plan is becoming a more generally accepted term (D. Brown, 1987). Additional items were added to this instrument to evaluate food content, preferences, patterns of consumption, and addition of salt. Percent overweight was also included as a measurement variable of dietary compliance. In future studies skinfold thickness or impedence testing yielding body composition: lean body mass to fat mass needs to be added.

The inclusion of compliance to exercise came from Harmon's recommendations. The questions were structured similarly to those for diet. Exercise as a therapy modality is not generally understood in this population. For those subjects with prior experience with cardiovascular disease this component was familiar. Specific questions regarding the nature of exercise were added. Another question to determine intensity of exercise would have been more helpful; "kinds" of exercise did not directly identify intensity in this study.

Question 9 of the sociodemographic data could have been worded to better describe drinking behavior. All three subsections were combined to give an estimate of ounces of ethanol ingested daily.

The Perceived Barriers to Therapy Questionnaire has several negatively worded items which are confusing to answer. For example: "I am not interested in taking my medications regularly," with responses of strongly agree, agree, undecided,

disagree, and strongly disagree. Inclusion of negatively worded items is usually advised in construction of questions to avoid bias (Polit and Hungler, 1983). Additionally, the educational level of the majority of the sample may have prohibited the subjects from responding appropriately.

The diet barrier question: "my husband/wife helps me to follow my diet" could not be answered by 50% of the sample because of divorce or widowhood. Therefore, "significant other" or an appropriate term needs to be used.

Non compliance is frequently reported to be more than 60% in low-income clinic populations (Becker, 1985). A high level of non compliance was not found in this study, indicating several possible options: 1) this group differs from all other groups; 2) the instruments do not represent intangible barriers experienced by this sample; 3) socially-acceptable responses were given by the subjects based on no prior contact or relationship of trust with the researcher; 4) cultural barriers exist which prohibit full expression of compliance or lack of compliance; 5) tangible barriers may be of greater significance than intangible barriers.

The next logical step would be to do an exploratory study using an informal, indepth interview technique to learn what types of barriers are perceived by the Native American whose blood pressure is not in control. King's concepts of the interpersonal system would give the structure to exploration of

perceptions of the providers as compared to perceptions of the Native American. Communication between the two would need to be analyzed to determine whether or not transaction could occur. Communication analysis would include observation of modes or styles, techniques, conflicts in verbal or nonverbal behavior, variations in inter-ethnic or intra-cultural processes and lastly, the role of prejudice (Kub, 1986).

Mutuality in planning and mutual compliance would also need to be studied. An instrument to access compliance behavior would need to be designed and pilot tested. A study of follow-through (tracking) and adherence to standards of care would need to be done with the providers.

Instruments would need to be designed to define tangible barriers: i.e., access to medical services, resources for healthy meal planning, available medications, or exercise programs. Any study would need to be undertaken with the full support and availability of a Native American researcher. Access to the sample and the I.H.S. system is greatly enhanced by cooperation of a tribal member.

The Population. In addition to studying the urban Chippewa-Cree, the same tribe could be studied on the reservation. Differences in exposure to the majority population and environmental cues may impact compliance with treatment regimens. An attempt could be made to include more of the younger population, which was missed in this study. Utilization of the

clinic on the reservation could be contrasted with utilization of the urban clinic. Tracking and follow-up would be indicators for maintaining blood pressure control.

Design. Since no studies have been published on compliance behavior in Native Americans, exploratory studies are needed to develop the background information. Folk care practices could be explored using Leininger's transcultural nursing concepts. The Native American's perceptions of illness/wellness could be identified and elaborated. Orientation to goal achievement would be usetul information in understanding compliance behavior. The process and function of the indigenous health care system could be explored.

Experimental studies could be designed to test the impact of specific treatment modalities in controlling hypertension. For example, does sodium restriction make a difference in control for Native Americans; would a community fitness program decrease obesity (Heath, 1987).

Implications for Advanced Nursing Practice

Recommendations for advanced nursing practice will be discussed in relation to King's theory of goal attainment, which is an elaboration and refinement of the nursing process. The interpersonal system will provide the structural framework for the discussion.

In order for advanced practitioners to give care to Native Americans, cultural factors need to be considered. "Differences

between cultural values, beliefs and practices of the client and those of health care personnel can lead to some unanticipated outcomes in health care services" (M. Leininger, 1984). Initial interactions are influenced by each person's past and present interaction with the environment. Assessment by the nurse is influenced by her/his own psychosocial milieu, as well as, the one presented by the client. Critical variables which enter into the interaction are perception, social class role, status, and ethnic values (King, 1981). Appreciation of these variables allow the nurse the opportunity to make valid assessments and proceed from the initial communication level to the interaction level.

King (1981) emphasized that communication skills and knowledge are necessary to gather accurate information about behaviors. The development of accurate and meaningful diagnosis of the health care state of the client is the outcome of this communication. Often lacking in the process is the interaction phase in which the client takes an active role in helping with diagnosis or problem identification.

A serendipitous finding of this research is that the Native American has not been an active partner in care. A provider-dominated system promotes dependence for care and cure upon the system. Caring behaviors for Native Americans need to be directed toward social groups. Cultures which value kinship ties tend to resist individualized caring measures (Leininger, 1978).

Transaction as defined by King is the transfer of value which involves behaviors that are goal-directed. Essential to this phase is cooperation and reciprocal social exchange. To achieve this level of performance the nurse needs advanced skills in counseling, education and transcultural nursing theory. Transaction is the basis from which implementation of care plans occurs. The strength of the transaction is obvious in compliance behavior by both the nurse and client.

Compliance by the nurse is expressed by adherence to standards of care for the hypertensive Native American. Although the participants' blood pressures were in control, the only therapeutic modality used was medication. Diet and exercise offer complex challenges for changing behavior, but are recognized components for hypertension management. Essential to maintenance of blood pressure control is follow-up. Follow-up or the evaluation phase of the nursing process is the critical link in the feedback loop. Without evaluation of outcomes, neither the client nor the nurse is aware of the outcomes of transaction.

Compliance by the Native American is expressed by active participation in the process. Active participation is a learned skill taught by the nurse. Group-care behaviors need to be taught and integrated into the overall care of the hypertensive client. For example, Native Americans need to know: how to recognize side effects of medications and when to report them; how to begin and maintain a safe exercise program; how to select,

prepare and store foods; and, how to lose and maintain a healthy body weight/composition. Self-monitoring of blood pressure supports the client in taking charge of his own health. Monitoring is available at the Native American Center several times each month; however, tracking those who are not in control is not done.

The scope of the nurse in advanced practice would also include "indirect roles" as defined by the A.N.A. Council of Primary Health Care Practitioners (1985). Those roles include educator, administrator, clinical supervisor, consultant, and researcher. Examples of those roles are partially listed here:

1. Instructing and preceptoring generic students in community health clinics;
2. Coordinator/administrator of a primary health care agency responsible for interdisciplinary care of Native Americans;
3. Programming continuing education for R.N.'s in the longitudinal care of families;
4. Consultant for problem resolution of health care delivery.

Implications for primary care for the Native American are focused on health promotion activities which may include:

1. Blood pressure screening for all urban Native Americans, which would include younger age groups;

2. Body composition screening for children and young adults to prevent the problems associated with obesity;
3. Education programs designed to teach nutrition using a practical/applicable format;
4. Referral of those individuals with suspected cardiovascular disease to cardiologists for further evaluation;
5. Educating the general public about the significant problems faced by Native Americans in urban environments;
6. Exercise programs especially designed to meet the needs of the older population of Native Americans, as well as, one for the younger group;
7. Weight control program with on-going community (Native American) support.

Recommendations for Nursing Education

Apparent to the researcher of this study is the lack of published information about diverse cultural groups. Within the past year several articles have been written by allied health fields regarding the problems experienced by Native Americans (Rhoades, 1987, Heath, 1987). Leininger, in a personal communication (1984), stated that studies are being done at certain universities regarding compliance behavior. She also emphatically stated that the word compliance carries a negative connotation to minority groups and is not used in the studies.

Leininger gave no specific references to available studies, but did indicate that graduate students at the University of Washington were in the process of studying Native Americans. In 1984, Leininger reported that four Master's Degree programs and four Doctoral Degree programs provided a research emphasis on transcultural nursing.

The field of transcultural nursing has existed since the 1960's. However, preparation at the generic level could be greatly expanded. Anthropological concepts could be integrated into the psychosocial education currently available to generic students. Social anthropology is the study of groups and their behaviors. Social structure which includes political, economic, kinship relationships, cultural orientation and values needs to be known by health care providers. Popular, folk, and professional care systems can be introduced and explored. Closely allied is psychological anthropology. This arena deals with individual behavior intra and cross culturally. Psychological anthropology entails the study of personality development with a cultural context.

Leininger identifies "cultural imposition" as a serious and largely unrecognized problem in nursing (1984). Cultural imposition refers to the nurse's tendency to impose her/his values upon the client without being aware of the client's values, feelings and beliefs. This problem was expressed by the Native American staff at the center in Great Falls through hiring

practices. Native American nurses are preferred, regardless of level of educational preparation.

Nurses in advanced practice have the opportunity to learn culturally-specific care by participation in existing services to Native Americans. Continuing education programs focused on "holistic care" are sponsored by Native American groups. Advanced practitioners working with Native Americans need to assume the student role in order to understand the problems critical to this group.

Conclusions and Discussion

The main conclusions are discussed and related to implications for future research. The research question: "How do clients' perceptions of barriers relate to stated compliance with a hypertension regimen?" was not answered by this research. The hypothesis: "the client's perception of barriers to therapy will be negatively related to stated compliance with the therapeutic regimen" was not tested due to limitations imposed by the data.

The one-to-one interview provided descriptive data about the sample. Consistent with Native American studies contained in the review of literature, hypertension is a significant problem in this group (Gillum, Torrey, Strotz, Alfred). The rate of obesity is high, participation in exercise is low, and the level of blood pressure control is adequate.

Compliance with medication was probably over-reported for various reasons: lack of trust relationship between the

researcher and client, misinterpretation of the question by the client, and unrecognized cultural barriers. Responses to the barriers to medication, diet and exercise demonstrated very little variability. Intangible barriers perceived by Native Americans may be dissimilar to the majority population. Tangible barriers may be of more significance to this group. The sample has a lower education level, lower income level, and is highly mobile within the city.

A major implication derived from this research is that a culturally-specific tool to identify barriers needs to be developed. Compliance needs to be interpreted by the Native American. Health beliefs need to be identified and defined. Transcultural nursing theory needs to be integrated into the basic and advanced education for nurses.

Suggestions for Future Research

Information related to the barriers Native Americans perceive would be very helpful to nurses providing chronic illness care. Problems with compliance need to be identified and remedied. Further research into barriers to compliance would provide a framework for intervention to the nurse and other members of the interdisciplinary team. Although extensive study has been done using the H.B.M., no studies have been done with Native American groups. This model could provide many avenues for further research. King's theory of goal attainment could also offer several approaches to analyze relationships between providers and clients. A few recommendations are listed below:

1. Exploratory/descriptive studies to determine perceptions of barriers to therapy (both tangible and intangible.
2. Development and testing of tools to determine compliance behavior in Native Americans.
3. Exploration of "perceptual accuracy" in nurse-client interactions (King, 1981).
4. Analysis of communication patterns which increase mutual goal setting (between provider and client).
5. Exploration of health beliefs using an open-ended interview technique.

Summary

A summary and interpretation of research findings were discussed in Chapter VI. Recommendations for nursing practice were presented in relation to King's theory of goal attainment. Suggestions for nursing education were based on Leininger's transcultural nursing theory. Conclusions of this study were presented. In the final section, there are recommendations for future research.

APPENDICES

APPENDIX A

APPENDIX A

Consent Form

Patient ID# _ _
1 2

Date _ _ _ _ _
3 4 5 6 7

Form _
8

The study in which you are about to participate is designed to find out the beliefs that persons with hypertension have about their disease and treatment. Your participation will involve responding to a questionnaire permitting a University Researcher to interview you, and permitting the nurse clinician at the Native American Center to review your past medical records. If you agree to participate, please sign the following statement.

1. I have freely consented to take part in a study of patients being conducted by the Native American Center and the College of Nursing at Michigan State University.

2. The study has been described and explained to me and I understand what my participation will involve.

3. I understand that if I withdraw from the study after originally agreeing to participate, the amount and quality of service provided me will not change. I understand that I can withdraw from participating at any time.

4. I understand that the results of the study will be treated in strict confidence and that should they be published, my name will remain anonymous. I understand that within these restrictions results can, upon request, be made available to me.

I,_____, state that I understand
(print name)
what is required of me as a participant and agree to take part in this study.

Signed_____
(Signature of Patient)

Date _____

APPENDIX B

APPENDIX B

Hypertension Intake Information Medical Record Audit

Patient ID# _ _
1 2

Date _ _ _ _ _
3 4 5 6 7

Form _
8

1. How many years has the patient had diagnosed hypertension?
   (WRITE IN) _____Years
2. What was the patient's average blood pressure reading during the past six months? (WRITE IN & SPECIFY POSITION)
   Blood pressure: _____ Position: Sitting_____
   Lying_____ Standing_____ Not recorded_____
3. What is the patient's current BP?_____
   Blood pressure: _____ Position: Sitting_____
   Lying_____ Standing_____ Not recorded_____
4. The patient's weight at the visit at which a definitive diagnosis of hypertension was made was: (Write in)
   _____ lbs.
5. What is the patient's current height and weight? (Write in)
   Height: _____ Weight:_____lbs.
6. What is the patient's age? (Write in)
   _____ years
7. What is the patient's sex? (Check One)
   1) Female _____ 2) Male _____
8. What specific diet has been prescribed? (Write in)
   _____
   _____

Patient ID# _ _
1 2

Date _ _ _ _ _
3 4 5 6 7

Form _
8

9. What medications for hypertension have been prescribed? Please list and state prescription.

_____

_____

10. Please check if any of the following are indicated in the record:

_____ Stroke
_____ End-stage renal disease
_____ Blindness
_____ Cancer
_____ Psychiatric problems
_____ Pregnancy
_____ Lactation
_____ None

APPENDIX C

APPENDIX C

Hypertension Patient Interview

Patient ID# _ _ (1 2)

Date _ _ _ _ _ (3 4 5 6 7)

Form _ (8)

Now I'm going to ask you some questions about the medicines your doctor has prescribed for you and about some suggestions he/she may have given you. I'd like you to tell me what medicines you've taken during the last two weeks. Let's start with the first one you think of. What's its name? What other medicines have you taken in the last two weeks? List: _____

_____

_____

Diuretics (1); Betablockers (2); Angiotension enzymes (3); vasodialators (4); Others (5)

		Med. # 1	Med. # 2	Med. # 3	Med. # 4	Med. # 5
1.	Do you take (name med)	(34)	(36)	(38)	(40)	(42)
	(READ CATEGORIES. CIRCLE ANSWER IN APPROPRIATE COL.)	(35)	(37)	(39)	(41)	(43)
	1. All the time,	1	1	1	1	1
	2. More than half the time,	2	2	2	2	2
	3. Half the time,	3	3	3	3	3
	4. Less than half the time, or	4	4	4	4	4
	5. None of the time	5	5	5	5	5
2.	In the past two weeks have you taken the <u>prescribed dosage</u> of (name-med)	(34) (44)	(36) (45)	(38) (46)	(40) (47)	(42) (48)
	1. All the time,	1	1	1	1	1
	2. More than half the time,	2	2	2	2	2
	3. Half the time,	3	3	3	3	3
	4. Less than half the time, or	4	4	4	4	4
	5. None of the time	5	5	5	5	5

Patient ID# _ _ (1 2)
Date _ _ _ _ _ (3 4 5 6 7)
Form _ (8)

3. In the past two weeks have you taken (name-med) at the recommended time of day

	(34) (49)	(36) (50)	(38) (51)	(40) (52)	(42) (53)
1. All the time,	1	1	1	1	1
2. More than half the time,	2	2	2	2	2
3. Half the time	3	3	3	3	3
4. Less than half the time, or	4	4	4	4	4
5. None of the time	5	5	5	5	5

4. Do you use any traditional Indian medicines to treat your high blood pressure? No ____ Yes ____ If yes:

   1. Describe what it is:_____
   _____
   2. Tell how it works:_____
   _____

5. Did the doctor suggest you follow a special diet? (Check one) No ____ Yes ____ If yes, go to question 6; If no, go to question 8.

6. Would you say you follow the diet as suggested (READ CATEGORIES) (Check One)

   1. All the time
   2. More than half the time,
   3. Half the time,
   4. Less than half the time, or
   5. None of the time

7. When you're away from home, have you followed the diet prescribed (READ CATEGORIES) (Check One)

   1. All the time,
   2. More than half the time,
   3. Half the time,
   4. Less than half the time, or
   5. None of the time

8. List the foods you like best.

   _____
   _____
   _____

   1. Carbohydrates (predominantly)
   2. Proteins (predominantly)
   3. Fats (predominantly)

Patient ID# 1 2
Date 3 4 5 6 7
Form 8

9. List the foods you eat most often:

_____
_____
_____
_____

1. Carbohydrates (predominantly) 3. Fats (predominantly)
2. Proteins(predominantly)

10. How often do you eat: (Write in)

a) during the day? _____ times
b) during the night?_____ times

11. List all the foods you eat in a typical day:

_____
_____
_____

1. All nutrients included in recommended amounts
2. Over consumption of certain nutrients
3. Under consumption of certain nutrients
4. Over and under consumption of recommended quantities

12. List all the liquids you usually drink in one day.

_____
_____

1.	Consumption of recommended quantities.	Yes____	No____
2.	Consumption of recommended kinds of fluids.	Yes____	No____
	quantities.	Yes____	No____
3.	Over consumption of recommended quantities	Yes____	No____
4.	Under consumption of recommended quantities	Yes____	No____
5.	Consumption of liquids not advised (alcohol).	Yes____	No____
6.	Over and under consumption of recommended quantities.	Yes____	No____

13. Do you add salt to your food? (Check one)
Always ____; Often ____; Seldom ____; Never____
If no, go to question 14.

If always or often, check one of the following:
1. While cooking? _____
2. At the table? _____
3. Both while cooking and at the table? _____

Patient ID# _ _
1 2

Date _ _ _ _ _
3 4 5 6 7

Form _
8

14. Did the doctor suggest you change your physical activity in any way because of your high blood pressure? (Check one) Yes____ No____ If no, go to Sociodemographic Questionnaire. If yes, go to number 18.

15. Would you say you follow the exercise recommended (READ CATEGORIES) (Check one)

1. All the time,
2. More than half the time,
3. Half the time,
4. Less than half the time, or
5. None of the time

16. When you're away from home, do you follow the exercise prescribed (READ CATEGORIES) (Check one)

1. All the time,
2. More than half the time,
3. Half the time,
4. Less than half the time, or
5. None of the time

17. How many times per week do you participate in exercise? (Write in) _____

18. How long (in minutes) do you exercise? (Write in) _____

19. What kind(s) of exercise(s) do you do during the day? Please specify:_____

1. _____ Light
2. _____ Moderate
3. _____ Vigorous

APPENDIX D

APPENDIX D

Sociodemographic

Patient ID# _ _
1 2

Date _ _ _ _ _
3 4 5 6 7

Form _
8

The following questions describe general things about you. Please answer all the questions to the best of your ability.

1. Sex (CHECK ONE)

   1. Male ____
   2. Female ____

2. Age in years (WRITE IN)
   _____ years

3. What is your racial or ethnic background? (CHECK ONE)

   1. White ____
   2. Black ____
   3. Mexican-American ____
   4. American Indian ____ Specify tribe:_____
   5. Oriental ____
   6. Other (specify)_____

4. What is your marital status? (CHECK ONE)

   1. Married ____
   2. Single, never married ____
   3. Divorced ____
   4. Widowed ____

5. Taking all sources of money into consideration, what was your family's total income before taxes and other deductions for the past 12 months? (CHECK ONE)

   1. $2,000 - $ 2,999 ____
   2. $3,000 - $ 4,999 ____
   3. $5,000 - $ 6,999 ____
   4. $7,000 - $ 8,999 ____
   5. $9,000 - $10,999 ____
   6. $11,000 - $12,999 ____
   7. $13,000 - $14,999 ____
   8. $15,000 - $16,999 ____
   9. $17,000 - $19,999 ____
   10. $20,000 Or Over ____
   11. No response ____

Patient ID# _ _
1 2

Date _ _ _ _ _
3 4 5 6 7

Form _
8

6. How much schooling have you had (highest grade completed)? (CHECK ONE)

1. None or some grammar school (Less than 7 grades completed)? ____
2. Junior high school (9 grades completed)? ____
3. Some high school (10 or 11 grades completed)? ____
4. Graduated high school? ____
5. Technical, business or trade school? ____
6. Some college (less than 4 years completed)? ____
7. Graduated college? ____
8. Post graduate college or professional? ____

7. Who lives in your household, besides yourself? (CHECK AS MANY AS APPLY)

1. No one else ____
2. Husband/Wife ____
3. Children (write in number living at home) ____
4. Other relatives (write in relationship; example: mother-in-law, niece, etc.)

_____

_____

5. Non-related persons (write in; example: friend, boarder)

_____

_____

8. Do you smoke cigarettes? YES____ NO ____ If no, go to question 9.

If yes, specify how many:

1. Less than 5 per day ____
2. 6 - 9 per day ____
3. 10-19 per day ____
4. 20-29 per day ____
5. 30 or more per day ____

Patient ID# _ _
1 2

Date _ _ _ _ _
3 4 5 6 7

Form _
8

9. Do you drink alcoholic beverages? YES____ NO ____
If no, go to question 10.

1. If yes, please check what kind.

a) Beer
b) Wine
c) Hard liquor (gin, vodka, etc.)
d) Other

2. If yes, please write in <u>how often</u> you drink alcoholic beverages?

a) Cans _____ a day _____ a week
b) Glasses _____ a day _____ a week
c) Bottles _____ a day _____ a week
d) Other _____ a day _____ a week

3. If yes, please write in the amount.

a) _____ cans a day/or week
b) _____ glasses a day/or week
c) _____ bottles a day/or week
d) _____ other a day/or week

10. How long have you lived in Great Falls? _____ Years

How long have you lived at the same address? _____ Years

APPENDIX E

APPENDIX E

Perceived Barriers to Therapy

Patient ID# _ _
1 2

Date _ _ _ _ _
3 4 5 6 7

Form _
8

EVERYONE WHO HAS HIGH BLOOD PRESSURE HAS TO FOLLOW SOME GUIDELINES TO HELP CONTROL HIGH BLOOD PRESSURE. SOME PATIENTS HAVE TO TAKE PILLS (MEDICATIONS) TO HELP CONTROL THEIR HIGH BLOOD PRESSURE.

1. Do you take <u>any</u> pills for your high blood pressure? (CHECK ONE)

   1. Yes, take pills ____ 2. No, do not take pills ____

   ↓

   IF NO, GO TO QUESTION 10

   If YES, please indicate the extent of your agreement with each statement by circling one choice for each statement.

2. I am confused by all the medications the doctor has given me.

   Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree

3. I would have to change too many habits to take my medications.

   Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree

4. If I take my medications, I may become dependent upon them.

   Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree

5. I am not interested in taking my medications regularly.

   Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree

Patient ID# 1 2

Date 3 4 5 6 7

Form 8

6. Taking my medications interferes with my normal daily activities.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

7. I must take my high blood pressure medications even if I don't think I am getting better.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

8. I believe that my medications will control my high blood pressure.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

9. Taking medication is something a person must do no matter how hard it is.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

EVERYONE WHO HAS HIGH BLOOD PRESSURE HAS TO FOLLOW SOME GUIDELINES FOR EATING (OR A DIET) TO HELP CONTROL HIGH BLOOD PRESSURE. SOME PATIENTS MUST BE CONCERNED WITH CALORIES OR CARBOHYDRATES, OTHERS WITH FAT OR SALT RESTRICTIONS. THE FOLLOWING STATEMENTS DESCRIBE BELIEFS SOME PEOPLE HAVE ABOUT THE DIET THEY MUST FOLLOW. PLEASE INDICATE THE EXTENT OF YOUR AGREEMENT WITH EACH STATEMENT BY CIRCLING ONE CHOICE FOR EACH STATEMENT.

10. Do you follow the diet suggested by your doctor?
    1. Yes____ Please indicate the extent of your agreement with each statement by circling one choice for each statement.
    2. No____ Go to question 19

11. Following my diet does not interfere with my normal daily activities.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

Patient ID# _ _
1 2

Date _ _ _ _ _
3 4 5 6 7

Form _
8

12. I am always hungry when I stick to my diet.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

13. I dislike the tastes of foods on my diet.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

14. My personal life does not interfere with my diet.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

15. It has been difficult following the diet prescribed for me.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

16. I have time to follow the diet the doctor ordered for me.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

17. I can count on my family when I need help following my diet.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

18. My husband/wife helps me to follow my diet.
(N/A: Spouse not available)

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

19. Some patients follow an exercise or activity program to help control their high blood pressure. Do you follow exercise recommendations suggested by your doctor for your high blood pressure?

1. Yes ____ 2. No ____

↓
GO TO END OF QUESTIONNAIRE

Patient ID# _ _
1 2
Date
3 4 5 6 7
Form
8

20. Following an exercise program does not interfere with my normal daily activities.

Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree

21. I am always tired when I exercise.

Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree

22. I dislike exercising on a regular basis.

Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree

23. My personal life does not interfere with my exercise program.

Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree

24. It has been difficult following the exercise program recommended for me.

Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree

25. I have time to follow the exercise program the doctor (nurse) suggested for me.

Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree

26. My family gives me the help I need in following my exercise program.

Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree

27. My spouse helps me to stick to my exercise program. (N/A: Spouse not available)

Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree

Patient ID# 1 2

Date 3 4 5 6 7

Form 8

28. My body has aches and pains after I exercise.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

THANK YOU VERY MUCH FOR PARTICIPATING IN THIS STUDY. IF YOU WISH TO KNOW THE RESULTS, A SUMMARY WILL BE SENT TO YOU UPON REQUEST.

APPENDIX F

APPENDIX F

MICHIGAN STATE UNIVERSITY

UCRIHS Approval

UNIVERSITY COMMITTEE ON RESEARCH INVOLVING HUMAN SUBJECTS (UCRIHS)
238 ADMINISTRATION BUILDING
(517) 355-2186

EAST LANSING • MICHIGAN • 48824-1046

May 5, 1987

Ms. Lynda Kendall
3435 Sixth Avenue South
Great Falls, MT 59405

Dear Ms. Kendall:

Subject: Proposal Entitled, "The Relationship Between Perceived Barriers to Treatment and Compliance with the Hypertensive Therapeutic Regimen"

UCRIHS' review of the above referenced project has now been completed. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and the Committee, therefore, approved this project at its meeting on May 4, 1987.

You are reminded that UCRIHS approval is valid for one calendar year. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval prior to May 4, 1988.

Any changes in procedures involving human subjects must be reviewed by the UCRIHS prior to initiation of the change. UCRIHS must also be notified promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

Thank you for bringing this project to our attention. If we can be of any future help, please do not hesitate to let us know.

Sincerely,

Henry E. Bredeck, Ph.D.
Chairman, UCRIHS

HEB/jms

cc: Dr. Barbara Given

Lynda Kendall
3435 Sixth Avenue South
Great Falls, MT 59405

March 23, 1987

Dr. Henry E. Bredeck
Chairman, UCRIHS
238 Administration Building
MICHIGAN STATE UNIVERSITY
East Lansing, MI 48824

Dear Dr. Bredeck:

I am a graduate student in the Family Clinical Nurse Specialist Program in the College of Nursing. Under the direction of Dr. Barbara Given, I have developed a thesis proposal to study the relationship between barriers to treatment and compliance with the hypertensive therapeutic regimen to be done with the urban American Plains Indian in Montana. I am submitting the enclosed information for review by the University Committee on Research Involving the Use of Human Subjects.

Consideration of this project would be greatly appreciated. Questions regarding the project may be directed to me in Montana, or to the Nursing Graduate Office (355-6526). I may be reached at either home or work, as follows:

Home: 3435 Sixth Avenue South
Great Falls, MT 59405
(406) 452-5458

Work: Montana Deaconess Medical Center
1101 26th Street South
Great Falls, MT 59405
(406) 791-5507.

Thank you for your time.

Sincerely,

Lynda Kendall

Lynda Kendall

Enclosure

MODIFICATION OF THE STUDY:

THE RELATIONSHIP BETWEEN PERCEIVED BARRIERS

TO TREATMENT AND COMPLIANCE WITH THE

HYPERTENSIVE THERAPEUTIC REGIMEN:

TO BE DONE WITH THE URBAN AMERICAN PLAINS INDIANS

IN GREAT FALLS, MONTANA

1. Abstract:

A descriptive study of 50 hypertensive urban American Plains Indians will be undertaken to determine the relationship between perceived treatment barriers and stated compliance with therapy. Interviews, self-administered questionnaires, and medical record audits based on the original instruments by Given and Given: Patient Contributions to Care: Link to Process and Outcome, 1983, will be used for data collection. The present study will be a modification of the research: The Relationship Between Perceived Barriers to Treatment and Compliance with the Hypertensive Therapeutic Regimen done by Harmon in 1983. The participants will be a convenience sample of adults receiving primary care at the Native American Center in Great Falls, Montana.

Descriptive statistics will be used to analyze the sociodemographic and audit data. Pearson r (product moment correlations), multiple and step-wise regression techniques will be used to analyze the relationships between perceived barriers to treatment and stated compliance with prescribed diet, exercise and medication. Extraneous variables, eg., alcohol consumption, income and other client descriptors will be entered as barriers

to compliance in a step-wise regression analysis. A comprehension of the nature and significance of barriers will afford the health professional opportunities and options to improve compliance.

2. Subject Population:

The subject population will be composed of a voluntary sample of accessible hypertensive clients under the care of local physicians and Indian Health Service physicians and the Native American Center in Great Falls, Montana. The sample will include Plains Indians of several tribes residing in Great Falls' city limits; able to speak and comprehend the English language; have an established medical diagnosis of essential hypertension; 18-65 years of age; no evidence of stroke, end-stage renal disease, blindness, cancer, psychiatric problems, pregnancy or lactation; and on a prescribed medication and/or a dietary regimen. No other studies are available at this time that deal with compliance issues in Native American groups.

Recruitment of subjects will be done with the assistance of the nurse clinician at the Native American Center. The initial contact with the patient will be done by the nurse clinician at the Native American Center. A follow-up telephone call by the researcher will be done to further describe the study. After written consent to participate is obtained from the patient by the researcher, a medical record audit will be done by the nurse clinician at the Native American Center to determine appropriateness for inclusion in the study. The Center has a

local medical advisor and a Board of Directors. The Board of Directors has given written consent to conduct the study.

3. Risk-Benefit Ratio:

No physical risks would be encountered with this study.

Psychological Risks. Some questions seeking specific behaviors: alcohol consumption, dietary habits, and cultural medicines may be viewed as encroachment upon privacy. Alcohol consumption is included in sociodemographic data which seeks a written response, possibly leaving the participant more free to decline to answer.

Social Risk. The study is being conducted by a non-Indian, which may pose sociocultural misunderstandings. Disclosure of Native American behavior may not be socially acceptable within certain tribes. This approach allows the participant the greatest freedom to respond and maximum control over the amount and type of information disclosed.

Benefits. Specific barriers to compliance may be identified which would facilitate an accurate assessment and resolution of problems with compliance. Cross-cultural communication may allow for more appropriate care for hypertensive Native Americans. The individual participant may become aware of actual and potential barriers which impede complying with a therapeutic regimen. The obvious overall benefit is that the physical risks of hypertension may be reduced by adherence to a medical regimen.

4. Consent Procedures:

Initially subjects will be contacted by the nurse clinician at the clinic to obtain the individual's interest and give an

overview of the project. After the initial contact, a telephone call will be made by the researcher to the individual to explain the research project, to describe theinstruments to be used, the time necessary to complete the instruments and to obtain verbal consent to participate. If the participant verbally agrees to enter the study, the individual will be asked to make an appointment to come into the Native American Center to sign a written consent form, participate in an interview and to complete the questionnaires. The participant is free to leave the study at any time with the guarantee that neither the quality nor amount of service provided by the Native American Center would change.

APPENDIX G

APPENDIX G

Native American Center Incorporated
700—10th Street South
P.O. Box 2612
Great Falls, Montana 59403
Ph. (406) 761-3165

Native American Center
Board Approval

SELF DETERMINATION THROUGH EDUCATION

August 27, 1985

Ms. Linda Kendall, R.N.
3435 6th Avenue South
Great Falls, Montana 59405

Dear Ms. Kendall:

Please be advised that the NACI Board of Directors voted unanimously to allow you to conduct your research project relating to Native Americans and hypertension.

Since very few studies of this nature have been conducted in relation to Urban Indians, we are, naturally, very interested in the final outcome; and, therefore, request that a copy of the study thesis be made available to our organization.

Thank you for your interest in the health and welfare of our Native People.

Sincerely,

Edward M. LaMere
Executive Director

jm

cc: NACI Board Members

LIST OF REFERENCES

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