HYPERTENSIVE PATIENTS' PERCEPTIONS OF SOCIAL SUPPORT IN FOLLOWING A THERAPEUTIC REGIMEN:

A DESCRIPTIVE STUDY

By

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A THESIS

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To my husband, Edward, our
children, David and Shannon,
and my parents, Beverly and
William Worley.

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ABSTRACT

HYPERTENSIVE PATIENTS' PERCEPTIONS OF SOCIAL SUPPORT IN FOLLOWING A THERAPEUTIC REGIMEN: A DESCRIPTIVE STUDY

By

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A descriptive study was conducted to identify hypertensive patients' perceptions of social support in following a therapeutic regimen. Differences in perceptions of social support (support person, type of support, and quantity of support) among the modalities and subgroups of the sample were also examined.

Data were collected from 102 hypertensive patients by means of a self-administered questionnaire. Data were analyzed using descriptive statistics, chi-square, and *t*-tests.

Hypertensive patients were most often able to identify someone able to support them for the modality of diet. Spouse was the most frequently identified support person for all modalities. Patients perceived high levels of psychological support for medication and slightly more tangible than psychological support for diet and exercise.

There were significant differences in perceptions among the modalities, experimental and control groups, and sociodemographic characteristics of sex, income, occupation, and living arrangements.

CHAPTER 1

INTRODUCTION TO THE STUDY

Introduction

Hypertension is a chronic, debilitating, and often fatal condition so widespread in the American population that many refer to it as epidemic (National Institute of Health, 1981). Approximately 60 million Americans have an increased risk of heart attack, coronary artery disease, stroke, and kidney disease as a result of high blood pressure (Kannel, 1976; National High Blood Pressure Information Center, 1978; Hypertension Detection and Follow-Up Program Group, 1979, 1982; Joint National Committee on Detection, Evaluation, & Treatment of High B/P, 1984). Estimates of the cost of hypertension and its complications range from $16 to $30 million per year. This cost includes direct medical expenditures and lost income through illness, disability, premature loss of productivity, and death (Kochar, 1981) but not the cost in changes in the quality of life for those individuals and their families that are impossible to measure.

Mortality from cardiovascular disease has declined since 1950, especially after 1970, with deaths from hypertension-related diseases declining at a much sharper rate than those categories not related to hypertension. From 1968 to 1978, the age-adjusted death rate for hypertensive-related diseases fell 28.5%. Still, in 1982 there were

729,000 deaths from hypertension and related diseases (U/S--A Statistical Portrait of the American People, 1983). This decline in mortality and morbidity is believed to be due in part to the treatment of hypertension (NHLBI Hypertension Detection and Follow-Up Program, 1972-79; V.A. Study Group on Antihypertensive Agents, 1963-1970) and the establishment of the National High Blood Pressure Education Program with its concurrent growth of community programs in 1972 (Hypertension Detection & Follow-Up Program Group, 1982).

Yet, despite the availability of effective treatment, the majority of hypertensive Americans do not have effectively controlled blood pressure. These uncontrolled hypertensive individuals include persons who are not identified as hypertensives, persons who are identified and not treated, and persons who are identified but receive ineffective treatment (Kochar, 1981; Mason, 1982). A review of surveys that measured public knowledge and attitudes toward hypertension from 1973 to 1979 (Haines & Ward, 1981) revealed that although the public had an increasing awareness of the seriousness and risks of hypertension, the etiology of hypertension, the availability and length of treatment, and the role of diet in treatment, there was no substantial change in the percentage of hypertensives who stayed in treatment.

In 1975 the National High Blood Pressure Education Program in cooperation with the American Nurses Association and the National League for Nursing sponsored a Task Force on the Role of the Nurse in High Blood Pressure Control. The goal of the task force was to review the nurse's role in the treatment of high blood pressure and to delineate the education necessary to fulfill that role (Grim & Grim, 1981). To accomplish these goals, the task force made the following recommendations:

1. high blood pressure be given greater emphasis in nursing curricula and continuing education programs;
2. more nurses become prepared to provide primary care for patients with uncomplicated hypertension; and
3. nurses participate in and conduct research related to the care of hypertensive patients. (Guidelines for Educating Nurses, 1980)

These objectives are being met. Colleges and universities have made information regarding the etiology, detection, and management of hypertension available to all nurses in either their basic or continuing educational programs. Graduate programs are preparing nurses to provide primary care to hypertensive patients and to conduct the research necessary to build nursing's knowledge base regarding hypertension and the role nurses play in its management. Reports from nurses involved in the clinical management of and research on hypertensive patients support the belief that the most challenging aspect of practice with hypertensive patients continues to be assisting the patient in long-term adherence to a therapeutic regimen (Brown & Bloom, 1978; Daniels & Kochar, 1979; Earp et al., 1982; Giblin, 1978; Given et al., 1979, 1982; Grancio et al., 1980; Grim & Grim, 1981; Haviland, 1983; Heine, 1981; Mason, 1982; McCombs et al., 1980; Rogus, 1981; Steckel et al., 1977; Swain & Steckel, 1981).

The treatment or therapeutic regimen for hypertension consists of several modalities that may involve life-style changes. The use of medication, dietary regulation for weight loss or sodium restriction, inclusion of exercise, exclusion of smoking, and more effective management of stress may be included in a hypertensive patient's therapeutic regimen. The difficulties of relinquishing old habits and modifying life styles to follow a therapeutic regimen are well documented (Caplan et al., 1976; Sackett & Haynes, 1976; Swain & Steckel, 1981). Zisook (1980), in a review of the literature, estimated that as many as 93% of patients do not follow recommended therapeutic regimens. The hypertensive patient may be more likely not to follow the recommended regimen because he/she does not feel ill or experience symptoms before starting a therapeutic regimen and therefore may feel no "improvement" while on the regimen.

Those interested in health care have studied many strategies that may influence a patient's ability to follow a therapeutic regimen, among which an important one has been social support. The earliest and most common focus of research in the field of social support was on the relationship of an individual's support system to his/her ability to cope with stressful circumstances (Atchly, 1979; Billings & Moos, 1980; Cobb, 1976; Dean & Lin, 1977; Goplerod, 1978; Gore, 1978; Kaplan et al., 1977; Murawski et al., 1978; Nuckolls et al., 1972; Pearlin et al., 1981). More recently, research has documented the value of social support not only as an enhancer of self-esteem, but also as a facilitator in following a therapeutic regimen. The major problem of this type of research has been the inconsistency in the definition and measurement of social support. As summarized by Kaplan et al. (1977),

> There is little strong empirical evidence to confirm the role it may play in health and illness. This is not surprising: attempts at conceptualization and measurement have been inadequate, discipline bound (or study bound) and usually formulated for post-hoc interpretation of unexpected, but striking results.

Still, more studies have reported positive relationships between social support and following a therapeutic regimen (Berkman & Syme, 1979; Davis & Eichorn, 1963; DeAraujo et al., 1972; Earp, 1982; Haynes, 1976, 1979; King, 1982; Kirscht et al., 1981; McKenny et al., 1973) than have reported no correlation (Hershay et al., 1980; Nelson et al., 1978).

In empirical research, social support is measured in two ways: from the perspective of an outside observer (the objective approach) or from the frame of reference of the target person (the subjective approach). Although supporters of the objective approach note that objective assessment is not prone to the self-reporting biases of the subjective approach, the subjective approach remains valuable. Donald et al. (1978) noted,

> In favor of the more subjective approach is the argument that individuals have different needs and tastes; therefore, the nature and number of interpersonal contacts with friends, relatives, and others necessary to achieve social health may vary greatly. The differences may not be adequately reflected in measures of objective social health constructs.

Using the subjective approach to measure social support may also help determine the person's perception of support available and received. For it is the perception of support rather than the objective measures of support that determines how people will respond in a situation. If people perceive they are supported, regardless of actual feelings or intentions toward them, they will respond, i.e., cope, effectively (Given et al., 1979).

A major goal of health-care providers dealing with hypertensive patients is to assist them in following a therapeutic regimen. As noted earlier, research has documented positive relationships between social support and following a therapeutic regimen. It is therefore important for health-care providers to be able to determine what social support is available to and received by the patient. Since the perception of social support determines the response in a situation, it is necessary to examine patients' perceptions of social support (subjective approach) rather than totally rely on the provider's assessment of support available and received (objective approach). Thus, the purpose of this study is to investigate hypertensive patients' perceptions of social support in following a therapeutic regimen.

Purpose

The purpose of this study is to examine and describe hypertensive patients' perceptions of social support in following a therapeutic regimen. The data were collected for the research project "Patient Contributions to Care--Link to Process and Outcome," by B. Given and C. W. Given, co-principal investigators. The project was a controlled field experiment in which the effects of a nursing intervention, over a 6-month period, on clinical parameters and other indicators of management and control of hypertension were explored.

In this thesis I will attempt to identify hypertensive patients' perceptions about who was supportive, what type of support they received, and how much support they received. An attempt will be made to identify any differences in perceptions of social support among the various modalities of the therapeutic regimen (medication, diet, and exercise) and among standard sociodemographic characteristics of the hypertensive patients studied. With this information the health-care provider may be in a much better position to assist the patient in the use of social support to make life-style changes necessary to follow his/her therapeutic regimen.

Statement of the Question

The study is descriptive in nature, and analysis of the findings will be used to answer the following questions:

1. What are hypertensive patients' perceptions of social support in following a therapeutic regimen?
2. Are there differences in perceptions of social support among the various modalities of the therapeutic regimen?
3. Are there differences in perceptions of social support among the various subgroups of the sample studied, based on standard sociodemographic characteristics?

Definition of Concepts

The following are definitions of concepts introduced in the research questions and used throughout the study.

Hypertensive patients are defined in this study as females and males, ages 21 to 65 inclusive, with an established diagnosis of essential hypertension whose therapeutic regimen includes one or more of the following: medication, therapeutic diet (weight reduction, sodium restriction, or both), or prescribed exercise. For inclusion in this study, patients must (a) have no other chronic illness; (b) have no evidence of stroke, cancer, blindness, end-stage renal disease, psychosis, or active pregnancy or lactation; (c) be literate; (d) speak and read English; and (e) have two blood-pressure readings separated over time indicating a systolic pressure above 160 mm Hg and a diastolic pressure of 90 mm Hg or above.

Perception of social support refers to the expressed belief of the individual as to the existence or nonexistence of social support. Social support is defined as "information leading the subject to believe that he is cared for, loved, esteemed, and valued, and a member of a network of mutual obligations" (Cobb, 1976). This support may be task oriented or tangible "behavior directed toward providing the person with tangible resources that are hypothesized to benefit his/her mental or physical well being" (Caplan, 1979). It may also be psychological support or "behaviors directed toward providing the person with cognitions (values, attitudes, beliefs, and perceptions) and toward inducing affective states that are hypothesized to promote well being" (Caplan, 1979).

Therapeutic regimen. This includes strategies documented or believed to reduce hypertension which are prescribed or recommended by a health-care provider to a hypertensive patient. These may include both pharmacologic and nonpharmacologic modalities, i.e., medication, dietary restrictions for weight loss or sodium reduction, exercise, stress reduction, reduction or cessation of alcohol consumption and smoking, and restoration of normal sleep patterns. For the purpose of this study, the modalities of the therapeutic regimen will be limited to medication, diet, and exercise.

Limitations

The following limitations were identified in this study:

1. The members of the sample were volunteers and may be different from those in the population who refused to participate. Therefore, the sample may not be representative of all hypertensive patients, and the results are not generalizable to all hypertensive patients.

2. Portions of the instrument used to collect the data studied were not tested before use and have limitations of validity and reliability.

3. The hypertensive patients' perceptions of social support may change over time or with circumstances. Therefore, the findings of this study may not reflect the hypertensive patients' perceptions at any other point in time.

4. This study relied on self-reported data and subjects may have responded in a socially desirable manner, thus posing a threat to the validity of the results.

Assumptions

For the purpose of this research, the following assumptions were made:

1. Following a therapeutic regimen for hypertension will involve modification of habits and possibly life style.

2. The hypertensive patient has perceptions regarding social support in following a therapeutic regimen.

3. The hypertensive patient is able to answer questions consistent with his/her perceptions.

4. The hypertensive patient is able to read and comprehend the questions in the instrument.

5. The instrument is sensitive enough to document perceptions of social support in following a therapeutic regimen.

Overview of the Thesis

The thesis is organized into six chapters. Included in Chapter 1 are the introduction, statement of the problem, research questions, conceptual definitions, limitations, and assumptions of the study.

In Chapter 2, the concepts and theories relevant to this study are outlined, integrated into a conceptual framework, and presented in graphic form.

A review of the literature related to major concepts of the study is presented in Chapter 3.

A discussion of the methodology and procedures used in conducting the research is presented in Chapter 4. A description of the collection sites, population, sample, human rights protection, data-collection procedures, instruments, and scoring procedures is included in this chapter.

The data collected are presented and analyzed in Chapter 5.

Research findings are summarized and interpreted in Chapter 6. Conclusions and recommendations for nursing practice, education, and research are also presented.

CHAPTER 2

CONCEPTUAL FRAMEWORK

Overview

The purpose of this chapter is first to discuss briefly the definition of hypertension and the regulation of blood pressure in both normal tension and hypertension. Next, the therapeutic regimen (recommendations or protocols) for treatment of hypertension will be presented. The possible role of social support in facilitating long-term management of hypertension then will be considered. Finally, a conceptual framework integrating systems theory, the nursing theory of Imogene King, and the major concept of the study, perceptions of social support, will be described. A schematic representation of the conceptual framework provides a base from which the research questions may be studied.

Definition of Hypertension

There continues to be some disagreement over what blood pressure reading denotes hypertension and deserves treatment. The World Health Organization has defined hypertension as the presence of casual blood pressure greater than 160/95 mm Hg. As a result of new research data on risks of slightly elevated blood pressure, the norms were refined by the National Center for Health Statistics and the following guidelines established (Mason, 1982).

Definite High--Blood Pressure Not Adequately Treated
160 mm Hg or over   Systolic pressure
95 mm Hg or over   Diastolic pressure

Borderline High--Blood Pressure Not Under Medication
Pressure below 160 mm Hg systolic <u>and</u>
Below 95 mm Hg diastolic, but not simultaneously
below both 140 mm Hg systolic and 90 mm Hg diastolic

Hypertensives on Adequate Treatment
Previously diagnosed hypertensives with blood pressure below 160 mm Hg systolic and 95 mm Hg diastolic and on a therapeutic regimen for high blood pressure

Normal Blood Pressure
Pressure below <u>both</u> 140 mm Hg systolic and 90 mm Hg diastolic

Notwithstanding these guidelines, the most widely followed definition appears in the recommendation of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (1984), which stated:

> Following screening, the diagnosis of hypertension in adults is confirmed when the average of multiple diastolic B/Ps on at least two subsequent visits is 90 mm Hg or higher; or when the average of multiple systolic B/Ps on two or more subsequent visits is consistently greater than 140 mm Hg.

Hypertension is then classified by the Committee as shown in Table 2.1.

Normal Regulation of Blood Pressure

Under normal circumstances, the blood pressure level is maintained by the interplay of various physiological mechanisms. Blood pressure is primarily a function of cardiac output and peripheral resistance. This relationship is summarized by the formula:

Blood pressure = cardiac output x peripheral resistance

Cardiac output is the volume of blood ejected into the aorta per minute. It is the major determinant of the systolic blood pressure. Diastolic blood pressure is primarily determined by the resistance in the arterioles. Cardiac output and peripheral resistance are directly and indirectly affected by factors such as blood volume, blood viscosity, sympathetic nervous activity, renin angiotensin aldosterone system, and autacoids (vasoactive substances) such as prostaglandins and bradykinin (Kochar, 1981).

Table 2.1: Classification of B/P

Range, mm Hg	Category
Diastolic	
< 85	Normal B/P
85-59	High normal B/P
90-104	Mild hypertension
105-114	Moderate hypertension
115	Severe hypertension
Systolic, when diastolic is 90	
< 140	Normal B/P
140-159	Borderline isolated systolic hypertension
160	Isolated systolic hypertension

Source: Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure (1984).

Essential Hypertension

More than 95% of patients with elevated blood pressure have essential (idiopathic, primary) hypertension. These patients do not have an identifiable cause for their hypertension, but they have a disease of blood pressure regulation. In earlier stages of mild hypertension, the cardiac output is elevated. As the pressure rises further, the cardiac output falls and the elevated blood pressure reflects increased peripheral resistance. Vasoconstriction is maintained by excess sodium content of the arteriolar smooth muscle cells, increased sympathetic activity, imbalance between vasoconstrictor angiotensin and vasodilator prostaglandins and kinins, and other unknown mechanisms. Other factors associated with hypertension include obesity, increased heart rate, heredity, physical activity, and increasing age (Kochar, 1981). The purpose of the therapeutic regimen, then, is to reduce or eliminate physiological and psychological phenomena which alter normal blood pressure regulation.

The Therapeutic Regimen--Recommendations for the Management of Hypertension

Findings of the Hypertension Detection and Follow-Up Program (1982) suggest that long-term reduction of blood pressure decreases overall mortality at all levels of hypertension. In patients with mild hypertension it also reduces the risk of cardiovascular complications such as stroke, congestive heart failure, left ventricular hypertrophy, and progressive elevations in blood pressure. In those patients with moderate or severe hypertension, reducing blood pressure decreases overall mortality and cardiovascular morbidity (V.A. Administration Cooperative Study Group, 1969, 1970).

It is therefore the recommendation of the Joint Committee of Detection, Evaluation, and Treatment of High Blood Pressure (1984) that even mild hypertension be treated. Benefits outweigh risks of pharmacologic therapy for those with a diastolic B/P persistently elevated above 95 mm Hg and for those who are at high risk (e.g., patients with target organ damage, diabetes mellitus, or other major risk factors for coronary heart disease). Aggressive nonpharmacologic therapy is suggested for those with diastolic B/Ps of 90 to 94 mm Hg who are otherwise at low risk.

While nonpharmacologic therapy has been used as an adjunct to drug therapy for some time, evidence has grown in the past five years in favor of using these approaches as definitive interventions for patients with mild uncomplicated hypertension. As described in Chapter 1, nonpharmacologic approaches may include dietary restrictions (weight loss and sodium reduction), reduction or cessation of alcohol consumption and smoking, exercise, stress reduction, and return to normal sleep patterns. In the Report of the Hypertension Task Force (1979), a strong correlation between body weight and B/P was noted. This was particularly true among children and young to middle-age adults. Reisin et al. (1978) found that weight reduction often resulted in substantial decrease in B/P even if ideal body weight was not achieved. This B/P reduction is in addition to any effect of restricted sodium intake. Based on these findings, the 1984 Joint National Committee on

Detection, Evaluation, and Treatment of High Blood Pressure recommends that weight reduction should be an integral part of therapy for all obese persons (> 115% of ideal body weight) with hypertension. The Committee also recommends counseling hypertensive patients for moderate sodium restriction. MacGregor et al. (1982) and Parijs et al. (1973) have documented reductions in elevated B/P with moderate dietary sodium restriction to a level of 70 to 90 mEq/day. Although not all patients with hypertension respond to moderate sodium restriction, there is no hazard and it may also decrease the amount of potassium lost with diuretic therapy.

In a study of the relationship of alcohol and the cardiovascular system, Klatsky (1982) found that heavy alcohol consumption (> 56.8 g/day of alcohol) may elevate arterial B/P. One ounce (28 g) of ethanol is contained in 2 oz. of 100 proof whiskey, 8 oz. of wine, or 24 oz. of beer. Therefore, the recommendation for controlling hypertension is for those who drink to drink moderately (< 56.8 g/day). As with alcohol, nicotine will raise arterial B/P for a short time. Still, there is no definitive evidence that prolonged nicotine use will increase the risk of hypertension. Persons who smoke, however, do increase their risk of cardiovascular disease (Stamler et al., 1975) and for this reason, avoidance of smoking is encouraged in hypertensive patients.

A regular isotonic or aerobic exercise program can aid in weight control and stress reduction and may be helpful in reducing B/P through these mechanisms. Exercise programs should be initiated by hypertensive patients gradually, after consultation with a health-care provider. These exercise programs are recommended for patients with uncomplicated essential hypertension.

Stress reduction and return of normal sleep patterns are accomplished by various relaxation or biofeedback therapies. Studies by Patel et al. (1981) and Engel et al. (1983) have demonstrated modest, but substantial, B/P reduction with the use of relaxation and biofeedback techniques in selected groups outside the laboratory. The B/P reductions have been maintained for as long as 1 year. As with other nonpharmacologic approaches, the techniques of relaxation and biofeedback are most relevant for the treatment of mild hypertension but are also useful as an adjunct to pharmacologic therapy in more severe hypertension.

When elevated B/P cannot be reduced by the use of nonpharmacologic therapies or when diastolic B/Ps are persistently 95 mm Hg or above, pharmacologic therapy is recommended in addition to nonpharmacologic measures. The most common approach to pharmacologic therapy is "stepped care." Stepped care

> is suggested as a guide for treating hypertensive patients when drug therapy is indicated. This approach leaves room for individualization and flexibility in management, and it has been used effectively in major clinical trials demonstrating reduction of morbidity and mortality. In numerous studies, normotensive levels have been achieved in more than 80% of the patients using this simple and relatively inexpensive approach to treatment. The SC program suggests initiating therapy with a small dosage of an anti-hypertensive drug, increasing the dose of that drug, and then adding or substituting one drug after another in gradually increasing doses as needed until goal B/P is achieved, side effects become intolerable, or the maximum dose of each drug has been reached.

See Table 2.2 for an outline of the stepped-care approach.

Table 2.2: Stepped-Care Approach to Drug Therapy

Step	Drug Regimen
1	Begin with less than a full dose of either a thiazide-type diuretic or a B-blocker; proceed to full dose if necessary and desirable
2	If B/P control is not achieved, either add a small dose of an adrenergic-inhibiting agent or a small dose of thiazide-type diuretic; proceed to full dose if necessary and desirable; additional substitutions may be made at this point
3	If B/P control is not achieved, add a vasodilator, hydralazine hydrochloride, or minoxidil for resistant cases
4	If B/P control is not achieved, add quanethidine mcnosulfate

Source: Joint National Committee on Detection, Devaluation, and Treatment of High Blood Pressure (1984).

Collaboration among health professionals is a further component of successful B/P control effort (Grim & Grim, 1981; Hill et al., 1984; Kochar, 1981; Mason, 1982). The nurse's role in this collaborative effort is expanding but remains based on standards of nursing practice. Cardiovascular nursing practice is defined in Standards of Cardiovascular Nursing Practice (1975) as

> the nursing care of individuals who have known or predicted alteration in cardiovascular physiologic function. The scope of cardiovascular nursing practice encompasses those nursing activities which assist the individual to modify his life style and environment so that he can attain optimum cardiac function and acceptable quality of life in congruence with his life goals. (p. 7)

Included in the standards--which are based on the nursing process of assessment, development of nursing diagnosis, development of goals and a nursing-care plan to achieve the goals, and evaluation of the plan of care--are factors particularly related to this study. Assessment factors include health data on the individual's perceptions and expectations which relate to her/his health-illness state and health-care services, the psychosocial behavior of the individual and her/his responses or patterns of coping/adaptation, and information as it relates to the individual's habits and social and work roles. The following patient outcomes are listed under goals for nursing care: (a) the individual participates in planning the modification of life style and accepts the modifications, (b) the individual demonstrates effective coping mechanisms to adapt to her/his altered life style, and (c) the individual maintains a dietary intake, activity pattern, and pharmacologic regimen that is compatible with therapeutic and personal goals (Standards of Cardiovascular Nursing Practice, 1975).

Social Support

As early as 1951, researchers proposed that social support was somehow positively related to health (Durkheim, 1951). The exact nature of the role of social support in health, however, has been elusive. Empirical findings in the studies of Brown et al. (1975), Lowenthal and Haven (1968), and Miller et al. (1976) have shown that emotionally intimate relationships are consistently found to be protective of health and that one intimate relationship is more protective than several more casual relationships.

Cassell (1974), Cobb (1976), and Dean and Lin (1977) supported the notion that social support acts as a protective buffer against major stress and life changes that may increase an individual's susceptibility to physical or mental illness. More recently, Pearlin et al. (1981) placed social support along with coping as interventions that do not act directly to buffer illness but rather minimize the elevation of illness by dampening the antecedent process. Billings and Moos (1980) also paired social supports and coping as "attenuating" the relationships between undesirable life events and personal functioning (which includes health).

A review of 22 research articles in which support-relevant variables were measured in relation to following a therapeutic regimen (Haynes & Sackett, 1979) revealed 15 studies that reported positive relationships, six studies that found no association, and one study that reported evidence contrary to the hypothesis that social support is positively associated with following a therapeutic regimen. Caplan (1976, 1979) and Kirscht et al. (1981) both reported positive relationships between social support and self-reported adherence to a therapeutic regimen among large groups of hypertensive patients. Caplan (1979), however, concluded that compliance was highest when both social support and motivation are present and that compliance appeared to determine support as well as be determined by it.

In 1982, Minkler set forth three major hypotheses regarding the mechanism of social support. The first hypothesis suggests that the existence of a supportive network may mean that an individual is being encouraged by his/her social contacts to take preventive action or seek needed health care. She cited results of Berkman and Syme (1979) from a study in which the mortality experience of 7,000 Alameda County residents over 9 years was followed. The most significant finding of the study was that those study subjects with few ties to other people had mortality rates two to five times higher than those with more ties. These differences were independent of self-reported health status and traditional risk factors.

The second hypothesis proposes that support provided by members of an individual's social networks increases coping ability and hence helps "short-circuit" the illness response to stress. Studies by Atchley (1979) and Gore (1978) provided support for this hypothesis with findings that job loss, retirement, and bereavement appear to be less traumatic in terms of morbidity and mortality when support networks are available and used. The third hypothesis builds in part on the first two and suggests that, over time, people's perceived support from others may lead them to a more generalized sense of control. In view of Antomorsky (1979) and Satariano (1981), it is perhaps this more global feeling of control and confidence that serves as the missing link explaining why social support would be so critically related to health.

It is not the intention of this research to unravel completely the complex and ill-defined concept of social support. Rather, an attempt will be made to add to the body of knowledge regarding social support by examining an important aspect of the concept, the patient's perception of social support. This will be accomplished using a conceptual framework that combines general systems theory and the nursing theory of Imogene King.

General Systems Theory and the Nursing Theory of Imogene King

In 1933, Ludwig von Bertalanffy published "Modern Theories of Development: An Introduction to Theoretical Biology." This paper marked the beginning of a dynamic new era in the sciences which stressed wholeness and organization. The purpose was to develop theoretical models, principles, and laws that promote the unity of science and eliminate the duplication of theoretical efforts through improved communications between the disciplines. The general systems theory applies universal principles to systems or their subclasses irrespective of the particular kind of system, the nature of the component elements, or the relationship or force between the elements. The systems model provides a framework by which otherwise unconnected parts are integrated and many different pieces fall into place (Hazzard, 1971).

Bertalanffy (1955) referred to a system as a complex of elements in interaction; Hall and Fagan (1968) spoke of a system as a set of parts of components together with relationships between the parts and between the properties of the parts; while Hart and Herriott (1977) defined a system as a set of components interacting with each other and a boundary that possesses the property of filtering both kind and rate of flow of inputs to the system and outputs from the system. In a living system, the model used for this thesis, the boundaries are semi-permeable to allow for an exchange of matter, energy, or information between the system and the environment. The boundary can be thought of as a hotel door that connects two adjoining rooms and locks or unlocks from either side. Systems on either side of the boundary may choose whether or not to "unlock the door" and how much to "open the door" to exchange matter, energy, or information. This function of the system is known as boundary maintenance.

The maintenance of the boundary between the system and the environment is one of the system's main functions. Bredemeir (1962) suggested there are four ways in which a system maintains its boundary while interacting with the environment. First, the system retains within itself matter, energy, and information necessary for the system to function. Second, the system obtains from the environment needed matter, energy, or information. Third, the system contains within the environment matter, energy, or information not wanted or required. Fourth, the system disposes of unwanted matter, energy, or information to the environment. The matter, energy, and information obtained by the system are inputs to the system. Disposed-of matter, energy, and information are outputs from the system. When there is some constancy in the input-output exchanges of an open system, it is said to be in a steady state. This does not imply a static state, for continual dynamic processes are taking place while the relationships between the system parts remain at or near a particular balance (Hall, 1977).

Hall (1977) noted, "It is the purpose and goal of the open system to determine the [steady] state desired. It is the system's work to make decisions which will maintain its continuum of balance and purposeful direction in the environment" (p. 23). Decisions necessary to maintain a desired state in a system are based on information input to the system as _feedback_. Feedback as defined by Melcher (1981) is the property of an open system to use all or part of an output as an input to effect future outputs and/or behaviors. Both positive and negative feedback are necessary for a system's survival. Positive feedback is system output information that will cause a system to change its previous activity. Negative feedback is output information that will cause the system to maintain its current activity. Vickers (1959) proposed four ways the system may adjust through feedback when usual responses fail. The system (a) alters itself, (b) alters the environment, (c) withdraws from the environment, or (d) alters its desired state or goal.

In the model of an open living system used for this thesis (Figure 2.1), input, in the form of demands and supports, is taken into the system and through a complex dynamic interaction of processes and internal feedback, decisions, or actions may be outputs to the environment. In this model the goal or desired state of the system is normotension. The demand of the system is following a therapeutic

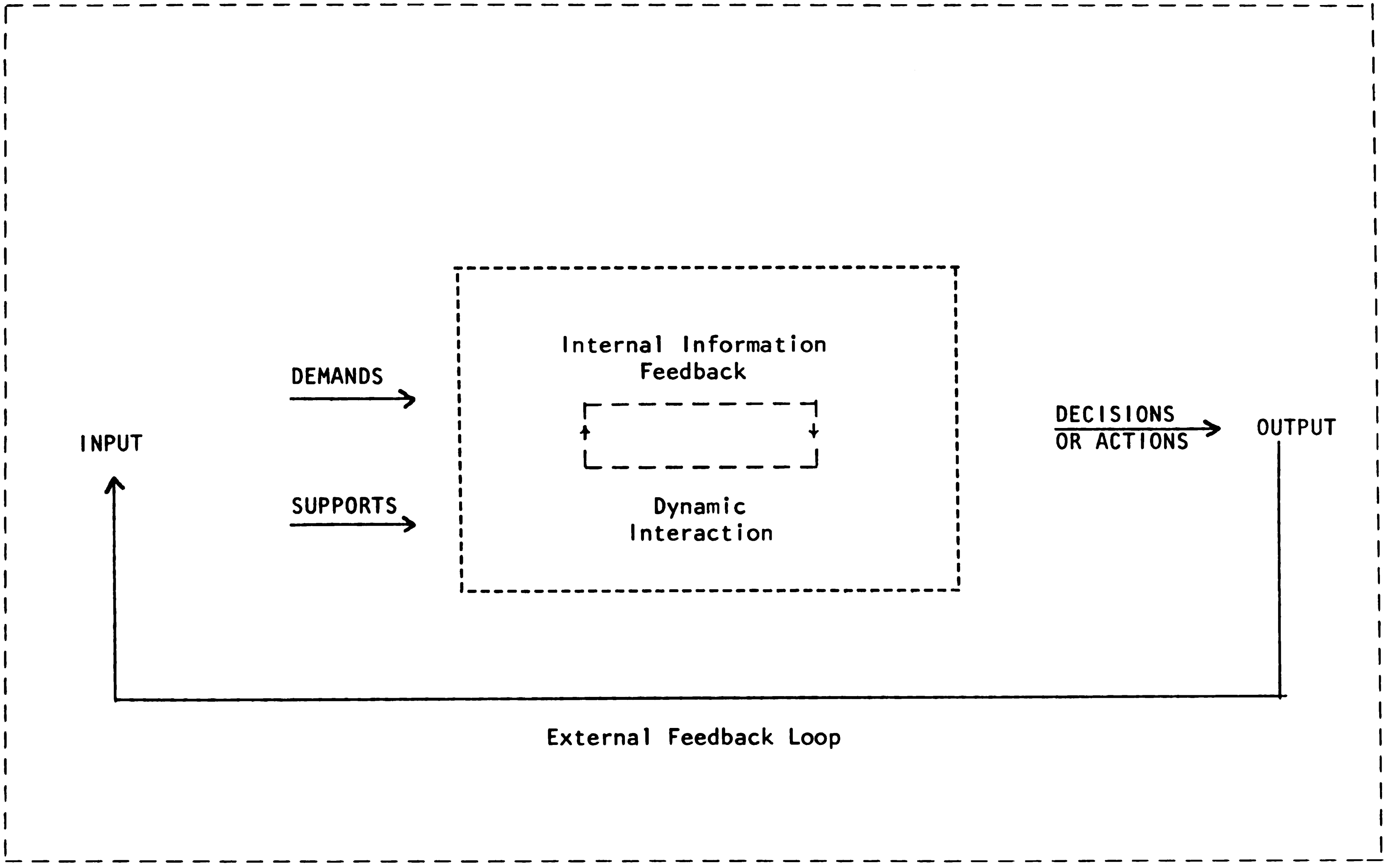

Figure 2.1: Open living system. (From Hazzard, 1971.)

regimen to control hypertension. Social support is the input support. The patient's perception of social support is part of the interactional and internal feedback process that may determine future decisions and behaviors (Figure 2.2). It must be remembered that both the hypertensive patient and the support person bring their own perceptions of social support to the interaction. One, both, or neither may reflect what in reality is available.

The interactional processes of the hypertensive patient and her/his support person(s) or group determine how and if decisions are made or actions are taken (Figure 2.3). The results of these decisions and actions, both positive and negative, feed back to both the demand (more or less pressure to control hypertension with a therapeutic regimen) and supports (more or fewer resources for social support) (Figure 2.3).

Imogene King used a systems approach to examine and understand human behavior and relate it to nursing care. Figure 2.3, with its focus on perceptions of the individual, is taken from her theory of nursing (1981). King stated that people function in social systems through interpersonal relationships in terms of their perceptions which influence their lives and health. This statement is an accurate portrayal of the events examined in this thesis.

People were described by King (1981) to be reacting, time oriented, and social beings with the ability to perceive, think, feel, choose, set goals, select means to achieve goals, and make decisions. These qualities are necessary if people are to be able to recognize the

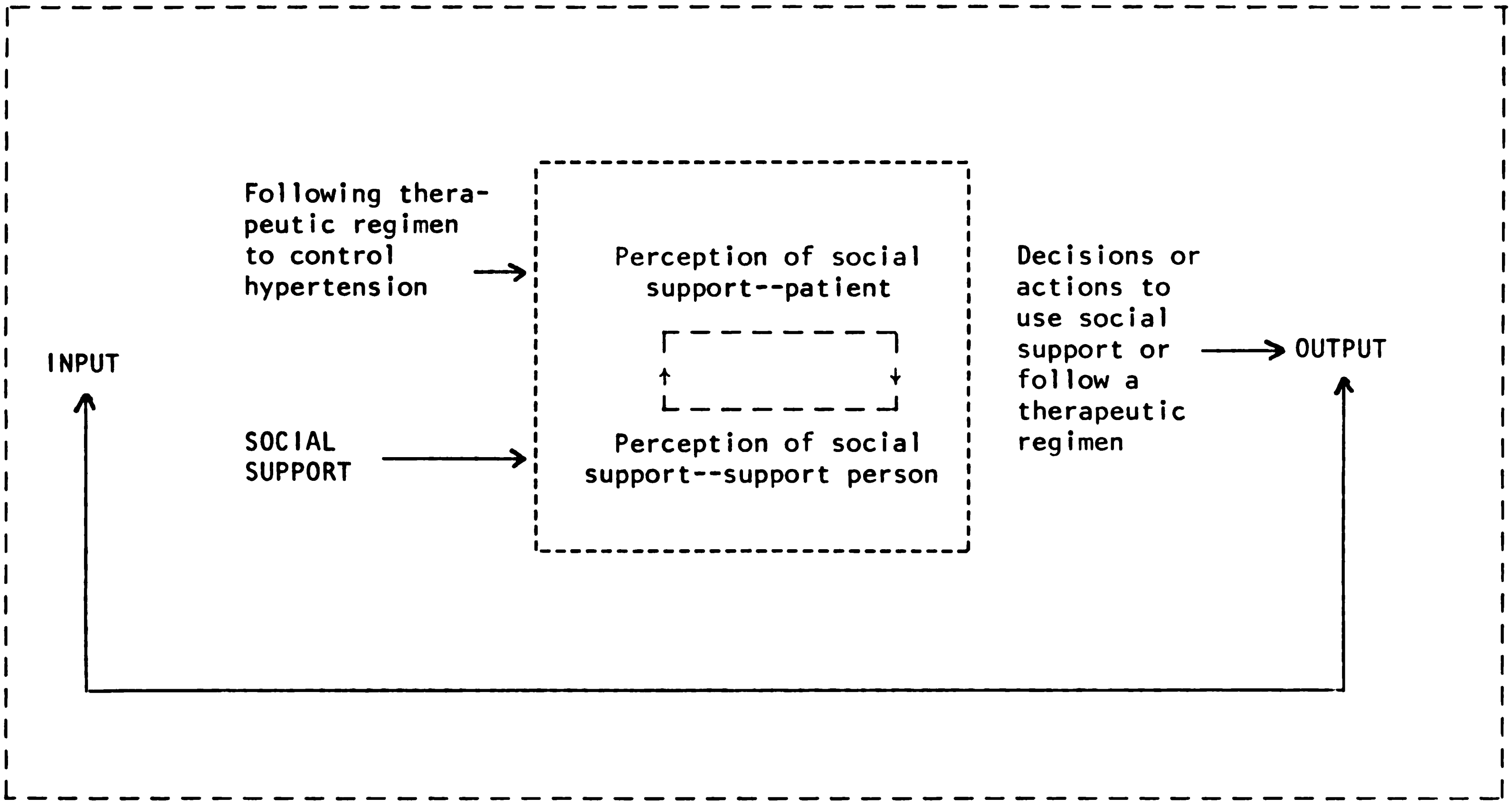

Figure 2.2: Open living system related to hypertension.

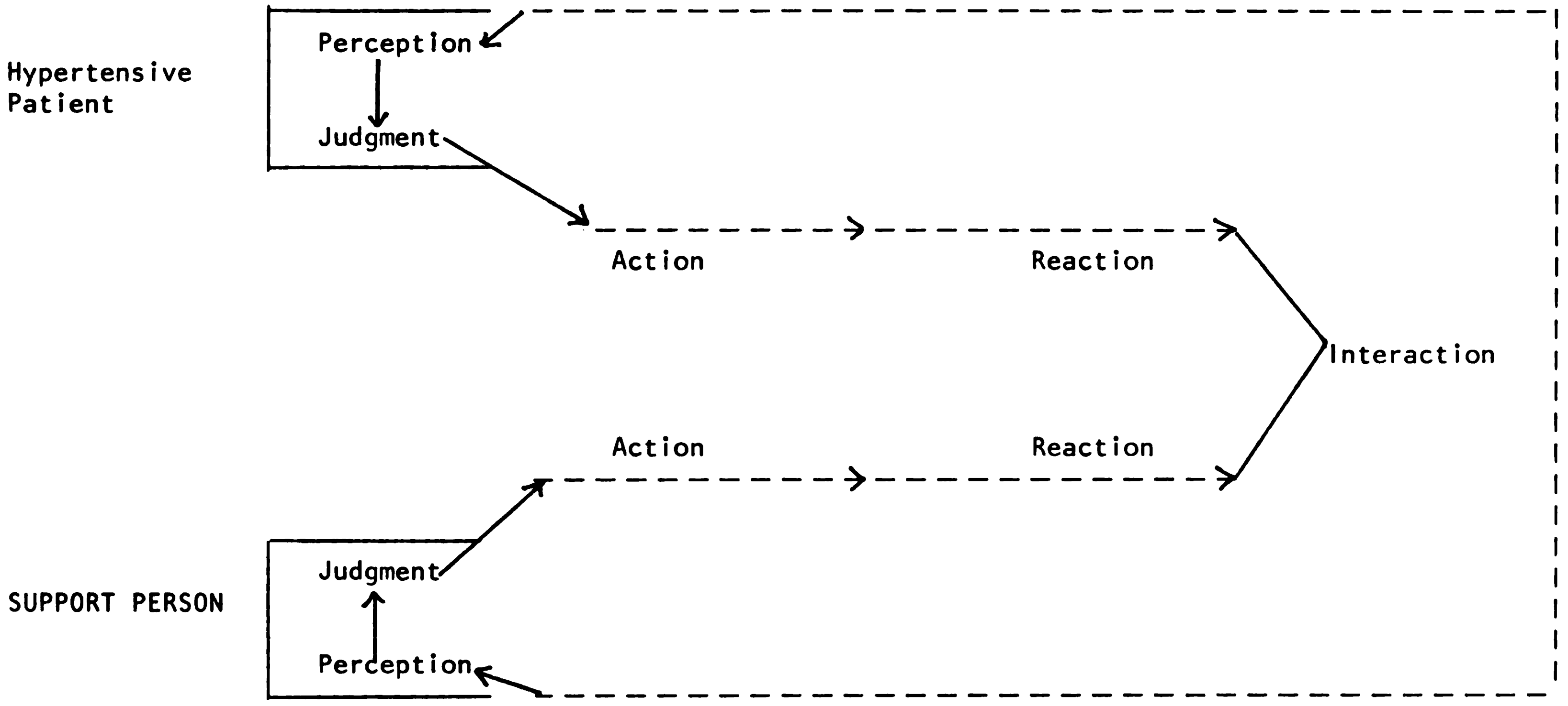

Figure 2.3: Social support interaction. (Adapted from King, 1981.)

demands made upon them, the supports available to them, and responses appropriate for themselves.

King (1981) defined social systems as groups of individuals who join together in a network or system of social relationships to achieve common goals developed around a system of values. Nurses are likely to work with one or more of the three levels of social systems proposed by King--individual, group, or society. The individual or personal social system is the focus of the thesis. In it, both the hypertensive patient and the nurse or other support person are involved in a dyadic relationship in which both individuals are perceiving the other simultaneously, making judgments, and formulating in this mental process some kind of action. (See Figure 2.3.) This is a continuous dynamic process rather than separate incidents, in which the verbal and nonverbal responses of one person influence the perception and response of the other person and vice versa.

This attention to the importance of the individual's perceptions and its role in an interaction make King's theory unique among nursing theorists and of value in examining the data in this study. According to King (1981), the clients' perceptions serve as a basis for nurses to gather and interrupt information regarding clients, as well as explaining their behaviors and interactions with others. King defined perceptions as "each individual's representation or image of reality; an awareness of objects, persons and events" (p. 20). Further, she stated that perception is "a process of organizing, interpreting, and transforming sensory data and memory; it is a process of human transactions with the environment and gives meaning to one's experience and influences one's behavior" (p. 24).

Implications for Nursing

The concept of perception is also a key point in King's (1981) definition of nursing, which states that "nursing is a process of human interactions between nurse and client whereby each perceives the other and the situation; and through communication they set goals, explore means and agree on means to achieve goals" (p. 144). The goal of nursing practice is the attainment and maintenance of health. Most clients also have health as a life goal. For the particular group of patients being studied, a portion of their health is control of their hypertension through following a therapeutic regimen. The concept of health as seen by King is very appropriate for these patients. She described health as a dynamic state in the life cycle of an organism which implies continuous adaptation to stresses in the internal and external environment through the optimum use of one's resources to achieve maximum potential for daily living. In this instance, the internal stress may be the physiological effects of hypertension as well as the psychosocial stresses of having a chronic illness whose control relies heavily on alterations in current lifestyle habits. External stresses may be the expense and time involved in controlling hypertension and pressure by family, friends, and health-care providers to gain or maintain control of the hypertension.

By communicating with the client regarding specific short-term goals in following the therapeutic regimen, the nurse and hypertensive client can set goals that are realistic and achievable. An example might be following an exercise program of walking 20 minutes three times a week. The nurse and client can then explore means and resources available to help the client achieve the goal. The client may have a family member, friend, or pet to walk with; he/she may have someone who could remind him/her to walk; the client might write him/herself notes and put them in conspicuous places or set a wristwatch alarm for the time of the walk. The nurse and client next agree on which of these means the client will use in achieving her/his goal. While the nurse may identify resources she/he sees as available to the client, the final decision as to what resources are used will be based on what the client perceives as available and appropriate. By carefully examining the client's perception of the resources, the nurse can facilitate the client's adaptation and improve her/his potential for meeting both short-term goals and the long-term goal of health.

In this study I will attempt to identify the hypertensive patient's perceptions of the resource of social support in following a therapeutic regimen. An attempt is also made to identify differences in perceptions among the three modalities of the therapeutic regimen (medication, diet, and exercise) and among various subgroups of the sample based on sociodemographic characteristics. With this information, the nurse can assist the client in identifying sources and types of social support in their environment that other hypertensive patients have perceived as helpful in following a therapeutic regimen.

In summary, systems theory can be well used by nurses to examine many areas of nursing practice. It may be most helpful when concepts are not well defined or when relationships among variables have been unclear, as with social support. Systems theory can be particularly useful to nursing as a profession, as it tries to establish further its body of knowledge. Nursing care is so varied and complex that it needs a theoretical base to organize, simplify, and describe exactly what it is that nurses do that is vital to the health care of our clients.

CHAPTER 3

LITERATURE REVIEW

Introduction

The purpose of this study is to identify hypertensive patients' perceptions of social support in following a therapeutic regimen. The literature review will include a brief review of the literature on following a therapeutic regimen for hypertension and an in-depth review of literature on the major concept of the study, social support. Two areas of social support will be addressed: definition and measurement of the concept and works that examine the relationship between social support; and following a therapeutic regimen for hypertension.

Following a Therapeutic Regimen for Hypertension

Reports of an enormous number of studies exist in the literature regarding compliance/adherence. Researchers examined following a therapeutic regimen for a wide range of illnesses from minor acute problems such as otitis media to major injuries or illnesses such as severe burns, stroke, or cancer. This review of the literature will consist of scholarly papers and empirical research which address following a therapeutic regimen for hypertension.

Researchers have agreed that the greatest challenge in the treatment and management of hypertension is getting the hypertensive patient to follow a therapeutic regimen (Baile & Gross, 1979; Caplan et al., 1976; Daniels & Kochar, 1980; Dracup & Meles, 1982; Heine, 1981; Kirscht et al., 1981; Sackett & Haynes, 1976; Wollam & Gifford, 1978). The maintenance or following of a therapeutic regimen is noted in the literature as compliance or adherence to the regimen. Conversely, noncompliance is not following the regimen. Not following the regimen may be expressed through a variety of behaviors, such as delay in acquiring health care, appointment failure, not taking prescribed medication, or not following recommended life-style changes in diet, exercise, stress reduction, smoking, or alcohol consumption.

In reviewing the literature on following a therapeutic regimen for hypertension, three major problems were discovered. First, operational definitions of adherence/compliance are inconsistent. Marson (1970) noted that even the most objective measures of medication compliance, urine drug excretion and blood tests, have presented difficulties in an accurate measurement of patient compliance. For although the techniques of the procedures may be the same, the operationalized definitions of compliance are varied. While one researcher may base compliance on one urine test at an outpatient clinic, another may use a series of tests as the basis for their estimate.

Less objective measures of compliance such as pill counts or self-report on compliance with medication, diet, or exercise have even more chance for error in the estimation of compliance. It should be noted that self-report methods (questionnaire or interview), while less accurate, may reflect the patient's behavior with regard to the total regimen rather than a portion of it. Still, the wide variation in the operationalization of these compliance measures makes it difficult to compare results of studies.

The second problem involves inconsistent description of the way in which adherence/compliance was operationalized. This was especially true in earlier works, but there continues to be a discrepancy. Some investigators have given a brief, vague description which would be difficult to replicate without a good deal of further information (Widmer et al., 1983). Others have written page after page of extremely detailed descriptions of the measure (Caplan et al., 1979).

The final existent problem is the overlap or confounding of variables which may affect adherence/compliance. Variables such as patient characteristics (sociodemographic characteristics, personality traits, and desire for active participation), disease characteristics (duration, severity, and symptoms), treatment characteristics (complexity of the regimen, side effects, cost), provider-patient relationship characteristics (consistent provider, convenience, demonstration of warmth and concern), health beliefs (perceived susceptibility, severity, benefits, barriers), knowledge, and social support have been studied as factors that may affect adherence/compliance. Results of the studies have shown interactions of these variables not only with adherence/compliance but also with each other. In many instances it is extremely difficult, if not impossible, to unravel these interactions with even the most complex analytic techniques. To further compound the dilemma, the majority of the variables noted above also have had widely varied and inconsistent operational definitions.

Sackett (1980) cited the results of five studies that examined compliance based on taking anti-hypertensive medication. Samples varied from 49 black hypertensive patients from Detroit to 240 white steel workers in Canada. The measure of compliance in three of the studies was pill count, but all three were operationalized differently. One study measured blood levels of Propranodol (Briggs et al., 1975), and the last measured Thiazide levels in urine (Lowenthal et al., 1976). In addition, definitions of compliance ranged from 80% to 95% of prescribed medication; each study used a different percentage. Levels of compliance ranged from 47% for those taking 95% of the medication (Blackwell, 1976) to 53% for those taking 80% of the medication (Sackett et al., 1975). Compliance for the two studies was defined as detectable levels of medication in blood sample (51%) or urine sample (65%).

This brief review by Sackett illustrates the difficulty in comparing results from studies up to 1980. The question that needs to be answered, then, is: Have investigators heeded the advice of their predecessors and adopted a standard measure to operationalize compliance with a hypertensive regimen? To answer this question, the remainder of this section, on following a therapeutic regimen for hypertension, will focus on studies conducted since 1980.

Two studies have examined the effect of interventions that increase knowledge of hypertension on blood pressure control. Tanner and Noury (1981) explored the effect of structured teaching about essential hypertension on control of diastolic blood pressure in hypertensive patients. The sample consisted of 30 black (n = 14) and white (n = 16), males (n = 11) and females (n = 19) between the ages of 18 and 65 who had been diagnosed as having essential hypertension. All subjects had diastolic blood pressure readings of 90 mm Hg or above on their last two visits to the health center before entry into the study.

The outcome variable of mean diastolic B/P was obtained from diastolic blood pressures recorded in the sitting position, on the right arm, at eight scheduled appointments over a 4-month period. The same institutional mercury sphygmomanometer was used to measure all blood pressures. Knowledge was measured on a 15-item instrument developed by the investigators and related to eight specific areas: hypertension, medication, diet, stress, exercise, smoking, lifestyle, and blood pressure monitoring technique. All subjects completed the 15-question instrument pre- and post-intervention.

Participants in the experimental group were given a brochure, "Guide to Essential Hypertension," which was developed by the investigators. Information contained in the guide was reflected in the knowledge instrument and was discussed with the experimental participants at each of the eight visits to the health center. Experimental subjects were encouraged to ask questions and discuss any problems they were experiencing. Subjects in the control group were given the usual care provided at the health center, i.e., appointments, at various intervals, with physicians for the purpose of evaluation of their hypertension.

The results of the study showed no significant difference between experimental and control groups on mean diastolic blood pressure (91.26 mm Hg and 92.33 mm Hg, respectively). The experimental group did have higher posttest than pretest scores ($t = -2.31$; $p < .05$) and higher posttest scores than the control group ($t = -3.40$; $p < .05$), supporting previous research in which instruction was found to increase knowledge but not increase compliance (Sackett et al., 1975).

Although the authors cited limitations (small sample size, selection from one agency, and noninclusion of dropouts from therapy), the study was concise and results were easily understood. Operational definitions of compliance and knowledge were clear and described in detail. The limited number of variables eliminated interaction or confounding.

In the second study, Powers and Woolridge (1982) examined the effect of four aspects of an educational program on the outcome variables of patient knowledge, attainment of identified goals, and mean arterial blood pressure. The 160 subjects who participated were from five types of clinical settings: an inner-city health facility, a community health center, private hospital clinics, university hospital clinic, and private physicians's offices. All subjects were under age 75, on prescribed medication for essential hypertension, not under psychiatric care, and had one recorded B/P greater than 140/90 in the 6 months prior to the study. A high portion of the subjects were black

(72%) and women (70%). There was also a high representation of patients of low socioeconomic status, i.e., unemployed (34%), unskilled workers (29%), and those with an eighth-grade education or less (46%).

A factorial design was used to test the relative effectiveness of four variations in the nurse's health-teaching approach. These variations were (a) the directiveness of the nurse's interaction style, (b) the degree of emphasis of self-responsibility and active health-care participation by the patient, (c) the degree of emphasis on negative consequences of uncontrolled hypertension, and (d) the number of meetings with the project nurse. The crossing of the four dichotomous approach variables resulted in a factorial design with 16 different treatment combinations.

The intervention involved patients receiving hypertension instruction from three sources: a 2-1/2 minute tape recording, a follow-up discussion with the project nurse, and a 12-page illustrated brochure presenting facts about essential hypertension. The project nurse and the patient jointly identified goals related to the patient's specific condition and/or general health and life circumstances, toward which the patient was to work. Each patient was then scheduled for a repeat visit 2 weeks later (Time 2). At Time 2, the project nurse and patient discussed the information in the brochure, reviewed the patient's medication, and discussed progress toward identified goals. At Time E, approximately 3 months after Time 1, the project nurse reviewed the educational information and re-emphasized the importance of continuing treatment. The degree of progress made toward achieving goals was also discussed.

The variations in educational approach were manipulated and operationalized in the following ways: directiveness of the nurse's intervention was manipulated by changing the characteristics in the interaction according to specific guidelines. The low direct approach informed the patient about what was taking place in a factual, impersonal manner. The high indirect approach placed emphasis on accepting feelings, eliciting comments, and discussing the patients' ideas. Patients assigned to the high responsibility/participation group were presented with audio-visual and written material that stated it was up to the patient to decide and act to reduce high blood pressure. The physician and nurse were presented as potential sources of help. Patients assigned low responsibility/participation were presented with materials that ordered them to control their blood pressure, with emphasis placed on following the physician's orders. The emphasis on negative consequences was operationalized by altering audio-visual and written material presented. Subjects in the high emphasis group heard and saw arousing terminology and graphics (e.g., "silent killer," "stroke," "death," "cripple," bright red H on yellow brochure, 5 of 40 tombstones colored to denote deaths related to hypertension). Those subjects in the low emphasis group received less detailed instruction, and a brochure in which less arousing terminology and graphics were used (e.g., "harm," "concern," a family standing under an umbrella labelled "Blood Pressure Control," small black H on tan brochure). The additional meeting variable was operationalized by whether or not three additional meetings were scheduled 2 weeks apart between Time 2 and Time E. At these meetings emphasis was placed on ways to achieve goals identified. The style of the educational approach was maintained according to the original treatment condition assigned.

Outcome variables included measures of patient knowledge, assessment by the nurse of patient attainment of goals, and reduction of the patient's mean arterial blood pressure. These variables were operationalized in the following ways.

Three scales, developed by the investigators, measured knowledge of etiology and symptoms, prescribed medications, and blood pressure elevation. The measurements were made during three meetings with the patient: Time 1 (first meeting), Time 2 (repeat meeting 2 weeks later), and Time E (exit meeting). Questionnaires were administered by a research assistant who was unaware of treatment assignment. Degree of goal attainment (measured at Time 2 and Time E) was scored by asking the nurse to identify for each patient the specific goals decided on at Time 1 and then to evaluate the degree of progress toward attaining these goals. Total goal scores and subscale score were calculated using the following rating system: regressed = -1, unchanged = 0, improved = +1, fully achieved = +2. Types of goals included general medication behavior, diet, exercise, weight control, control of smoking or drinking, stress reduction, improvement of role relationships, unemployment, and finances. Data of B/P were obtained from the research nurse's measures and the patient's medical record. A mean arterial B/P of 106 mm Hg is equivalent to 140/90, the usual criterion for clinically significant blood pressure elevation.

The main goal applicable to all patients was B/P reduction. About three-fourths of the sample (74.4%) exhibited elevated blood pressure at Time 1 (average 114 mm Hg). The mean arterial blood pressure at Time E averaged 108.2 mm Hg, a mean drop of 6 mm Hg ($\underline{t} = -4.27$; $\underline{p} < .001$). The mean arterial blood pressure also remained lower for a 6-month period following Time E (average 108.5 mm Hg). Despite these significant overall decreases in blood pressure, a regression analysis found no significant regressions of B/P changes on the approach variables or interaction. This suggests that the variations in approach had little or no effect on the reduction of blood pressure. There were some statistically significant interactions of the other variables studied, but they will not be discussed in this review since the focus is on compliance measures. A detailed discussion may be found in Powers and Woolridge (1982).

This study was much more complex than the first. While subjects did experience decreases in blood pressure, the reason for this is not clear. The complexity of the study added little information to how or if knowledge affects compliance. Although both studies (Powers & Woolridge, 1982; Tanner & Noury, 1981) examined knowledge as it affects compliance, operationalized as controlled B/P, both knowledge variables and compliance variables were operationalized in very different ways. It would appear that inconsistent operationalization is a continuing problem even in similar research areas.

Examining another definition of compliance, Meyers et al. (1983) compared four strategies designed to improve appointment compliance of hypertensive individuals. One hundred forty-eight subjects identified as hypertensive and missing a clinic appointment at a community health center were recruited through a city-wide hypertension screening program. Subjects ranged in age from 15 to 87 (mean = 46.7) and were from a predominantly low-income, black community. Of the subjects, 44.6% were male and 55.4% female; 80 were defined as borderline hypertensive (diastolic B/P between 90 and 99 mm Hg) and 68 as clinical hypertensive (diastolic B/P $\geq$ 100 mm Hg).

Appointment compliance was operationalized as keeping a scheduled appointment. To test the four strategies, appointments were made for borderline hypertensives at the health center approximately 2 months after the screening and for clinical hypertensives 2 weeks after initial screening. Individuals who reported to the health center did not participate in the study, while those who missed appointments were referred for inclusion in the study.

Borderline hypertensive and clinical hypertensive individuals who missed appointments were randomly assigned to a postcard, phone call, home visit, or rotating contact group and contacted within a week of the missed appointment. Subjects in the postcard, phone call, and home visit groups received up to three presentations of a compliance message in the appropriate modality, one following each of three consecutively missed appointments. Subjects in the rotating contact group also received up to three presentations, one postcard, phone call, and home visit each following one of three consecutively missed appointments. The order of the rotating presentation was balanced across the six possible combinations. The message content was identical among the modalities. It briefly stated that high blood pressure could be harmful if uncontrolled, but that it was easily treated. It told subjects that when their blood pressure was last checked it was high and since they had missed their last appointment they needed to come in and have it rechecked. The health center address and phone number were included. All contacts were made by trained upper-level undergraduate or graduate students.

Chi-square analysis was used to evaluate appointment compliance. Significant differences were found among the modes in eliciting appointment compliance (X^2 [3] = 21.87; $p < .01$). The rotating contact (81.1% compliance), home visit (67.7%), and phone call (54.1%) modes were all significantly more effective than postcard (29.7%). Compliance rates across all contact conditions were higher for clinical hypertensives than borderline hypertensives. The second contact produced the highest rates of appointment compliance across all message modes. When specific comparisons were made between compliance rates for the baseline health center sample and the study's rotating condition, the rotating condition was superior for the total sample (X^2 = 29.87; $p < .01$).

The cost of the contacts was calculated for each message mode, and those figures were used to determine the cost for each subject in each condition. For all subjects, home visit was the most expensive mode at $13.92 per compliant subject. Post card, rotating, and phone call followed at $6.49, $4.92, and $2.20 per compliant subject, respectively.

This study examined a different definition of compliance, keeping scheduled appointments. The independent variables, four contact modes, were operationalized in a precise manner, as was the measure of compliance. Information obtained from the study is useful to other researchers and health-care providers in clinical practice. It documents not only an empirically effective but also a cost effective method of increasing appointment compliance in hypertensive patients.

A unique or, as the authors proposed, "state of the art" study was conducted by Widmer et al. (1983). The investigators in this study stated that previous research on compliance among hypertensive clients was severely biased because it had focused on patients from large urban clinics and teaching hospitals. To rectify this shortcoming, they examined compliance characteristics of 291 hypertensive patients from a rural midwestern area. The 1-year prospective study involved patients of seven family physicians in towns with populations of 700 to 8,500. Physicians were not asked to follow any special criteria for diagnosis, treatment plan, B/P recording technique, or record-keeping protocol. If a pharmacy was not present in the town, physicians dispensed medication. Patients were unaware they were involved in a research study.

The 291-patient sample had a mean age of 63.2 years. Of the subjects, 37.5% were male and 63.5% female. Farm dwellers comprised

53% of the group and those living in towns 47%. The racial background of the sample was not given.

The operational definition of compliance was based on two assumptions: (a) drugs bought and paid for by semi-rural and rural midwesterners are taken, and (b) refills purchased on schedule indicate adherence to the prescription. Therefore, a compliance percentage was determined by dividing the number of pills purchased by the patient by the number of pills he or she required during the study period. If a patient was on multiple medications, the medication with the lowest compliance was used for analysis. The mean number of days in the study was 272.3. Individual compliance percentages of the 291 subjects were used to calculate a group mean of 86.6%.

A person from each office recorded demographic information, date of visits for hypertension, name and number of prescribed medications, directions for use, and B/P readings. The independent variables were sex, how medications were dispensed, median weight, complications, how often medications were taken, and smoking status. Specific operational methods were not given. Data were taken from information recorded by office personnel.

For purposes of analysis, the independent variables were dichotomized, that is, sex--male/female, dispensing of medication--by doctor/by prescription, median weight--above median/below median, complications--no complications/one or more complications, how often medication taken--one or two times daily/three or four times daily, and smoking status--smoker/nonsmoker. Although not in the operational definition of compliance, diastolic B/P was cited as a measure of compliance in the results.

Taking pills three or four times a day was the only measured factor that significantly affected compliance ($\underline{p} < .05$). Of those subjects who took medication once or twice a day, 78% had diastolic B/P of 90 mm Hg or less; of those who took medication three or four times daily, 63% had a diastolic B/P of 90 mm Hg or less. Although not statistically significant, considerably more females than males had diastolic B/P less than 90 mm Hg. The authors suggested their results supported the contention of Sackett et al. (1975), who stated compliance of at least 80% should achieve a positive outcome from an antihypertensive medication treatment regimen. Seventy-five percent of subjects had compliance percentages of 80% or more ($X^2 = 3.822$; $\underline{p} < .0506$). The researchers also cited that a decrease in mean diastolic B/P (83.7 mm Hg) from pretreatment levels of 90 mm Hg or more indicated good control at the end of the study.

This final research was very unusual when compared to the first three studies. The sample had a mean age higher than any this researcher has seen in any other study. Although the sample was large, the results of the study are questionable due to a lack of standardization on definition of hypertension, treatment goals and plans, B/P measurement, and record keeping. Operational definitions were vague if present, with the exception of the compliance percentage of medications. As noted earlier, mean diastolic pressure was not noted as a measure of compliance until it was cited in the results section. While the investigators noted that a lower percentage of subjects taking medication three to four times a day had diastolic B/P of 90 mm Hg or less, they did not relate that this may have been due to the severity of these patients' hypertension. The fact that their B/P's were higher may have been due to severity and not lack of compliance. It is not possible to make this determination since no data were collected related to severity or duration of hypertension. A smaller sample with more precise methods would probably yield more useful information.

With the exception of the last study reviewed (Widmer et al., 1983), it appears that investigators in the area of compliance for hypertensive patients have been following the suggestion of earlier researchers and clearly and precisely operationally defining both compliance measures and independent variables. The few studies that have appeared in the literature since 1980, however, are still not consistent in the way they operationalize compliance, and this continues to make comparisons of results difficult. It is tempting and often necessary to explore a large number of variables that may affect compliance when a large sample is available; results, however, are often confusing. Results are of little value to future investigators who wish to replicate or expand on the research and of no practical value to the practicing health-care provider.

The review above focused on literature related to following a therapeutic regimen for hypertension. In the next section of this chapter, literature related to the concept of social support and works that examine the relationship between social support and following a therapeutic regimen will be reviewed.

Overview--Social Support

Authors and researchers have demonstrated a great deal of interest in the concept of social support over the last decade. This interest evolved in the 1970s when several major papers presented discussions and literature reviews on social support (Caplan, 1974; Cassel, 1976; Cobb, 1976; Dean & Lin, 1977). These authors found mounting evidence that social support had both a direct positive effect on health status and served as a buffer or modifier of the effects of stress (psychosocial and physical) on the mental and physical health of an individual.

Investigators have been enthusiastic about social support because it is thought that it may be easier to change the social relationships of an individual than the exposure to stress or the other mediators such as personality traits or coping style (Thiots, 1982). For this reason, social support is currently regarded as a central psychosocial issue in health research. In a review of literature on social support, Wortman (1984) related that in the last 10 years hundreds of studies and numerous review articles and books have addressed social support. She noted that the research is increasing at an astounding rate, with more citations on social support in the last 2 years than in the entire previous decade.

The recent outpouring of research has caused some investigators to critically re-examine earlier claims about social support. As stated earlier in this thesis, the greatest weakness of social-support research is the lack of consensus on the definition and operationalization of social support. Numerous authors (Barrera & Ainlay, 1983; Broadhead et al., 1983; Dimond & Jones, 1983; Ell, 1984; Gottlieb, 1981; Henderson, 1984; Wortman, 1984) have cited variables as diverse as the presence of littermates, the wantedness of pregnancy, involvement in self-help groups, and care delivered by nurses and physicians as evidence of the effectiveness of social support in mitigating stress. Other questionably related constructs such as social class, job satisfaction, and insufficient financial resources have been used by some researchers as operational definitions for social support.

The research design typically used to study social support represents another commonly identified weakness. Most of the conclusions about social support have been based on correlational data collected at a single time (Wortman, 1984). Three longitudinal studies were cited as "adequately designed" by Broadhead and associates (1983). The first, by Pless and Satterwhite (1973), was a randomized controlled clinical trial of lay family counselors and families of children with chronic diseases. Results showed improved psychological status was greater in children in the treatment group (60%) than in the control group (41%). The second was a randomized control design to evaluate the effect of physician-led support groups for parents having their first child, by Gottlieb (1981). He was able to document an increase in amount of support received by patients when they were outside their group but could not demonstrate a reduction in subjective ratings of stress or an improvement in sense of well being. Sosa et al. (1980) used supportive lay companions for women during labor, also a randomized controlled design in the third study. Controls had higher complication rates (Caesarean section, meconium staining, etc.) during labor and delivery. Even comparing only uncomplicated deliveries, the experimental group had markedly shorter labors than controls (8.8 versus 19.3 hours), were more often awake after delivery, and stroked, smiled at, and talked to their babies more than did control mothers.

A review by Broadhead et al. (1983) noted that numerous cross-sectional, retrospective, and case-control studies have shown a direct effect of social supports in various health/disease states. Yet Broadhead and associates felt these studies were flawed by their inability to address causality. Alternative explanations for the findings such as the confounding of life events and social supports, as proposed by Thiots (1982), are highly plausible. Thiots noted that many important life events are also interpretable as losses or gains in social-support relationships (i.e., death of a spouse, divorce, marriage, family member leaving or joining a household). Another explanation is that though the variables are causally related, one's prognosis, coping, or prior adjustment influences the amount of support available (Wortman, 1984). Those individuals with a poor prognosis or numerous health problems may make more demands for support and receive it. Those individuals with poor coping skills or adjustment may lack social competence and drive others away with socially inappropriate behaviors.

Most recently, critics have noted a lack of information regarding the process through which social support may affect health outcomes (Barrera & Ainlay, 1983; Dimond & Jones, 1983; Pearlin, 1982; Thiots, 1982; Wortman, 1984). While a majority of the available research has documented a relationship between social support and health, the question of why or how social support influences health has only recently been addressed. Models for social support and adaptation to stress have been presented by Dimond and Jones (1983), Pearlin et al. (1981), and Thiots (1982). Barrera and Ainlay (1983) have developed and tested a typology of social support. The above works are an attempt to give a framework from which to answer the question of how and why social support affects health. If there is one area of widespread agreement in the literature, it is the recognition of the complex and multifaceted nature of social support. There is a great need for more systematic and precise conceptualization and measurement of the construct (Wortman, 1984).

Definitions of Social Support

Historically, the concept of social support has been vaguely defined. As House (1984) and Thiots (1982) remarked, many of the early investigators in the social-support area failed to provide any definition of the social-support construct. Some of the early studies referred to Durkheim's (1951) notion of social integration, the strength or weakness of ties binding the individual to the group. The investigators then stated their operational definition of social support (Andrews et al., 1978; Myers et al., 1975; Nuckolls et al., 1972). Others used definitions termed circular or vague by House (1984) and Thiots (1982). In a criticism of the definition of social support by Kaplan and associates (1975), "support is defined by the relative presence or absence of psychological support resources from significant others." Thiots (1982) noted the term "support resources" is too imprecise to be theoretically useful. In a similar vein, House (1984) found the definition of social support by Lin and colleagues (1979)--"support accessible to an individual through social ties to other individuals, groups, and the larger community"--as essentially defining social support as support that is social.

The importance of how social support is defined should not be underestimated, for the definition of the concept has far-reaching implications for its measurement. As House (1984) discussed, an imprecision in the definition of social support is often mirrored in the operationalization of the construct. As noted earlier, investigators have used operational definitions of social support that are widely varied, i.e., financial resources, self-esteem, and job satisfaction. Wortman (1984) discussed the even more problematic tendency of some researchers to use operational definitions of support that may overlap with the outcome they are assessing. Variables such as adaptability or crying have been used as operational definitions of social support.

There are authors who have defined social support in a more precise manner. Cobb (1976) defined social support as information leading a person to believe that he/she is (a) cared for and loved,

(b) esteemed and valued, and (c) belongs to a network of mutual obligations. (Cobb's definition was used for this study.) Kahn (1979) defined social support as interpersonal transactions that involve the expression of positive affect, the affirmation or endorsement of the person's beliefs or values, and/or the provision of aid or assistance. Walker and co-workers (1977) defined social support as behavior that assures people that their feelings are understood by others and considered normal in the situation. While these definitions may differ in focus, House (1984) and Wortman (1984) emphasized that there is some agreement about what aspects of relationships fall within the general definition of social support. Each of these definitions could permit a clear operational definition of social support.

Types of Support

As investigators discovered the complexity of social support, they attempted to identify its components. Taxonomies or lists of components have been continually developed. In a review of social-support literature, Dimond and Jones (1983) noted four areas of agreement in the taxonomies of social support. First, social support involves the communication of *positive affect*. A second area of agreement centers on *social integration*, that is, to have membership in groups and exchange with others. The third component was not agreed upon entirely; that is the provision of *material or tangible aid*. Finally, *reciprocity* was noted as necessary for the continuance of mutually satisfying and supportive interactions. Citing a similar, but slightly expanded, version, Wortman (1984) compiled a list of six distinct types

of support based on the works of several authors (Caplan, 1979, 1974; Cobb, 1976; House, 1984; Weiss, 1974). They are as follows:
(a) expression of positive affect, (b) agreement with acknowledging the appropriateness of a person's beliefs or feelings, (c) encouraging the open expression of beliefs and feelings, (d) offering advice or information, (e) provision of material aid, and (f) providing information that the person is part of a network.

One empirical study of types of social support was conducted by Barrera and Ainlay (1983). They developed a taxonomy of social support based on a review of literature and determined six initial categories: material aid, behavioral assistance, intimate interaction, guidance, feedback, and positive social interaction. To test this taxonomy, a 40-item scale (the Inventory of Socially Supportive Behavior) was completed by 370 introductory psychology students. Through factor analysis and varimax rotation, four factors were extracted. The first was labelled directive guidance. It featured activities that were included in the conceptual categories of guidance and feedback (e.g., teaching skills, providing advice, giving feedback). These actions provided support of a practical nature and accounted for 76.3% of the variance in the rotated pattern matrix. The second factor contained activities typically associated with nondirective counseling (intimacy, unconditional availability, esteem, trust, physical affection). This factor was labelled nondirective support. It explained 11.6% of the variance, and its content corresponded to the theoretical category of intimate interaction. The third factor was labelled positive social interaction based on the content of three items with the highest loadings (joking and kidding, talking about interests, and engaging in diversionary activities). There was some overlap of four additional items that also had high loadings on Factors I and II. Factor III accounted for 7% of the variance in the rotated factor matrix. The fourth factor had all highly loaded items representing tangible assistance (physical assistance, providing shelter, money, or physical objects of value. This factor accounted for 5% of the variance.

While this study had limitations, such as the use of college-student sample and items representing a distinct sample of action variables, the findings may be used to conceptualize social support as behavioral transactions and organize them into empirical categories useful in further research. This type of empirical testing is crucial but not often found in social-support research.

Practical limitations may make it impossible to investigate many different types of support in a given population. Therefore, it is important to consider which types of support may be most important and helpful to that population. This thesis will provide information about hypertensive patients' perceptions of the type of social support they received. This information can then be used by other researchers in determining the type/types of support to investigate for other hypertensive patients.

Measurement of Social Support

As with all other aspects of social support, there is no clear agreement on how the concept should be measured. In general, the measurement of social support has been approached in four ways (Henderson, 1984). In the first instance, coarse sociodemographic variables have been used as indices of isolation or not having an intimate relationship. These findings are limited in that they reflect only indirectly the social environment of the individual. A second method has been to determine social support from a few questionnaire items regarding marital status, living arrangements, social functioning, and involvement in group activities. While some have praised this approach used by Berkman and Syme (1979) because they consistently examine effects of social relationships on "hard" outcomes such as mortality (House, 1984), others have criticized its use because it provides little information about the process through which social ties affect health. There is no evidence to determine if it is social support or some other aspect of the relationship that is beneficial.

The third method involves examining specific elements within a person's social network. Usually the structure of the network such as size (the number of people with whom there is contact, density (extent to which members are in contact), accessibility, stability over time, and reciprocity is examined. While such measures may be more objective than measures of perceived support, House (1984) advised against examining social support exclusively in terms of structural variables. The existence of a relationship provides little information about its nature, quality, or content. In some cases social interaction may be stressful and have detrimental effects. Speaking of patients with chronic or serious illness, DiMatteo and Hayes (1981) cited several ways social support may have a negative impact. The "family equilibrium" may be severely strained if one individual receives too much attention and support due to illness or injury. Because of the possible negative effect on the family, the support person/persons also need some kind of support.

In working with hypertensive patients, providers need to remember that the patient's ability to follow a therapeutic regimen may also be negatively influenced by social support. If the treatment is acceptable to them, family and friends will encourage and assist the patient in following the regimen. If however, the treatment regimen is contrary to the values, beliefs, and usual patterns of conduct in the family, they may sabotage the therapeutic regimen or ignore it. Therefore, both the positive and negative influence of the patient's social-support system should be examined. Involvement of family and friends in planning and implementation of the regimen can alleviate some of the negative effects possible with social support.

Social support may also undermine the patient's self-esteem in one of two ways (DiMatteo & Hays, 1981). First, patients may feel they are a "burden" to their family or friends as a result of their illness. Emotional, financial, or physical support may be viewed as an intrusion on loved ones' time and energy. Second, acceptance of social support from others requires the patient to recognize his or her status as an impaired person. Some patients may find the costs of disclosing information regarding their illness to their support persons to be greater than the benefits. To protect others from their illness and maintain self-esteem, they withdraw from the support system. This action may alienate the patient from the support system, straining further interaction and eroding trust.

Since there are few definitions of social support that include possible negative effects, few instruments contain items that operationalize its possible negative influence or effects. Yet there is evidence that problems resulting from social relationships represent an important share of the stresses people experience in their daily lives (Schaefer et al., 1984). For this reason it is as important to identify relationships that are predominantly negative and nonsupportive as those that are supportive. The negative aspect of social support may be especially important to evaluate for hypertensive patients because of the chronic nature of their illness. Relationships that are supportive initially may become nonsupportive over a period of time. Behaviors such as reminding someone to take a pill or follow a diet may be perceived as "nagging" or "pressure" and no longer have a positive effect on following the therapeutic regimen. Identification of these relationships may allow the hypertensive patient to change the character of the relationship or find a new relationship that is more supportive.

Henderson (1984) noted the last approach as purpose-built instruments such as the Psychological Assets Questionnaire (Nuckolls et al., 1972), the Interview Schedule for Social Interaction (Henderson et al., 1981), the Personal Resource Questionnaire (Brandt & Weinert, 1981), the Norbeck Social Support Questionnaire (Norbeck et al., 1981), and the Social Support Questionnaire (Sarason et al., 1983). Most of these instruments have indices that differentiate between instrumental (tangible) and affectional support, between intimate and more diffuse relationships, and between availability and perceived adequacy. The reliability of such scales has been found to be satisfactory by Henderson (1984). There are, however, technical problems in validation. While validation of availability measures can be achieved by obtaining information from a collateral source, this approach fails for adequacy indices which reflect an individual's perceptions of support.

Social Support and Following a Therapeutic Regimen for Hypertension

Empirical research regarding social support and its effect on following a therapeutic regimen for hypertension will be reviewed in a similar fashion to that on compliance/adherence and hypertension. Studies conducted before 1980 will be reviewed and comparisons made among the studies regarding operational definitions of compliance/adherence, operational definitions of social support, other independent variables studied, and the general research design. Next, studies conducted from 1980 through 1984 will be reviewed and comparisons made in the same manner as for research before 1980. Finally, a discussion will be presented on whether or not progress has been made in the way in which research on social support and following a therapeutic regimen for hypertension has been conducted.

Research prior to 1980. In 1973, McKenney et al. examined the effect of clinical pharmacy services on patients with essential hypertension. Fifty hypertensive patients receiving care in a Model Neighborhood Health Program were included in the study. All subjects had met the following criteria: an average diastolic B/P greater than 90 mm Hg on three consecutive visits prior to the study, receiving pharmacy services from one of three pharmacies participating in the study, not bedridden or debilitated, and no other health problems that made hypertension a secondary concern. Of the subjects, 11 were male and 38 female. The subjects' average age was 60 years; 38 were black and 11 white.

Adherence/compliance was operationally defined for taking medication (taking more or less than 10% of prescribed anti-hypertensive medication) and normotension (two or more consecutive monthly diastolic B/P readings averaging less than 90 mm Hg). Taking medication was confirmed by pill counts, while B/P readings were obtained from records of physicians at the health center. Knowledge for all subjects was also measured pre- and post-intervention on a 21-item true-false test designed to evaluate the patient's general knowledge of hypertension and its drug and dietary management.

The intervention for the experimental group (n = 24) involved each subject's being seen monthly by appointment for a period of 5 months by the pharmacist investigator. At the initial visit the pharmacist obtained a medical and pharmaceutical history and B/P recording, questioned the patient about drug use and how closely he/she followed prescribed therapy, and discussed complaints, reactions, or problems related to hypertension. At subsequent visits the pharmacist investigator evaluated responses to drug and dietary management, identified and managed other problems (i.e., adjusted therapy on physician orders and referred for specialized care), and provided and evaluated educational materials. Both experimental and control patients were seen by regular physician providers at the health center. Commercial hypertension literature was available to all clients and physicians throughout the study.

Test results regarding knowledge found a significant difference in scores between the experimental and control groups post-intervention (F [1,32] = 23.47; $p < .001$). While both groups of patients were noncompliant with prescribed therapy for a 7-month period prior to the study, those in the experimental group closely followed the prescribed regimen during the study period. Control patients remained noncompliant prior to, during, and after the study period. There was a significant difference between groups related to medication compliance ($X^2 = 14.487$; $p < .001$). A record audit revealed that after the study period, the experimental group returned to the prestudy level of compliance.

As with medication compliance, the B/P of most experimental patients (79%) dropped to normal levels during the interaction with the pharmacist. After the study they rose to prestudy levels. Most control patients (80%) remained hypertensive before, during, and after the study period. This difference was statistically significant (*F* [1,46] = 21.988; *p* < .001). An interesting additional finding was that the experimental patients kept 92% of the 100 scheduled appointments with the pharmacist, while control patients kept 82% of the 44 scheduled physician visits. Results of this study suggest that support from a pharmacist can increase compliance as measured by taking medication and B/P control, while patients' level of knowledge can be increased as a result of an interaction.

In their study, McKenney et al. (1973) documented fairly clear operational definitions of compliance and social support in the form of the provision of clinical pharmacy services. The knowledge variable was not discussed in great detail in the article which described the study. Intervention methods were well defined by the investigators, but little information was given on how pill counts took place and if there were any standards for B/P measurement. Results were easily understood and were useful for future research or clinical intervention.

A sample of 38 male Canadian steelworkers who were neither compliant with medication or a diastolic B/P goal after 6 months of treatment were studied by Haynes et al. (1976). This sample was selected from that of an earlier study (Sackett et al., 1975) in which increased convenience of medical care and knowledge had failed to affect medication compliance or diastolic B/P control. Compliance with medication was operationalized in this second study as 80% of medications taken, as measured by pill counts, urine levels, and blood levels. Control of blood pressure was defined as fifth-phase diastolic reading less than 90 mm Hg.

Subjects were assigned to experimental (n = 20) and control (n = 18) groups. The intervention for the experimental group was conducted by a high school graduate with no health-profession education. Each subject met with the intervenor an average of 10 times over 6 months. At the initial visit, subjects were loaned an aneroid sphygmomanometer and stethoscope and instructed in their use. They were also given daily pill and B/P charts and asked to record fifth-phase B/P and pills taken and missed each day. Daily habits were identified and when possible linked to pill taking. On subsequent visits, at 2-week intervals, pill taking and B/P charts were reviewed. If B/P was below 90 mm Hg or 4 mm HG or more below initial readings, the patient was praised and received a $4 credit toward ownership of the B/P cuff and stethoscope. Praise was also given for perfect medication compliance, and reasons for noncompliance were discussed.

At the end of 6 months, patients were examined at home and at work. Examiners were "blind" as to which patients were in which group. Home visits consisted of B/P measurement, urine specimen (unannounced) for drug level, and an unobtrusive pill count. Within a few days of the home visit, subjects were examined at the mill where B/P measurement and blood samples for drug level were taken.

Criteria for success of the intervention were set in advance: (a) exceed the previous 6 months' compliance level by 20%, (b) the difference (6 to 12 month) of compliance had to be statistically significant, and (c) compliance in the experimental group had to exceed those of the control group by 20%. The intervention was successful, and all three criteria were met. Experimental subjects exceeded 6-month compliance by more than 20%, and the difference was significant at $p < .001$. The compliance rate of experimental subjects exceeded the control subjects by more than 20%, and the difference was significant at $p < .025$. There also was a decrease in diastolic B/P which averaged 5.4 mm Hg for the experimental group versus 1.9 mm Hg for the control group.

It should be noted that the investigators felt a confounding variable may have been the amount of "attention" given the experimental group during the two studies. Although the intervention in the second study was not intended as social support per se, it may be equated to social support in that the lay project coordinator offered praise and material incentives for medication compliance and improved B/P control. Attention in the first study by physicians providing routine care for hypertension and project staff providing information regarding hypertension and its treatment did not affect an increase in medication compliance or B/P control.

Operational definitions of compliance were given as noted above but were not detailed (i.e., type of blood or urine test, level of test which denoted 80% compliance, and who did end-of-study examination). The overall study design included the first study (phase I) and the study which was reviewed (phase II). The authors did not elaborate on when the particular intervention strategies in the second study were chosen. It is not clear if they were planned at the same time as the interventions for the first study or as a result of the outcome of the first study.

Nelson et al. (1978) explored the relationship of 18 health-belief variables with compliance for hypertension. The sample consisted of 142 hypertensive subjects, 69% females and 31% males. Blacks comprised 54% of the group and whites 46%. Twenty-eight percent of the patients were 49 years of age or less, 41% were between 50 and 64 years, and 31% were 65 years or older.

Compliance was operationally defined in three ways: B/P control (diastolic average 90 mm HG or less), self-reported medication taking (doses of medication missed in the past 28 days), and appointment keeping (80% or more = high, less than 80% = low). Medical records for the 12-month study period were audited to obtain B/P readings and appointment data. Data on medications were collected during interview by asking the patient to identify anti-hypertensive medications and state how many doses were missed in the past 28 days.

Independent variables from the Health Belief Model were from three categories: core perceptions (control over health matters, priority of health in life, and perceived severity of hypertension); modifying factors--general (sociodemographics four items, quality of life without hypertension, time costs of doctor visits, anxiety when hypertension first diagnosed, intention to comply when diagnosed, perceived hypertension symptoms when diagnosed, ever perceived hypertension symptoms, ever perceived side effects of medication, and impact of hypertension on life style); and modifying factors--cues to action (support given by family and other medications prescribed). These variables were measured with from one to six questions during the interview. Five questions asked the patient about support given by the family. The authors did not give the content or an example of these questions.

Patients were offered $7 to cover the expense of coming to an interview. Trained interviewers held the interview at the physician's office, hospital, and for the few who found the first two inconvenient, the patients' homes. Average length of the interview was 1-1/4 hours.

For the purpose of analysis, data on taking medication were dichotomized into "taking all medication" and "missing one or more doses." The authors found a positive correlation between self-reported medication taking and B/P control. The statistical difference was significant ($\underline{d}$ = 25%, $\underline{p}$ = .02) between patients who reported "taking all medication" (74%) and patients who reported "missing one or more doses" (49%). No statistically significant associations were detected among medication taking, appointment keeping, and B/P control.

Five independent variables significantly correlated with self-reported medication taking ($\underline{p}$ < .05). Age, perceived severity of hypertension, and having a medication prescribed for another chronic illness correlated positively with medication compliance, while side effects from anti-hypertensive medication and experiencing anxiety when hypertension was diagnosed were negatively correlated with medication compliance.

There were also five variables correlated with B/P control ($p <$ .05). Two were the same that associated with medications: medication prescribed for another chronic illness and anxiety at the time of diagnosis. The other three were perception that regimen was effective, little impact on life style, and less education. Only two demographic characteristics were associated with appointment keeping: age and employment status. Older and employed patients were more likely to keep appointments than younger unemployed patients. No relationship was noted between social support by family and either of the compliance variables.

Although a large number of independent variables were examined, analysis and results were straightforward and easily understood. The large number of variables did limit the number of items used to examine each variable, and therefore only five questions related to social support. The dependent variables were well defined, but there is a question regarding the consistency with which B/P was recorded and how many readings were used to determine the average diastolic pressure. The design was similar to others using an interview and record audit to collect data.

The final pre-1980 study to be reviewed was conducted by Caplan et al. (1979). Unlike earlier research in which social support was a minor variable, this study was designed to test the theory that social support should operate to increase compliance in hypertension. To do this, an experimental intervention was developed in which differences in the amount of objective social support were introduced.

The sample consisted of 438 hypertensive patients, from five health clinics, who met the following criteria: (a) diagnosis of essential hypertension or last two B/P prior to study entry ≥ 165/105, (b) able to complete a self-administered questionnaire at the high school reading level, (c) have medication prescribed for hypertension, (d) absence of psychosis or other disabling illness, (e) volunteer and consent, and (f) be ambulatory. Approximately 64% of the subjects were female and 46% male, while 52% were black and 48% white. The mean age of the sample was 54 years.

Compliance was operationalized both objectively and subjectively. The first objective measure, blood pressure control, was defined as both diastolic pressure 96 mm Hg and systolic pressure 160 mm Hg. Blood pressure was recorded in the left arm, in the sitting position, with a mercury sphygmomanometer before and after each questionnaire administration. Mean systolic and diastolic pressures for each visit were calculated and used as the visit B/P score. The second objective compliance measure, adherence, was defined as adherence to scheduled appointments. Clerks at each site kept a record of appointments kept, cancelled, and missed.

Subjective adherence was operationalized in two ways. First, a pair of "adherence vignettes" in which one member of a pair described an adherent patient and the other described a nonadherent patient were presented. The subjects were asked to indicate the extent to which one or the other vignette described them. An index of adherence behavior was the second measure. Subjects were asked "how often" they had missed adhering to various aspects of the regimen, and the last time they had forgotten to take their medicine.

Objective social support was operationalized by the three conditions of the intervention: social support, partner, and control. In the social-support condition, social support was provided to the patient by a project nurse. The nurse was to explain the purpose of the meetings as educational and helpful, explain the regimen, provide praise and encouragement, allow the patient to discuss concerns, and be warm and friendly. At the first meeting (T1), the client received a booklet of factual information with space for specific information on individual B/P readings and regimen. Then the nurse set up a time in 2 weeks for the patient to telephone the nurse and discuss how he/she was doing. The nurse provided support in the forms listed above, according to a protocol, during the conversation. At the end of the meeting, both the patient and nurse completed a sheet that included the question, "Overall, how much help and real concern about you and your health has been shown by the nurse at your clinic or hospital?" The rating scale ranged from "very little" to "a great deal." Other multi-item indices were used throughout the study and had their content changed, but this question correlated well with the multi-item indices (r = .86 -.90) and was therefore used for analysis.

The nurse met with the patient at each visit scheduled by the normal provider and provided support as noted above. At T2 (3 months later), each patient was provided with a plastic pill box with compartments for the 7 days of the week. The nurse also set up one more phone call appointment; thereafter, phone calls were only made if a change in regimen required follow-up.

The partner condition was identical to the social-support condition with the addition of (a) the nurse asking the patient to bring a partner at T2, (b) a reminder letter to bring a partner was sent prior to T2, (c) materials reviewed at T2 on the type of support the partner should provide and rationale for providing support; and (d) partners were asked to complete questionnaires and support sheets at T2 and T3. The nurse followed the same principles of support in interacting with the partner as with the patient.

Subjects in the control condition did not meet with a nurse. They, as all subjects, on arriving at T1 and T3 (10 months after T1) had their B/P taken while seated in the waiting room. The patients were then handed a questionnaire which took about 35 minutes to complete. After the questionnaire was completed, a second B/P was taken. Patients in the control condition saw their routine provider. Patients in the social-support or partner condition met with the project nurse and then saw their routine provider. The experimental intervention ended at T4 (12 months after T1), and patients and partners were mailed questionnaires to be completed and returned.

Subjective social support of the partners was obtained on the questionnaire from all patients in the study and was obtained on the rating sheets from patients in the experimental conditions after the meetings of the patient, partner, and nurse from T2 through T3. Items reflected perceptions of both tangible and psychological support. Items relating to the variables of knowledge of the regimen, complexity of regimen, somatic complaints, depression, and motivation to comply were presented in questionnaires administered at T1, T3, and T4. Descriptions of these items are lengthy and may be found in Caplan et al. (1979, pp. 53-58). They will not be discussed in this review.

Analysis showed the only statistically significant finding was to be a positive correlation between social support from a nurse in the social-support experimental group and subjective (self-reported) adherence ($r = .30$; $p < .05$). There were neither significant changes in mean diastolic or systolic blood pressure due to the intervention, nor associations between objective adherence (appointment keeping), and the intervention.

One of the limitations of the study was the unreliability of record keeping used for objective compliance. In many instances the clinic staff simply did not record data regarding appointments. If there had been any significant findings in this area, they would have been questionable.

A second limitation of the study was the rather high level set for B/P control (systolic < 166 mm Hg and diastolic < 96 mm Hg). Investigators in the three previously reviewed studies and other research regarding hypertension rarely cite this high a reading unless it is age adjusted. Again, had there been significant findings they would have been questionable and difficult to compare to other studies.

One item was used to analyze data for each variable regarding amount of social support received from the nurse, amount of tangible support received from the partner, and amount of psychological support received from the partner. Even if they were highly correlated with multiple questions, using one question from each variable to document the major concept of the study is unusual.

Perhaps the most severe limitation of this study is the difficulty in interpreting results. There were a large number of interrelationships, several of which were reciprocal. This confounding restricts multivariate analysis and makes it difficult to determine the precise meaning of any association. (These relationships will not be discussed here but may be examined in Caplan et al., 1979.) It is this type of confounding of variables that has made the findings of this and other studies with a large number of variables difficult to interpret without further complex analysis. In some cases, no amount of analysis will reveal the relationships.

Comparison of studies prior to 1980. A comparison of the four studies prior to 1980 reveals that all the researchers used some form of B/P control and medication taking as operational definitions of compliance. Blood pressure control was operationalized similarly in three of the four studies, diastolic < 90 mm Hg (Haynes et al., 1976; McKenney et al., 1973; Nelson et al., 1978), but the number of recordings, method of recording, and where the B/P was taken varied. As noted earlier, the B/P control level used in the Caplan (1979) research (systolic < 166 mm Hg and diastolic < 96 mm Hg) was not consistent with other levels cited in the literature.

Both McKenney and associates (1973) and Haynes and colleagues (1976) used pill counts as definitions of medication compliance. Compliance percentages, however, were different. Nelson et al. (1978) and Caplan et al. (1979) used self-support measures that were similar, noting doses of medication not taken. Only the study by Haynes et al. (1976) determined compliance with urine and blood drug levels.

Appointment keeping was an operationalized definition of compliance in the research of Nelson et al. (1978) and Caplan et al. (1979). Both studies recorded appointments kept. The Nelson study (1978) defined compliance as keeping 80% of scheduled appointments, while the level necessary to be compliant was not given by Caplan et al. (1979).

Experimental interventions in the two earlier studies (Haynes et al., 1976; McKenney et al., 1973) were not viewed as social support by the authors, but rather as a series of strategies to increase compliance. The fact that another person was assisting or "supporting" the subject with these strategies was incidental. In a later study by Nelson et al. (1978), social support was examined as a cue to action from the Health Belief Model and was operationalized by five questionnaire items in an interview design. No intervention was involved. The research by Caplan and associates (1979) used an experimental intervention to test a theory related to social support and compliance. There appeared to be an increasing emphasis in the research on the importance of social support as a major factor influencing compliance with a regimen for hypertension. Unfortunately, the significance of the relationship was not well documented in the Caplan study results due to confounding of social support and other variables.

Research since 1980. Investigators in two empirical studies examined social support as an educational intervention aimed at increasing compliance with a therapeutic regimen for hypertension. In the first study (Kirscht et al., 1981), a factorial design was employed to deliver four sequential educational interventions about 4 months apart to randomly selected subgroups of the sample. Subjects were nearly all white, most (60%) had a high school education, and most were currently employed in blue-collar jobs. Median family income was $12,000 per year. The age of most subjects (78%) was over 50 years. Four hundred thirty-two patients from six private practices participated in the study. "High blood pressure" was defined by each physician, and no blood pressure "cut-off" level was used for inclusion in the study.

The researchers focused on adherence to three areas of the regimen: medication, dietary restrictions, and control of weight. Impact of the intervention on B/P levels was not examined. Medication adherence, dietary adherence,and weight control were operationalized through self-report. In an interview, the patient was asked, "Have you been able to follow your doctor's advice? For example, how many pills did you take yesterday? The last time you didn't take the medication what was the reason? How often does this happen?" Similar items were used for other aspects of the regimen. Answers were coded on an ordinal scale from low to high, and each patient was assigned an index of adherence for each element of the regimen. In addition, medication adherence was operationalized as a pharmacy score, a ratio of pills available to the patient. To calculate the ratio, the number of daily doses of each prescribed medication was estimated from pharmacy records. This number was divided by the number of days the prescription was in force.

Three interventions were provided in the following sequence. First a printed message was given to each patient. Three groups received one of three messages--a threatening message, a positive message, or no message. Second, the experimental group received a letter and phone call to discuss the regimen and reinforce positive behaviors. The control group received no intervention. Third, two experimental groups were taught self-monitoring techniques. One group kept daily charts on behaviors involved in the regimen; the other recorded B/P readings. Both interventions lasted 2 weeks. The control group received no intervention.

Social support was the fourth of the sequential interventions. It was operationalized as an intervention in which a nurse made an appointment by phone to meet with patients assigned to the experimental group and a person selected by the patients to help them with problems in following the regimen. The nurse visited the subject and support person, discussed the purpose of the intervention, obtained a commitment that the pair would work on particular aspects of the regimen, and staged a role-playing example. Two weeks later, the nurse called both the patient and support person to give reinforcement and answer questions. Control subjects received a letter thanking them for their continued participation but were not otherwise contacted.

For the whole study, 36 groups were ultimately formed (3 x 2 x 3 x 2). The sequence of interventions was the same for all patients, whether or not they received one or more experimental treatments. The progression of interventions was from impersonal to personal and corresponded to an increase in patient involvement.

The first intervention--printed material--did not significantly increase compliance. The control subjects had higher scores for diet that were significantly different from the experimental group ($\bar{X}$ = .837; $p < .05$). The second intervention--nurse phone calls--increased medication compliance ($p < .05$), and the third intervention--self-monitoring of medication and B/P--led to better weight control.

The results documented the social-support intervention significantly increased medication adherence ($p < .05$) on both the pharmacy score and self-report medication score. There was also a tendency for the intervention to have a positive effect on weight control. Dietary-adherence scores were not affected by social support.

There was no cumulative impact of the interventions when tested by factorial analysis of variance. Different aspects of the regimens were not significantly related to one another. The authors felt these results were consistent with the conclusion that adherence is a multidimensional concept which requires different interventions for different components of the therapeutic regimen.

Operationalization for both compliance and social support was clearly defined. Although the design of the study was somewhat complex with 36 subgroups, the data analysis and results were presented in a manner that was easily understood. Results denoting different types of interventions that affect different aspects of the regimen are useful to both researchers and health-care practitioners, and this researcher could find no major limitations in the study. There was no definition of hypertension for entry into the study, but since B/P control was not an outcome variable this created no problems. The authors listed two limitations in their summary: (a) repeated data collection through patient interviews may constitute potential interventions to an unknown degree, and (b) the interventions all involved people outside the group of the patient's normal health-care providers.

In the second of the studies using an educational intervention, Morisky et al. (1982) used a factorial design to examine educational approaches toward increasing adherence and patient activation in hypertensive patients. The sample of 200 black, inner-city hypertensive patients was a subgroup from an earlier study (Levine et al., 1979). Subjects in the sample of this study were equally divided between the experimental and control groups. Females comprised 70% of the sample, which had a median age of 54 years, a median income of $4,250, and a median of 7 years of education.

Compliance was operationalized by two methods, medication taking and B/P control. Medication-taking compliance was operationally defined as a self-report measure based on patients' responses to four questions about their usual patterns of medication taking. An age-adjusted set of criteria defined B/P control: patients under age 40, < 140/90 mm Hg; patients age 40 to 59, < 150/95 mm Hg; and patients aged 60 years or older, < 160/100 mm Hg. A record of systolic and diastolic B/P readings was kept throughout the study period and then averaged for analysis.

Social support was operationally defined for three sequential interventions. The first intervention was an exit interview conducted by a health-education student immediately after the clinic visit. During the 5- to 10-minute session, the regimen was reviewed and instruction reinforced, problems were discussed, and an attempt was made to tailor the regimen to the patient's daily routine. The second intervention involved two home visits: one with the patient regarding knowledge, attitudes, and behaviors concerning hypertension; and a second at the same time or within several days, was with a patient-chosen significant other. The objectives of the visit with the identified support person were to (a) identify ways family members can assist the patient in hypertension treatment and reinforce self-care behaviors and (b) have the support person make a commitment to help the patient remember to take medications and keep appointments. Nurses made the home visits.

The third intervention consisted of three weekly 2-hour sessions of small groups co-led by a social worker and a nurse. Three main steps characterized the sessions: (a) a general discussion of health behaviors and compliance issues, (b) teaching and inducing rehearsal of coping skills and problem-solving activity, and (c) encouraging patients to practice and apply newly acquired skills to stressful situations. The focus of these steps was to increase the patients' sense of internal control over stressful situations. Issues raised by the subjects frequently centered on grief and loss.

Four other variables were examined in this study. Knowledge was operationalized as 10 items regarding symptoms, causes, effects, and treatment of hypertension. Belief in seriousness was operationalized as four items related to a patient's belief that hypertension can cause bodily harm or target-organ damage. Belief in benefits was operationalized as three items about effects of drug therapy on controlling B/P. Finally, locus of control was operationalized by six items from a scale developed by Wallston and Wallston to examine change in the expectancy dimension of adherence. The interview to measure these variables and compliance was administered to patients at the beginning of the family-support intervention and again in the final follow-up interview, 3 to 6 months following the completion of the small-group sessions.

For purposes of analysis, the authors divided the study groups into two categories: those assigned to family-support interventions but not small-group sessions (Group I) and those assigned to both the family-support interventions and small-group sessions (Group II). Significant differences were found between the groups on final B/P control ($X^2 = 4.22$; $p < .05$) with 62% ($n = 87$) of the members in Group II demonstrating control versus only 46% ($n = 86$) of those in Group I. None of the attitudinal or the medication-compliance variables demonstrated statistically significant differences at the .05 level between the two study groups.

Results of a 3-year follow-up study of the same population supported no decay factor with respect to B/P control. It was noted that the most significant main effect for sustained B/P control was the family-support intervention. This finding reinforces documentation in the social science literature of the importance of building in support of new beliefs and behaviors within an individual's natural environment.

The operational definition for B/P control was the only age-adjusted definition among the studies reviewed. This age-related adjustment increased the validity of the study findings. Both the exit intervention and family-support interventions were clearly defined. The third intervention, small-group sessions, was outlined but the exact process changed from group to group depending on issues raised by group members. Since patients included in the small-group sessions and family support had significantly better B/P control, it would be interesting to examine what happened in the small-group sessions that made a difference. This type of analysis was not possible with the data collected from this study.

In the last of the studies to be reviewed, the effectiveness of two social-support strategies designed to lower patients' blood pressure was examined by Earp et al. (1982). Patients were compared to each other and to members of a control group receiving routine care in a randomized clinical trial extending over a period of 2 years. The sample ($\underline{n}$ = 218) was predominantly black (77%), married (60%), and female (59%). Only 28% of the subjects were high school graduates. Participants resided in urban, semi-rural, and rural areas.

Diastolic B/P control was the dependent variable for compliance, with < 95 mm Hg used to operationally define B/P control. The entry B/P was an average of all readings from all clinic visits patients made in the year prior to and including the first visit in the study. Blood pressure for the end of the first year was the average of B/Ps recorded at all visits between 7 and 12 months; end-of-the-second-year pressure represented the average of readings charted between 19 and 24 months after entry into the study.

Social support was operationalized by means of two experimental interventions. Patients were randomly assigned to one of three groups. Group 3 (_n_ = 63) included patients who received routine medical care at a university or community hospital clinic and served as a control group. Patients in Group 2 (_n_ = 56) received standard medical care plus home visits to motivate and reinforce positive health behavior. The home visits were over an 18-month period and were carried out by either public-health nurses or specially trained pharmacists. The total number, frequency, duration, and content of each visit were at the discretion of the health professional. Group 1 (_n_ = 99) patients received standard medical care, home visits, and chose a "significant other" to actively participate in both the home visits and home blood pressure monitoring. A four-item index measuring the amount of social support received from family and friends for continued medication and appointment compliance was also used.

Two other variables were explored. A three-item index measuring perceived worry over possible impact of hypertension was included with the four-item social-support index. Questions about barriers assessed the affordability and accessibility of care.

Findings at the end of the first year of the study showed no group had a statistically significant advantage in reducing diastolic B/P. All three groups experienced a decline in the number of patients with uncontrolled B/P. At the end of the second year, however, Group 3 (control) had regressed somewhat while both experimental groups demonstrated continued improvement in B/P control. This trend was not statistically significant ($p = .07$). The investigators reported that while each of the two supportive interventions seemed clearly superior to the control group, over time they were unable to determine which of the two was more effective.

The operational definition for compliance in this study was simple, involving one outcome variable, diastolic B/P control. The operational definition for social support was more vague. Main objectives for the interventions were documented, but there was no consistency or standardization of how the home visits were conducted. Each nurse or pharmacist determined the content, format, frequency, and duration of the visits with the patient or patient and significant other. The lack of consistency severely limits others' ability to replicate this study. There also was no type of analysis of possible differences in results based on the type of health professional who carried the home visits. For both future research and use in clinical practice, it would be helpful to know if the nurse and pharmacist were equally effective in the home visits or if one type of provider offered an advantage in assisting patients and significant others in B/P control.

Comparison of studies 1980 to present. In comparing the dependent variables used to measure compliance, one group of investigators used both B/P control and medication taking (Morisky et al, 1982); one explored medication taking, dietary restrictions, and weight control (Kirscht et al., 1981); and one examined only B/P control (Earp et al., 1982). Kirscht and Earp both noted that their decision to use only adherence to the regimen or B/P control was based on results of earlier research which documented a significant relationship between B/P control and adherence measures (Haynes et al., 1976; Levine et al., 1979; McKenney et al., 1973; Nelson et al., 1978). Morisky and associates used data from the Levine et al. (1979) study.

Adherence to the regimen was operationalized by self-report measures by both Morisky et al. (1982) and Kirscht et al. (1981). Research by Kirscht and colleagues examined three aspects of the therapeutic regimen, while medication taking was the only variable explored by Morisky and associates. The operationalization of B/P control was distinctly different in the two studies that examined it. Morisky et al. employed an age-adjusted mean systolic and diastolic B/P reading. The research by Earp et al. (1982) defined a mean diastolic B/P < 95 mm Hg as a level of control. As noted previously, the age-adjusted control level is unique in the hypertension and compliance literature reviewed for this thesis.

Social-support variables were clearly defined as such in the literature since 1980. In two studies (Earp et al., 1982; Morisky et al., 1982), social support was provided through a number of sequential support interventions, while in the third study (Kirscht et al., 1981) social support was the last of four sequential interventions. Each of the studies had as one of the interventions a home visit with the hypertensive patient and a support person of the patient's choice. The focus of the home visit varied slightly but basically involved an explanation of the concept of social support, provision of information regarding the patient's regimen, and enlisting the aid of the support person in assisting the patient to follow the therapeutic regimen. While the project staff in the Kirscht and Morisky studies each made one home visit, those involved in the Earp research made from 1 to 12 visits over 18 months for an average of 5.5 visits per subject.

Additional support interventions by Morisky et al. (1982) and Earp et al. (1982) were in the form of patient-only interventions. Patients in the Earp study were visited in the home, whereas those in the Morisky study were seen after the first clinic visit. Small-group sessions of hypertensive subjects were the third intervention of the Morisky research. The type of health-care professional used in the support interventions varied between the studies: Kirscht employed nurses; Morisky used health educators, nurses, and social workers; and Earp used nurses and pharmacists.

All of the investigators used a factorial experimental design for their research. The number of independent variables, other than social support, was much smaller than noted in earlier studies. Results of the studies were at times difficult to interpret because the effects of more than one social-support intervention could not be separated and examined alone.

Summary

A review of the literature on social support and following a therapeutic regimen for hypertension has shown changes taking place in the manner in which research is being conducted. First, social support is being identified as a major concept and studies are addressing it as a primary variable. In a recent study (Earp et al., 1982), the entire experimental intervention revolved around social support. In the past, the trend was to examine social support as one of a large number of variables related to compliance with a therapeutic regimen.

A second trend in research has been to use self-report measures as operational definitions of compliance. This is a result of practical necessity when dealing with a large number of subjects and has been documented in the literature (Nelson et al., 1978) to be positively correlated with B/P control. Self-report measures can be especially useful in examining areas of the regimen other than medication (i.e., diet and exercise) and have been found to be reliable when compared to objective measures of compliance (Gierszewski, 1983; King & Fredrickson, 1984).

As noted earlier, investigators appear to be limiting the number of independent variables examined along with social support. In 1978, Nelson examined social support as one of 18 variables related to compliance with a therapeutic regimen for hypertension. In recent studies in which social support has been a major variable (Earp et al., 1982; Kirscht et al., 1981; Morisky et al., 1982), fewer variables (one to four) were examined.

Finally, the factorial design has become popular with investigators examining the effects of social support through experimental interventions. This design has the advantage of being able to administer multiple interventions to subgroups of a sample. The findings are then examined for differences in effectiveness of the interventions. Unfortunately, this change in the research has become a limitation in one recent study (Earp et al., 1982). The investigators used sequential social-support interventions and at the end of the study were unable to determine which of the interventions were responsible for changes in compliance measures. This was not the case when social support was only one of four interventions examined (Kirscht et al., 1981).

With all the progress made, old problems still remain in research regarding social support and following a therapeutic regimen for hypertension. Operational definitions of compliance/adherence for hypertension have become more consistent, while operational definitions of social support remain widely varied. The lack of consistency in operationalizing social support is the result of a still-inconsistent conceptual definition. There is more agreement among scholars and researchers now than 10 years ago about the definition of social support, but the agreement is far less than total. This fact is reflected in the research.

There continues to be an overlapping or confounding of social support with other variables that may affect following a therapeutic regimen. This problem has improved as fewer variables are studied simultaneously with social support, but extraneous variables remain a problem.

The area in which the least amount of progress has been made is increasing information regarding the process of social support. Researchers are continuing to document that social support affects adherence/compliance in hypertension. Yet no research reviewed for this thesis has given any information about how or why the effect occurred. A clearer understanding of the process of social support will lead to more agreement about its conceptual definition and more consistency in its operationalization.

In an effort to add to the knowledge regarding social support and following a therapeutic regimen, data regarding supportive person, type of support, and quantity of support will be examined in this thesis.

CHAPTER 4

METHODOLOGY AND PROCEDURE

Overview

This study was designed to identify and describe hypertensive patients' perceptions of social support in following a therapeutic regimen. More specifically, the focus of the study was the identification and descriptions of social support among selected subgroups of hypertensive patients as well as the identification and description of social support for each modality of the therapeutic regimen (i.e., medication, diet, and exercise). Differences among subgroups and modalities were also examined.

Data for this study were collected in 1980-1981 as part of a federally funded research project, "Patient Contributions to Care--Link to Process and Outcome," grant #5R01NU00662. Co-principal investigators were B. Given and C. W. Given. The agency granting funding was the Public Health Service, Division of Nursing. For this reason, the description of sites, sample and population characteristics, and data-collection procedures will refer to those used in the research project. The study design for the research project was a controlled field experiment in which the effects of a 6-month nursing intervention on clinical parameters and other indicators of management and control of hypertension were explored. A more detailed discussion of the methodology and procedures used for this thesis is also presented in this chapter.

Collection Sites

The study, "Patient Contributions to Care--Link to Process and Outcome," was conducted in four sites located in midwestern urban areas. Three of the sites were ambulatory care centers staffed by family practice residents. These family practice residents were comparable in terms of their training level (18 and 24 first, second, and third year) and in the range of patient visits handled per month (900 to 1,200 patients). The distributions of the number of visits for the top 20 diseases/problems were virtually identical, with hypertension among the top 10 most frequently occurring problems in all sites.

The fourth site consisted of two private offices staffed by four general internists. These physicians were all board-eligible or board-certified in general internal medicine. Information about the number of patient visits per month and distribution of visits based on disease/problem was not obtained from this site. The populations of the three cities in which the family practice programs were located ranged from 92,000 to 198,000. Two of the three cities were lightly to moderately industrialized, whereas the third was heavily industrialized. The city where the private practices were located had a population of approximately 85,500 and was lightly industrialized and moderately commercial.

Population

A population of hypertensive patients was identified at these four sites by two methods. In the three family practice centers, data contained in a computerized health information system were employed. In the private practices, patient lists were drawn up by the four physicians (in two practices) who participated in the study.

Population criteria specified that the patients had to (a) be between the ages of 18 and 65; (b) have an established diagnosis of essential hypertension; (c) be literate; (d) show no evidence of cancer, end-stage renal disease, stroke, blindness, or psychosis; (e) show no evidence of active pregnancy or lactation; and (f) be on a prescribed dietary and/or medication regimen for hypertension.

Four hundred thirty-three patient records were originally screened at all sites for hypertension. Of these, 177 were excluded during a second screening by the co-principal investigators. The majority of these 177 patients, 124, were excluded because their blood pressure fell below the limits set to define hypertension as out of control: a systolic BP of 140 mm Hg or a diastolic B/P of 95 mm Hg.

Sample

Sample selection occurred in two stages. In the first stage, trained auditors (graduate students in the Family Nurse Clinical Specialist program at Michigan State University) screened the medical records of the patient population and abstracted data from the records of those patients who met the criteria for inclusion in the study: two blood pressure readings taken on two separate occasions indicating a diastolic pressure of 90 mm Hg or above, name of medication and dosage and/or type of diet prescribed, and two weights taken on two separate occasions.

In the second stage, the principal investigators screened the data abstracted on each patient to determine eligibility for inclusion in the final sample. An additional criterion for inclusion in the final sample was that the subjects' medical records indicate two blood pressure readings taken on separate occasions with _either_ a systolic pressure of 140 mm Hg or above _or_ a diastolic pressure of 95 mm Hg or above.

Two hundred fifty-six hypertensive patients who met the criteria for inclusion in the study were sent letters requesting their participation in the research project. One hundred fifty-eight patients consented to participate and be interviewed. Of this number, 102 hypertensive patients continued in the study and completed the portions of the Social Interaction Questionnaire examined in this thesis.

Human Rights Protection

The rights of the respondents were protected through adherence to standard criteria set forth by the Michigan State University Committee on Research Involving Human Subjects. All patients were sent a letter before being contacted by an interviewer. (See Appendix A.) The letter, signed by either the medical director of the health-care center where the patient sought care or by the patient's private physician, described the study and its benefits, assured the patient of anonymity and confidentiality, and requested his or her participation in the study.

An interviewer initiated telephone contact with patients who returned a postcard indicating a willingness to participate in the study, patients who requested more information about the study, and patients who did not return a postcard. During the telephone conversation, the study was again described to the potential subject, questions were answered, and if the person indicated a willingness to participate, an appointment time was arranged to meet with the interviewer at the site.

At the time the interviewer met with a patient, she or he described the study and told the subjects they had a right to refuse to participate, that refusal to participate would in no way affect their health care, and that they could withdraw at any time during the study. The patient was then asked to sign a consent form before proceeding with the interview. The consent form provided an explanation of the research, the purpose of the study, use of results, and assurances of anonymity and confidentiality. (See Appendix B.)

Interview Procedures--Intake

Upon obtaining the patient's agreement to participate in the study, the interviewer explained the content of the five self-administered questionnaires. The individual was placed alone in a room by an interviewer to complete the five self-administered questionnaires. Included among these forms was the sociodemographic questionnaire from which data for this thesis were drawn. The subject's progress was checked periodically by the interviewer as he or she completed the questionnaires. Upon completion of the self-administered forms, the interviewer collected the instruments and reviewed them for omissions. Next the interviewer administered two final questionnaires, one related to the patient's current therapeutic regimen and the other to current symptomology. The instruments were then returned to the research staff for coding.

After completion of the questionnaire, subjects were assigned to the experimental or control groups (see method below). Subjects in the experimental group were asked to meet eight times over the following 6 months with a nurse intervener. The interviewers gave the patients the name of the nurse intervener who would be contacting them and asked the best time of day for the nurse intervener to call. Subjects assigned to the control group were thanked for their assistance and told they would be contacted again in 6 months for another interview. (See Appendix C--Intake Sociodemographic Instrument.)

Experimental and Control Groups

At the conclusion of the intake interview, interviewers assigned patients to the experimental or control group using the following algorithm for randomization. It was anticipated that no more than 50 patients would be selected per site for the study, so an array of 54 numbers was randomly ordered. Assignment was achieved by consulting a table of random numbers from 1 to 100 and randomly selecting 54 numbers. Once the random array was complete, the numbers were assigned to experimental and control group patients on the basis of a two-third/one-third split favoring assignment to the experimental condition. Since three persons were employed as interviewers at each site, the 54 numbers were divided into three groups: 1 through 20 to the first interviewer, 21 through 40 to the second, and 41 through 54 to the third.

Subjects in the experimental group were asked to meet with a nurse intervener eight times over a 6-month period. The goal of the intervention was that the nurse together with the patient identify a plan and specific strategies to involve the patient in carrying out the health behaviors needed to follow the therapeutic regimen. Progress was measured by the responsibility that patients took for implementing strategies designed to address their priority health problems. This process recognized each patient's unique problems in attempting to achieve the behaviors that lead to better control and management of their hypertension.

All materials for the intervention phase were standardized and systemized to facilitate use by nurse interveners at each site, as well as to ensure patient involvement. Extensive documentation by the nurse took place at each intervention visit. The detailed recording enabled the staff to analyze the context and focus of each visit and ensured consistency among the nurse interveners.

Assignment to the control group did not involve participation in a specific nursing intervention. These subjects received standard health care by their usual provider. Providers for both the experimental and control patients were asked to complete a form with information regarding health status and current therapeutic regimen at each visit to the provider for the duration of the intervention period.

Interview Procedures Post-Intervention and Follow-Up

Following the intervention phase of the project, all subjects were asked to complete the same five self-administered and two interviewer-administered questionnaires. This interview occurred approximately 6 months after the intake interview for the control group of patients. The experimental group completed the interview upon completion of the nursing intervention. The time was generally slightly more than 6 months after the intake interview. Most of the patients had difficulty completing eight visits in 6 months due to schedule conflicts, holidays, or illness.

The follow-up interview was conducted 3 months after the post-intervention interview (approximately 9 months after the intake interview). This final interview was done by mail. All subjects were again asked to complete the same five self-administered questionnaires as well as self-report versions of the two questionnaires previously administered by the interviewer. In addition, the subjects were also asked to complete a newly constructed questionnaire on social interaction. (See Appendix D.) The Social Interaction Questionnaire was designed after the research staff noted a good deal of documentation related to social support in the nurse intervenor records. A decision was made to more thoroughly explore the concept of social support among study subjects. Completed questionnaires were returned to the research staff in stamped, pre-addressed envelopes. Patients who did not return the questionnaire in 3 weeks were contacted by telephone for follow-up.

Interviewers

With the exception of one site, none of the interviewers were health-care providers. In the one exception, three graduate students from the nursing program at Michigan State University interviewed patients. (This researcher was one of the interviewers.)

The non-health-care-provider interviewers were recruited by personnel at the centers and were interviewed by the research staff before being hired. The interviewers received 2 days of training, which included an overview of the research, ethics of interviewing, and the responsibilities and techniques of interviewing. Interviewing skills were sharpened through role play with simulated patients.

Each interviewer was assigned a list of patients to contact and was responsible for an accounting of each patient included on her or his list. Initially the interviewer met with the subject at the site and explained the nature and purpose of the study. Interviewers were responsible for obtaining written consent to participate or, if the subject chose not to participate, to record the reason. They then recorded patient assignment, explained future participation, and provided the nurse intervener with a list of patients to contact.

The interviewers were also responsible for contacting all subjects to be interviewed at the 6-month or post-intervention period. Again they conducted the interviews as previously detailed, recorded data pertinent to questionnaires completed, problems encountered, and returned the instruments to the research staff.

Field supervisors for each site debriefed the interviewers and spot checked their work on a weekly basis. This helped to facilitate the interview process and to ensure quality and consistency of their work.

Operationalization of the Study Variables

Information to answer the research question "What are hypertensive patients' perceptions of social support in following a therapeutic regimen?" was collected in the follow-up phase of the experiment (approximately 9 months after intake and 3 months post-intervention). The instrument used was the Social Interaction Questionnaire.

The Social Interaction Questionnaire was developed by the research staff of the project "Patient Contributions to Care--Link to Process and Outcome." The questionnaire was structured so the patient would focus on one modality of the therapeutic regimen at a time as he or she answered questions regarding social support. The format (both open- and closed-ended questions) and the content (who gives support, type of support provided, and how much support provided) were based on a review of the literature and the staff's previous experience with the concept of social support. The words "social support" were avoided on the questionnaire as it was discovered during the nursing intervention that many patients were unfamiliar or uncomfortable with the terminology.

Patients' perceptions of social support were operationalized into three sets of variables: (a) who did or did not provide support, (b) what type of support was provided, and (c) how much support was provided.

To determine whom patients perceived as able to support them, they were asked to list the first name and relationship of people who could help them take on new habits or solve problems in following their treatment plan. (See Appendix D, Question 1.) (Please note that all question numbers refer to Appendix D, the Social Interaction Questionnaire, until further noted.) Beginning with the modality of medication, patients were asked if any people they listed had been able to support them in following the modality of the therapeutic regimen (Question 2). Those answering "yes" were asked to identify who had been supportive and who had been _most_ supportive (Questions 2a and 2b) in following the modality of the therapeutic regimen.

An identical format was used for the modalities of diet and exercise. The identification of people able to be supportive was taken from the list in Question 1. The "yes" or "no" responses to anyone able to help for diet and exercise were Questions 4 and 6, respectively. Questions regarding who had been supportive and who had been _most_ supportive were 4a and 4b for diet and 6a and 6b for exercise. Patients were also asked if they thought a nurse could support them in following a therapeutic regimen (Question 16).

The operationalization of hypertensive patients' perceptions of type of social support was based on Caplan's (1979) definitions for subjective tangible and subjective psychological support. Both types of support are analogous to their objective counterparts but are determined by the perception that the supportive condition exists. Tangible support is "behavior directed toward providing the person with tangible resources that are hypothesized to benefit his/her mental or physical well being" (Caplan, 179, p. 85). Psychological support is "behavior directed toward providing the person with cognitions (values, attitudes, beliefs, and perceptions) and toward inducing affective states that are hypothesized to promote well being" (Caplan, 179, p. 85).

In this instance, patients were asked to describe how the most supportive person had helped or been supportive in following the therapeutic regimen in each of the modalities. The description of support given for taking medication was Question 2c, for diet 4c, and for exercise 6c. Those who responded "yes" to Question 16 (could a nurse offer support) were asked to identify how a nurse could be supportive (16a). No respondents were asked why they did not think a nurse would be supportive (16b). This group of questions (16, 16a, 16b) was included to identify specifically patients' perceptions of the role of the nurse in providing social support in following a therapeutic regimen.

To measure the last of the three variables of social support--How much support was provided?--patients were asked to answer 17 closed-ended questions. Eleven of these addressed positive support or concern for following a modality of the therapeutic regimen (Questions 2d, 2e, 2f--medication; 4d, 4e, 4f, 4g--diet; and 6d, 6e, 6f, 6g--exercise). An example is given below:

2d. How much does this person help you remember to take your pills? (CHECK ONE)

_____ A great deal
_____ A lot
_____ Some
_____ A little
_____ Not at all

Questions 11 through 13 on the Social Interaction Questionnaire attempted to quantify possible negative support the patient perceived as "pressure" to follow each of the three modalities (medication, diet, and exercise). A third group of questions (8, 9, and 10) attempted to quantify the patients' perceptions of support in more general categories, such as self-worth, concern for hypertension control, and self-reliance in hypertension control.

Coding and Scoring of the Questionnaire

Patients' responses to questions regarding who was or was not supportive (Questions 1, 2a, 2b, 4a, 4b, 6a, 6b, and 14a) were categorized as: spouse, child, other relative, friend/workmate, physician, nurse, no one/myself, none, don't need help, counselor/psychologist/social worker, or no answer. These categories were coded with numbers 01-12, with 99 representing no answer.

Perceptions of how a support person was helpful (Questions 2c, 4c, 6c, and 14b) were categorized as follows:

1. Tangible support (active or task oriented), e.g., places pill on plate, fixes low-sodium foods, walks with me

2. Psychological support--e.g., encourages me when I'm down, talks with me if I have a problem, explains importance of taking medication

3. Both tangible and psychological support

Tangible support originally appeared as 2 in the code book. Psychological support is a combination of categories originally coded 1 (education), 3 (verbal support), and 6 (education and verbal support). Both tangible and psychological support were originally coded 4 (verbal and tangible) and 5 (education, verbal, and tangible). Perceptions of how much support was provided (Questions 2d, 2e, 2f, 4d, 4e, 4f, 4g, 6d, 6e, 6f, 6g, 8, 9, 10, 11, 12, and 13) were measured on one of two 5-point Likert scales (see samples below).

How much does this person help you to remember to follow your diet?

_____ A great deal
_____ A lot
_____ Some
_____ A little
_____ Not at all

How much does this person remind you to exercise?

_____ Far too much
_____ Somewhat too much
_____ About the right amount
_____ Somewhat too little
_____ Far too little

"A great deal" and "Far too much," though coded 1, were given a score of 5, with each response in order receiving the next lowest whole number to 1 for "Not at all" and "Far too little." Questions in the format of the first example demonstrate the highest degree of support with a score of 5 and the lowest with a score of 1. In the second example, a score of 3 denotes the patients' perceptions of adequate support, with other answers indicating too much or too little support perceived. The scoring of the second example is also used for questions that examine possible negative support or "pressure" to follow modalities in the therapeutic regimen.

Research Question 2, "Are there differences in perceptions of social support among the various modalities of the therapeutic regimen?" was examined by analysis of the responses that look specifically at each modality. These responses are all on the Social Interaction Questionnaire, as noted earlier, and are as follows for each modality (See Appendix D):

Medication: Questions 2, 2a, 2b, 2c, 2d, 2e, 11, and 14b

Diet: Questions 4, 4a, 4b, 4c, 4d, 4e, 4f, 4g, 12, and 14c

Exercise: Questions 6, 6a, 6b, 6c, 6d, 6e, 6f, 6g, 13, and 14d

The examination of "differences in perceptions of social support among subgroups of the sample studied based on standard sociodemographic characteristics," as stated in Research Question 3, was again done by analyzing responses given in the Social Interaction Questionnaire. In this case, however, responses were grouped according to the sociodemographic characteristics that were collected with data upon entry into the study (Intake--see Appendix A) and at the time the Social Interaction Questionnaire was administered (follow-up--see Appendix E). Data were collected on the following characteristics: sex, age, race/ethnicity, marital status, number of living children, income, work status, occupation, education, living arrangements, number of children living at home, size of household, and duration of hypertension. Operationalization and coding of these sociodemographic characteristics can be found in Appendices A and E (intake and 9-month sociodemographic instrument).

Reliability and Validity of the Instrument

Reliability and validity of the Social Interaction Questionnaire have not been established due to the one-time administration and the abstract nature of the concept of social support. Reliability, as defined by Polit and Hungler (1978), is the consistency with which the instrument measures the attribute it is intended to measure. The statistical measurement of reliability is normally accomplished in one of two ways: repeated administration of the instrument (test-retest) and/or by methods that examine internal consistency of the instrument, such as split-half reliability or the Kuder-Richardson Formula 20.

Neither of these methods was possible with the Social Interaction Questionnaire. The questionnaire was administered one time so the test-retest was not possible. The format of the questionnaire did not lend itself to methods that measured internal consistency. The majority of the questions on the instrument were open ended, with patients responding "yes" to a filter question completing one portion of the questionnaire and those answering "no" to a filter question completing another portion of the questionnaire. There was a filter question for each modality of the therapeutic regimen (medication, diet, and exercise). Therefore, the patient could have answered the questionnaire in six different ways, making it very difficult to use internal-consistency methods.

Although not quantified, an attempt to ensure reliability of the Social Interaction Questionnaire was made by using consistent activities in the coding process. Answers to open-ended questions were examined by the supervisory staff and coders. Together the members of this group discussed and determined how the categories for coding each question would be constructed. This process increased each staff member's understanding of the coding categories and ensured consistent placement of answers in the correct categories. To further enhance the intercoder reliability, spot checks of the coding were made weekly or at more frequent intervals by the supervisory staff. If discrepancies were noted, the matter was discussed with the coder and data were recoded in the correct category.

Validity refers to the degree to which the instrument measures the trait or concept it is desired to measure. As noted by King (1982), it is impossible to develop objective criteria against which to compare abstract concepts such as social support. "Therefore it becomes necessary to depend on subjective criteria upon which to base evaluation of the validity of the instrument." Validity, then, must rest with the investigator and his/her estimation of the degree to which the instrument will measure the concept. The validity of the Social Interaction Questionnaire was enhanced by the research staff's previous experience with research in which social support was a major concept. The content and format of the questionnaire were based on a review of current literature by the research staff. Most important among the works were those that examined the perception or subjective aspects of social support (Caplan, 1979). The literature review, with a focus on research of perceptions of social support, also helped to ensure that the questionnaire would indeed measure perceptions of social support.

Research Questions

1. What are hypertensive patients' perceptions of social support in following a therapeutic regimen?

2. Are there differences in perceptions of social support among the various modalities of the therapeutic regimen?

3. Are there differences in perceptions of social support among the various subgroups of the sample studied, based on standard sociodemographic characteristics?

Statistical Analysis of the Data

Descriptive and inferential statistical methods were used to analyze data and attempt to answer the research questions. Data related to Research Question 1, "What are hypertensive patients' perceptions of social support in following a therapeutic regimen?" will be described using frequencies of responses in different categories. Who was supportive (Questions 1, 2a, 4a, 6a, and 14a), type of support (Questions 2c, 4c, 6c, and 16a), and quantity of support (Questions 2d, 2e, 2f, 4d, 4e, 4f, 4g, 6d, 6e, 6f, 6g, 8, 9, 10, 11, 12, and 13) were data taken from the Social Interaction Questionnaire and analyzed in this manner. Contingency tables and bar graphs will be used to display these descriptive statistics in a bivariate form, i.e., supportive person x type of support and supportive person x quantity of support.

To answer Research Question 2, "Are there differences in perceptions of social support among the various modalities of the therapeutic regimen?" frequencies in contingency tables and bar graphs will be used to present the variables of social support (support person, type of support, and quantity of support) by the three modalities of the therapeutic regimen in this study (medication, diet, and exercise).

As with the two previous questions, contingency tables and bar graphs will be used to display data pertinent to Research Question 3, "Are there differences in perceptions of social support among the various subgroups of the sample based on standard sociodemographic characteristics?" Each of the three variables related to social support (support person, type of support, quantity of support) was examined with the sociodemographic characteristics noted earlier: sex, age, race/ethnicity, marital status, number of living children, income, work status, occupation, education, living arrangements, number of children living at home, size of household, and duration of hypertension. The differences between experimental and control groups were also examined as subgroups of the sample.

Chi-square and *t* tests were used to analyze data for Questions 2 and 3, which address differences; i.e., are the frequencies of this supporter, modality, or subgroups equal or not? and is the level of support given equal? As the *N* permits, extension of the *t* test may be needed in the form of analysis of variance for multiple independent variables and/or multivariate *t*'s for multiple dependent variables.

This was necessary since the dependent variables were likely to be intercorrelated.

Summary

The methodology and procedures used in the thesis were presented in Chapter 4. The sites, population and sample, and data-collection techniques were described and discussed. Human rights protection was outlined, and procedures for statistical analysis were presented. A detailed analysis of the data is presented in Chapter 5.

CHAPTER 5

DATA PRESENTATION AND ANALYSIS

Introduction

In this chapter the sample will be described by its sociodemographic characteristics. Data obtained from the Social Interaction Questionnaire will be presented and analyzed along with the sociodemographic data in an attempt to answer the following research questions:

1. What are hypertensive patients' perceptions of social support in following a therapeutic regimen?
2. Are there differences in perceptions of social support among the various modalities of the therapeutic regimen?
3. Are there differences in perceptions of social support among subgroups of the sample based on standard sociodemographic characteristics?

Description of the Study Sample

The study sample was part of a larger sample of 158 hypertensive patients who participated in the research project "Patient Contributions to Care--Link to Process and Outcome," B. Given and C. W. Given, co-principal investigators. The present subsample included 102 male and female hypertensive patients ranging in age from 24 to 65 years.

The only criterion for inclusion in this study was completion of the Social Interaction Questionnaire.

Sociodemographic Characteristics

The sociodemographic characteristics examined in this study were sex, age, race/ethnicity, marital status, number of living children, income, work status, occupation, education, living arrangements, number of children living at home, size of household, and duration of hypertension.

Sex

A nearly equal number of male and female hypertensive patients participated in this study, 52 males (51%) and 50 females (49%).

Age

Study participants ranged in age from 24 to 65 years, with a mean age of 47.98 years. The distribution and percentages of subjects by age are displayed in Table 5.1.

Table 5.1: Number and Percentage of Subjects by Age (*n* = 102)

Age	Number of Subjects	Percentage
24-39	27	26
40-49	27	26
50-59	28	31
60-66	16	16

Race/Ethnicity

Each participant was asked to record his/her racial or ethnic background. The majority of the subjects in this study were white (n = 90; 88%). Data on the number and percentage of subjects by race are illustrated in Table 5.2.

Table 5.2: Number and Percentage of Subjects by Race (n = 102)

Race	Number of Subjects	Percentage
White	90	88
Black	10	10
Mexican-American	1	1
Other	1	1

Marital Status

Three-quarters (83%) of the hypertensive patients in this study were married. The remaining subjects were almost equally divided among the categories of single (7%), divorced (5%), and widowed (5%).

Number of Children

Subjects reported having from 0 to 12 living children. The mean number of children was 3. Thirteen percent of the participants (n = 13) had no living children. A smaller percentage (n = 8; 8%) had one child. Approximately one-quarter of the subjects (n = 28; 28%) had two children. An almost equal number (n = 33; 33%) of the hypertensive patients had three or four children. Eighteen participants (18%) reported having five or more children.

Income

Data on yearly total family income were obtained from 100 subjects. Sixty-three percent of the subjects (n = 63) reported incomes above $20,000. Table 5.3 includes the distribution and percentage of subjects by income.

Table 3: Number and Percentage of Subjects by Total Family Income (n = 100)

Income	Number of Subjects	Percentage
Less than $5,000	3	3
$ 5,000- 6,999	2	2
$ 7,000- 8,999	4	4
$ 9,000-10,999	5	5
$11,000-12,999	4	4
$13,000-14,999	1	1
$15,000-16,999	7	7
$17,000-19,999	11	11
$20,000-24,999	16	16
$25,000 or more	47	47

Work Status

Current work status was recorded for each participant. Distribution and percentage of participants by work status are presented in Table 5.4. Approximately two-thirds (n = 68; 67%) of all subjects were working outside the home for pay.

Table 5.4: Number and Percentage of Subjects by Work Status (n = 101)

Work Status	Number of Subjects	Percentage
Working	68	67
Unemployed or laid off	4	4
Retired	8	8
Disabled	4	4
Housewife	18	18

Occupation

Sixty-six participants responded to a question asking them to describe their work. This number is two less than the 68 subjects who stated they were working outside the home. The number and percentage of subjects according to occupation are illustrated in Table 5.5. The Hollingshead Occupational Scale was used to code the occupational variables. The category of clerical/sales was the most frequently reported (n = 14; 21%). Least reported was the category of unskilled labor (n = 4; 6%). The remaining subjects reported occupations fairly evenly distributed within the other occupational categories.

Education

Approximately one-third (n = 33; 32%) of the sample were high school graduates. Nearly one-half (n = 47; 47%) had attended or graduated from college, whereas 20% (n = 20) of the subjects had less than a high school education. The number and percentage of hypertensive patients by education are presented in Table 5.6.

Table 5.5: Number and Percentage of Subjects by Occupation (n = 66)

Occupation	Number of Subjects	Percentage
Higher executive, major professional	12	18
Business manager, lesser professional	12	18
Administrator, minor professional	7	11
Clerical, sales	14	21
Skilled, manual	9	14
Semi-skilled	8	12
Unskilled	4	6

Table 5.6: Number and Percentage of Subjects by Education (n = 102)

Education	Number of Subjects	Percentage
None or some school (less than 7 years)	5	5
Junior high (completed 9 grades)	4	4
Some high school	11	11
High school graduate	33	32
Technical, business, or trade school	2	2
Some college (less than 4 years)	20	20
College graduate	12	12
Postgraduate or professional	15	15

Living Arrangements

Information regarding whom the subject lived with was obtained. Table 5.7 represents the distribution and percentage of participants by living arrangements. Almost one-half (n = 48; 48%) of all subjects were married and living with a spouse and children.

Table 5.7: Number and Percentage of Subjects by Living Arrangements (n = 100)

Living Arrangements	Number of Subjects	Percentage
Unmarried; living alone	9	9
Unmarried; living with relative or unrelated person	3	3
Single; living with children	6	6
Married; living with spouse and children	48	48
Married; living alone with spouse	28	28
Married; living with spouse, children, and other relatives	4	4
Married; living with spouse and other relatives	2	2

Number of Children Living at Home

The number of children living at home was obtained from each participant. The numbers ranged from zero to seven, with 42% (n = 41) reporting no children living at home. Approximately one-fourth (n = 24; 24%) had one child living at home. Subjects with two children in the home represented 17% (n = 17) of the total sample, while those with three children represented 9% (n = 9), those with four children 5% (n = 5), and those with five or seven children 1% each (n = 1, n = 1).

Size of Household

The size of household was reported by 95 subjects. One-third of the sample (n = 32; 33%) had two other people living in the household in addition to themselves, and one-fourth (n = 23; 24%) had three other people in the household. Subjects having one, four, or five others in the household were almost equally distributed (n = 11, 11%; n = 13, 13%; and n = 10, 10%, respectively). Five subjects (5%) reported six others in the household, and two subjects reported seven others (n = 1; 1%) and nine others (n = 1; 1%) in the household.

Duration of Hypertension

The distribution and percentage of subjects by duration of hypertension are included in Table 5.8. Nearly one-quarter of the participants (n = 24; 24%) had had hypertension for 3 to 5 years. Sixteen subjects (16%) had had hypertension for 15 years or more.

Summary of Sociodemographic Findings

Descriptive findings related to sociodemographic characteristics of the sample were presented in the previous section. Examination of the descriptive statistics showed a nearly equal number of males and females in the sample. The majority of participants were found to be white, married, middle income, employed, and graduates of high school (of these, most had attended or graduated from college).

Table 5.8: Number of Subjects by Duration of Hypertension (n = 100)

Duration of Hypertension	Number of Subjects
Less than 1 year	14
1-2 years	17
3-5 years	24
6-8 years	17
9-11 years	10
12-14 years	2
15 or more years	16

Data Presentation for Research Questions

The research questions will be presented in this section along with pertinent data. Data for each research question will be presented by the three variables of social support examined (support person, type of support, and quantity of support). The statistical techniques of chi-square and *t* test will be used to analyze differences in perceptions of social support among the modalities of the therapeutic regimen and subgroups of the sample. Descriptive statistics (frequencies, percentages, and means) will be used to describe hypertensive patients' perceptions of social support in following a therapeutic regimen.

Research Question 1

> What are hypertensive patients' perceptions of social support in following a therapeutic regimen?

Support person. Participants responded to a question asking if someone was able to help (support) them with each modality of the therapeutic regimen. Hypertensive patients were most often able to identify someone able to help with the modality of diet (*n* = 53; 71%), followed by medication (n = 60; 67%) and finally exercise (n = 44; 48%). Ninety subjects responded to the question for medication, 75 responded regarding diet, and 91 responded for exercise.

Subjects were also asked to identify the most helpful (supportive) person for each modality of the therapeutic regimen. Fifty-nine of 60 subjects who stated someone was able to help with medication identified the most helpful person. All 53 subjects who related someone was able to help with diet identified a support person, while 40 of the 44 participants did the same for exercise. Spouse was the most frequently identified support person for all modalities: diet (n = 35; 66%), medication (n = 37; 63%), and exercise (n = 5; 9%). The distributions and percentages of support person for each modality are displayed in Table 5.9.

Table 5.9: Number and Percentage of Supportive Person by Modality

Support Person	Medication		Diet		Exercise	
	n	%	n	%	n	%
Spouse	37	63	35	66	18	45
Child	3	5	5	9	3	7.5
Other relative	2	3	1	2	0	0
Friend/workmate	5	9	7	13	14	35
Doctor	1	2	0	0	0	0
Nurse	3	5	3	6	1	2.5
No one/myself	3	5	1	2	0	0
Dietitian	0	0	1	2	0	0
Pet	0	0	0	0	3	7.5
More than 1 of above	4	7	0	0	1	2.5

Type of support. Subjects answered a question asking them to describe the help (support) they received from the most helpful person for each modality of the therapeutic regimen. Fifty-three subjects responded to the question for medication, 54 for diet, and 44 for exercise. Hypertensive patients identified much higher levels of psychological support for medications (_n_ = 40; 75%) than for diet (_n_ = 19; 35%) or for exercise (_n_ = 16; 36%). Conversely, subjects were more likely to identify tangible support for exercise (_n_ = 23; 52%) and diet (_n_ = 26; 48%) than for medication (_n_ = 7; 13%). A fairly evenly distributed percentage of participants identified receiving both psychological and tangible support: medication 11% (_n_ = 6), diet 17% (_n_ = 9), and exercise 11% (_n_ = 5).

Quantity of support. Means were computed for 17 questions that attempted to quantify support for following a therapeutic regimen. Subjects recorded responses on two different 5-point Likert scales. The first scale was used to measure "how much help" was given for each of the modalities. Answers ranged from "A great deal" to "Not at all." The second scale was used to quantify "how much concern" was shown, "how much the support person reminded," and "how much pressure" was placed on the subject to follow each modality. The responses for each ranged from "Far too much" to "Far too little." The number of subjects and mean for each question by modality are presented in Table 5.10.

Table 5.10: Number of Subjects and Means of Quantity of Support by Modality

Quantity of Support	Medication		Diet		Exercise	
	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$
How much help	59	3.66	53	3.79	42	3.55
How much concern (follow modality)	61	3.02	53	3.02	43	3.02
How much concern (weight)	--	--	52	2.96	--	--
How much concern (establish exercise)	--	--	--	--	43	3.00
How much remind	59	3.02	52	2.98	43	3.14
How much pressure	92	2.73	96	2.78	94	2.68

The last three questions attempted to quantify more general feelings of support: How much did family and friends make the subject feel worthwhile ($n = 95$; $\bar{X} = 3.91$)? How much concern did family and friends show about their hypertension control ($n = 97$; $\bar{X} = 3.54$)? and How much did the subject have to rely on himself/herself to take care of their hypertension ($n = 96$; $\bar{X} = 3.15$)?

Subjects perceived the quantity of "help" to be between "some" and "a lot." Other aspects of support (i.e., concern, reminding, pressure) were perceived as "about the right amount."

In summary, hypertensive patients most often perceived help available for diet, followed by medication and exercise. Spouse was perceived as the most supportive person, followed by friend, for all modalities. Subjects perceived much higher levels of psychological than tangible support for medication. Slightly more tangible than psychological support was perceived for diet, while nearly equal amounts of tangible and psychological support were perceived for exercise. The quantity of concern, reminding, and pressure perceived were "just about right," while help perceived ranged between "some" and "a lot."

Research Question 2

> Are there differences in perceptions of social support among the various modalities of the therapeutic regimen?

Support person. There was a significant difference in perceptions ($X^2 = 10.79$, df = 2, $p < .01$) among the modalities regarding the hypertensive patients' ability to identify someone able to help with each modality of the therapeutic regimen. There was no statistically significant difference in perceptions among the modalities regarding the person identified as most able to help. Data were dichotomized into categories of "spouse" and "other" for analysis. This eliminated a large number of cells with frequencies of zero.

Type of support. For purposes of analysis, subjects who recorded perceptions of both tangible and psychological support were added to both the tangible and the psychological categories. A significant difference in perceptions ($X^2 = 18.32$, df = 2, $p < .001$) of type of support was noted among the modalities of the therapeutic regimen. The number and percentages of subjects by type of support are presented in Table 5.11.

Quantity of support. Paired t tests were used to analyze differences in quantity of social support among the modalities. This test is appropriate when two measures are obtained from the same subject (Polit & Hungler, 1981). In this case, the mean scores for quantity of support for medication, diet, and exercise were compared and analyzed. Since the scores are paired, the n of the test reflects the n of the modality with the fewest subjects, usually exercise.

Table 5.11: Number and Percentage of Subjects by Type of Support*

Modality	Tangible		Psychological		Both	
	n	%	n	%	n	%
Medication	7	13	40	75	6	11
Diet	26	48	10	35	9	17
Exercise	23	52	19	35	5	11

*Significant at $p < .001$.

The paired t test was performed on all data related to "how much help," "how much concern," "how much reminding," and "how much pressure" the subject perceived for following each modality of the regimen. Statistically significant differences were found among the modalities related to "how much help" subjects perceived. Subjects perceived more "help" for medications than exercise ($t = -2.05$, df = 27, $p = .05$, $n = 28$) and more "help" for diet than exercise ($t = -2.74$, df = 27, $p = .01$, $n = 28$). There was no significant difference of "help" between medication and diet, nor were there significant differences related to "concern," "reminding," or "pressure."

In summary, there were statistically significant differences found among the modalities of the therapeutic regimen regarding patients' perceptions of "someone able to help," type of support, and "how much help" they received.

Research Question 3

> Are there differences in perceptions of social support among various subgroups of the sample based on standard sociodemographic characteristics?

Data to answer this question will be presented by condition or sociodemographic characteristic in relation to the variables of social support (support person, type of support, and quantity of support).

Condition by support person. Approximately two-thirds (E: n = 44; 68% vs. C: n = 16; 64%) of both the experimental and control groups were able to identify someone able to help (support) them for the modality of medication. Approximately three-quarters of both the experimental and control groups identified someone able to help (support) them for the modality of diet. There was also a similarity between the groups for the modality of exercise, with one-half of both groups identifying someone able to help. The number and percentage of patients who identified a person able to help are displayed in Table 5.12. No statistically significant differences were found between conditions for any of the modalities.

Spouse was the most frequently identified as "person most help" for both experimental (n = 22; 52%) and control (n = 15; 88%) groups for the modality of medication. The only other person identified by the control group was friend (n = 1; 6%). Subjects in the experimental group identified child (n = 3; 7%), relative (n = 2; 5%), friend (n = 4; 10%), and others, e.g., doctor, nurse (n = 11; 26%). When data were categorized into "spouse" and "other" for analysis, there was a significant difference in perceptions between the experimental and control groups ($X^2 = 6.63$, df = 1, $p < .01$) as to who was identified as the most supportive person for the modality of medication.

Table 5.12: Number and Percentage of Patients Who Identified Support Person by Condition

Modality	Experimental		Control	
	n	%	n	%
Medication	44	68	16	64
Diet	40	70	13	72
Exercise	31	46	13	54

Spouse was again the most often identified support person for experimental (n = 25; 66%) and control (n = 10; 67%) groups for the modality of diet. Both groups identified friend (E: n = 4; 11% vs. C: n = 3; 20%) and other (E: n = 4; 11% vs. C: n = 1; 7%). Results were very similar between groups for the modality, and no statistically significant differences were found ($p \leq .05$).

For the modality of exercise, the experimental group identified spouse and friend equally (n = 10; 36%) as the most supportive person. They also identified child (n = 3; 11%), pet (n = 3; 11%), and other (n = 2; 8%). Subjects in the control group identified only spouse (n = 8; 67%) and friend (n = 4; 33%). These data were also analyzed in two categories, "spouse" and "other." Results showed significant differences in perceptions of "who was most supportive" for the modality of exercise ($X^2 = 6.04$, df = 1, $p < .02$).

Condition by type of support. Although some differences were noted between the experimental and control groups on the type of support identified for the modalities of diet and exercise, these were not statistically significant ($p \leq .05$). The number and percentage of subjects by condition and type of support are presented in Table 5.13.

Table 5.13: Number and Percentage of Subjects by Condition and Type of Support

Type of Support	Experimental		Control	
	n	%	n	%
Tangible--medication	9	21	4	24
Psychological--medication	33	79	13	76
Tangible--diet	22	49	23	51
Psychological--diet	11	68	5	31
Tangible--exercise	22	63	6	42
Psychological--exercise	13	37	8	57

Condition by quantity of support. Differences in quantity of support were again analyzed using t tests. No statistically significant differences were found between the experimental and control groups for any of the modalities.

Sex by support person. Males identified more people able to help for medication (n = 34; 71%) and diet (n = 32; 78%) than for exercise (n = 18; 36%). Females identified people able to help (support) equally for all modalities at 62% (medication n = 26, diet n = 21, exercise _n_ = 26). The difference between the number of males and females who were able to identify a support person for the modality of exercise was statistically significant ($X^2 = 4.77$, df = 1, $p < .05$). Differences in perceptions for modalities of medication and diet were not significant. Table 5.14 includes these data.

Table 5.14: Number and Percentage of Subjects Who Identified Support by Sex

Modality	Male		Female	
	_n_	%	_n_	%
Medication	34	71	26	62
Diet	32	78	21	62
Exercise	18	36	26	62*

*Significant at $p < .05$.

Males were much more likely to identify a spouse as the most helpful (supportive) person--medications (_n_ = 26; 79%), diet (_n_ = 27; 84%), and exercise (_n_ = 9; 53%)--than females--medications (_n_ = 11; 42%), diet (_n_ = 8; 38%), and exercise (_n_ = 9; 39%). Females identified friends as equally supportive as a spouse for the modality of exercise (_n_ = 9; 39%) and the next person most likely to help with the modalities of medication (_n_ = 4; 15%) and diet (_n_ = 5; 24%). Males perceived friends as most helpful after spouse for the modality of exercise (_n_ = 5; 29%).

When data were analyzed in two categories of "spouse" and "other," significant differences in perceptions of "who was most helpful" were noted between males and females for the modalities of medication and diet. For the modality of medication, $X^2 = 6.04$, df = 1, $p < .02$. For the modality of diet, $X^2 = 12.09$, df = 1, $p < .001$. There was no statistically significant difference found for the modality of exercise.

Sex by type of support. Both males and females perceived and identified higher levels of psychological than tangible support for the modality of medication. Females, however, identified only 5% ($n = 1$) tangible support while males identified 19% ($n = 6$). This difference was found to be significant ($X^2 = 6.24$, df = 1, $p < .02$).

Males identified more tangible support than females for the modality of diet; males ($n = 23$; 62%), females ($n = 10$; 42%). Females identified more tangible support than males for the modality of exercise; females ($n = 18$; 66%), males ($n = 10$; 41%). Neither of these differences was significant. Data for this section are displayed in Table 5.15.

Sex by quantity of support. One statistically significant difference was noted between men and women in perceptions of quantity of support. Women perceived less "pressure" to take medication than men ($t = -2.98$, df = 60, $p = .004$).

Table 5.15: Number and Percentage of Subjects by Sex and Type of Support

Type of Support	Males		Females	
	n	%	n	%
Tangible--medication	6	19	1	5*
Psychological--medication	25	81	21	95
Tangible--diet	23	62	10	42
Psychological--diet	14	38	14	58
Tangible--exercise	10	41	18	66
Psychological--exercise	12	59	9	33

*Significant at $p < .02$.

Race. As noted earlier, a large majority of the sample was white (n = 90; 88%). The small number of subjects from other racial backgrounds did not allow for analysis of data that would show either statistical significance or practical differences. This is due to having large numbers of cells in a chi-square test with zero entries. Although the statistic may prove significant difference between whites and Mexican-Americans, it is not sensible to base that conclusion on 90 responses from whites and 1 response from Mexican-Americans.

Marital status. Data were dichotomized into categories of married and unmarried for analysis due to the small number of subjects in each of the unmarried categories (single, divorced, and widowed). A higher percentage of married subjects were able to identify a support person for the modalities of medication (n = 52; 70%) and diet (n = 46; 73%) than those who were not married: medication (n = 8; 50%) and diet (n =

7; 58%). For the modality of exercise, both groups equally identified people able to help: married (n = 37; 49%), unmarried (n = 7; 47%). None of these findings was statistically significant ($p < .05$).

It was difficult to analyze differences between married and unmarried subjects as to "who was most helpful." Consistent with other data, married subjects most often identified spouse as most helpful: medications (n = 37; 72%), diet (n = 35; 76%), and exercise (n = 18; 51%). Friend was the person most often identified by unmarried subjects: medication (n = 4; 50%), diet (n = 3; 43%), and exercise (n = 5; 100%). The chi-square technique was not used because of the zeros present in the spouse cell for unmarried subjects.

Marital status by type of support. Table 5.16 portrays the number and percentage of subjects by marital status and type of support. Both married and unmarried subjects perceived more psychological support for medications. Both groups also identified more tangible than psychological support for exercise. For the modality of diet, however, married subjects identified slightly more tangible support, while unmarried subjects identified more psychological support. This difference was not statistically significant at $p = .05$.

Marital status by quantity of support. Data regarding quantity of support and marital status were not analyzed. This decision was based on the fact that only one significant finding emerged from data on the two sample characteristics which previously had the most differences, condition and sex. Therefore, no further data analysis on quantity of support related to other sociodemographic characteristics will be presented.

Table 5.16: Number and Percentage of Subjects, Marital Status by Type of Support

Type of Support	Married		Unmarried	
	<u>n</u>	%	<u>n</u>	%
Tangible--medication	11	22	2	25
Psychological--medication	40	78	6	75
Tangible--diet	31	57	2	33
Psychological--diet	23	42	4	66
Tangible--exercise	23	56	5	63
Psychological--exercise	18	44	3	37

<u>Number of living children</u>. The large range in the number of living children (0 to 12) made the data difficult to analyze with chi-square. The large number of cells with zero may produce a false statistical significance. Therefore, differences in perception were not calculated for this sociodemographic characteristic.

<u>Income by support person</u>. To analyze the income data more easily, data were dichotomized into categories of "less than $25,000" and "$25,000 or more." Both groups were nearly equal in identifying someone able to help for each modality: medication (< $25,000 <u>n</u> = 28; 62%; > $25,000 <u>n</u> = 30; 69%), diet (< $25,000 <u>n</u> = 22; 69%; > $25,000 <u>n</u> = 29; 72%), and exercise (< $25,000 <u>n</u> = 21; 48%; > $25,000 <u>n</u> = 23; 51%).

Subjects in the \$25,000 or more category identified spouse more often than those with incomes under \$25,000 for the modalities of medication and diet: medication ($<$ \$25,000 *n* = 22, 76%; $>$ \$25,000 *n* = 14, 54%), diet ($<$ \$25,000 *n* = 23, 79%; $>$ \$25,000 *n* = 11, 52%). Those in the less than \$25,000 category identified child, relative, friend, and others more often than subjects with incomes of \$25,000 or more. The support variable of "who was most helpful" was also dichotomized for the purpose of analysis to "spouse" and "other." There was a statistically significant difference in perceptions of "who was most helpful" for the modality of diet ($X^2 = 4.06$, df = 1, $p < .05$). A significant difference was also noted for the modality of exercise ($X^2 = 3.92$, df = 1, $p < .05$). In the exercise modality, subjects with income less than \$25,000 were more likely to identify friend (*n* = 10; 56%) than spouse (*n* = 5; 28%). Those with incomes of \$25,000 or more identified spouse most often (*n* = 13; 59%), followed by friend (*n* = 4; 18%).

Income by type of support. Perceptions of type of support were similar between the two income categories. Both groups identified higher levels of psychological support for the modality of medication. Both groups perceived nearly equal amounts of tangible and psychological support for diet. Both groups identified slightly more tangible support for the modality of exercise. Data representing number and percentage of subjects by income and type of support are found in Table 5.17.

Table 5.17: Number and Percentage of Subjects by Income and Type of Support

Type of Support	< $25,000		> $25,000	
	n	%	n	%
Tangible--medication	4	17	8	25
Psychological--medication	20	83	23	75
Tangible--diet	12	50	20	55
Psychological--diet	12	50	16	45
Tangible--exercise	15	63	13	52
Psychological--exercise	9	37	12	48

Work status. Data for work status were categorized as "employed" and "unemployed" for analysis. None of the findings was significant at $p \leq .05$. Employed and unemployed subjects identified a person most able to help for the modality of diet, with the unemployed group perceiving more support (n 18; 82%) than those employed (n = 35; 67%). Both groups had a similar percentage of subjects who perceived someone able to help for medication (employed 68%, unemployed 63%) and exercise (employed 45%, unemployed 54%).

Work status by support person. The person identified as most helpful for all modalities was spouse. The employed group perceived spouse as most helpful: 68% medication, 68% diet, and 50% exercise. Unemployed subjects identified spouse: 63% medication, 71% diet, and 39% exercise. Friend was the next most frequent response for both groups, with the modality of exercise displaying the largest percentage of support by friends (employed n = 10, 39%; unemployed n = 4, 31%).

Work status by type of support. Both employed (61%) and unemployed (78%) subjects perceived more psychological than tangible support for the modality of medication. Nearly equal amounts of tangible (55%, 53%) and psychological (45%, 47%) support were reported for the modality of diet. For the modality of exercise, both employed (56%) and unemployed (62%) subjects identified slightly more tangible than psychological support.

Occupation. For analysis, data which were coded in seven categories on the Hollingshead Occupational Scale were regrouped into three new categories. The first (I) contained occupations from the three upper categories of the Hollingshead Scale--executives, business managers, and all professionals. The second (II) restructured category consisted of sales, clerical, and skilled manual workers. The final group (III) was composed of semi- and unskilled laborers. Significant differences were found among subjects in these categories in their perception of someone being able to help for each modality. Table 5.18 displays these data.

Occupation by support person. For analysis, data regarding "who was most helpful" were categorized as "spouse" or "other." While spouse was identified most often for all modalities by groups I and II, subjects in group III identified spouse only 25% for medication, 0% for diet, and 33% for exercise. This difference in perceptions was significant for the modality of diet ($X^2 = 8.61$, df = 2, $p < .02$), where group III identified children (n = 2; 100%) as the most supportive person.

Table 5.18: Number and Percentage of Subjects by Occupation and Availability of Support

	I		II		III	
Modality	n	%	n	%	n	%
Medication	20	69	16	80	4	36*
Diet	20	80	12	60	2	29**
Exercise	15	50	8	40	4	40

*$X^2 = 6.21$, df = 2, $p < .05$.

**$X^2 = 6.72$, df = 2, $p < .05$.

Note: Group I = Executives, business managers, and professionals.
Group II = Sales, clerical, and skilled manual workers.
Group III = Semiskilled and unskilled laborers.

Occupation by type of support. Consistent with previous data, all groups I, II, and III identified more psychological than tangible support for the modality of medication (65%, 83%, 75%). Tangible support was perceived as greater or equal for diet: group I (60%), group II (62%), and group III (50%). The only subjects to perceive lower levels of tangible support for exercise were group II at 42%, with group I at 62% and group III at 50%.

Education. The data for education were regrouped into three categories: I--less than a high school education, II--high school graduate or technical school, and III--some college to postgraduate. Two-thirds of all groups were able to identify someone able to help with the modality of medication. Group I was less often able to identify someone able to help with diet (I n = 9, 60%; II n = 18, 72%; III n = 26, 74%) and exercise (I n = 5, 31%; II n = 16, 52%; III n = 23, 52%). These differences were not statistically significant.

Education by support person. Approximately one-half of groups I (55%) and III (57%) identified spouse as the most helpful person with medication. Three-quarters of group II (75%) did the same. For the modality of diet (group I 78% and group III 70%) and exercise (group I 40% and group III 43%), groups I and III had a similar percentage of subjects who identified spouse as most helpful. Group II represented a lower percentage for diet (53%) and a higher percentage for exercise (50%) in their perceptions of spouse as most helpful. None of these differences, however, was statistically significant.

Education by type of support. Table 5.19 denotes the number and percentage of subjects by education and type of support. The most striking difference among the groups was found in the modality of diet, where 100% (n = 9) of the subjects in group I identified tangible support. Group II identified tangible support 33% (n = 7) and group III 54% (n = 17) for the modality of diet. This difference was significant (X^2 = 11.5, df = 2, p < .01).

Table 5.19: Number and Percentage of Subjects by Education and Type of Support

Type of Support	I		II		III	
	n	%	n	%	n	%
Tangible--medication	3	33	2	10	8	28
Psychological--medication	6	66	19	90	21	72
Tangible--diet	9	100	7	33	17	57*
Psychological--diet	0	0	14	66	13	43
Tangible--exercise	2	33	11	61	15	58
Psychological--exercise	4	66	7	39	11	42

*Significant at $p < .01$.

Note: Group I = Less than a high school education.
Group II = High school graduate or technical school.
Group III = Some college to postgraduate.

Living arrangements. The eight original options for living arrangements were condensed to four categories for analysis: group I--unmarried, living alone (n = 9); group II--unmarried, living with other (n = 9); group III--married, living with spouse and other (n = 54); and group IV--married, living with spouse alone (n = 28). Of the four groups, group II recorded the lowest percentage of people able to help for each modality: medication 38% (n = 5), diet 60% (n = 3), and exercise 25% (n = 2). Group III reported the highest percentages for medication (78%) and diet (74%), while group I was found to have the highest percentage of people able to help for exercise (63%).

Living arrangements by support person. Data were again analyzed as "spouse" and "other." As with the characteristic of marital status, the two groups in which subjects were married (III and IV) most often identified spouse as most helpful for all modalities of the therapeutic regimen. Those in group I most often identified friend for all modalities, while those in group II identified friend most often for medication and exercise and child most often for diet. Chi-square would give a false representation of the significance of these results because of the zeros in cells where spouses were not present in the living arrangement; therefore, it was not used for this portion of the characteristic.

Living arrangement by type of support. Results were similar among all four groups except for the modality of medication. Approximately two-thirds of groups I, II, and III identified psychological support, while 100% of group IV did so. Tangible and psychological support were almost equal among all groups for diet and exercise. Table 5.20 displays these data.

Number of children living at home. Data for this characteristic were dichotomized into "no children at home" and "children at home." Children at home represented 57 subjects with from one to seven children living at home. Differences between the two groups were not statistically significant at $p < .05$. Subjects with children in the home identified a slightly higher percentage of someone able to help for medication (70%) and diet (76%) than those without children--medication (62%) and diet (66%). Perceptions were nearly equal for exercise (50% and 48%).

Table 5.20: Number and Percentage of Subjects by Living Arrangement and Type of Support

Type of Support	I		II		III		IV	
	n	%	n	%	n	%	n	%
Tangible--medication	2	33	1	33	10	29	0	0
Psychological--medication	4	66	2	66	24	71	15	100
Tangible--diet	2	50	1	33	22	59	8	50
Psychological--diet	2	50	2	66	16	41	8	50
Tangible--exercise	3	50	1	50	14	54	9	64
Psychological--exercise	3	50	1	50	12	46	5	36

Note: Group I = Unmarried, living alone.
Group II = Unmarried, living with other.
Group III = Married, living with spouse.
Group IV = Married, living with spouse alone.

Number of children living at home by support person. Both groups identified spouse as most helpful person for all modalities. The percentage was similar for medication (63% and 66%). Those with children identified spouse more for diet (72%) and less for exercise (39%) than those without children: diet (55%) and exercise (56%).

Number of children at home by type of support. While both groups identified higher levels of psychological than tangible support for medications, those without children in the home were higher (86%) than those with children (67%). For the modality of diet, those with children identified more tangible support (55%) than those without children (40%). The opposite was true for exercise. Those without children perceived more tangible support (58%) than those with children (46%).

Size of household. Data were categorized into two groups: "1 or 2" or "3 or more" people in a household. Results were very similar to those for number of children at home and will not be presented here. None of the differences was statistically significant.

Duration of hypertension. Data for the characteristic were divided into four categories for analysis: group I--less than 1 year duration (n = 14), group II--1 to 5 years duration (n = 41), group III--6 to 14 years duration (n = 29), and group IV--15 or more years duration (n = 16). For the modality of medication, subjects in group IV most often identified someone able to help (81%). Those in group III identified those able to help least often for medication (52%). Both group I and group IV reported 100% of subjects having someone to help with diet. This was a significant difference in perceptions (X^2 = 10.86, df = 3, $p < .02$) among the groups, as group II perceived 65% and group III 59% of subjects had someone able to help with diet. Interestingly, the two groups with 100% for diet were the two lowest groups able to identify someone able to help with exercise: group I (31%) and group IV (27%).

Duration of hypertension by support person. Spouse was the most frequently identified person "most able to help" by all groups for all modalities with one exception. Group I, those with hypertension less than 1 year, only identified friend (n = 4) as being the most help with the modality of exercise. In all other groups, friend was the second most often identified support person for all modalities.

Duration of hypertension by type of support. All groups perceived more psychological than tangible support for the modality of medication. Those with hypertension the shortest time, group I, perceived the highest tangible support for medication (43%), while those with hypertension the longest time, group IV, perceived the lowest tangible support (9%). All groups identified slightly more tangible than psychological support for the modality of diet. Groups I and IV, which were least able to identify someone able to help for exercise, also perceived lower levels of tangible support for exercise (group I, 25%; group IV, 33%) than the other subjects (group II, 56%; group III, 75%).

In summary, significant differences were found among the following sociodemographic characteristics: condition by support person for medication, condition by support person for exercise, sex by person able to help for exercise, sex by support person for medication, sex by support person for diet, sex by type of support for medication, income by support person for diet, income by support person for exercise, occupation by person able to help for medication, occupation by person able to help for diet, occupation by support person for diet, education by type of support for diet, and duration of hypertension by someone able to help for diet.

Additional Findings

Social Support by a Nurse

All subjects were asked if they thought a nurse could help them follow their therapeutic regimen. Forty-three (47.8%) responded with yes, while 47 (52.2%) responded no. Those who answered yes described the type of support the nurse could provide. The majority stated the nurse could help with psychological support, i.e., moral support, caring, guidance, and knowledge.

Subjects who felt the nurse could not help were asked why the nurse could not be helpful. The largest number (n = 19) stated that following the therapeutic regimen was their responsibility. The next largest group felt they needed no help. Two subjects stated it was not the nurse's role.

Summary

In Chapter 5 the sample was described by its sociodemographic characteristics. Descriptive and inferential statistics were used to present data relevant to the research questions. Statistically significant differences were found among the modalities of the therapeutic regimen and subgroups of the sample based on sociodemographic characteristics.

The data described in Chapter 5 will be interpreted in Chapter 6. Conclusions and implications for nursing education, research, and practice will also be discussed.

CHAPTER 6

SUMMARY, INTERPRETATIONS, AND RECOMMENDATIONS

Overview

A summary and interpretation of findings are presented in Chapter 6. Included in the summary and interpretation are a discussion of the sociodemographic characteristics of the study sample, findings related to the research questions, and the limitations of the study. Implications of the findings for nursing practice, education, and research, as they relate to the conceptual framework, will also be presented.

Sociodemographic Characteristics of the Sample

Sociodemographic characteristics which were commonly reported in the reviewed research will be discussed first in this section (i.e., sex, age, race, marital status, income, education, and duration of hypertension). Next, sociodemographic characteristics not commonly found in the literature will be briefly discussed, and the sample will be compared with the general United States population. Finally, a summary of sample sociodemographic characteristics will be presented and compared with characteristics of the samples of other research.

Sex

Approximately equal numbers of males (*n* = 52) and females (*n* = 50) participated in this study. This sex distribution is slightly different from that of previous studies in which a higher percentage of females was reported (e.g., Earp et al., 1982, 59%; Caplan et al., 1979, 64%; Nelson et al., 1978, 69%; Morisky et al., 1982, 70%; McKenney et al., 1973, 77%). Only one study, that of Haynes et al. (1976), used a monosexual sample, that is, 38 male steel workers.

Age

Study participants ranged in age from 24 to 65 years, with a mean age of 48 years. Study participants appear slightly younger than samples in other studies. It must be noted that 65 was the upper age limit for acceptance into this study, while other investigators set no upper age limit for inclusion. Thirty-one percent of the sample in Nelson and colleagues' study (1978), for example, were 65 years or older. Subjects in two studies (Caplan et al., 1979; Morisky et al., 1982) had a mean age of 54 years, while participants in the research of McKenney et al. (1973) averaged 60 years of age.

Race

More than four-fifths (88%; *n* = 90) of the participants in the study were white, a portion similar to the study sample used by Kirscht et al. (1981) in which 91% of the participants were white. These were the only two studies reviewed in which more whites than blacks participated. Blacks comprised a large portion of the samples in studies conducted in large inner-city clinics (McKenney et al., 1973, 77%; Earp et al., 1982, 77%; Morisky et al., 1982, 91%) for two reasons. First, blacks represented the largest racial group in the general population where the studies were conducted. Second, there is a higher percentage of hypertensives in the black population than in the white population.

Marital Status

Well over three-quarters (88%) of hypertensive patients in this study were married. The remaining subjects were almost equally divided among the categories of single, divorced, and widowed. The 88% is higher than percentages cited in other studies which documented this characteristics. Both Caplan et al. (1979) and Earp et al. (1982) reported approximately two-thirds (68% and 60%, respectively) of participants as married.

Income

Sixty-three percent of subjects (n = 63) reported annual total family incomes above $20,000. Although data were collected 1 to 2 years earlier, Kirscht et al. (1981) reported a median family income of $12,000 per year, while Morisky et al. (1982) cited a median income of $4,250 for study participants. It should be noted that the Morisky sample was composed largely of black females, with less than a high school education. Still, the median family income for study participants was markedly higher than for other hypertensive subjects studied.

Education

Eighty percent of the subjects had at least a high school education, with 47% of the high school graduates also having attended or graduated from college. Again, the participants of the Kirscht et al. (1981) study were most similar when compared on this characteristic, with 60% of participants being high school graduates. The thesis findings are vastly different from those cited by Earp et al. (1982)--28% high school graduates--and Morisky et al. (1981)--median of 7 years of education. It would appear that the participants in this study were more highly educated than other study samples for which this characteristic was reported.

Duration of Hypertension

Fourteen participants in the study had hypertension less than 1 year, 41 from 3 to 5 years, 29 from 6 to 14 years, and 16 for 5 years or more. Only two studies reviewed reported information regarding duration of hypertension. Subjects in the Caplan et al. (1979) study had received treatment for hypertension for an average of 5.4 years, while those in the study by Morisky et al. (1981) averaged 6 years. The findings regarding the sample for this study are consistent with previous research.

Work Status, Occupation, and Number of Children

No information was found in the literature reviewed regarding work status, occupation, or number of children. Approximately two-thirds (*n* = 68; 67%) of all subjects studied were working outside the home for pay. During the same year, 1981, 64.6% of the U.S. population was employed (Statistical Abstract of the U.S., 1982). The study population had a slightly higher percentage of people employed than the general population of the U.S.

Of subjects working outside the home, 47% were in some type of professional/managerial position, 21% indicated they were in clerical/ sales positions, 14% were in skilled trades, and 18% were in semi- or unskilled labor. Considering that 63% of the sample had family incomes over $20,000, the large percentage of professional/managerial positions is not unexpected. Subjects in the skilled trades also contributed to the high income levels noted.

Subjects reported having from 0 to 12 living children, with 3 children being the mean. The average number of children per white family was 1.72, while the average number per black family was 2.16 in the U.S. (Statistical Abstract of the U.S., 1981). Thus the average number of children for participants in this study was higher than the national average. Yet, the numbers of children living in each home--one child, 24%; two or more children, 33%--were nearly equal to those of the general U.S. population. It would appear, then, that a number of the children of study participants were older and not living in the home.

In summary, the majority of subjects studied for this thesis were found to be white, middle income, employed, with children, and graduates of high school (of these, most had attended or graduated from college). A nearly equal number of males and females participated.

Comparing the subjects from this study with those from other research studies reviewed, it was found there were more males, more whites, more married, higher income, more children, and higher educational levels among subjects in this study.

Research Questions

Study findings, as they relate to the research questions, will be summarized and interpreted in this section. The discussion will be presented by the three variables of social support examined: support person, type of support, and quantity of support. Findings related to Research Question 1--What are hypertensive patients' perceptions of social support in following a therapeutic regimen?--will be presented first in each section. This will be followed by findings regarding Research Question 2--Are there differences in perceptions of social support among the various modalities of the therapeutic regimen? Finally, findings from data of Research Question 3--Are there differences in perceptions of social support among subgroups of the sample based on standard sociodemographic characteristics?--will be discussed.

Support Person

No previous research has asked hypertensive patients if they have someone able to support them for various aspects of the therapeutic regimen. Hypertensive subjects examined in this study were most often able to identify someone able to help with the modality of diet (71%; n = 53) followed by medication (67%; n = 60) and finally exercise (48%; n

= 44). The difference in perceptions between the modalities was statistically significant ($X^2 = 10.79$, df = 2, $p < .01$) and was most likely due to the lower perception of support for exercise than for medication or diet.

It is known from an audit of subjects' medical records that exercise was the least routinely prescribed of the three modalities. It is reasonable to assume that fewer hypertensive patients were engaged in an exercise program than were taking medication or following a diet for control of hypertension. Subjects not participating in a treatment modality may be less able to identify support for the modality. Such would be the case for subjects in the control group. One might expect the experimental subjects to be more able to identify support for exercise since the modality was introduced and goals and strategies for exercise were developed as part of the nursing intervention. In fact, subjects in the experimental group identified less support for exercise than did subjects in the control group. A possible explanation is that experimental subjects asked for support for exercise during the intervention and did not receive it. Experimental subjects would then perceive lower levels of support than control subjects and both would contribute to the significant difference noted.

Male subjects in the study may also have strongly influenced the difference between exercise and the other modalities. Males identified a much lower percentage of people able to help with exercise (36%) than females (62%) while identifying higher percentages of people able to help for medication and diet than females. It may be that men feel they need less help or no help to exercise and therefore identify no one as able to help. Or perhaps men did not participate in exercise programs as often as women and thus could not identify someone as able to help. This may not be the case for diet if they depend on a support person to purchase and prepare foods or for medication, where a reminder to take medication may be viewed as helpful.

Neither socioeconomic characteristics (work status, income, occupation, education) nor family structure characteristics (marital status, living arrangements, number of children) appeared to influence the perception of lower support for the modality of exercise compared to medication and diet. No significant difference among the modalities was noted for any of these characteristics.

Spouse was the most frequently identified support person for all the modalities: diet (66%; n = 35), medication (63%; n = 37), and exercise (45%; n = 12). The next most often identified support person was friend, being the highest for exercise (33%; n = 14). The differences among the modalities were not statistically significant. Several investigators (Caplan et al., 1979; Kirscht et al., 1981; Morisky et al., 1982) noted that the person most often chosen to participate in the intervention was a family member. Only Earp et al. (1982) described the support person chosen, spouse (50%), child (25%), and nonrelative (7%), but no differentiation was made for various aspects of the regimen. Findings in this thesis indicate higher levels of spouse support for medication and diet and higher levels of nonrelative support for exercise than reported in Earp et al. (1982).

Higher levels of spouse support may be the result of the high percentage of married subjects in the sample (88%) compared to Earp and colleagues (1982) (60%). Spouse support may be higher for diet and medication than exercise because eating and medication taking may more often take place in the home or in the presence of the spouse than exercise. Exercise could take place in the home with a spouse present or outside the home with a spouse, friend, or other.

Male subjects were found to have a significantly higher percentage of spouse support than females for the modalities of medication and diet. The reason for these differences is not clear. A nearly equal number of males (n = 44; 84%) and females (n = 41; 82%) were married. One can hypothesize that women feel free to ask for help from a variety of sources, while men may feel they can only ask a spouse to assist them with areas of the regimen which are related to "illness," i.e., medications and diet. With the recent emphasis on physical fitness, both men and women could ask for assistance from friends in following an exercise program without relating it to their hypertension. Women may feel that as the nurturer in the family it is not as acceptable for them to ask for support within the family and therefore seek help from friends.

Statistically significant differences were also noted between the experimental and control groups with regard to whom they identified as a support person. While both groups identified spouse most often for medications, the difference, 52% experimental versus 88% control, was substantial. The only other person identified by the control group was friend, while subjects in the experimental group identified child, relative, friend, and others (i.e., doctor, nurse). Similar findings were noted for exercise, with the experimental group identifying friend and spouse equally (36%), as well as child, pet, and other. Control subjects identified only spouse (67%) and friends.

The most likely explanation for the above findings is that subjects in the experimental group were able to identify a broader base of support as a result of the nursing interventions. During the nursing interventions experimental subjects were exposed to the concept of social support, explored various sources of social support, and developed strategies using social support to follow the therapeutic regimen. A broader base of support would allow a hypertensive client to choose a support person they perceive as most appropriate for a particular strategy (i.e., a friend to walk with). If the first-choice support person was unavailable, the client could identify an alternative source of support for the strategy (i.e., walk the dog). Using a variety of support people also lessens the burden of the most frequently identified person.

The amount of spouse support was significantly different in only one of the socioeconomic characteristics, income. Subjects with incomes more than $25,000 perceived more spouse support for the modalities of diet and exercise than those with incomes less than $25,000. A possible explanation is that there were more single persons in the less than $25,000 group to whom spouse support was not available.

Type of Support

Hypertensive patients identified much higher levels of psychological support for medications (81; $n = 40$) than for diet (54; $n = 19$) or exercise (42; $n = 16$). Conversely, subjects identified more tangible support for exercise and diet than taking medications. These differences were statistically significant ($X^2 = 18.32$, df = 2, $p < .001$). The only study in the literature that tapped hypertensive patients' perceptions of the type of support they received was Caplan et al. (1979). Caplan's measure, however, related to how much of each type of support was received and cannot be compared to these findings.

In the present study, psychological support was defined as "behaviors directed toward providing the person with cognitions (values, attitudes, beliefs and perceptions) and toward inducing affective states that are hypothesized to promote well-being (Caplan et al., 1979, p. 14). That this type of support was perceived as forthcoming most often for the modality of medications is logical. Taking medications involves the least amount of change in lifestyle of the three modalities. Often it is accomplished by the patient with little more than encouragement from family and friends and a shared belief that the modality is beneficial.

Female subjects perceived significantly more psychological support for the modality of medications (95%) than males (81%). This finding may influence the higher amount of psychological support noted for medication than diet or exercise. Females may have perceived such high levels of psychological support because it is the easier of the two types of support to obtain or because it was the type of support they desired for the modality of medication.

Tangible support, defined as "behavior directed toward providing the person with tangible resources hypothesized to benefit his/her mental or physical well being" (Caplan et al., 1979, p. 14) is more appropriate when changes in lifestyle are required. Modifying dietary intake and following an exercise program are two such lifestyle changes. There was one statistically significant difference in perceptions of type of support for the modality of diet. Nine subjects (100%) with less than a high school education perceived receiving tangible support, while 33% of those with a high school education and 57% of those with post-high-school education perceived tangible support for diet. Subjects with less than a high school education were more likely to also be in the low-income groups. Tangible support in the form of food, money or transportation to purchase food, and money or transportation for weight-loss support groups may be viewed as more helpful than encouragement or other forms of psychological support for the modality of diet. Tangible support may also be the only type of "help" this group of subjects could identify.

Hypertensive patients in general may find it easier to change dietary and exercise patterns with tangible support. If family members offer support and are involved in changes (such as purchasing and preparing low-sodium foods or establishing a family exercise program of swimming or jogging), the lifestyle change is incorporated in the family patterns and the patient has little difficulty maintaining the new family pattern. Friends and other nonrelatives can also offer tangible support as noted above. If, however, the dietary or exercise habits of the family are in conflict with desired patterns of diet and exercise, the hypertensive patient may require increased tangible support from friends and nonrelatives to counterbalance the lack of family support.

Hypertension is a chronic illness. Therefore, lifestyle changes related to the therapeutic regimen (medication, diet, and exercise) are long term and require continued social support. It was found that there were differences in subjects' perceptions of type of social support related to duration of hypertension.

All groups perceived more psychological than tangible support for the modality of medication. Subjects with hypertension the shortest period of time, less than 1 year, perceived the highest tangible support for medication (43%), while those with hypertension the longest time, 15 years or more, perceived the lowest support (9%). It would be logical to assume that those with hypertension less than 1 year were still trying to establish a daily pattern or routine for taking medication. Tangible support in the form of purchasing the medication, putting medication in a conspicuous place, or actually handing the subject the pill would be appropriate for recently diagnosed hypertensive patients. Conversely, subjects with hypertension for 15 years or more most likely have well-established patterns of medication taking, good or bad, and perceive little need for the type of tangible support used above.

All groups perceived slightly more tangible than psychological support for diet. Subjects who were the least able to identify someone able to help for exercise, duration less than 1 year and 15 years or more, also perceived lower levels of tangible support than other subjects for the modality of exercise.

It may be that subjects with hypertension for less than 1 year were focusing on strategies to control hypertension for the areas of the regimen most commonly prescribed, medication and diet. They may, therefore, have asked support persons for tangible support for medication and diet rather than exercise. If the hypertensive subject asked for tangible support for all three modalities, the support person may have chosen to provide support for medication and diet rather than exercise. Less "energy" is generally needed to provide tangible support for medication and diet than for exercise. This may explain why subjects with hypertension less than 1 year identified friend most often as the support person for the modality of exercise. They may have already used all the spouse or family support for the modalities of medication and diet.

Subjects with hypertension for 15 years or more may have perceived lower levels of tangible support than other subjects for exercise for several reasons. First, if their therapeutic regimen was long standing, it may not have included an exercise program and subjects may have perceived little need for tangible support for a modality they did not participate in. Second, subjects may have asked for tangible support for exercise in the past and have not received it. The longer duration of hypertension for these subjects provided more opportunity for support persons to refuse or tire of providing tangible support for exercise. Due to the long-standing nature of the regimen, it may no longer be in the forefront of the patients' awareness. Finally, subjects with hypertension 15 years or more may have required more support than other subjects due to starting an exercise program later in life.

Quantity of Support

Subjects responded to 17 questions which attempted to quantify support for following a therapeutic regimen. The questions addressed how much help, concern, reminding, and pressure was received from the support person for following each modality of the regimen. Mean scores for all of the questions were calculated (Table 5.11) and found to be similar to the midpoint score on the Likert scale (3), with one exception. Mean scores for the questions asking how much help was received for each modality ranged from 3.55 (exercise) to 3.79 (diet), with statistically significant differences noted between medication and exercise (p = .05) and diet and exercise (p = .01). The reason for these differences is unclear. Only subjects who identified a support person for that particular modality answered the question regarding how much help was received. It is possible that less support was perceived for exercise because it is the least prescribed of the modalities. Therefore, the patient and support person may be less familiar with the modality of exercise and with strategies to implement and maintain an exercise program, or the patient may be unsure of which activities would be supportive.

The means noted above are similar to the mean score reported by Caplan et al. (1979) for quantity of tangible support by a significant other (3.7). The same Likert scale was used in both studies. A common problem with the use of Likert-type scales is that some respondents characteristically choose the middle-range answer (Polit & Hungler, 1978). With this type of scale, subjects may also respond with an answer they feel is most socially desirable rather than reflective of their attitude. With few other research findings to confirm or refute these mean scores, it cannot be ruled out that they were affected by the response biases noted above. These biases may also explain why no statistically significant differences in perceptions were found among the modalities regarding "concern," "reminding," or "pressure" from the support person to follow the therapeutic regimen.

There was, however, a significant difference in perceptions between males and females. Females perceived less "pressure" to take medication than males ($\underline{t} = -2.98$, df = 90, $\underline{p} = .004$). While the initial impression is that the finding is better for females than males, the reverse is true. The mean score of the male response was closest to the quantity "just about right" on the Likert scale, while the mean score of the females was closest to "some to little."

This finding may be explained by the support person each group identified as helping with medication. Males identified spouse much more often (79%) than females (42%). It is likely that contact with a spouse would be more consistent than that of a friend, unless the friend was living in the same household. This consistent contact may make the difference in perception that "pressure" to take medication is "just about right."

An alternative explanation is that females simply perceived less support as available (62% vs. 71%) than males for the modality of medication. Pressure, though intended as a possibly negative aspect of support, was evidently also perceived as less available by females than males.

There were no statistically significant differences among the experimental and control groups regarding quantity of support. This is not unexpected since there were no significant differences between the groups in perception of someone able to help and type of support. Differences noted regarding support person may not affect the quantity of support perceived. Due to the few significant differences noted among the modalities and characteristics of condition and sex, no further analysis of data for other sample characteristics and quantity of support was done. There will, however, be a brief discussion of findings related to two groups of sample characteristics: socioeconomic characteristics (i.e., work status, income, occupation, education) and family structure characteristics (i.e., marital status, living arrangements, number of children, number of children in the home).

Findings among the socioeconomic characteristics were similar regarding the ability to identify someone able to help for each modality, with one exception. Subjects in the semi-/unskilled occupation group perceived significantly less available support than other subjects for the modalities of medication ($\underline{p}$ = .01) and diet ($\underline{p}$ = .05). This finding may not be as significant as the statistic would suggest because the $\underline{n}$'s were very small (medication, $\underline{n}$ = 4; diet, $\underline{n}$ = 2).

Two socioeconomic characteristic groups perceived significantly less spouse support. Those with incomes under $25,000 perceived lower levels of spouse support for the modalities of diet and exercise. As noted previously, this may be a result of subjects with lower incomes being unmarried and having no spouse support available. Subjects in the semi-/unskilled occupation group perceived no spouse support, only support by children, for the modality of diet. Again the significance is questionable because the $\underline{n}$ = 2.

There was one significant difference among the socioeconomic characteristics related to type of support. Subjects with less than a high school education perceived only tangible support ($\underline{n}$ = 9) for the modality of diet. As discussed in an earlier section, this may be a result of only perceiving "help" as something tangible (i.e., purchasing or preparing appropriate foods).

All four of the significant differences in the socioeconomic characteristics involved subjects with a low socioeconomic status (i.e., low educational level, low occupation status, and low income). The correlation of these findings might be expected since educational level affects the subject's occupation and occupation determines income. It should be remembered, however, that two of the differences involved a very small group of subjects.

It was also interesting to find that three of the four differences were for the modality of diet. The reason for this is not clear but may be related to the fact that for subjects in low socioeconomic groups basic, much less prescribed, dietary needs may not be as easily met as for subjects in higher socioeconomic groups. Lack of money, transportation, and knowledge regarding selection and preparation of food may limit the subjects' ability to meet dietary needs. This fact would affect the availability of support, support person, and type of support desired and perceived by subjects with low socioeconomic status.

Although there were no statistically significant differences noted in any of the family structure characteristics (i.e., marital status, living arrangements, children, and children living at home), findings related to one group should be noted. Unmarried subjects living with a child (single parents) perceived the least available support for each modality of the therapeutic regimen. Single parents also perceived the lowest levels of tangible support for diet and exercise. This is logical because spouse was previously noted as the support person most often identified for all modalities. The absence of this support person in the home would decrease availability of support and may make tangible support less likely. Parents with young children would receive little support from the children and may be unable to have contact with or have little contact with their most-often-identified support person (friend) because of caring for the children.

Limitations

Perhaps the greatest limitation of this thesis was the lack of estimated reliability and validity of the social support instrument. This can be rectified in the future by administration of the questionnaire to other subjects with hypertension or other chronic diseases. Analysis of the findings and refinement of the instrument may increase its reliability and validity.

The fact that the social support questionnaire was only administered after the nursing intervention was also a limitation. Administration of the questionnaire pre- and postintervention to all subjects would allow the researcher to examine any changes in the experimental group's perceptions as a result of the nursing intervention.

The threat of bias due to social desirability which existed in the questions measuring perceptions of quantity of social support should also be viewed as a limitation. Findings suggested that hypertensive patients perceived "about the right amount" of social support. These findings may be influenced by the subject responding with the socially desirable answer rather than their true perception of the quantity of the support they receive.

Finally, the characteristics of the sample may be viewed as a limitation. The sample for this thesis varied a great deal from samples of other studies which examined social support and hypertension. This limits the reader's ability to compare results between this thesis and other studies on a related topic. Findings may have been influenced by the small number of unmarried subjects, subjects with low socioeconomic status, and nonwhite subjects.

Implications

Implications for Nursing Practice

This study has identified hypertensive patients' perceptions of social support in following a therapeutic regimen. When study findings are considered in relation to King's (1981) concepts concerning nursing, a number of practical implications for nursing practice emerge. According to King (1981), "nursing is a process of human interactions between nurse and client whereby each perceives the other and the situation; and through communication they set goals, explore means and agree on means to achieve goals" (p. 144).

The discussion will focus on primary care because the majority of hypertensive patients are diagnosed and treated in primary-care settings. Often, hypertension is discovered while a patient is receiving routine health maintenance or treatment for another health-care problem by the primary-care provider. Unless the patient is in a hypertensive crisis, the primary-care provider is in the best position to monitor and treat the patient, if necessary.

The patient is likely to be familiar with both the provider and the setting in primary care, and this facilitates the patient returning for follow-up visits. The primary-care provider is familiar with the patient's general health status and possibly with some areas of the patient's psychosocial status which may affect current B/P levels. If the patient should require referral to another provider or an acute-care setting, the primary-care provider can coordinate general health care and follow-up.

The nurse in advanced practice provides health care to hypertensive patients in primary-care settings as noted above. She/he functions as an assessor, practitioner, counselor, educator, evaluator, advocate, and coordinator of care in the role of primary provider.

Nurses educated at both the basic and graduate levels may find the study findings useful as they interact with hypertensive patients. Although both groups of nurses will use the nursing process in these interactions, the assessment, goals, strategies for implementation, and evaluation of outcomes of the nurse in advanced practice will be more complex and sophisticated than those of baccalaureate-prepared nurses. The increased complexity and sophistication is a result of (a) application of theories (i.e., systems, family, role, educational) and concepts (i.e., social support, grief, loss) which broaden the theoretical knowledge base and (b) didactic and practicum courses related to a clinical area which increase the level of clinical judgment.

In the first step of the nursing process, assessment, nurses at both levels of practice should explore the patients' perceptions of availability and desirability of social support for each aspect of the therapeutic regimen. It is important to assess each aspect of the regimen individually. Results of the study have shown there were significant differences in the availability of support among the modalities. Hypertensive patients were more able to identify support for the modalities of diet and medication than exercise. Therefore, the nurse should determine if exercise is a part of the patient's therapeutic regimen. Patients may not consider the physician telling them to go out and walk prescribed exercise.

If the hypertensive patient perceives support for a modality, the nurse should then assess who the support person/persons are, what type of support they provide, and whether or not the patient is satisfied with the support. The patient's perceptions are essential to the development of appropriate goals and strategies for managing hypertension. King (1981) related that perceptions are "each individual's representation or image of reality; an awareness of objects, persons and events" (p. 20). Assessment of social support by the nurse in basic practice could be brief, focusing on the most supportive person for each aspect of the regimen. The assessment by the nurse in advanced practice could be expanded to examine the total support network related to type, quality, and quantity of support. The identified support person should also be assessed to determine her/his knowledge of social support and willingness to provide support. The nurse should realize that factors in the initial assessment may change over time and that the influence of other stressors may override the patient's concern regarding hypertension.

Goals, set in the planning stage of the nursing process, will be based on information from the total assessment and may relate to an aspect of the regimen directly (i.e., lose 3 pounds in 1 week) or indirectly (i.e., identify support person for diet). Therefore, the goals determined by the baccalaureate nurse and hypertensive patient, related to social support, may involve choosing or obtaining a support person. Mutual goal setting between the nurse in advanced practice and the client would reflect the more detailed assessment and could involve goals related to obtaining support, modifying the type of support, or expanding the existing support network.

Study findings may also be helpful to nurses as they develop strategies with hypertensive patients and implement the plan to meet the goal. Awareness by the nurse that spouse and friend were most often identified as a support person for all modalities will guide the nurse in suggesting possible support persons for patients who did not perceive support. The baccalaureate nurse could use this information to assist the patient in determining whom to ask for support. The nurse in advanced practice may go beyond the above strategy and assist the patient in deciding how they could ask for support. Nurses also need to realize that perceptions of who can be supportive may be broadened, as with the experimental group, to include children, other relatives, physicians, nurses, other health professionals, and even pets. This may be accomplished through the introduction of alternative sources of support when the patient perceives a spouse or friend as nonsupportive.

Results of this thesis support the findings of Kirscht et al. (1981) that different strategies or interventions are required for following different components of the therapeutic regimen. Study findings revealed that there were significant differences among the modalities for the type of support and quantity of support perceived.

Hypertensive patients perceived much more psychological support for the modality of medication than for diet or exercise. Conversely, they perceived more tangible support for diet and exercise than for medication.

Knowledge of types of support perceived by patients for each aspect of the regimen will allow the nurse and client to explore strategies which use the type of support most often identified by other hypertensive patients for each modality. This may increase the chance for success in meeting the goal set by the patient and nurse and encourage the patient to attempt other strategies involving social support.

There were also significant differences in perception of social support based on sociodemographic characteristics of sex, income, occupation, education, and duration of hypertension. Females identified less support available than men for medication and diet and more support available than men for exercise. Men were much more likely to identify spouse as a support person for all modalities than women. Women perceived high levels of psychological support for medication and high levels of tangible support for exercise. While men perceived the same type of support as females, the levels were much lower and were significantly different for medication.

Subjects with a low socioeconomic status (i.e., low income, low occupational status, and low educational level) perceived less available support for the modality of diet than other subjects. Newly diagnosed hypertensive patients (less than 1 year duration) perceived less support available for exercise than medication or diet and higher levels of tangible support for medication than other subjects. Patients with hypertension of 15 years or more duration perceived the lowest level of tangible support for medication. Although not statistically significant, a practically significant finding related to single parents was found. Single parents perceived less available support for each modality of the regimen than any other group of subjects.

The nurse must be aware of the differences in patients' perceptions as she/he records the patients' perceptions and develops her/his own perceptions of the patients' support. Findings noted above can guide the nurse in developing goals and strategies with the patient that are most appropriate for each modality and the characteristics of the patient. For example, the nurse in advanced practice may have a female patient who cannot identify support for the modality of exercise. In assessing social support for this patient, the nurse discovers that the patient was told to "walk" as part of her therapeutic regimen. The nurse and client decide on a goal: the patient will walk 20 minutes a day, three times a week. The nurse relates to the patient that other female hypertensive patients have found spouse and friend equally supportive for the modality of exercise. The nurse and patient also discuss that tangible support is sometimes more helpful than psychological support for exercise, especially among women. Based on this information, the patient chooses to ask a friend to walk with her as a strategy to meet her goal. The above strategy could be further adjusted for the female patient if she was a single parent, recently diagnosed as hypertensive, or from a low socioeconomic group.

The baccalaureate nurse could also use the knowledge of differences related to the modalities and sociodemographic characteristics as a guide in developing goals and strategies with the hypertensive patient. The strategies, as were the assessment and goals, would be less complex than those used by the nurse in advanced practice. For example, the baccalaureate nurse may present information regarding differences of support person for women and exercise as a strategy to assist the patient in choosing a support person for exercise. The chance of patient success in meeting the goal is increased by using strategies that have been successful for other hypertensive patients with similar characteristics in similar situations. A positive interaction with a support person will also encourage the patient to continue to use social support in strategies to follow the therapeutic regimen.

The nurse in advanced practice is often responsible for the clinical management and evaluation of treatment of newly diagnosed hypertensive patients. In many instances, the nurse and client focus on nonpharmacologic aspects of the regimen before trying medication. Study findings related to type of support and support persons for the modalities of diet and exercise can direct the nurse and patient in choosing strategies which will be successful. Success with dietary restrictions and exercise could eliminate the need for medication for some hypertensive patients. The nurse in advanced practice is able to make such decisions regarding the therapeutic regimen based on her/his advanced clinical judgment. Using study findings, the nurse in advanced practice could also recommend or organize support groups for hypertensive patients with similar characteristics who face similar difficulties in identifying and using social support to follow their therapeutic regimen.

The interventions discussed above are most appropriate for primary-care settings. However, nurses in acute-care settings could also use study findings while conducting initial assessments of newly diagnosed or uncontrolled hypertensive patients. The assessment related to social support should include perceptions of availability of support and identification of a support person for each modality of the regimen. The information from the assessment could then be given to the nurse educator or the person responsible for in-patient and out-patient education regarding hypertension and strategies for its management.

Evaluation of the success of the strategies is based on the degree to which short-term (i.e., patient will lose 3 pounds, patient will identify a support person for exercise) and long-term goals (i.e., patient's individual B/P goal, patient's weight goal) are met. If the goal was accomplished, the strategy was successful and a new goal may be set and strategies developed. If the goal was totally or partially unmet, the appropriateness of both the goal and strategies should be evaluated and adjusted. Determination of alternative goals and strategies may include evaluation of success by the support person.

To return to the example of the nurse in advanced practice and the female hypertensive patient, suppose the patient did not meet the goal of walking 20 minutes three times per week. First the patient and nurse would evaluate the goal to determine if it was realistic. In this case, the patient and nurse decide the goal is realistic. Next, they examine the strategy, a friend to walk with the patient. The patient relates that the friend was only able to go walking with her once. The other two times the patient called her friend the friend was busy and the patient did not like to walk alone. Since the patient would still like to walk with the friend, the nurse suggests setting a specific time aside on specific days that are acceptable to both the patient and her friend. The patient decides that further specification of the strategy will be helpful and agrees to contact her friend to set up times to walk. The modified strategy would be evaluated in the same manner at the next visit.

Implications for Nursing Education

While most nursing education programs address the pathophysiology and recommended treatment of hypertension, few deal with the major problem of hypertension management--assisting the patient to follow his/her therapeutic regimen. Yet as health-care practitioners, many nurses deal with this problem on a daily basis. Previous research has documented a positive relationship between social support and following a therapeutic regimen for hypertension (Caplan et al., 1979; Earp et al., 1982; Haynes et al., 1976; Kirscht et al., 1981; McKenney et al., 1973). Findings of these investigators would suggest that the concept of social support should be included in the curriculums of basic, graduate, continuing, and inservice nursing education.

Results of this study imply that it is important for nurses to assess the hypertensive patient's perception of social support if they are to assist the patient in using social support to follow the therapeutic regimen. The ability to do so depends on the nurse's awareness of the importance of perceptions in social support. Nurses must understand that a patient's perception of social support may be very different from those of the nurse or support person, and their decisions to follow the therapeutic regimen are based on that perception. Nurses must also realize that patients' perceptions of social support are constantly changing through interaction with the nurse and other support persons. Knowledge of the social support interaction can be obtained if systems theory and King's (1981) theory of nursing are included in the curriculum.

The results of this study found differences in hypertensive patients' perceptions of social support among the modalities of the therapeutic regimen and subgroups of the sample. The findings would imply that further research is needed at the graduate level of nursing education to expand and add to nursing's knowledge base regarding social support in general and as it relates more specifically to patients with hypertension. Courses in research methods, theory of social support, and clinical management and evaluation of treatment of hypertension would be appropriate at the graduate level.

Implications for Research

While investigators have explored the effect of social support on following a therapeutic regimen for hypertension (Caplan et al., 1979; Earp et al., 1982; Haynes et al., 1976; Kirscht et al., 1981; McKenney et al., 1973; Morisky et al., 1982; Nelson et al., 1978), no other study has described patients' perceptions of social support in following a therapeutic regimen for hypertension. The present study may therefore be viewed as adding another dimension to the present knowledge regarding social support. Findings of the study may also be used as a base for future research. Results related to differences between males and females, patients with hypertension of various durations, patients with low socioeconomic status, and unmarried patients (especially those with children at home) suggest that further research is needed of these subgroups of the sample.

In future research, the limitations of the present study should be considered. For example, administration of the social support questionnaire before and after a social support intervention would allow examination of the differences or changes in perceptions of social support of the experimental group.

Validity and reliability of the questionnaire could be estimated by administration of the questionnaire to several groups of hypertensive patients or patients with other chronic diseases. The questionnaire could also be administered at the same time as other instruments which measure social support. Correlation of the results of this study with other questionnaires would indicate the Social Interaction Questionnaire was indeed tapping the concept of social support.

The study could be replicated using a sample with different sociodemographic characteristics: races other than white, lower income levels, lower educational levels, unmarried, no upper age limit, or all of one sex. Results could be compared to the findings of this study and document the differences noted. Similar results with different samples would make the findings more generalizable to the larger population of hypertensive patients.

Finally, the threat of response bias due to social desirability could be decreased by validating the present questions with similar questions worded in a more subtle, indirect manner. Both negative and positive statements regarding quantity of support could be presented (i.e., "You can always depend on someone to help you take your medicine." "No one will remind you when it's time to take your medicine."). The patient would then be asked to record the extent to which he/she agrees or disagrees with the statement. If a patient recorded perceptions of social support for reminding as "just about right" to take medications and disagreed with the statement that "no one would remind them to take medication," the chance of bias is small. If, however, a patient perceived support as "just about right" but agreed with the statement that no one would remind them to take medication, the chance of bias is great and the initial questions should be revised.

As discussed in earlier chapters, understanding the process of social support is central to the clear conceptual and operational definitions of the concept. Several authors have developed models of how social support affects adaptation to stress (Dimond & Jones, 1973; Pearlin et al., 1981; Thoits, 1982). This researcher believes the most promising model is that proposed by Dimond and Jones (1983) because the model explains both main and interactive effects of the components of social support. (See Figure 6.1, A proposed model for social support and adaptation to stress, Dimond & Jones, 1983.)

The key elements in the abovementioned model are (a) the nature of the stressor, (b) characteristics of the support network, (c) the nature of support offered, (d) the perceived adequacy of support, (e) adaptive responses to stress, and (f) environmental resources. The nature of the stressor denotes the type of stress (i.e., crisis, transition, or deficit) as well as whether the stressor was expected or unexpected, voluntary or involuntary, temporary or permanent. As viewed by the health-care provider, hypertension is an unexpected, involuntary, stressor which may be a permanent health deficit. The patient's perception of hypertension as a stressor is directly influenced by environmental resources.

Environmental resources are noted in four areas by Dimond and Jones (1983). The first are resources of the individual (i.e., age, sex, developmental stage, personality, and health). Next are resources of the physical environment (i.e., living situation, sanitation, location of dwelling, number of people in dwelling). The third area,

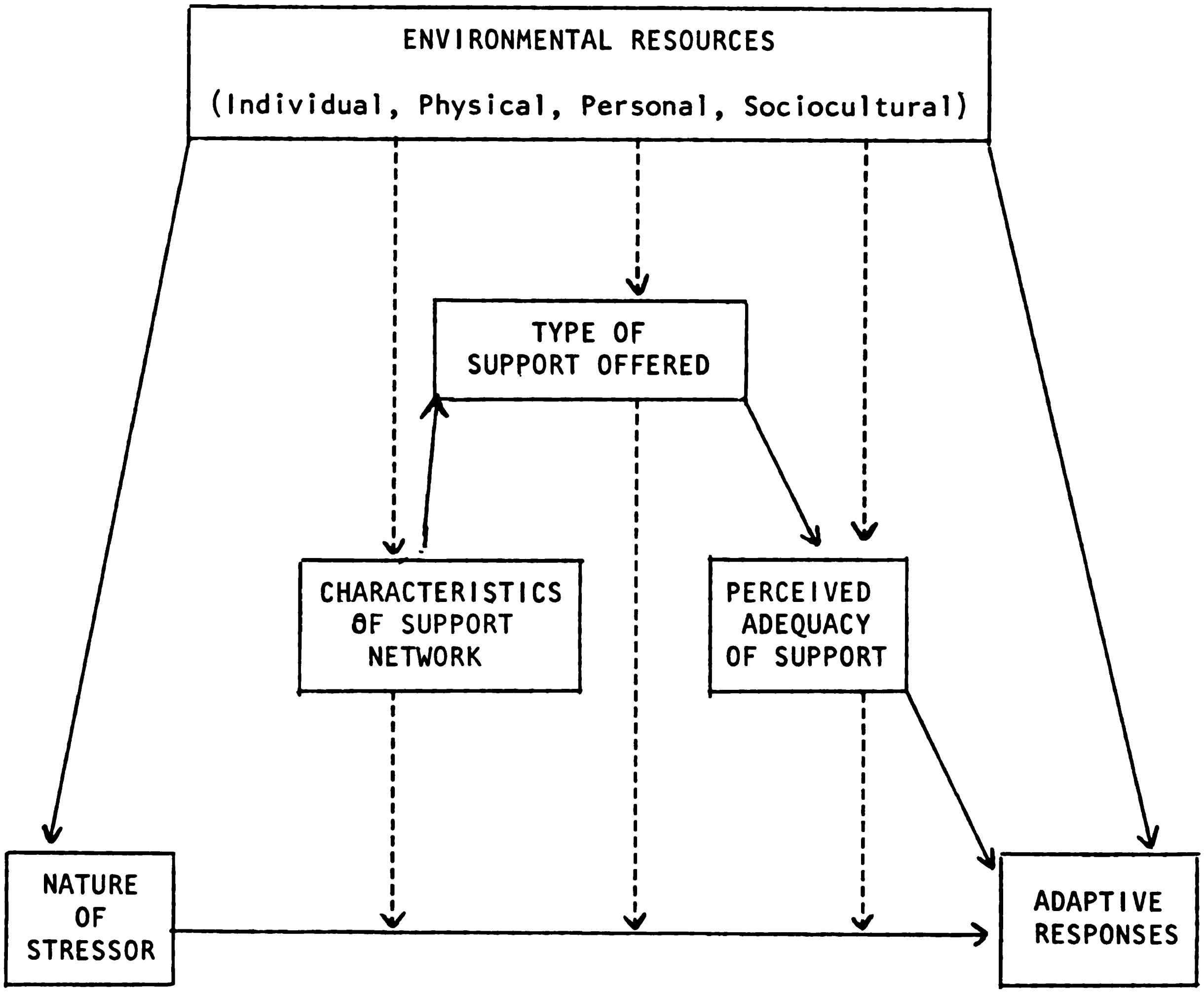

Figure 6.1: A proposed model for social support and adaptation to stress. (From Dimond & Jones, 1983, p. 242.)

personal resources, is addressed in characteristics of the support network. Finally, sociocultural resources (i.e., norms, values, religion, and socioeconomic resources) are seen as influencing the individual's perception of the stressor.

Environmental resources are also believed to have a direct effect on adaptive responses to the stressor. Dimond and Jones (1983) discussed that the adaptive responses may be short or long term and are the interaction of physiological (i.e., physical well being), psychological (i.e., denial or other defense mechanisms), and sociobehavioral (i.e., coping) responses. Therefore, environmental resources, nature of the stressor, and adaptive responses are the elements of the model that form the framework in which social support takes place.

The hypertensive patient may view hypertension as a stressor if health is valued and a norm in the culture and if hypertension is perceived as affecting present or future health. A coping response by the patient may be to follow the therapeutic regimen recommended by the health-care provider. The patient's ability to adapt to hypertension is influenced directly by environmental resources noted above. The adaptive response, in this case following the therapeutic regimen, is also directly influenced by the patient's perceived adequacy of social support. Components of social support (i.e., characteristics of the support network, nature of the support offered, and perceived adequacy of support) also function to buffer the effect of the stress situation (hypertension) on the adaptive response (following a therapeutic regimen).

All elements of social support are indirectly influenced by environmental resources. Characteristics of the support network (i.e., size, strength of ties, amount of interaction between members, homogeneity, and geographic dispersion of members) directly affect the nature of social support offered (i.e., support person, type of support, and timing of support). In turn, the nature of social support offered directly affects the perceived adequacy of support.

The findings of this thesis (differences among subgroups of the sample related to availability of support, support person, type of support, and quantity of support) support the assumptions made by Dimond and Jones (1983) that (a) characteristics of the support network determine the nature of support offered; (b) the more appropriate the support person and type of support, the greater the perceived adequacy; and (c) the greater the adequacy of support the more adaptive the response to stress. The model, therefore, is appropriate even when the patient does not perceive a great deal of stress related to his/her hypertension. If the nature of the stress is slight or nonexistent, the demand for social support related to hypertension is also slight or nonexistent and the patient would perceive the support, if any, as adequate.

The Dimond and Jones model allows another problem in social support research to be addressed--that is, the possibly negative nature of social support. As discussed in the literature review, there is a growing concern among researchers and scholars that the present definitions, both conceptual and operational, regard social support only as a positive behavior. There is, however, mounting evidence that social support may also have a negative effect in some situations.

Therefore, a redefinition of social support should include both the positive and negative aspects of support, for example, interpersonal transactions that involve the expression of affect (positive or negative), affirmation or nonaffirmation of the person's beliefs or values, and provision or nonprovision of material aid or assistance (based on Kahn, 1979). The definition could then be operationalized by measuring the three components of social support in the Dimond and Jones (1983) model (i.e., characteristics of the support network, nature of the support offered, and perceived adequacy of support).

Operationalization could be accomplished by modifying existing instruments (the Inventory of Socially Supportive Behavior, Barrera & Ainlay, 1983; the Social Interaction Questionnaire, Given & Given, 1982; and the Norbeck Social Support Questionnaire, Norbeck et al., 1981) to include all three elements of social support. Measures regarding type of support should include negative social interaction (i.e., arguments, abusive physical contact, and physical separation) just as they now include positive social interaction (Barrera & Ainlay, 1983), i.e., joking and kidding, talking about interests, and engaging in diversionary activities.

The main effects of social support, both positive and negative, could be determined by examining the adaptive response. The buffering or nonbuffering of the effects of the stress situation on the adaptive response, by social support, could also be examined as positive and negative effects. For example, the hypertensive patient may perceive following dietary restrictions as a stressor. Environmental resources (i.e., income, cultural role of food, and cultural norms for preferred body weight) will influence the patient's perceptions regarding following dietary restrictions. The patient decides to adapt to the stressor by choosing one restriction (reducing salt intake) and working on it.

If the support network contains the appropriate person (i.e., spouse or friend) and that person provides the appropriate type of support (i.e., tangible), the patient would perceive support as adequate and this should positively affect the patient's ability to adapt to the stressor. If, however, a support person is unavailable or the type of support is inappropriate (i.e., a negative interaction--an argument after the support person purchased and offered the patient a food high in salt), the patient would perceive inadequate support and the support may have no effect or a negative effect on the patient's ability to adapt to the stressor. The social support interaction model (see Figure 2.2) adapted from King (1981) can be used to examine individual support interactions, which may be positive or negative in nature.

The Social Interaction Questionnaire used in this thesis included both open- and closed-ended questions. The former are most commonly used in qualitative research, while the latter are associated with quantitative research. Open-ended questions allow the subject to respond based on his/her interpretation of the question and allow the researcher to collect descriptive data enriched by the individualization of the response. Disadvantages of the open-ended question are that some subjects will not write in an answer and that widely varied responses may be difficult to categorize. Closed-ended questions direct the subject's response by asking the subject to choose from a set of printed responses. Responses may then be given a quantitative value. Disadvantages of closed-ended questions are that some subjects choose the response that is most socially acceptable rather than reflective of their perception. A mid-range response bias may also result, if subjects routinely chose the mid-range answer on Likert-type scales.

The elements in the model of social support discussed above would be best operationalized by open-ended questions to gather qualitative data, for the level of social support research requires descriptive data at this time. The one exception to this would be the measure for perceived adequacy of support. A Likert-type scale in which responses could be assigned a quantitative value could best measure "how satisfied" the patient was with the social support offered.

The following are questions for further research based on the findings of the study and recommendations regarding modification of the model and redefinition of the concept of social support:

1. Are there consistent differences between male and female hypertensive patients related to social support (i.e., characteristics of the support network, nature of the support offered, and perceived adequacy of support) and following a therapeutic regimen?

2. Are there consistent differences between hypertensive patients with low socioeconomic status and other socioeconomic sample groups related to social support and following a therapeutic regimen?

3. Are there consistent differences between hypertensive patients who are single parents and other hypertensive patients regarding social support and following a therapeutic regimen?

4. Using the new operational definition of tangible support, is tangible support more appropriate than other types of support for diet and exercise?

5. Do low levels of social support have a negative effect on an individual's ability to adapt to stress?

6. Do negative interactions (as a type of support) have a negative effect on an individual's ability to adapt to a stressor?

Summary

A summary and interpretation of research findings were discussed in Chapter 6. Recommendations and implications for nursing practice, education, and research were also presented.

APPENDICES

APPENDIX A

LETTER FROM PROVIDER

JAMES E. FOLKENING, M.D.
INTERNAL MEDICINE

JAMES W. CARTER, M.D.
INTERNAL MEDICINE

2021 Rambling Road
Kalamazoo, Michigan 49008
Phone (616) 343-0542

To improve the care we give patients with high blood pressure, our medical and nursing staffs are working with researchers at Michigan State University to help patients better manage their high blood pressure. We are asking many patients, including you, for help in this effort.

Your assistance is important and we hope you will agree to participate in this important project. Your participation will involve responding to a questionnaire--administered by a research interviewer from the University--at your next visit and at two other visits during the next fifteen months. In addition, you may be asked to meet with a staff nurse during the next six months to talk with her about your high blood pressure and its treatment. We hope you will meet with them.

The information you give about yourself and your personal identity will, of course, remain <u>strictly confidential</u>. Should the results of the study be published, you will remain anonymous. You are free to discontinue your participation in this study at any time.

If you do not agree to participate, or should you withdraw from the study after originally agreeing to participate, the amount and quality of service we provide you, naturally, will not change. However, by agreeing to participate, you will help yourself and us to provide better care for all our patients.

To indicate your willingness to participate in this study, please return the enclosed postcard so we can arrange a day and time that it will be convenient for you to meet and talk with an interviewer.

Sincerely,

James W. Carter, M.D.

JWC/jmm

APPENDIX B

CONSENT FORM

CONSENT FORM

The study in which you are about to participate is designed to find out the beliefs that persons with diabetes (hypertension) have about their disease and treatment. Your participation will involve responding to a questionnaire and permitting University researchers to review your past and future 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 ______________________ (Study Site Name) and the College of Nursing and the Department of Community Health Science of the Colleges of Human and Osteopathic Medicine 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, ______________________ (print name), state that I understand what is required of me as a participant and agree to take part in this study.

Signed ______________________
(Signature of Patient

Date ______________________

APPENDIX C

INTAKE SOCIODEMOGRAPHIC INSTRUMENT

Site ___ (1)
Pt. I.D. ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ (2-11)
Form 0 2 (12-13) Type ___ (14)
Card No. 0 2 (15-16) Date ___ ___ ___ ___ ___ ___ (17-22)

SOCIO-DEMOGRAPHIC

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 ___ (23)

2. Age: (WRITE IN)

   ___ (24-25)

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

   1. White ___
   2. Black ___
   3. Mexican-American ___
   4. American Indian ___
   5. Oriental ___
   6. Other (Specify) ________ (26)

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

   1. Married ___
   2. Single, never married ___
   3. Separated ___
   4. Divorced ___
   5. Widowed ___ (27)

5. How many living children do you have, including adopted and stepchildren?

   No living children (CHECK) ___
   Number of living children (WRITE IN) ___ (28-29)

6. 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)

00.	Below $5,000	___	05.	$13,000-$14,999	___	
01.	$5,000-$6,999	___	06.	$15,000-$16,999	___	
02.	$7,000-$8,999	___	07.	$17,000-$19,999	___	
03.	$9,000-$10,999	___	08.	$20,000-$24,999	___	
04.	$11,000-$12,999	___	09.	$25,000 or over	___	(30-31)

7. Are you working now at a regular job, unemployed, retired, a housewife, or what? (CHECK ONE)

1. Working now at regular job __

2. Unemployed or laid off __
3. Retired __
4. Disabled __
5. Housewife __
6. Other (Specify ________ ________

GO TO QUES. 10 (32)

8. What is the main occupation you work at? (What type of work do you do?) (WRITE IN)

____

____

____

9. What kind of business or industry is that in? (What do they make or do?) Is it your own business? (WRITE IN)

____

____ (33)

____

10. 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) __
4. Graduated high school __
5. Technical, business, or trade school __
6. Some college (less than 4 years completed) __
7. Graduated college __
8. Postgraduate college or professional __ (34)

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

a. No one else __ __(35)
b. Husband/wife __ __(36)
c. Children (Write in number living at home) __ __ __(37-38)
d. Other relatives (Write in relationships: example, mother-in-law; niece) ________ __ __(39-40)
e. Non-related persons (Write in: example, 2 friends; 1 boarder) __ __(41-42)
____

12. Do you have hypertension? (CHECK ONE)

1. Yes ___ 2. No ___→(GO TO QUES. 14) (43)

13. How long have you had hypertension? (CHECK ONE)

1. Less than one year ___
2. One to two years ___
3. Three to five years ___
4. Six to eight years ___
5. Nine to eleven years ___
6. Twelve to fourteen years ___
7. Fifteen years or more ___ (44)

14. Do you smoke cigarettes? (CHECK ONE)

1. Yes ___ 2. No ___→(GO TO QUES. 16) (45)

15. How many cigarettes do you smoke in a day? (CHECK ONE)

1. Less than five cigarettes a day ___
2. Six to nine cigarettes a day ___
3. Ten to nineteen cigarettes a day ___
4. Twenty to twenty-nine cigarettes a day ___
5. Thirty or more cigarettes a day ___ (46)

16. Do you drink alcoholic beverages? (CHECK ONE)

1. Yes ___ 2. No ___→(GO TO QUES. 18) (47)

17. How often do you drink alcoholic beverages? (CHECK ONE)

1. Occasionally ___
2. Weekends only ___
3. Several times a week ___
4. One to two drinks a day ___
5. More than two drinks a day ___ (48)

18. Do you have diabetes? (CHECK ONE)

1. Yes ___ 2. No ___→(GO TO END OF QUESTIONNAIRE) (49)

19. How long have you had diabetes? (CHECK ONE)

1. Less than one year ___
2. One to two years ___
3. Three to five years ___
4. Six to eight years ___
5. Nine to eleven years ___
6. Twelve to fourteen years ___
7. Fifteen years or more ___ (50)

END: You have completed this part of the questionnaire.
Please begin answering the next section.

END OF
CARD 02

APPENDIX D

SOCIAL INTERACTION QUESTIONNAIRE

I.D. # ____________________

Packet # __________________

SOCIAL INTERACTION

THIS IS A QUESTIONNAIRE YOU HAVE NOT COMPLETED AT PREVIOUS INTERVIEWS. THE QUESTIONS RELATE TO PEOPLE AROUND YOU WHO COULD HELP OR ENCOURAGE YOU TO TAKE ON NEW HABITS OR SOLVE PROBLEMS RELATED TO YOUR HIGH BLOOD PRESSURE. PLEASE ANSWER THE QUESTIONS TO THE BEST OF YOUR ABILITY.

PLEASE READ THE DIRECTIONS CAREFULLY. YOU WILL NOT BE ANSWERING ALL OF THE QUESTIONS. FOR EXAMPLE, IF YOU ANSWER QUESTION NO. 2 YES, YOU WILL ANSWER ALL THE QUESTIONS ON PAGE 1 AND THEN SKIP TO PAGE 3, QUESTION 4. IF YOU ANSWER QUESTION NO. 2 NO, YOU WILL SKIP TO PAGE 2 AND ANSWER QUESTION 3.

THE DIRECTIONS AT THE END OF EACH QUESTION TELL YOU WHICH PAGE AND QUESTION TO GO TO NEXT. THOUGH IT MAY SOUND CONFUSING, THE QUESTIONNAIRE IS QUICK AND SIMPLE TO COMPLETE IF YOU READ AND FOLLOW THE DIRECTIONS CAREFULLY.

1. Many people find it easier to take on new habits or solve problems when others help them. Please write in the name and relationship (for example, husband, friend) of people who could help you to take on new habits or solve problems in following your treatment plan.

NAME	RELATIONSHIP
______________________	______________________
______________________	______________________
______________________	______________________

2. Have any of the people you just listed been able to help or support you in taking your pills? (CHECK ONE)

___ Yes ↓ ↓ ↓ ___ No ↓ GO TO P. 2, Q. 3

2a. Who has been able to help or support you in taking your pills? (LIST THE PERSONS' NAME AND RELATIONSHIP TO YOU.)

NAME	RELATIONSHIP
______________________	______________________
______________________	______________________
______________________	______________________

2b. Who has been the most supportive in helping you take your pills? (WRITE IN)

____

2c. How does he/she help you? (WRITE IN) ______________________

____

____

2d. How much does this person help you to remember to take your pills? (CHECK ONE)

___ A great deal
___ A lot
___ Some
___ A little
___ Not at all

2e. Overall, how much concern has this person shown about whether or not you take your pills? (CHECK ONE)

___ Far too much
___ Somewhat too much
___ About the right amount
___ Somewhat too little
___ Far too little

2f. How much does this person remind you to take your pills? (CHECK ONE)

___ Far too much
___ Somewhat too much
___ About the right amount
___ Somewhat too little
___ Far too little

GO TO P. 3, Q. 4

3. Would you like to have someone who is close to you help you (for example, remind or encourage you) to take your pills? (CHECK ONE)

___ Yes ↓ ___ No ↓

3a. Have you ever asked or indicated to anyone that you would like them to help (remind or encourage) you? (CHECK ONE)

___ Yes ↓ ___ No ↓

3b. What happened when you asked for help? (WRITE IN)

____

____

GO TO P. 3, Q. 4

3c. Why haven't you? (WRITE IN) ______________________________

____

____

GO TO P. 3, Q. 4

3d. Why wouldn't you? (WRITE IN) ______________________________

____

____

GO TO P. 4, Q. 5

4. Now think about the people whom you identified as being able to help or support you. Have any of these people been able to help you with your diet? (CHECK ONE)

___ Yes
↓

___ No
↓
GO TO P. 4, Q. 5

4a. Who has been able to help you with your diet? (LIST NAMES AND THE PERSONS' RELATIONSHIP TO YOU.)

NAME	RELATIONSHIP
___	___
___	___
___	___

4b. Who has been the <u>most</u> supportive in helping you follow your diet? (WRITE IN)

___

4c. How does he/she help you? (WRITE IN) ___

___

___

4d. How much does this person help you to remember to follow your diet? (CHECK ONE)

___ A great deal
___ A lot
___ Some
___ A little
___ Not at all

4e. Overall, how much concern has this person shown about whether or not you follow your diet? (CHECK ONE)

___ Far too much
___ Somewhat too much
___ About the right amount
___ Somewhat too little
___ Far too little

4f. And how much concern has this person shown about whether or not you achieve weight control? (CHECK ONE)

___ Far too much
___ Somewhat too much
___ About the right amount
___ Somewhat too little
___ Far too little

4g. How much does this person remind you to follow your diet? (CHECK ONE)

___ Far too much
___ Somewhat too much
___ About the right amount
___ Somewhat too little
___ Far too little

GO TO P. 5, Q. 6

5. Would you like to have someone who is close to you to help you (for example, remind or encourage you) to follow your diet? (CHECK ONE)

___ Yes ___ No

5a. Have you ever asked or indicated to someone that you would like them to help (remind or encourage) you? (CHECK ONE)

___ Yes ___ No

5b. What happened when you asked for help? (WRITE IN)

____

____

GO TO P. 5, Q. 6

5c. Why haven't you? (WRITE IN) ____________________

____

____

GO TO P. 5, Q. 6

5d. Why wouldn't you? (WRITE IN) ____________________

____

____

GO TO P. 5, Q. 6

6. Again, think about the people whom you previously identified as being able to help or support you. Have any of these people been able to help you with exercise? (CHECK ONE)

___ Yes
↓

___ No
↓
GO TO P. 6, Q. 7

6a. Who has been able to help you with your exercise? (LIST NAMES AND PERSONS' RELATIONSHIP TO YOU.)

NAME

________________ ________________
________________ ________________
________________ ________________

6b. Who has been <u>most</u> supportive in helping you with exercise? (WRITE IN)

____

6c. How does he/she help you? (WRITE IN) ________________

____
____

6d. How much does this person help you to remember to follow your exercise program? (CHECK ONE)

___ A great deal
___ A lot
___ Some
___ A little
___ Not at all

6e. Overall, how much concern has this person shown about whether or not you follow your exercise program? (CHECK ONE)

___ Far too much
___ Somewhat too much
___ About the right amount
___ Somewhat too little
___ Far too little

6f. And how much concern has this person shown about whether or not you establish a regular exercise pattern? (CHECK ONE)

___ Far too much
___ Somewhat too much
___ About the right amount
___ Somewhat too little
___ Far too little

6g. How much does this person <u>remind</u> you to follow your exercise program? (CHECK ONE)

___ Far too much
___ Somewhat too much
___ About the right amount
___ Somewhat too little
___ Far too little

GO TO P. 7, Q. 8

7. Would you like to have someone who is close to you help you (for example, remind or encourage you) with exercise? (CHECK ONE)

___ Yes ↓ ___ No ↓

7a. Have you ever asked or indicated to someone that you would like them to help (remind or encourage) you? (CHECK ONE)

___ Yes ↓ ___ No ↓

7b. What happened when you asked for help? (WRITE IN)

____

____

GO TO P. 7, Q. 8

7c. Why haven't you? (WRITE IN) ______________________________

____

____

GO TO P. 7, Q. 8

7d. Why wouldn't you? (WRITE IN) ______________________________

____

____

GO TO P. 7, Q. 8

8. How much do your family and/or friends make you feel worthwhile and good about yourself? (CHECK ONE)

___ A great deal
___ A lot
___ Some
___ A little
___ Not at all

9. How much do your family and/or friends show concern about your hypertensive control? (CHECK ONE)

___ A great deal
___ A lot
___ Some
___ A little
___ Not at all

10. How much do <u>you</u> have to <u>rely on yourself</u> to take care of your hypertension? (CHECK ONE)

___ Far too much
___ Somewhat too much
___ About the right amount
___ Somewhat too little
___ Far too little

11. How much do you feel pressured by others to take your pills? (CHECK ONE)

___ Far too much
___ Somewhat too much
___ About the right amount
___ Somewhat too little
___ Far too little

12. How much do you feel pressured by others to follow your diet? (CHECK ONE)

___ Far too much
___ Somewhat too much
___ About the right amount
___ Somewhat too little
___ Far too little

13. How much do you feel pressured by others to exercise? (CHECK ONE)

___ Far too much
___ Somewhat too much
___ About the right amount
___ Somewhat too little
___ Far too little

14. Are there people, for example, family members or friends, who have not helped you with your treatment program <u>BUT</u> whom <u>you</u> would like <u>to</u> help you with it? (CHECK ONE)

___ Yes
___ No

GO TO P. 8, Q. 15

14a. Who are these ~~people~~? (LIST NAME AND THE PERSONS' RELATIONSHIP TO YOU.)

NAME	RELATIONSHIP
______________________	______________________
______________________	______________________
______________________	______________________

GO TO P. 8, Q. 14b

QUESTION 14 CONTINUED

14b. How would you plan with these people a way that they can best help you take your medicines for hypertension? (WRITE IN)

____

____

14c. How would you plan with them a way that they can best help you follow your diet for hypertension? (WRITE IN)

____

____

14d. How would you plan with them a way that they can best help you to exercise? (WRITE IN)

____

____

14e. Will it be hard for you to ask for help? (CHECK ONE)

___ Yes ↓ ↓ ↓ ↓

___ No ↓ GO TO Q. 15

14f. Why will it be hard for you to ask for help? ____________________

____

____

15. Besides people, what things--hobbies, pastimes, habits, or personal activities--help you in dealing with your treatment program for hypertension? (WRITE IN)

____

____

____

16. Do you think a nurse could support you to successfully follow your treatment program for high blood pressure?

___ Yes ↓ ↓ ↓ ↓

___ No ↓ GO TO P. 9, Q. 16b

16a. How do you think she could do this? ____________________

____

____

QUESTION 16 CONTINUED

16b. Why don't you think a nurse could support you? (WRITE IN) ______________________

____

____

END: You have completed this part of the questionnaire. Please begin answering the UNDERSTANDING HIGH BLOOD PRESSURE section.

APPENDIX E

NINE-MONTH SOCIODEMOGRAPHIC INSTRUMENT

Begin Card A9

Site ___
(1)
Pt. I.D. _ _ _ _ _ (2-11) _ _ _ _ _
Form 4 0 (12-13)
Type ___ (14)
Card No. A 9 (15-16)
Date _ _ _ (17-22) _ _ _

SOCIO-DEMOGRAPHIC

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

1. How old were you on your last birthday? (WRITE IN) _____ years

(23-24)

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

   1. Married __
   2. Single, never married __
   3. Separated __
   4. Divorced __
   5. Widowed __

(25)

3. How many living children do you have, including adopted and stepchildren?

   No living children (CHECK) ________
   Number of living children (WRITE IN) ________

(26-27)

4. 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)

   00. Below $5,000 ___
   01. $5,000-$6,999 ___
   02. $7,000-$8,999 ___
   03. $9,000-$10,999 ___
   04. $11,000-$12,999 ___
   05. $13,000-$14,999 ___
   06. $15,000-$16,999 ___
   07. $17,000-$19,999 ___
   08. $20,000-$24,999 ___
   09. $25,000 or over ___

(28-29)

5. Are you working now at a regular job, unemployed, retired, a housewife, or what? (CHECK ONE)

   1. Working now at regular job __

   ↓

   GO TO PAGE 2, QUES. 6

   2. Unemployed or laid off __
   3. Retired __
   4. Disabled __
   5. Housewife __
   6. Other (Specify) ________
   ____

   ↓

   GO TO PAGE 2, QUES. 8

(30)

6. What is the main occupation you work at? (What type of work do you do?) (WRITE IN)

___

___

___

7. What kind of business or industry is that in? (What do they make or do?) Is it your own business (WRITE IN)

___ (31)

___

___

8. Who lives in your household, besides yourself? (CHECK AS MANY AS APPLY) (32)

a. No one else ___
b. Husband/wife ___ (33-34)
c. Children (Write in number living at home) ___
d. Other relatives (Write in relationships: example, mother-in law, niece) ___ (35-36)
e. Non-related persons (Write in: example, 2 friends; 1 boarder)
___

9. Do you smoke cigarettes? (CHECK ONE)

1. Yes ___ 2. No ___ →(GO TO QUES. 11) (37)

↓

10. How many cigarettes do you smoke in a day? (CHECK ONE)

1. Less than five cigarettes a day ___
2. Six to nine cigarettes a day ___
3. Ten to nineteen cigarettes a day ___
4. Twenty to twenty-nine cigarettes a day ___
5. Thirty or more cigarettes a day (38)

11. Do you drink alcoholic beverages? (CHECK ONE)

1. Yes ___ 2. No ___ →(GO TO END OF QUESTIONNAIRE)

↓ (39)

12. How often do you drink alcoholic beverages? (CHECK ONE)

1. Occasionally ___
2. Weekends only ___
3. Several times a week ___
4. One to two drinks a day ___
5. More than two drinks a day (40)

END: You have completed this part of the questionnaire. Please begin answering the BELIEFS ABOUT HIGH BLOOD PRESSURE section.

END OF CARD A9

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