DETERMINANTS OF PERCEIVED HEALTH IN HOSPITALIZED END-STAGE RENAL DISEASE PATIENTS

by

Marcia Nielsen, B.S.N.

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APPROVED:

[redacted]

May Rawlinson, Ph.D., Professor, Thesis Advisor

[redacted]

Carol Burckhardt, Ph.D., Assistant Professor, First Reader

[redacted]

Charlotte Markel, M.S., Associate Professor, Second Reader

[redacted]

Carol A. Lindeman, Ph.D., Professor of Nursing, Dean

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DEDICATION

This study is dedicated to May Rawlinson for her expert modelling as thesis advisor and for her patience with the multiple successive approximations of this report.

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CHAPTER I

INTRODUCTION

A central and intriguing problem in chronic illness research is that persons with comparable, objectively assessed disabilities respond with great variation in resultant handicap and level of adaptation. Approximately 80% of health care funds are utilized for chronic illness (Cluff, 1981), motivating multiple health professions to investigate the reciprocal influence of biophysical and psychosocial components of health status in determining rehabilitative outcome. The way a chronically ill person perceives his health is thought to be a crucial factor influencing health behavior (Croog, Levine & Lurie, 1968).

Health perception is conceptualized as a variable intervening between an individual's objective physical status and several measures of outcome (Tornstam, 1975). The National Heart and Lung Institute task force on cardiac rehabilitation identified self-rated health as an underlying construct related to multiple disparate outcome measures, and proposed a model locating this variable in the causal network of health behavior (1975). Ware, Davies-Avery and Donald (1978) consider self-assessed health the most valid of any health/illness behavior predictor because it taps both the subjective and objective aspects of health. This logic is based on the assumption that patients seek treatment

based on self-assessed need. Determinants of this variable have not been systematically evaluated across enough chronically ill groups to establish a well-developed body of knowledge.

Greater understanding of determinants of health perception may contribute to nursing practice through identification and control of the process which links health perception with health outcome. The aim of the present study was to investigate selected characteristics in a sample of end-stage renal disease (ESRD) patients to determine their relation to subjective health estimate. Because the ESRD population demonstrates poor health outcome, clinical concern for the problems associated with adaptation to ESRD stimulated the present investigation.

Mental health nursing practice employs diagnostic formulation concerned with human responses to, or interactions that result in, actual or potential health problems. The nursing process is characterized by the therapeutic use of self combined with current theory/research to assess and intervene in rehabilitating the patient as an integrated biopsychosocial whole (Rogers, 1970). Although the biophysical predicament of the ESRD patient is largely irremediable, nurses may promote maximal health outcome by influencing the patient's health attitudes and behavior. Patients tend to adopt attitudes and behaviors related to those of their caregivers (Steckel, 1974). The execution of explanatory and predictive level research is a necessary step towards building

prescriptive theory to guide such nursing intervention. In the literature review most studies regarding health perception were found to be at the factor-identification level. The present investigation was descriptive and correlational and examined selected demographic, sociomedical and sociopsychologic predictors of health perception in hospitalized ESRD patients.

Review of the Literature

The first section of the literature review deals with psychobiological and socioeconomic contributors to the vulnerability and risk of the ESRD patient and their possible influence on health perception. The successive sections present research on the topics of perceived health, locus of control and repression-sensitization. Because this study replicates Hefty's (1982) research on health perception in cardiac patients, a brief overview of the contributions and scientific merit from Hefty's investigation are presented. Finally, the purpose and research questions of the present study are explicated.

The ESRD Patient: Vulnerable and at Risk

A brief overview of the psychophysiologic and socioeconomic factors influencing health outcome for the ESRD patient may be useful in understanding the special characteristics of this population and their possible impact on health perception. ESRD patients are vulnerable to develop dysfunctional cognitive, affective and/or behavioral coping responses to the stress of having

chronic illness and a demanding treatment regimen. The United States spent an estimated $3 billion treating ESRD in 1984 (Evans, Blagg & Bryan, 1981), and yet adaptation was poor. A 10-year review of the research literature indicated that less than half of this population demonstrated positive health outcome as measured by length of survival, vocational rehabilitation, incidence of psychiatric/medical complications or interpersonal satisfaction (Nielsen, 1981). One manifestation of dysfunctional coping response is psychiatric symptomatology in the ESRD patient.

Estimates of the ESRD population's incidence of psychiatric disturbance range from 17% to 50% (Salmons, 1980). The incidence of suicide among dialysands is 100 times that of the population at large, not taking into account fatal episodes of dietary or medication related noncompliance (Rajapaksa, 1979). Highly anxious ESRD patients demonstrate a significantly elevated incidence of medical complications and clinic visits (Parker, 1980). Depression is prevalent in this population (Stewart & Stewart, 1979) and relates to more frequent hospitalization and a higher mortality rate (Numan, Barklind & Lubin, 1981).

Psychobiologic factors. Psychiatric symptomatology in the dialysand is partially due to pronounced fluid and electrolyte imbalance (Marshal, 1979; Salmons, 1980). Neuropsychiatric complications develop such as fatigue, irritability, apathy, impaired

memory, decreased visual-motor coordination, decreased concentration, decreased libido, nausea, anorexia, insomnia, depression and anxiety. With increasing uremia the patient may become delerious or psychotic, demonstrating disorientation and hallucinations. This disequilibrium is reversed by dialysis, but the patient may have an 8-24 hour time lag before clinical symptoms improve. The dialysis procedure itself causes somnolence, irritability, headache and nausea in 70% of patients (Marshall, 1979; Stewart & Stewart, 1979). Behavioral concomitants include aggressiveness, uncooperativeness, paranoia and lethargy (Dickerson, 1980; Gerber & Nehemkis, 1980).

Further stressors that increase the vulnerability/risk of the ESRD population are that dialysis patients often witness the death of another patient (Dickerson, 1980), experience frequent medical/cardiac emergencies (Gerber & Nehemkis, 1980) and report distress regarding the unpredictable and uncertain future (Campbell & Campbell, 1978; Friedrich, 1980). Dietary restriction, social role disturbance and machine dependency tax the patient's adjustive capacity. Fear of machine or caregiver malfunction and loss of control over perceived threat characterize the ESRD patient (Friedrich, 1980). These fears have basis in fact; for instance, a machine malfunction in Dallas, Texas, resulted in cardiac death for three of the eight dialysands connected to it in October, 1983.

Coupled with the above stressors is the patient's primary response of denial. Denial is commonly associated with the dialysis population and may serve as an effective coping mechanism to avoid negative affect to minimize depression (Short, Wilson & Durham, 1969; Yanagida, Streltzer & Siemsen, 1981), and improve survival (Glassman & Siegel, 1970; Ziarnik, Freeman, Sherrard & Calsyn, 1977). The high incidence of psychiatric symptomatology in this population suggests the use of denial does not wholly ameliorate the stress of ESRD.

In summary, psychobiological factors contribute to vulnerability and risk in the ESRD population. The following section describes socioeconomic forces which further effect health perception in the dialysis population.

Socioeconomic factors. Prior to 1973, selection of patients with ESRD for dialysis treatment was necessitated by inadequate medical and financial resources. At that time, only patients identified as likely to successfully adapt (comply to treatment, return to work, contribute to society) were authorized by the selection board to receive dialysis treatment.

In 1973 ESRD patients became eligible for Medicare benefits, eliminating the need for medical triage. Universal dialysis resulted in a less elite ESRD population of 55,000 which was much older, less educated, more financially disadvantaged and medically debilitated than in the past (Evans et al., 1981). Recent studies

suggest that at least 30% of ESRD patients are substantially debilitated (Gutman, Stead & Robinson, 1981). The proportion of dialysands doing home dialysis has decreased from 62% to 11% (Burton & Hirschman, 1979). More than 5% of the total Medicare budget was spent on dialysis patients, who represent 0.2% of the active Medicare population (Blagg & Scribner, 1980). Quality of life and rehabilitation have become critical issues in ESRD (Blagg et al., 1980; DeNour & Czaczkes, 1976; Gutman et al., 1981; Kolata, 1980; Kutner & Cardenas, 1981).

Recently, there is renewed interest in patient selection for ESRD treatment in the United States. Increasingly complex bioethical dilemmas confront health care providers (Evans et al., 1981), such as the psychiatric consideration of competency (versus mental illness or organic brain syndrome) when a dialysis patient elects to terminate therapy. Of 80 ESRD deaths occurring over a 3-year period, 9% were patient-initiated and 18% were staff-initiated terminations of therapy (Rodin, Chmara, Ennis, Fenton, Locking & Steinhouse, 1981). McKegney and Lange recommended personality research be done on determinants of dialysand adaptation/decision to withdraw from treatment (1971).

The federal government restructured the Medicare payment system in August, 1983. The new ESRD prospective reimbursement regulations were estimated to save $100 million in federal government expenditures in the first year of implementation. Nephrology

nurses have expressed concern regarding resultant staff reduction, quality of care and patient safety. Facilities increasingly reuse dialysis equipment in the absence of reprocessing procedural guidelines (Baker, 1983). The sense of helplessness characterizing ESRD patients (Rodin et al., 1981) has risk/vulnerability contributors from both psychobiologic and socioeconomic forces. These forces are thought to potentially influence health perception as well as the measurement of health estimate.

Psychological measures. Measurement of such constructs as health perception, locus of control, and repression-sensitization may be confounded by the psychobiological and socioeconomic characteristics of the ESRD population (Freeman, Calsyn & Paige, 1980). Psychological assessment using standard psychometric techniques may have questionable validity/reliability with dialysands because of their pervasive use of denial, their tendency to provide socially desirable responses (Yanagida & Streltzer, 1979), their unique dependence on health providers (machines and federal funding), and their potential mental status fluctuations due to organicity (Yanagida et al., 1979). The mean social desirability score for dialysands with 60 or more treatments was nearly two standard deviations higher than the normative mean (Gentry & Davis, 1972). Investigation of the potential influence of the above variables on the validity and reliability of measurement in the ESRD population is warranted. Current efforts remain at the

factor identification level. Clarification of such measurement issues would allow investigators to place greater confidence in the validity and reliability of their findings in the ESRD population. The burden on the respondent would be too great to attempt to measure for all the potential influences in one study (for example, denial, social desirability, psychobiological status and dependency level measurement concomitant with the present investigation tools).

In summary, both psychobiological and socioeconomic forces increase the vulnerability and risk of the ESRD patient. These factors may also influence measurement of health perception in the present study and must be considered in interpretation of the findings.

The Concept of Perceived Health

Self-perceived health may influence the ESRD patient towards successful rehabilitation, chronic invalidism or early mortality. Emphasis on cognition and perception has become explicit and primary in several researcher's conceptualizations (Chan, 1977).

A critical debate in current research concerns the relative contribution of personal trait and situational constraint in determining behavior (Chan, 1977; Epstein, 1979; Stagner, 1977). A trait is the tendency for a person to behave in a specific manner over a sufficient sample of events and does not imply the execution of trait-relevant behavior in all situations or even on

all occasions in the same situation (Epstein, 1979). Situationists report that environmental pressures often mediate inner-determined behavioral tendency (Stagner, 1977) and that personality traits are not constant across different situations (Epstein, 1979). Personality trait theorists indicate that traits are stable over time and significantly predict behavior even under moderate situational pressure (Stagner, 1977). A compromise between the two positions is the interactionist approach: behavior represents the interaction between the individual and the environmental situation. An assumption of interactionism is that behavioral response is influenced by subjective perception (Chan, 1977).

General health perception is thought to represent an integrating construct underlying the specific components of health (physical, mental, and social) and does not distinguish between them (Tissue, 1972). Research on self-assessed health status has primarily utilized healthy and/or elderly community residents and cardiac patients. Examination of perceived health in ESRD patients may provide useful information regarding differences between chronic illness groups. The literature includes hundreds of studies on health status measurement and demonstrates progressive refinement. The number of standardized health status measures is increasing. An area of primary research emphasis is the evaluation of health care in terms of patient outcome and the under-

standing of the etiology/consequents of differences in health status (Ware, Brook, Davies & Lohr, 1981).

An exhaustive review by Ware et al. (1978) of 39 empirical and theoretical studies pertaining to subjective health estimates published from 1959 to 1977 indicated that health perception was used for the following purposes: (a) to investigate relationships among health constructs (23 studies), (b) to explain health and illness behavior (7 studies), (c) to describe the health of populations where a physical examination was not feasible (7 studies), and (d) to clarify measurement issues (2 studies). Most of the studies were cross-sectional, utilized single-item measurements that had multiple response categories, and did not report reliability/validity estimates. Even taking into consideration the above limitations, the authors concluded that the review of data supported general health perception as a valid measure of health status (Ware et al., 1978).

One measurement of the validity of general health ratings is provided by their association with related health variables. Wan (1976) found sociomedical indicators more predictive than demographic or psychological variables. Regarding functional status, less favorable self-rated health was associated with incapacity/immobility, a greater number of chronic conditions/symptoms and exhaustion. In relation to health/illness behavior, poorer general health estimate was correlated with a greater number of bed

days, a shorter time since the the last clinic/hospital visit, and a greater frequency of medical treatment. Tessler and Mechanic (1978) found a consistent association between psychological distress and poor health perception in four separate population groups. Psychological strain accounted for 18% of the variance in health perception (Garrity, Somes & Marx, 1978). More positive health assessment significantly related to the following mental health variables: life satisfaction, happiness, good morale and self-satisfaction. Anomie, loneliness, dejection, hopelessness and feeling blue were inversely related to positive perceptions of health. Persons tended to rate their own health comparatively with age-peers. Several studies indicated that physician- and self-rated health estimates were significantly related. The direction of these relationships supported general health ratings as valid measures of health status (Ware et al., 1978).

Inconsistent findings are reported in the literature regarding the relationships between self-rated health and demographic characteristics. This may be due to true population differences or differences in measurement tools. Patients who reported higher educational levels tended to rate their health more favorably. There was a positive relationship between income and socioeconomic status and self-health estimate. The relationships between gender, employment status, and marital status with health perception remain equivocal (Ware et al., 1978). Few investigators report

the relationship between ethnicity and health perception, but the findings suggest that poor health assessment was associated with being nonwhite (Maddox, 1962; Tessler & Mechanic, 1978). Regarding age, persons 70 years or older perceive chronic illness as natural to the aging process and tended to rate their health more favorably than younger persons with comparable disability (Hefty, 1982). Two cardiac samples have reported a significant and positive relationship between age and health perception (Brown & Rawlinson, 1975; McKim, 1980). However, other investigators report a negative relationship between age and perceived health (Palmore & Luikart, 1972).

Based on the above findings the Health Perception Questionnaire was developed by Ware et al. (1978). It was further refined into the Health Perception Questionnaire Form II (HPQ II), which was utilized in the present study. Validity, reliability and content are delineated in Chapter II. Major determinants of health perception across chronically ill groups are yet to be identified (Tissue, 1972).

McKim (1980) and Hefty (1982) examined factors influencing health perception of cardiac patients in outpatient and hospitalized settings, respectively. McKim utilized the Cantril Ladder for Health Perception which is a self-anchoring, 9-rung ladder. The top rung is labeled "the best possible health" and the bottom "the worst possible health." The tool assesses both prior and

current health as well as perception of current health in regard to the "average" and the "sick" person of one's own age group. The sample included 51 outpatient cardiac patients, primarily male, ages 33 to 72 years, who were recruited from two of the five hospitals utilized in the present investigation. The sample rated their perceived health as equivalent to the "average" person their own age and superior to ill age-peers. Older subjects tended to rate their health more positively than younger cardiac patients. Contrary to the findings of others in the literature, McKim found that physical (cardiac) functional status was unrelated to health estimate. Depression and hypochondriasis related to poorer prior health rating but not to current health assessment. Repression-sensitization and health locus of control did not relate significantly to health perception.

Hefty (1982) investigated a triad of trait categories thought to potentially predict health assessment: demographic, sociomedical and sociopsychological. Of these three groups, the demographic variables accounted for the most variance in health perception. Hefty utilized the HPQ II and studied a sample of 79 cardiac patients. The major findings, strengths and limitations of Hefty's study will be discussed throughout the remainder of this study. The present investigation replicates Hefty's work on a different chronic illness population.

In summary, health perception is thought to be an intervening variable mediating the coping response to physical status. Selected traits may predict health perception, and further research in chronically ill populations is warranted.

Multidimensional Health Locus of Control

Health locus of control has been associated with outcome measures and health behaviors (Hatz, 1975; Strickland, 1978). It was shown to be significantly correlated with the incidence of effective, goal-striving behavior and was predictive of apathy and withdrawal behavior (Lefcourt, 1966a). Health perception may be partially dependent on whether health behavior is viewed as controllable or uncontrollable by the patient (Laborde & Powers, 1985). Locus of control has been shown to mediate perceptual, cognitive and motivational processes (Lowery, 1981).

Based on social learning theory, Rotter (1960) developed a unidimensional scale of generalized control expectancy that measured the degree to which an individual perceives that outcomes are contingent on one's own behavior (representing the internal end of the continuum) or reinforced by uncontrollable influences (representing an external orientation). Persons tend to become passive and less competent when involved in situations perceived as beyond personal influence. Many forms of behavioral deviance/symptoms of psychopathology may be profitably viewed as resulting from a

disbelief in personal control of the outcome (Lefcourt, 1966a, 1966b).

Concern has been raised regarding the misconception that internal orientation is associated with higher levels of adjustment than externality (Lowery, 1981; Rotter, 1975; Wolk, 1976) and that prescriptive locus of control change-technique research (MacDonald, 1972; Parks, Becker, Chamberlain & Crandell, 1975) has begun prior to comprehension of explanatory/predictive research findings. Nursing interventions involving cognitive restructuring have been suggested to enhance belief in internal locus of control (Schillinger, 1983; Wenerowicz, Riskind & Jenkins, 1978). It has been suggested that congruency of health locus of control expectation and situation may enhance behavioral change (Hefty, 1982; Rawlinson, Crabtree, Adler & Hallburg, 1982). Greater understanding of the relationship between control belief and situational adjustment must precede intervention attempts (Lowery, 1981). Wolk recommends that prediction of adjustment for a given population take into account both the type of situation and the individual locus of control (1976).

Contradictory findings utilizing the generalized Internal Versus External Scale (Prociuk, 1977) stimulated the development of a multidimensional locus of control scale. The internal locus of control dimension remained unchanged, but the external dimension was divided into two discreet scales: externality in regard

to powerful others and externality in regard to chance (Levenson, 1974). Wallston, Wallston, Kaplan and Maides (1976) developed a health-specific locus of control scale, and in 1978, Wallston, Wallston & DeVellis further refined the instrument by incorporating Levenson's multidimensional component. This resulted in the Multidimensional Health Locus of Control Scale (MHLC) utilized in the present study. Lau and Ware (1981) developed another health-specific multidimensional scale which identified three subscales: self-control (internal HLC), chance health outcomes (external chance HLC) and provider control over health (external powerful others HLC).

Several researchers have investigated locus of control belief in the ESRD population. Internality has been associated with dialysand dietary compliance (Levin & Schultz, 1980; Weaver in Lefcourt, 1981; Wenerowicz et al., 1978), medication compliance (Wenerowicz et al., 1978), positive past and future life satisfaction estimates (Hatz, 1978), and less denial (Goldstein, 1976). Gentry and Davis (1972) found dialysands to be more externally oriented than the healthy population. Binik and Devins (in Lefcourt, 1981) found no difference in HLC between home- and hospital-based dialysands.

Repression-Sensitization

The repression-sensitization (RS) personality dimension represents a characteristic mode of coping with threatening stimuli.

It is conceptualized as a continuous unidimensional personality variable. The repression end of the continuum is characterized by the use of defensive behaviors to avoid anxiety-arousing stimulus and its consequents through cognitive minimizing, denial and rationalization. The sensitizing extreme of the continuum is representative of behaviors which involve hypervigilant approach, or attempts to control the stimulus typified by the responses of intellectualization, obsessive behaviors, and ruminative worrying.

Evidence supporting the construct validity of the RS Scale is based on the relationship of test scores to clinically observable, repressive versus sensitizing defensive behaviors. These differences are manifested even if the subject only believes the stimulus is threatening, and are absent in neutral situations (Bell & Bryne, 1978; Bryne, 1964).

A number of studies have consistently associated poor level of adjustment with sensitization. Repressors demonstrate the best adjustment, with mid-range scores falling in an intermediate position in adjustment. Sensitizing tendencies are significantly related with overt death anxiety (Tolor & Reznikoff, 1967) and heightened perceived vulnerability to illness (Gayton, Tavormina, Bassett & Ozman, 1976).

Minkley (1971) found pre-operative patients significantly more repressive than field sample respondents. Two nursing researchers have investigated the relationship between RS and health

perception in cardiac samples. McKim found RS unrelated to health perception (1980), but Hefty (1982) found a significant relationship between repression and a more favorable estimate of prior health ($p \leq .05$). No studies investigating RS in relation to dialysis patients were identified.

Scientific Merit of the Study Being Replicated

Hefty's major findings indicated that for cardiac respondents, both prior and current health perception were much less favorable than for the healthy field sample. Seventy-three percent of Hefty's predictor variables correlated significantly ($p \leq .05$) with at least one dimension of health perception. Longer hospitalization significantly explained prior, current and future health estimates. The greatest amount of variance was accounted for in the sickness orientation and prior health dimensions of health perception. The demographic category of variables was the most strongly predictive. A major limitation of Hefty's study was that demographic parameters of the cardiac population were not compared systematically with the sample profile. Instead, Hefty discussed sample characteristics in relation to the general U.S. population. Hefty recommended longitudinal, repeated-measure design and inpatient/outpatient comparison of health perception in cardiac patients.

Assessment of the scientific merit of the study under replication guided the research questions and design of the present

study. Hefty's research (1982) built on previous nursing knowledge. Research significance may be estimated in terms of social utility and the impact value/relevance of the findings (Gortner, Bloch & Phillips, 1976). Hefty illustrated clinical relevance through reciprocity of theory/practice (Fawcett, 1984) in that the research problem fell within the second-ranked category of research priorities identified by nursing administrators: determination of nursing interventions to reduce the patient's psychosocial stress (Lindeman, 1975). This integration demonstrated potentiation between the theory, research, and practice dimensions of nursing. The findings contributed to nursing science by generating questions warranting further investigation. Hefty's research has not been replicated. It involved marginal risk to the respondents and explicated an emerging theoretical framework logically related to the research questions. Methods for design and analysis were appropriate, and variables were operationalized in accordance with the extant literature.

In summary, the variation in coping response in ESRD patients represents a significant problem warranting further nursing investigation. Multiple psychobiological and socioeconomic factors potentially influence health perception and may confound measurement in the ESRD population. Health perception research supported health perception as a valid measure of health status. Locus of control has been studied in the ESRD population and potentially

mediates health perception. Repression-sensitization may be a predictor of health perception but has not been studied in dialysis patients. Hefty's (1982) study suggested questions warranting further investigation and demonstrated scientific merit sufficient to justify replication in another chronic illness population.

Purpose of the Study

The purpose of the present study was to replicate Hefty's research in another chronic illness group and to provide between-group comparison to extend previous nursing knowledge. The research questions of the present study include:

1. What relationship exists between selected demographic (age, gender, marital status, race, education, income, SES, and employment status), sociopsychologic (locus of control and repression-sensitization), and sociomedical (length of time in hospital, length of illness, time when changes were made in one's living routine as a consequence of illness) variables and the hospitalized ESRD patient's health perception?

2. What is the relative contribution of each of the demographic, sociomedical and sociopsychological variables in predicting the perception of health in the ESRD population?

CHAPTER II

METHODS

This chapter presents the database selection, study design, subjects and setting, procedure, data collection instruments and plan for data analysis. Data for secondary analysis in the present study were obtained from the renal subset of the parent consortium teaching study (Rawlinson et al., 1982). The design of the present study replicates Hefty's (1982) research on correlates of perceived health in the cardiac subsample of the consortium teaching project. The renal and cardiac chronic illness groups were from the same parent study, drawn from the same hospitals, and thus were comparable on multiple characteristics.

Database Selection

Secondary analysis is the re-examination of data already collected. An important step in database selection for secondary research is to evaluate the quality of data collection methods utilized by the primary researchers (Stewart, 1984). The parent study discussed instrument reliability and validity, utilized data collectors trained for interrater reliability, and implemented data collection protocols in a standardized manner with no ethical violations. Data were collected utilizing a structured interview schedule and self-administration of standardized questionnaires.

One commonly cited disadvantage of secondary analysis is that

the data summary categories reported by the primary investigator are inappropriate for the secondary analyst's purposes. This limitation did not occur in the present investigation, because all raw data of the primary project were accessible. An advantage of secondary analysis in the present study was the reduced cost and time expenditure.

Design

The present study design is descriptive and correlational. It utilizes stepwise multiple regression analyses to examine the relationship between health perception and a set of selected predictor variables. It does not imply causation but describes how factors systematically varied together.

Efforts to extend the knowledge base derived from previous nursing research are largely directed through the use of replication. Recently, replication has received increased legitimization and support in nursing research and is recognized as a critical source of validation because it provides an opportunity to examine the generalizability of previous findings (Butts, 1982; Fawcett, 1982; Hefferin, Horsley & Ventura, 1982; Mercer, 1984). A substantial part of the Results and Discussion section (Chapter III) of the present study describes between-group comparisons of the cardiac and ESRD samples.

Subjects and Setting

The size of the ESRD sample for the present study was 66.

The sample was collected from five West Coast hospital sites, each with an average bed capacity of 450. Three were private propriety hospitals, one a state university teaching hospital, and one a federal veterans hospital. Data collection occurred between August, 1979, and November, 1980. Potential participants in each hospital were identified by researchers via nursing cardex/medication list monitoring. Persons with a primary diagnosis of ESRD who met the following inclusion criteria were recruited. They were:

1. Eighteen years of age or older.
2. Able to speak and read the English language.
3. In the nonacute phase of illness.
4. Within 4-5 days of discharge from the hospital.
8. Able to achieve a minimum score of 8 on both the Digit Span and Associate Learning subscales of the Wechsler Memory Scale.

Procedure

Data collectors were trained by the investigators to administer the instruments and to conduct the interview in a standardized manner. Qualifying ESRD patients who met inclusion criteria were invited to complete informed consent (see Appendix A). Each participant was interviewed in a quiet area of the hospital ward for approximately 1-1/2 to 2 hours. The interview occurred about 4 days prior to hospital discharge.

Data Collection Instruments

Data collection instruments are presented and reviewed for both the criterion and predictor variables. Health perception was measured by the Health Perception Questionnaire Form II (Ware, 1976). Demographic and sociomedical predictors for self-assessed heath status were measured with the Patient Profile Questionnaire designed by the primary researchers. Sociopsychological predictor variable measurement was accomplished with two instruments: the Multidimensional Health Locus of Control Scale (Wallston, Wallston & DeVellis, 1978) and the Epstein-Fenz Repression Sensitization Modification Scale (Epstein, 1967).

Criterion Variable

The Health Perceptions Questionnaire II (HPQ II) surveys self-rating of personal health through 36 favorably or unfavorably worded statements measuring general health (see Appendix B). It is a self-administered, standardized instrument which divides general health perception into six dimensions: prior health, current health, health outlook, health worry/concern, resistance/susceptibility to illness (RSI) and sickness orientation. Response categories for the 36 statements range from "definitely false" (scored 1 point) to "definitely true" (scored 5 points). Specific scale dimensions of the HPQ II are presented below:

1. Prior health, 3 items, range 3-15 points.
2. Current health, 9 items, range 9-45 points.

3. Health outlook, 4 items, range 4-20 points.

4. Resistance/susceptibility to illness, 4 items, range 4-20 points.

5. Health worry/concern, 4 items, range 4-20 points.

6. Sickness orientation, 2 items, range 2-10 points.

Higher scores on the first four dimensions of health perception indicate a favorable health appraisal, while higher scores on the last two dimensions (health worry/concern and sickness orientation) indicate a less favorable estimation of personal health. The first four scales are balanced and contain both favorably and unfavorably worded item-statements. Sickness orientation contains only two unidirectionally worded items.

Estimates of HPQ II scale homogeneity indicate that items which cluster around the same scale are reliable measures of the same construct. Current health and health outlook scale scores overlap substantially, suggesting that respondents may rate future health similarly to their assessment of present health status (Ware, 1978). Results of factor analytic studies strongly support HPQ II construct validity (Ware & Karmas, 1976). Although less stable in disadvantaged respondent samples, test-retest reliability coefficients and internal consistency measures indicate that the tool is sufficiently reliable for purposes of group comparison. Intertemporal stability was measured 2 years apart for current health, prior health, RSI and health worry/concern,

and demonstrated sufficient stability for use in repeated measure designs ($p \leq .001$, one-tailed test).

Predictor Variables

The Patient Profile Questionnaire (Appendix C) was used to collect data regarding demographic and sociomedical determinants of health perception. The instrument is a 22-item structured interview administered by the nurse researcher. Demographic characteristics measured by the Patient Profile Questionnaire include: age, sex, marital status, ethnic group, educational level, occupation, employment status and income. Sociomedical factors included on the questionnaire include: length of illness, length of time since living routine changes occurred due to illness, length of hospital stay and type of lifestyle changes made consequent to illness.

The Multidimensional Health Locus of Control Scale (MHLC) was developed by Wallston, Wallston and DeVellis (1978). It is an 18-item, self-administered instrument designed to measure three distinct dimensions of MHLC (see Appendix D). The three dimensions of MHLC are internal orientation, external orientation in regard to powerful others, and external orientation in regard to chance. Each dimension is measured by six personally worded items. Response-scales for each item are Likert-format and range from "strongly disagree" (scored as 1) to "strongly agree" (scored as 6). Scores on each dimension can range from 6-36 points, with

a higher score indicative of a stronger orientation towards that dimension. The MHLC scales utilize only positively worded items, and response set could produce a bias in the data.

The concurrent and discriminant validity of the MHLC scales were evaluated by correlating them with Levenson's (1973; 1975) Internal, Powerful Others and Chance locus of control scales. Levenson's scales were not specific to health expectations. The three dimensions of the MHLC tool correlated most highly with the appropriate theoretical counterpart among Levenson's scales. The alpha reliabilities for the MHLC scales (Form A, utilized in the present study) ranged from .67 to .77, indicating acceptable internal consistency for research purposes (Wallston & Wallston, in Lefcourt, 1981).

The Epstein-Fenz Repression-Sensitization (RS) Modification Scale was developed by Epstein in 1967 (see Appendix E), and consists of 66 personally worded true-false items. Thirty items are scored. The other 36 items are distractors and are unscored. Scores of the RS scale range from 0 (indicative of repression) to 30 (indicative of sensitization). Epstein and Fenz modified Bryne's revised RS scale by removing the less reliable items and retaining items with more consistent scores. Bryne's revised RS scale demonstrated a test-retest reliability of .82 at 3 months, and a corrected half-split reliability of .94 (Bryne, Barry & Nelson, 1963). A review of the literature failed to provide

discussion of the reliability and validity of Fenz's modified version, the RS scale utilized in the present study.

Analysis

Data analysis included the calculation of zero-order correlations and the use of stepwise multiple regression analyses to formulate prediction equations for the six dimensions of health perception. The criterion variables for the equations were prior health, current health, health outlook, health worry/concern, RSI and sickness orientation. Predictor variables included demographic characteristics, sociomedical factors and sociopsychological factors. Predictor variables most highly correlated with the criterion variable were entered first into the regression analyses. In comparing the results of the present study with related research, a $\underline{t}$ test was used to test for significance of differences between group means.

CHAPTER III

RESULTS AND DISCUSSION

The first section presents and discusses demographic, sociomedical, and sociopsychological sample variables. Next, the significant intercorrelations between the criterion variable (Ware's Health Perception Scales) and predictor variables are examined. Finally, the results of a stepwise multiple regression analysis for each of the six health perception scales are presented and discussed with reference to the extant literature.

Demographic Characteristics

A demographic profile representative of all hemodialysands in the United States (Evans et al., 1981) is compared with the present ESRD sample in Table 1. The profile was based on the 1978 U.S. Dialysis Registry, while the present sample was recruited in 1979-80. All ESRD patients (whether transplant, peritoneal dialysis, or hemodialysis) are hemodialysis-dependent. Thus, the present ESRD sample and hemodialysis population members are assumed to overlap substantially.

The present sample was similar to the population in terms of gender and marital status. In comparison with the population this sample was better educated, younger, and substantially poorer. The sample was primarily Caucasian, while the population had a 35% black representation. The sample was mostly clerical, skilled,

Table 1
Demographic Comparison of Hemodialysis Population, ESRD Sample (N = 66), and Hefty's Cardiac Sample (N = 79)

Characteristic	Hemodialysis Population (percent)	Present ESRD Sample (percent)	Hefty's Cardiac Sample (percent)
Sex			
Male	49	47	62
Female	51	53	38
Education			
3 - 11 years	46	20	35
12 years	28	44	30
College or more	26	36	35
Age in years (Mean)	not done	48	61
$\leq$ 34 years	13	28	0
35 - 54 years	41	36	24
$\geq$ 55 years	46	36	76
Marital status			
Married/cohabitate	62	67	64
Never married/single	13	11	5
Divorced/separated	13	4	13
Widowed	12	18	18
Race			
White	64	89	97
Black/other	35	11	3
Employment status			
Employed	18	30	22
Unemployed	18	36	8
Retired	10	34	70
Disability recipient	54	not done	not done
Income			
Median yearly income	$9,000	$5,100	$10,400
$\leq$ $5,900	36	36	22
$5,901 - $14,999	36	42	49
$\geq$ $15,000	28	22	29
Occupation			
Professional/managerial	not done	23	23
Clerical/skilled/semi-skilled	not done	46	34
Unskilled	not done	17	28
Housewife	not done	14	15
Socioeconomic status*			
Mean(S.D.)	not done	41(20)	41(23)

*Duncan's Socioeconomic Status Index (Reiss, 1961)

or semi-skilled in terms of occupation, with a socioeconomic rating of 41 (SES range 1-100). Similar measures were not obtained for the population. These differences between sample and population demographic characteristics limit the generalizability of the present study findings to other ESRD patients with similar characteristics.

The present study was a replication of Hefty's (1982) research on the cardiac subset of the consortium patient-teaching study. The demographic comparison between the ESRD and cardiac samples presented in Table 1 demonstrates similar racial, occupational, socioeconomic, and educational levels. The cardiac sample was more likely to be male, older, retired, and with a better income than the renal sample.

Sociomedical Characteristics

Length of illness from onset to time of interview ranged from 1 month to 31 years in the ESRD sample, with over half the patients in the 1- to 10-year category (see Table 2). One-fourth of the sample had renal illness for 10 to 31 years. Despite the substantial length of illness in this group, 82% stated they had made living routine changes consequent to illness only within the past 6 months. In comparison, length of illness in the cardiac sample ranged from 1 month to 64 years and shared a similar mean

Table 2

Health-Related Comparison of ESRD and Cardiac Samples

Variable	ESRD Sample (N = 66) Mean(S.D.)	Percent	Cardiac Sample (N = 74) Mean(S.D.)	Percent
Length of illness	7.96(8.75)[a]		8.35(10.7)[a]	
6 months or less		15		25
7 months to 1 year		4		9
1+ to 10 years		54		31
10+ to 64 years		27		35
Time since living routine changes from illness	0.26(0.29)[a]		6.2(7.2)[a]	
6 months or less		82		28
7 months to 1 year		18		9
1+ to 9 years		0		36
9+ to 33 years		0		27
Length of hospital stay	12.6(9.8)		8.5(6.8)	
1 to 8 days		41		67
9 to 18 days		45		30
23 to 56 days		14		3

[a]Length of time in years.

(approximately 8 years) with the ESRD group. Cardiac patients described a longer period since living routine changes were necessitated by their illness, with approximately one-third of the sample in both the less than 9 years and the 9- to 33-year categories. ESRD patients tended to have been in the hospital longer.

Over 90% of the ESRD sample volunteered information describing lifestyle changes consequent to illness: 60% significantly altered diet patterns, about 50% reported that frequent doctor visits and medication regimens significantly modified daily activity patterns, and 35% complained of significant sleep disruption.

Sociopsychological Characteristics

The literature review suggested that sociopsychologic variables may influence health perception. MHLC and RS served as the two sociopsychological predictor variables in this study. Results will be discussed in comparison with the cardiac sample and pertinent research literature.

Multidimensional Health Locus of Control

MHLC values of the present study are compared with Wallston & Wallston's (1978) field test results, Hefty's (1982) cardiac sample and Hatz's (1975) hemodialysis sample in Table 3. The hemodialysis sample of Hatz (N = 19) tended to be older, better educated and tended to have been on dialysis a shorter period of time than the present sample. The means and standard deviations of all four samples were used in *t* test formulas to assess the

Table 3

Health Locus of Control Scale Score Comparison Between the ESRD (N = 66), Field Test (N = 115), Cardiac (N = 79), and Hemodialysis (N = 19) Samples

	ESRD Sample	Cardiac Sample		Field Sample		Hemodialysis Sample	
MHLC Scale (Range)	Mean(S.D.)	Mean(S.D.)	t	Mean(S.D.)	t	Mean(S.D.)	t
Internal HLC (6-35)	23.6(6.0)	24.4(5.9)	.67	25.1(4.9)	-1.7	24.0(7.0)	-.40
Powerful Others HLC (8-36)	25.7(5.5)	25.2(5.6)	.64	20.0(5.2)	2.7**	23.1(7.2)	.35
Chance HLC (6-32)	17.9(5.2)	18.3(5.9)	.67	15.6(5.8)	2.7**	14.8(5.6)	1.5

** $p \leq .01$. All t values represent a comparison of the specific sample with the ESRD referent sample.

significance of sample value differences. In alignment with Wallston and Wallston's HLC normative data review (in Lefcourt, 1981), all three chronically ill samples in Table 3 were more external than healthy participants in the field test without any one group falling into a pure type of orientation.

Compared with field test values, the ESRD sample was significantly more oriented towards powerful others ($\underline{t}$ = 2.7, $\underline{p} \leq .01$) and chance ($\underline{t}$ = 2.7, $\underline{p} \leq .01$). This is in accordance with conceptual expectation. No significant differences were found between the ESRD hemodialysis and cardiac sample scores. Correlations between the demographic variables and the MHLC scales in the present sample (see Table 4) demonstrated a negative correlation between age and IHLC ($\underline{r}$ = -.23, $\underline{p} \leq .01$) indicating that younger patients tended to be more internally oriented. Hefty found age unrelated to MHLC in the cardiac sample. Field study results (Wallston & Wallston in Lefcourt, 1981) found little indication of a relationship between age and MHLC. The field test sample of Wallston, et al. (1978) produced a negative relationship between education and powerful others orientation ($\underline{r}$ = -.22, $\underline{p} \leq .05$), supporting the results of the present study ($\underline{r}$ = -.28, $\underline{p} \leq .01$) which indicate that those with less education are more externally oriented in regard to powerful others. Hefty's significant correlation between chance externality and education is in accordance with ESRD sample findings ($\underline{r}$ = -.28, $\underline{p} \leq .01$). Both Hefty and the

Table 4

Intercorrelations Among the Variables+

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Chance HLC	——	01	39**	08	-16	-18	-22*	32**	-12	09	-10	-18	05	-28**	-24*	29**	13	-12	-36**	-19
2. Internal HLC		——	-16	16	19	28**	35**	26*	27*	-11*	-23*	04	02	-11	-05	00	-02	-12	03	01
3. Powerful others HLC			——	00	-21*	-30**	-16	48**	-28**	22*	07	-07	01	-28**	-26*	17	10	01	-26*	04
4. Repression/sensitization				——	04	-01	-09	27*	-11	-32**	08	-01	03	25*	-01	25*	17	-10	-33**	-15
5. Prior health					——	27*	23*	-15	38**	-37**	-12	-11	-02	03	-02	32	-00	-20*	16	-10
6. Current health						——	37**	-18	49**	-11	-06	-09	-06	04	09	-13	-01	-05	24*	03
7. Health outlook							——	-06	39**	-38**	-22*	20	20	03	05	-09	-24*	-15	10	-20*
8. Health worry/concern								——	-31**	18	-21*	01	04	-30**	-26*	-24*	12	-04	-42**	-02
9. Resistance/susceptibility to illness									——	39**	22*	-04	02	08	08	-21*	-03	00	21*	12
10. Sickness orientation										——	17	-10	03	01	-19	-21*	17	16	20*	09
11. Age											——	-02	-08	01	-04	-37**	14	25*	29**	18
12. Sex												——	24*	04	-03	14	-22*	-03	-02	-03
13. Marital status													——	05	14	-40	-25*	14	28**	00
14. Education														——	29**	-28**	-08	10	35**	-11
15. Employment status															——	-18	-30**	-24*	18	-18
16. Income																——	01	-19	-36**	-08
17. Length of hospital stay (NHD)																	——	08	-27*	31**
18. Length of illness (months)																		——	08	08**
19. Socioeconomic status																			——	05
20. Change in living routine																				——

\+ Decimals have been omitted.

N = 66

* $p < 05$

** $p < 01$

present study found lower income correlated with belief in chance externality. Although SES was not related to chance externality in Hefty's sample, in the present study the two correlated significantly (r = -.36, $p \leq .01$), relating lower SES with chance externality. Reviewing normative data for HLC, Wallston et al., (in Lefcourt, 1981) describe low SES persons as most external; however, the HLC did not differentiate between chance or powerful others orientation.

Intercorrelations among the MHLC scales of the present study (see Table 4) parallel field test findings. Both samples are comparable in gender and age, with more field test participants having had some college education. The internal and powerful others scales demonstrated statistical independence; internal and chance scales were negatively related; powerful others and chance scales correlated positively in both samples.

Negative experiences over which there is little control may be conducive to the development of high belief in both chance and powerful others control, and low belief in internal control (Wallston et al., in Lefcourt, 1981). Present sample findings support this statement, with the ESRD sample oriented towards powerful others and chance externality. Binik and Devins (in Lefcourt, 1981) compared HLC between self-care home dialysands and dialysands depending on hospital staff for hemodialysis. One might predict greater internality in the home-based, self-care

group who assumed responsibility for a complex technical regimen, but Binik and Devins found no significant difference between the two groups. They suggested that machine dependency in ESRD was conducive to an external HLC orientation regardless of level of self-care participation.

In contrast, Hefty found a different intercorrelation pattern among the cardiac sample with powerful others HLC correlated with internal HLC ($p \leq .01$). Hefty suggests the cardiac patients considered their health to be under their own control while acknowledging dependence on powerful others. The ESRD patients did not perceive their health to be under their own control.

Repression-Sensitization (RS)

Scores on the Epstein-Fenz RS Scale ranged from 7 to 20, with a mean of 13.3 and a standard deviation of 3.5 for the ESRD sample. These levels reflect greater repressive tendencies than the healthy field sample (mean 16.5). Repression may be an adaptive perceptual defense for this ESRD sample in the face of difficult health problems. A number of studies support the finding that repressors adjust much better than sensitizers, which is in accordance with dialysis literature associating denial with improved survival, effective mental coping and prevention of depression.

The ESRD sample RS scores are comparable with Hefty's cardiac sample but less repressive than Minkley's (1971) elective preoperative group. This may reflect measurement error, or suggest

that chronic health-related anxiety in ESRD and cardiac illness is tolerated with less repression than a rare elective surgical experience.

Correlations of ESRD demographic characteristics with RS (see Table 4) associated greater repression with increasing age (r = -.32, $p \leq .01$) and indicated that sensitizers tended to be of lower SES (r = -.33, $p \leq .01$). Hefty's and McKim's cardiac samples demonstrated no significant relationships between demographic variables and RS scores.

Health Perception

ESRD sample results for each of the six health perception scales are described in terms of mean and standard deviation in Table 5. These responses are compared with the responses from healthy participants in a field test (Ware, 1976) and Hefty's cardiac sample using t values to assess for significance of differences between means. No significant differences in health perception occurred between the ESRD and cardiac samples, suggesting some similarity in health perception between these two chronic illness groups. However, specific variables associated with health perception differed between the cardiac and ESRD samples. In relation to field test participants, the ESRD respondent was significantly ($p \leq .01$) more negative in assessing prior health (t = -4.2), current health (t = -7.1) and health outlook (t = -2.7). This would seem realistic in view of ESRD

Table 5

Health Perception Scale Score Comparison Between the ESRD (N = 66), Field Test (N = 2,000) and Cardiac (N = 79) Samples

	ESRD Sample	Field Sample		Cardiac Sample	
HPQ II Scale (Range)	Mean(S.D.)	Mean(S.D.)	t	Mean(S.D.)	t
Prior Health (3-15)	6.6(3.3)	10.2(3.6)	-4.2**	6.5(3.2)	.09
Current Health (9-26)	16.5(6.1)	31.5(7.9)	-7.1**	18.9(7.6)	.28
Health Outlook (4-20)	10.3(3.8)	13.9(2.7)	-2.8**	12.3(3.6)	-1.43
Health Worry/Concern (8-17)	13.3(2.1)	12.1(2.9)	0.7	13.2(2.8)	.04
Resistance/Susceptibility (4-20)	12.2(4.0)	14.6(2.9)	-1.6	13.9(3.6)	-.78
Sickness Orientation (3-10)	7.9(1.6)	6.8(2.0	1.1	6.8(2.4)	.71

** $p \leq .01$. All t values represent a comparison of the specific sample with the ESRD reference sample.

chronicity and incurability. Surprisingly, ESRD patients did not report more sickness orientation, illness susceptibility, or health worry/concern than Ware's household respondents.

Ware et al. (1978) analyzed correlations among the six HPQ scales in an effort to assess their validity as measures of general health perception. After determining the extent of overlap with a general health perceptions factor, it appeared each HPQ scale contributed some reliable information not shared by the other scales. Patterns of intercorrelations among the present ESRD HPQ scale scores were similar to the cardiac sample and in directions comparable to field test patterns. A more positive view of prior health was significantly associated with positive assessment of current and future health and less sickness orientation. Greater perceived resistance related significantly with more positive prior, current, and future health ratings, and decreased health worry/concern and sickness orientation.

Significant Correlations Between Predictor and Criterion Variables

Selected factors (demographic, sociomedical and sociopsychological) were identified as potential correlates of health perception in the present sample of hospitalized ESRD patients. Table 4 presents the correlation matrix of associations among variables and was used to determine the choice of predictor variables for stepwise multiple regression analysis entry. Each dimension

of health perception is presented and discussed separately. The purpose of this technique is to determine the contributing influence of selected predictor variables on the dependent variable while the effect of other factors is controlled. This procedure also determines the order of importance of the predictor variables.

Prior Health

No demographic variables in the present study significantly related to prior health. This is in alignment with McKim's cardiac sample but inconsistent with Hefty's and Ware's (1976) results. Hefty and Ware both identified a significant association between lower SES and less favorable prior health ratings. Ware found more favorable prior health ratings significantly related with younger age and higher levels of education, income and social class (1978). Employed cardiac respondents had more favorable prior health ratings than the unemployed (Hefty, 1982).

In the present sample the sociomedical factor of illness duration related significantly with prior health (r = .17, $p \leq$ .05). Those who had been ill longer tended to view their prior health more favorably. This finding is contrary to the results of two cardiac samples who reported no significance between length of illness and prior health ratings. Correlations between number of hospital days and prior health demonstrate mixed results. In the present ESRD sample, the two were unrelated, but Hefty reported a

positive significant association, while Ware's household sample (1976) indicated a significant negative relationship.

Regarding sociopsychological variables, an orientation towards powerful others HLC was related to a less favorable prior health estimate (r = -.19, $p \leq .05$). Neither McKim nor Hefty report MHLC scales to be related to prior health. Scores on RS scales were comparable between the present ESRD sample and Hefty's cardiac sample. However, RS was unrelated to prior health in the present study while repression related to favorable prior health ratings in cardiac respondents (Hefty, 1982). Significant determinants of less favorable prior health estimates in the present study were a short time since ESRD onset and a greater propensity towards powerful others HLC orientation.

Current Health

The only demographic predictor significantly associated with current health was SES (r = .22, $p \leq .05$). Higher SES related with more favorable current health assessment. Ware's field test associated more favorable current health perception with younger age, and higher levels of education, income and social class (1978). McKim reported gender, SES and marital status unrelated to current health. Hefty found only employment significantly related to more favorable estimates of current health. The present findings suggest that ESRD patients in professional occupations tended to view their current health more favorably than those

working in manual, semi-skilled and unskilled occupations. This might suggest less employment disruption consequent to illness for higher SES dialysands, and support Hefty's cardiac findings relating employment with positive current health assessment.

Sociomedical variables did not relate significantly to current health ratings in the present sample. In contrast, Hefty associated longer hospital stay with more favorable current health, and McKim found a longer illness duration related significantly with a more positive rating of current health. Possibly the biophysical improvements that occur over the cardiac recovery period contribute to more favorable ratings of current health (McKim, 1980; Hefty, 1982). Nearly 75% of McKim's cardiac patients demonstrated improved functional status as hospitalization progressed. Such improvements are not characteristic of the ESRD illness pattern which demonstrates a peaks and valleys trajectory with frequent and recurrent fluctuations of biological status.

MHLC was the sociopsychological variable that significantly associated with current health in the present study. A more favorable perception of current health correlated with less orientation towards powerful others ($r = -.28$, $p \leq .01$) and more orientation towards internal HLC ($r = .24$, $p \leq .01$). In contrast, neither cardiac sample demonstrated a relationship between HLC and current health. This difference may represent measurement error or differences between cardiac and ESRD illness patterns and/or

age differences (mean age for ESRD sample is 48 years; for cardiac samples, 61 years). RS did not relate significantly with current health in the present sample or in either cardiac sample.

Health Outlook

The only demographic variable significantly related with health outlook was age (r = -.22, $p \leq .05$). Younger respondents had a more positive view of their future health. In comparison, Hefty found only gender significantly associated with health outlook. Women estimated their future health more favorably (1982). Ware (1978) found positive health outlook correlated with younger age and increased levels of education, income and social class.

The sociomedical associations significant to future health perception in the present study were length of hospital stay and length of time since ESRD caused lifestyle changes (r = -.24, $p \leq .05$; r = .20, $p \leq .05$). The greater the duration of these two variables, the more negative the future health estimate. Hefty reported a conflicting finding and associated a longer hospital stay with more favorable health outlook. Hefty offered the same interpretation as in current health findings: improved biophysical status in cardiac patients as time progressed.

RS was a sociopsychological variable unrelated to future health perception in both the present study and Hefty's cardiac

sample. HLC significantly correlated with health outlook assessment for the present sample but not for cardiac respondents. ESRD patients with less HLC chance orientation and greater internal HLC tended to report a more favorable health outlook (r = -.22, $p \leq .05$; r = .36, $p \leq .01$).

Health Worry/Concern

ESRD respondents indicated multiple significant correlations between demographic variables and their rating of health worry/concern. Greater health concern was associated with younger age (r = -.21, $p \leq .05$), unemployment (r = -.26, $p \leq .05$), less income (r = -.24, $p \leq .05$), less education (r = -.30, $p \leq .01$) and lower SES (r = -.42, $p \leq .01$). Similarly, Hefty reported younger cardiac patients to be significantly more worried about their health. Hefty reported that married cardiac patients report greater health concern. In contrast, Ware (1978) found age, education and social class unrelated to health worry/concern, but reported more health concern with less income. It is possible that within the present sample, ESRD respondents with less education tended to occupy manual jobs with less income and were less likely to be employed. Sociomedical variables did not significantly relate to health worry/concern in either the present sample or Hefty's sample. Sociopsychological variables were unrelated to health concern in Hefty's cardiac patients. In comparison, for the ESRD sample, all three MHLC dimensions correlated significantly with health worry/

concern. Greater health worry was associated with chance HLC externality (r = .32, $p \leq .01$), powerful others HLC externality (r = .48, $p \leq .01$), and less strongly with internal HLC orientation (r = .26, $p \leq .05$). These findings are difficult to interpret. They may suggest that more refinement of measures is indicated, or that some degree of health concern attends all HLC orientations for this vulnerable ESRD sample. In alignment with theoretical expectation, sensitizers reported greater health worry than did repressors (r = .27, $p \leq .05$).

Resistance-Susceptibility to Illness (RSI)

Demographic variables correlated with perceived RSI in the ESRD sample similarly as in Hefty's (1982) cardiac patients. In the present study, higher income (r = -.21, $p \leq .05$), higher SES (r = .20, $p \leq .05$), and older age (r = .22, $p \leq .05$) associated with greater perceived resistance. Hefty found higher occupational status and SES correlated with greater perceived resistance. In a national study of health beliefs, the following demographics correlated with greater perception of illness-susceptibility: less education, less income, older age, and female gender (Kirscht, Haefner, Kegeles & Rosenstock, 1966). Ware (1978) found inconsistent relationships between demographics and RSI.

No sociomedical variables in the ESRD sample correlated significantly with perceptions of RSI. This is inconsistent with

Hefty's finding associating more recent hospital admission with greater perceived susceptibility (r = .24, $p \leq .05$).

MHLC was the only sociopsychological variable significantly related to RSI ratings in the ESRD sample. Increased resistance varied systematically with internal HLC orientation (r = .23, $p \leq .05$), and less externality towards powerful others HLC (r = -.28, $p \leq .01$). This supports the association between internal HLC and perceived resistance reported by Kirscht (1972). In comparison, Hefty found no significant relationship between MHLC and RSI but reported that cardiac repressors rated themselves more resistant than sensitizers. RS did not relate significantly with RSI in the present sample.

Sickness Orientation

Demographic variables of lower income and SES correlated significantly with a greater orientation towards illness in the ESRD respondents (r = -.21, $p \leq .05$; r = .20, $p \leq .05$). In comparison, Hefty's sample significantly associated female gender and less education with greater sickness orientation. Ware found inconsistent relations between demographics and sickness orientation scores in field tests (1978).

No sociomedical predictors were significantly associated with sickness orientation in either the present or the cardiac sample.

The sociopsychological variable that significantly related with levels of ESRD participant sickness orientation was MHLC.

Increased propensity towards internal HLC and decreased orientation towards powerful others HLC were associated with less sickness orientation (r = -.11, $p \leq .05$; r = .22, $p \leq .05$). This supports Hefty's correlation between powerful others HLC and less sickness orientation.

In summary, demographic predictors of health perception were statistically significantly related to five of the six dimensions of health perception (all scales except prior health). Sociomedical factors associated significantly with two dimensions of health perception (prior health and health outlook). Sociopsychological determinants correlated significantly with all dimensions of health perception. The most prominent predictor variable in the present study was MHLC, significantly related to all six dimensions of health perception for the ESRD sample. Although many statistically significant correlations were obtained, it must be recognized that this accounts for only a small part of the variance due to the modest value of the correlation coefficients.

Results of Stepwise Multiple Regression Analyses

A correlation matrix was constructed which presented the zero order correlations between all the variables in the study. The predictor variables chosen for inclusion in the stepwise multiple regression were those that achieved a statistically significant relationship with the dependent variable. Stepwise multiple regression considers the selected predictor variables simultaneously

and yields the combination of variables providing the most predictive power. In order to select the minimum number of variables needed to approximate the amount of variance accounted for by the selected set, the variable demonstrating the highest correlation with the criterion health perception scales was entered first into the regression analyses. The amount of variance left unexplained by the first predictor was determined, and the remaining predictors were then correlated with this residual. The predictor with the highest value became the second best predictor, and the process continued until it terminated due to statistical insignificance (as measured by the F test). Stepwise multiple regression provided a measure of the relative contribution of each successively introduced predictor variable. The results of the regression for each dimension of health are presented in Table 6. The following sections discuss the results for each dimension of health perception contrasting the ESRD and cardiac sample results.

Prior Health

Two characteristics in the ESRD sample related significantly to prior health (powerful others HLC and illness duration), but the F to enter in the regression was not significant for either variable. These two traits achieved a multiple R of .26 and accounted for only 7% of the variance. In contrast, the cardiac sample accounted for four times as much variance and identified six predictor variables with statistically significant F values

Table 6

Stepwise Multiple Regression of Predictor Variables in Relation to Ware's Health Perception Scales (N = 65)

Criterion Variable	Correlation r	Variance R	R^2	F to enter	B	Beta
1. Prior Health						
Powerful Others HLC	-.19*	.19	.04	3.49	-.14	-.23
Length of Illness (mos.)	.17*	.26	.07	2.31	-.59	-.18
2. Current Health						
Powerful Others HLC	-.28**	.28	.07	5.03*	-.30	-.27
Internal HLC	.24**	.39	.15	5.43*	.28	.27
3. Health Outlook						
Internal HLC	.36**	.36	.13	9.11**	.21	.30
Number Hospital Days	-.23*	.43	.19	3.59	-.34	-.09
Chance HLC	-.22*	.46	.21	1.82	-.18	-.24
4. Health Worry/Concern						
Powerful Others HLC	.46**	.46	.21	11.39**	.12	.31
Socioeconomic Status	-.41**	.56	.31	10.42**	.20	.19
Internal HLC	.35*	.64	.40	9.71**	.99	.27
5. Resistance-Susceptibility to Illness						
Powerful Others HLC	-.28**	.28	.07	7.49**	-.22	-.29
Age	.25*	.37	.13	8.37**	.79	.31
Internal HLC	.23*	.49	.24	8.19**	.23	.32
6. Sickness Orientation						
Internal HLC	-.11*	.11	.05	1.01	-.34	-.12

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

for entry into the regression. Cardiac respondents who tended to repress, who were in the hospital longer, who were employed, had higher SES, a lower occupational status and less education tended to rate prior health more favorably. The findings of the first four variables are in accordance with the literature, but the contribution of lower occupation and less education is difficult to interpret.

Current Health

In both the ESRD and cardiac samples, approximately 15% of the variance was explained for current health but through differing sets of variables. In the ESRD sample, two traits achieved a multiple R of .39 (R^2 of 1.5) and demonstrated significant F to enter values ($p \leq .05$). Less orientation toward powerful others HLC and greater internal HLC predicted more favorable current health estimates. Internally oriented dialysands tend to comply with diet regimen and clinic appointments to a greater degree than externally oriented ESRD patients (Weaver, in Lefcourt, 1981), which may be related to the association between internal HLC and more favorable current health. An increased dependency on health professionals and dialysis machines during ESRD illness exacerbation may relate to the association between powerful others HLC and poorer assessment of current health.

In contrast, Hefty's heart patients identified being employed and a longer hospital stay as predictive of more favorable current

health ratings (multiple R = .37). The ability to work and improvements in functional status that occur as the hospital stay progresses in cardiac respondents appear congruent with these findings.

Health Outlook

The ESRD participants accounted for twice as much variance (R^2 = .21) as the cardiac sample (R^2 = .10) in the prediction of health outlook. In the ESRD sample, internal HLC entered the regression first and was the only predictor with a significant F to enter value for the regression ($p \leq .01$). Fewer hospital days and less chance HLC orientation accounted for an additional 8% of health outlook variance but did not significantly predict ESRD future health estimates. Fewer hospital days may indicate less severe uremic fluctuation in the ESRD patient. Current health is highly correlated with health outlook ($p \leq .01$) and may explain the association between fewer hospital days and more favorable assessment of future health. The unpredictability of biophysical status in ESRD may contribute to a chance HLC orientation. Periods of greater illness stability (less severity) may be associated with increased internal HLC, less chance HLC and more optimistic future health estimates.

In comparison, the cardiac patients identified a longer hospital stay ($p \leq .01$) and female gender ($p \leq .05$) as predictive of more positive health outlook. Similarly, length of hospital stay

predicted prior and current health ratings in the cardiac sample. Because of the high correlation between prior, current and future health perception, this finding is consistent with theoretical expectation. Hefty offered no interpretation regarding the association between gender and health outlook. Ware (1978) found gender differences in general health perception to be inconsistent across field tests but stated that data trends suggested women may rate future health more favorably than men.

Health Worry/Concern

Three variables achieved a multiple R of .64 and accounted for 40% of the variance in health worry/concern for the ESRD sample. This criterion variable was best predicted in the regression analysis in the present study, with all three variables achieving significance ($p \leq .01$) for entry into the analysis. Greater externality in regard to powerful others HLC, a lower SES rating and, to a lesser extent, internal HLC orientation predicted more health concern. Powerful others HLC may be associated with increased health concern during ESRD exacerbation and increased symptomatology/dependency on health professionals. Some of the variance accounted for by SES may have been represented by powerful others HLC because of the negative association between powerful others HLC and SES ($p \leq .05$). A lower SES may indicate less financial buffering in this sample (mean annual income, $5,100) and predict greater health worry because of limited available

coping resources. Greater health concern is predicted by both internal and powerful other external HLC orientations.

The cardiac sample predicted health worry/concern to a much lesser extent (multiple R = .31, R^2 = .10) than the renal patients. Both being married and having made a work status change consequent to illness equally contributed to the variance in health worry. Neither Hefty nor Ware (1978) discuss the relation of marital status to health concern. Forced retirement was frequently described as a significant lifestyle change related to cardiac illness in Hefty's sample and may reflect poorer biophysical status.

Resistance-Susceptibility to Illness (RSI)

Three different traits significantly ($p \leq .01$) predicted perceived resistance in the ESRD sample and achieved a multiple R of .49, accounting for 24% of the variance. Less orientation toward powerful others HLC, greater internal HLC orientation and an older age predicted greater perceived resistance. All three findings are consistent with the reviewed literature.

In contrast, Hefty's cardiac sample predicted 18% of the cumulative variance in RSI with four significant variables. The factor entered first into the regression analysis was repression-sensitization (R = .25). A tendency to repress, a longer hospital stay, higher SES and less education predicted more perceived

resistance. The first three findings are congruent with conceptual expectations for the cardiac sample. The prediction of greater perceived resistance by less education is difficult to interpret because Hefty reported a nonsignificant correlation between RSI and education (r = .09).

Sickness Orientation

None of the predictor variables significantly explained ESRD sample sickness orientation. Although internal HLC was weakly associated with less tendency towards sickness orientation (r = -.11), this dimension of health perception was not significantly predicted by the renal sample (R^2 = .05). Because the sickness orientation scale contained only two unidirectionally worded items, this may reflect measurement limitations requiring refinement. However, scores in the cardiac patients were predictive of sickness orientation (R^2 = .27).

Being female and more highly educated ($p \leq .01$), and having an internal HLC predicted greater sickness orientation (multiple R = .52) in the ESRD sample. Neither Ware nor Hefty discuss gender or level of education in relation to sickness orientation. However, Hefty found females to rate future health more positively. The prediction of greater sickness orientation by more education seems incongruent with previous research correlating increased education with more favorable general health perception (Osborn, 1973).

CHAPTER IV

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

This study addressed the problem of persons with comparable objectively assessed disabilities responding with great variation in resultant level of adaptation. The research questions developed out of clinical concern for the poor level of coping in dialysis patients and the importance of understanding factors that affect it. Of primary interest in the present study is the concept of health perception which was conceptualized as a variable intervening between objective physical status and health outcome.

The research examined:

1. What relationship exists between selected demographic, sociopsychologic and sociomedical variables and the hospitalized ESRD patient's health perception?

2. What is the relative contribution of each variable in predicting health perception in the ESRD population?

The present study replicated Hefty's (1982) research on health perception in hospitalized cardiac patients. Both studies were secondary analyses of a larger consortium study. Results of the present investigation were compared with Hefty's findings.

This descriptive and correlational study identified systematic relationships between selected predictor variables and health perception. The sample consisted of 66 hospitalized ESRD patients

which was partially comparable to the U.S. dialysis population. Ware's Health Perception Questionnaire II measured the criterion variable. Epstein Fenz's Repression-Sensitization Scale and the Multidimensional Health Locus of Control Scale (Wallston et al. 1978a) measured the sociopsychological variables. A questionnaire developed by the primary investigators measured sociomedical and demographic variables. Analyses included the calculation of zero-order correlations between the variables and the use of stepwise multiple regression analyses to formulate prediction equations for the six dimensions of health perception.

The results of the stepwise multiple regression showed that four different predictor variables predicted four of the six dimensions of general health perception for the ESRD patients. Health worry and resistance-susceptibility to illness were the most strongly predicted dimensions. In the ESRD sample, internal health locus of control (HLC) and powerful others HLC significantly predicted variance in four general health perception dimensions.

There was no statistically significant difference between the health perception scale scores of the ESRD and cardiac illness groups. However, variables which predicted health perception varied between the ESRD and cardiac samples. It took fewer variables to predict health perception for the ESRD sample than for the cardiac sample. Both the ESRD and cardiac patients rated prior,

current and future health perception less favorably than healthy field test subjects (Ware, 1978).

Health locus of control consistently predicted most dimensions of health perception in the ESRD sample, suggesting that control issues may be highly influential in determining health perception in this population. This may be related to the unique dependency of the dialysand on health care providers, machines, and societal funding for continued life maintenance.

Although the present study accounted for a significant amount of the variance in health perception of the ESRD patient, other variables are needed to fully account for health perception variance. Future research on health perception in dialysis patients could be refined by:

1. The use of a more representative sample of the ESRD population;

2. The use of inventories more sensitive to chronic illness populations:

    a. Emphasize the negative end of the health status continuum;

    b. Use a dialysis-specific HLC instrument; and

    c. The addition of open-ended clarification questions in the HLC instrument to increase comprehensiveness of measurement.

3. The concurrent use of objective physical status measurement.

The multidimensional complexity and combined subjective/objective quality of health perception represent a compelling area for future nursing research (Engel, 1984). Rehabilitation is one of the primary foci of nursing. Further research on determinants of health perception would refine the understanding of variables amenable to influence and potentially improve rehabilitation outcome. Of particular interest in the ESRD patient is locus of control in relation to health perception.

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APPENDIX A

CONSENT FORM FOR HUMAN RESEARCH

UNIVERSITY OF OREGON HEALTH SCIENCES CENTER

CONSENT FOR HUMAN RESEARCH PROJECT

I, _____
(First Name) (Middle Initial) (Last Name)

herewith agree to serve as subject in the investigation named Patient Teaching: A Trait-Treatment Interaction Strategy, under the supervision of Dr. May Rawlinson and M. Katherine Crabtree, R.N., M.S., A.N.P. The investigation aims at finding the best way to teach particular types of patients about their self-administered prescribed medications.

It is my understanding that I will participate in a planned, systematic teaching method to learn more about the medications the doctor has ordered in my treatment. I will be required to answer some questions during an interview and to complete paper and pencil tests. The questions relate to my knowledge of and practice in taking prescribed medications. The paper and pencil tests are commonly used personality tests. The time required for my participation will not exceed one hour a day for four consecutive days prior to discharge from the hospital. After I have returned home, I will be visited by one of the research workers for an interview that will take about an hour.

All information that I give will be handled confidentially. My anonymity will be maintained on all documents, which will be identified by means of code numbers.

I may benefit from these procedures by knowing more about the medications that the doctor has ordered for me to take when I leave the hospital.

Denise Demaray, R.N., B.A., and Mary Shick, R.N., B.S., have offered to answer any questions I might have about the procedures I am submitting to.

I understand that it is not the policy of the Department of Health, Education and Welfare, or any other agency funding the research project in which I am participating, to compensate or provide medical treatment for human subjects in the event the research results in physical injury. I understand that the University of Oregon Health Sciences Center, as an agency of the State, is covered by the State Liability Fund and if I suffer injury from the research project, compensation would be available to me only if I establish that the injury occurred through the

fault of the Center, its officers or employees. If I have further questions, I will call Dr. Michael Baird at (503) 225-8014.

I understand that I am free to not participate or to withdraw from participation in the investigation at any time without this decision otherwise affecting my relationship with or medical treatment in the hospital.

I have read the above explanation and agree to participate as a patient in the study described.

Signature: _____

Witness: _____

Date: _____

APPENDIX B

HEALTH PERCEPTIONS QUESTIONNAIRE FORM II

(WARE, 1976)

ID# _____

HEALTH PERCEPTIONS

Please read each of the following statements, and then circle one of the numbers one each line to indicate whether the statement is true or false for you.

There are no right or wrong answers.

If a statement is definitely true for you, circle 5.
If it is mostly true for you, circle 4.
If you don't know whether it is true or false, circle 3.
If it is mostly false for you, circle 2.
If it is definitely false for you, circle 1.

Some of the statements may look or seem like others, but each statement is different and should be rated by itself.

	Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
A. According to the doctors I've seen, my health is now excellent.	5	4	3	2	1
B. I try to avoid letting illness interfere with my life.	5	4	3	2	1
C. I seem to get sick a little easier than other people.	5	4	3	2	1
D. I feel better now than I ever have before.	5	4	3	2	1
E. I will probably be sick a lot in the future.	5	4	3	2	1

ID# _____

	Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
F. I never worry about my health.	5	4	3	2	1
G. Most people get sick a little easier than I do.	5	4	3	2	1
H. I don't like to go to the doctor.	5	4	3	2	1
I. I am somewhat ill.	5	4	3	2	1
J. In the future, I expect to have better health than other people I know.	5	4	3	2	1
K. I was so sick once I thought I might die.	5	4	3	2	1
L. I'm not as healthy now as I used to be.	5	4	3	2	1
M. I worry about my health more than other people worry about their health.	5	4	3	2	1
N. When I'm sick, I try to just keep going as usual.	5	4	3	2	1

ID# _____

	Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
O. My body seems to resist illness very well.	5	4	3	2	1
P. Getting sick once in a while is a part of my life.	5	4	3	2	1
Q. I'm as healthy as anybody I know.	5	4	3	2	1
R. I think my health will be worse in the future than it is now.	5	4	3	2	1
S. I've never had an illness that lasted a long period of time.	5	4	3	2	1
T. Others seem more concerned about ther health than I am about mine.	5	4	3	2	1
U. When I'm sick, I try to keep it to myself.	5	4	3	2	1
V. My health is excellent.	5	4	3	2	1

ID# _____

	Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
W. I expect to have a very healthy life.	5	4	3	2	1
X. My health is a concern in my life.	5	4	3	2	1
Y. I accept that sometimes I'm just going to be sick.	5	4	3	2	1
Z. I have been feeling bad lately.	5	4	3	2	1
AA. It doesn't bother me to go to a doctor.	5	4	3	2	1
BB. I have never been seriously ill.	5	4	3	2	1
CC. When there is something going around, I usually catch it.	5	4	3	2	1
DD. Doctors say that I am now in poor health.	5	4	3	2	1
EE. When I think I am getting sick, I fight it.	5	4	3	2	1
FF. I feel about as good now as I ever have.	5	4	3	2	1

APPENDIX C

PATIENT PROFILE QUESTIONNAIRE

Patient Profile Questionnaire

Hospital Interview Schedule

Identification Number _____ Diagnosis: Primary _____

Secondary _____

Variable

Date of birth _____ Age (at last birthday) _____

Sex: Male _____ Female _____

Present marital status (circle one):
1. Married: living with spouse
2. Married: not living with spouse
3. Divorced or legally separated
4. Widowed
5. Never married
6. Other (cohabitation) _____

Ethnic group (circle one):
1. Caucasian
2. Black
3. Mexican-American
4 American Indian
5. Other (identify) _____

Highest grade of school completed (circle one):

1 2 3 4 5 6 7 8 9 10 11 12*

College: 13 14 15 16*

Postgraduate: 17+ Highest degree attained:* _____

*If 10-12 are circled, note if high school graduate.
If 13-16 are circled, note if any type of degree was awarded (such as Associate degree/Baccalaureate).

ID # _____

Occupation Status:

A. Please classify the patient's usual occupation (circle one):
   1. Professional
   2. Manager or owner of business
   3. Farmer (owner or manager of at least 100 acres)
   4. Clerical, sales, technician
   5. Skilled craftsman, foreman
   6. Operative, semi-skilled
   7. Service worker
   8. Unskilled
   9. Farm labor (owner of less than 100 acres)
   10. Housewife.

B. Probes to be used to correctly classify work (add other information the patient may give). Ask patient.
   1. What is the title of your position? _____
   2. State the general duties of the job. _____
   _____
   3. What is the name of the company? _____
   4. What is the approximate size (number of employees) of the company? _____

C. Employment status (circle one and write in):
   1. Employed (employed before illness and plans to return):
      Full time _____
      Part time _____ Hours per week _____
   2. Unemployed _____
   3. Unemployed and looking for work _____
   4. Retired _____ How long? _____

D. How important is it to you or your family for your to be gainfully employed (circle one)?
   1. Critical
   2. Very important
   3. Important
   4. Not important

E. (If patient was housewife before illness) did you manage household tasks (circle one)?
   1. Most of household tasks
   2. Only some of household tasks
   3. None of household tasks

ID # _____

F. Ask patient to try to estimate his/her total income (including spouse's income, if any) from all sources for the past 12 months (circle one).

1. $50,000 or more
2. $25,000 to $49,999
3. $15,000 to $24,999
4. $12,000 to $14,999
5. $10,000 to $11,999
6. $ 9,000 to $ 9,999
7. $ 8,000 to $ 8,999
8. $ 7,000 to $ 7,999
9. $ 6,000 to $ 6,999
10. $5,000 to $5,999
11. $4,000 to $4,999
12. $3,500 to $3,999
13. $3,000 to $3,499
14. $2,500 to $2,999
15. $2,000 to $2,499
16. $1,500 to $1,999
17. $1,000 to $1,499
18. Less than $1,000

Living arrangements:

A. Do you live alone?
   1. Yes _____
   2. No _____

B. Do you have anyone who will be concerned about your following the medical regimen (circle one)?
   1. Yes
   2. Probably yes
   3. Probably no
   4. No
   5. I don't know

C. Will some other person be involved in helping you following the medical regimen (within the next 3 months)?
   1. Yes - considerably
   2. Yes - to some extent
   3. No - probably not
   4. No
   5. I don't know

   Probe to C if 1 or 2 is circled:
   With what aspects of the medical regimen will the other person be involved (circle all that apply)?
   1. Diet
   2. Medication
   3. Exercise
   4. Physical care (bathing)
   5. Other _____

ID # _____

Payment for health care:

A. Who will pay for your prescribed medications when you leave the hospital?

1. Patient pays in full
2. Patient pays in part (includes insurance coverage)
3. Another source pays (i.e., individual, governmental/ private agency/ insurance)
4. Don't know

a. Does the patient consider medications as expensive?

1. Yes
2. No

a) Will it be:

1) not a problem
2) a problem, but will manage
3) a problem and will have to consider if they are worth the expense
4) a problem and not able or willing to buy them
5) don't know

B. Do you believe that your financial resources are adequate to cover the cost of your health care (circle one)?
1. Yes (adequate)
2. No (inadequate)

C. Do you believe that your financial resources are adequate to cover living expenses during recovery period (circle one)?
1. Yes (adequate)
2. No (inadequate)

Length of Illness (as defined by the patient):

A. The date when you were aware of having symptoms of poor health (i.e., aware of having a health problem):

Write in the approximate date _____

ID # _____

B. The date when you made changes in living routine because of symptoms:

Write in the approximate date _____

C. What change in your living routine was most significant (circle one)?
1. In dietary routine
2. In rest-sleep patterns
3. In taking medications
4. In frequent visits to doctor
5. Other _____
Explain: _____

D. Interviewer calculates length of illness:

Number of days _____, weeks _____, months _____

Length of time of treatment at present hospital (Interviewer calculates this):

Number of days _____, weeks _____, months _____

APPENDIX D

MULTIDIMENSIONAL HEALTH LOCUS OF CONTROL SCALE

(WALLSTON, WALLSTON & DEVELLIS, 1978)

ID # _____

Multidimensional Health Locus of Control

(MHLC)

This is a questionnaire designed to determine the way in which different people view certain important health-related issues. Each item is a belief statement with which you may agree or disagree. Beside each statement is a scale which ranges from strongly disagree (1) to strongly agree (6). For each item, we would like you to circle the number that represents the extent to which you disagree or agree with the statement. The more strongly you agree with a statement, the higher will be the number you circle. The more strongly you disagree with a statement, the lower will be the number you circle. Please make sure that you answer every item and that you circle only one number per item. This is a measure of your personal beliefs; obviously, there are no right or wrong answers.

Please answer these items carefully, but do not spend too much time on any one item. As much as you can, try to respond to each item independently. When making your choice, do not be influenced by your previous choices. It is important that you respond according to your actual beliefs and not according to how you feel you should believe or how you think we want you to believe.

Strongly Disagree - 1
Moderately Disagree - 2
Slightly Disagree - 3
Slightly Agree - 4
Moderately Agree - 5
Strongly Agree - 6

1. If I get sick, it is my own behavior which determines how soon I get well again.	1	2	3	4	5	6
2. No matter what I do, if I am going to get sick, I will get sick.	1	2	3	4	5	6

ID # _____

Strongly Disagree - 1
Moderately Disagree - 2
Slightly Disagree - 3
Slightly Agree - 4
Moderately Agree - 5
Strongly Agree - 6

3. Having regular contact with my physician is the best way for me to avoid illness.	1	2	3	4	5	6
4. Most things that affect my health happen to me by accident.	1	2	3	4	5	6
5. Whenever I don't feel well, I should consult a medically trained professional.	1	2	3	4	5	6
6. I am in control of my heath.	1	2	3	4	5	6
7. My family has a lot to do with my becoming sick or staying healthy.	1	2	3	4	5	6
8. When I get sick, I am to blame.	1	2	3	4	5	6
9. Luck plays a big part in determining how soon I will recover from an illness.	1	2	3	4	5	6
10. Health professionals control my health.	1	2	3	4	5	6
11. My good health is largely a matter of good fortune.	1	2	3	4	5	6
12. The main thing which affects my health is what I myself do.	1	2	3	4	5	6
13. If I take care of myself, I can avoid illness.	1	2	3	4	5	6
14. When I recover from an illness, it's usually because other people (for example, doctors, nurses, family, friends) have been taking good care of me.	1	2	3	4	5	6

ID # _____

Strongly Disagree - 1
Moderately Disagree - 2
Slightly Disagree - 3
Slightly Agree - 4
Moderately Agree - 5
Strongly Agree - 6

15. No matter what I do, I'm likely to get sick.	1	2	3	4	5	6
16. If it's meant to be, I will stay healthy.	1	2	3	4	5	6
17. If I take the right actions, I can stay healthy.	1	2	3	4	5	6
18. Regarding my health, I can only do what my doctor tells me to do.	1	2	3	4	5	6

APPENDIX E

EPSTEIN-FENZ REPRESSION SENSITIZATION (RS) MODIFICATION SCALE

(EPSTEIN, 1967)

ID # _____

RS Scale

Epstein-Fenz Modification Scale

Instructions: The following are some statements on feeling, attitudes, and behavior. Reach each statement and decide if it is true or false in reference to yourself. Write "T" if the statement is true, and "F" if it is false.

_____ 1. People often disappoint me.

_____ 2. If I could get into a movie without paying and be sure I was not seen, I would probably do it.

_____ 3. I tend to keep on at a thing until others lose their patience with me.

_____ 4. I do not always tell the truth.

_____ 5. I frequently find myself worring about something.

_____ 6. I have often met people who were supposed to be experts who were no better than I.

_____ 7. I sweat very easily even on cool days.

_____ 8. I like to know some important people because it makes me feel important.

_____ 9. I think of ways to get even with certain people.

_____ 10. I often think, "I wish I were a child again."

_____ 11. Most people who know me would say I am a cheerful person.

_____ 12. I do not like everyone I know.

_____ 13. I find discussions about sex slightly annoying.

_____ 14. I gossip a little at times.

_____ 15. Sometimes at elections I vote for men whom I know very ittle.

ID # _____

_____ 16. I usually have to stop and think before I act even in trifling matters.

_____ 17. Once in a while I laugh at a dirty joke.

_____ 18. Sometimes when I am not feeling well, I am cross.

_____ 19. I have never felt better in my life than I do now.

_____ 20. I am more of a "happy-go-lucky" person than a deep thinker.

_____ 21. I do not read every editorial in the newspaper every day.

_____ 22. I try to plan in advance what to do if certain threatening situations were to arise.

_____ 23. Once in a while I put off until tomorrow what I ought to do today.

_____ 24. I work under a great deal of tension.

_____ 25. My table manners are not quite as good at home as when I am out in company.

_____ 26. When things go wrong, I cannot rest until I've corrected the situation.

_____ 27. I would rather win than lose in a game.

_____ 28. I worry over money and business.

_____ 29. I like to let people know where I stand on things.

_____ 30. I think a great many people exaggerate their misfortune in order to gain the sympathy and help of others.

_____ 31. When I leave home I tend to worry about such things as whether the door is locked and the windows closed.

_____ 32. It takes a lot of argument to convince most people of the truth.

_____ 33. I am not easily awakened by noise.

ID # _____

_____ 34. Most people will use somewhat unfair means to gain profit or an advantage rather than to lose it.

_____ 35. I have very few quarrels with members of my family.

_____ 36. Often I can't understand why I have been so cross and grouchy.

_____ 37. I rarely wonder what hidden reason another person may have for doing something nice for me.

_____ 38. Criticism or scolding hurts me terribly.

_____ 39. I am not often troubled with disturbing thoughts.

_____ 40. I certainly feel useless at times.

_____ 41. I have daydreams that I make a fool of someone who knows more than I do.

_____ 42. At times my thoughts have raced ahead faster than I could speak them.

_____ 43. I never get angry.

_____ 44. It makes me impatient to have people ask my advice or otherwise interrupt me when I am worrking on something important.

_____ 45. I have sometimes felt that difficulties were piling up so high that I could not overcome them.

_____ 46. Everything is turning out just like the prophets of the Bible said it would.

_____ 47. People have too much sex on their minds.

_____ 49. What others think of me does not bother me.

_____ 50. I sometimes tease animals.

_____ 51. I am against giving money to beggars.

_____ 52. Most nights I go to sleep without thoughts or ideas bothering me.

ID # _____

_____ 53. It makes me uncomfortable to put on a stunt at a party when when others are doing the same sort of thing.

_____ 54. I tend to get along well with people and am liked by almost everybody.

_____ 55. At times I am all full of energy.

_____ 56. Bad words, often terrible words, come into my mind and I cannot get rid of them.

_____ 57. I find it hard to make talk when I meet few people.

_____ 58. I have a habit of counting things that are not important such as bulbs on electric signs, and so forth.

_____ 59. I get mad easily and then get over it soon.

_____ 60. I find it hard to set aside a task that I have undertaken, even for a short time.

_____ 61. Sex education should not be part of the high school cirriculum.

_____ 62. When in a group of people I have trouble thinking of the right things to talk about.

_____ 63. I never get so mad as to feel like beating or smashing things.

_____ 64. I think nearly anyone would tell a lie to keep out of trouble.

_____ 65. I almost never think of things too back to talk about.

_____ 66. I have periods in which I feel unusually cheerful without any special reason.

APPENDIX F

CODING KEY FOR DATA ANALYSIS

CODE BOOK

Label	Variable	Column	Size	Variable (Range)
ID		1-4	4	Patient ID Number
HOSP	1	1	1	Hospital 1 = VAH Portland 2 = OHSU Portland 3 = St. Vincents Portland 4 = Alvarado San Diego
IHLC	2	6-7	2	Internal HLC (6-36). Higher score indicates internalization.
POHLC	3	8-9	2	Powerful Others HLC (6-36). Higher score indicates externalization to powerful others.
CHLC	4	10-11	2	Chance HLC (6-36). Higher score indicates externalization to chance.
RS	5	17-18	2	Repression/Sensitization (0-30). Higher score indicates sensitization; lower score indicates repression.
PH	6	19-20	2	Prior Health (3-15). Higher score indicates a more positive perception.
CH	7	21-22	2	Current Health (9-45). Higher score indicates a more positive perception.
HO	8	23-24	2	Health Outlook (4-20). Higher score indicates a more positive outlook.
HWC	9	25-26	2	Health Worry/Concern (4-20). Higher score indicates more worry and concern about health.

RSI	10	27-28	2	Resistance/Susceptibility to Illness (4-20). Higher score indicates more perceived resistance to illness.
SO	11	29-30	2	Sickness Orientation (2-10).

RSI	10	27-28	2	Resistance/Susceptibility to Illness (4-20). Higher score indicates more perceived resistance to illness.
SO	11	29-30	2	Sickness Orientation (2-10). Higher score indicates more orientation toward sickness.
AGE	12	36-37	2	Age in Years (18-82).
SEX	13	38	1	Gender (1-2). 1 = Male 2 = Female
MS	14	39	1	Marital Status (1-5). 1 = Married 2 = Divorced 3 = Widowed 4 = Never married 5 = Cohabitation
ED	15	40-41	2	Education (1-17) Number in years. Highest grade 1-12 College 13-16 Postgraduate 17
OCC	15	42-43	2	Occupation (1-10). 1 = Professional 2 = Manager or owner of business 3 = Farmer (owner or manager of at least 100 acres) 4 = Clerical, sales, technician 5 = Skilled craftsman, foreman 6 = Operative, semi-skilled 7 = Service worker 8 = Unskilled 9 = Farm labor (owner of less than 100 acres 10 = Housewife

EMP	17	44	1	Employment (1-4) Mode used for housewife. 1 = Full-time 2 = Part-time 3 = Unemployed 4 = Retired
INC	18	45-46	2	Income (1-18) Mean used when not specified. 1 = $50,000 or more 2 = $25,000 to $49,999 3 = $15,000 to $24,999 4 = $12,000 to $14,999 5 = $10,000 to $11,999 6 = $ 9,000 to $ 9,999 7 = $ 8,000 to $ 8,999 8 = $ 7,000 to $ 7,999 9 = $ 6,000 to $ 6,999 10 = $ 5,000 to $ 5,999 11 = $ 4,000 to $ 4,999 12 = $ 3,500 to $ 3,999 13 = $ 3,000 to $ 3,499 14 = $ 2,500 to $ 2,999 15 = $ 2,000 to $ 2,499 16 = $ 1,500 to $ 1,999 17 = $ 1,000 to $ 1,499 18 = less than $ 1,000
NHD	19	50-51	2	Length of time in hospital in days (1-56).
LOI	20	52-54	3	Length of illness--awareness of symptoms--in months (1-391)
LRC	21	55-57	3	Period of time since chances were made in one's living routine because of illness (1-391).
DX	22	58	1	Primary diagnosis for current admission (1-3). 1 = Hemodialysis 2 = Peritoneal dialysis 3 = ESRD pre-dialysis stage

SES	23	59-60	2	Socioeconomic Status (1-100). From Duncan in Reiss; Table B-1 Socio-Economic Status Index for Occupations in the Bureau of Census in 1950. (Duncan in Reiss, 1961). Higher scores indicate more professional occupations.

AN ABSTRACT OF THE THESIS OF
MARCIA NIELSEN

For the MASTER OF NURSING
Date of Receiving this Degree: January 3, 1986
Title: DETERMINANTS OF PERCEIVED HEALTH IN HOSPITALIZED END-STAGE RENAL DISEASE PATIENTS

APPROVED: [redacted]
May Rawlinson, R.N., Ph.D., Thesis Advisor

This study addressed the problem of persons with comparable objectively assessed disabilities responding with great variation in resultant level of adaptation. The research questions developed out of clinical concern for the poor level of coping in dialysis patients and the importance of understanding factors that affect it. Of primary interest in the present study is the concept of health perception which was conceptualized as a variable intervening between objective physical status and health outcome.

The research examined:

1. What relationship exists between selected demographic, sociopsychologic and sociomedical variables and the hospitalized ESRD patient's health perception?

2. What is the relative contribution of each variable in predicting health perception in the ESRD population?

The present study replicated Hefty's (1982) research on health perception in hospitalized cardiac patients. Both studies were secondary analyses of a larger consortium study. Results of the present investigation were compared with Hefty's findings.

This descriptive and correlational study identified systematic relationships between selected predictor variables and health perception. The sample consisted of 66 hospitalized ESRD patients which was partially comparable to the U.S. dialysis population. Ware's Health Perception Questionnaire II measured the criterion variable. Epstein Fenz's Repression-Sensitization Scale and the Multidimensional Health Locus of Control Scale (Wallston et al. 1978a) measured the sociopsychological variables. A questionnaire developed by the primary investigators measured sociomedical and demographic variables. Analyses included the calculation of zero-order correlations between the variables and the use of stepwise multiple regression analyses to formulate prediction equations for the six dimensions of health perception.

The results of the stepwise multiple regression showed that four different predictor variables predicted four of the six dimensions of general health perception for the ESRD patients. Health worry and resistance-susceptibility to illness were the most strongly predicted dimensions. In the ESRD sample, internal health locus of control (HLC) and powerful others HLC significantly predicted variance in four general health perception dimensions.

There was no statistically significant difference between the health perception scale scores of the ESRD and cardiac illness groups. However, variables which predicted health perception

varied between the ESRD and cardiac samples. It took fewer variables to predict health perception for the ESRD sample than for the cardiac sample. Both the ESRD and cardiac patients rated prior, current and future health perception less favorably than healthy field test subjects (Ware, 1978).

Health locus of control consistently predicted most dimensions of health perception in the ESRD sample, suggesting that control issues may be highly influential in determining health perception in this population. This may be related to the unique dependency of the dialysand on health care providers, machines, and societal funding for continued life maintenance.

Although the present study accounted for a significant amount of the variance in health perception of the ESRD patient, other variables are needed to fully account for health perception variance. Future research on health perception in dialysis patients could be refined by:

1. The use of a more representative sample of the ESRD population;

2. The use of inventories more sensitive to chronic illness populations:

    a. Emphasize the negative end of the health status continuum;

    b. Use a dialysis-specific HLC instrument; and

c. The addition of open-ended clarification questions in the HLC instrument to increase comprehensiveness of measurement.

3. The concurrent use of objective physical status measurement.

The multidimensional complexity and combined subjective/objective quality of health perception represent a compelling area for future nursing research (Engel, 1984). Rehabilitation is one of the primary foci of nursing. Further research on determinants of health perception would refine the understanding of variables amenable to influence and potentially improve rehabilitation outcome. Of particular interest in the ESRD patient is locus of control in relation to health perception.