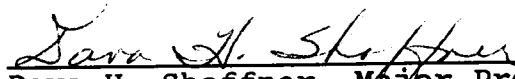
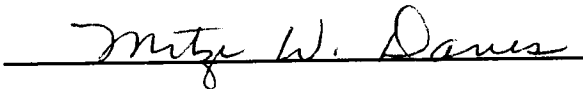


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RELATIONSHIPS AMONG EXERCISE OF SELF-CARE AGENCY,
HEALTH LOCUS OF CONTROL, AND COMPLIANCE
OF THE HEMODIALYSIS PATIENT

A Thesis
Presented for the
Master of Science
Degree
The University of Tennessee, Knoxville

Kay Gibson Matlock

May, 1991

DEDICATION

This work is dedicated to my husband

Neal C. Matlock, Jr.

whose support, understanding, encouragement, patience and

love have made this educational experience possible

and to the memory of

Neal C. Matlock, Sr. - Father-in-law

June 18, 1990

and

Claude J. Smith - Uncle

December 29, 1990

both of whom were hemodialysis patients whose lives

influenced mine both personally and professionally.

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ABSTRACT

This research project was designed to identify relationships among exercise of self-care agency, health locus of control and compliance of the hemodialysis patient. Instruments which measure exercise of self-care agency and health locus of control were administered to hemodialysis patients undergoing dialysis treatments in three outpatient dialysis units. Compliance indicators which included serum potassium, serum phosphorus, serum blood urea nitrogen and weight gains between treatments were compiled from the patient's medical record for a period of six months. Compliance data was correlated to scores on the written instruments. Additional demographic data and patient knowledge of the prescribed dialysis regimen were obtained through patient completion of a demographic data and screening tool.

Analysis of the data indicates that no significant relationships exist between health locus of control, exercise of self-care agency and compliance of the hemodialysis patient. These findings were not congruent with the those suggested by the conceptual framework, which suggested that the compliant patient would have an internal health locus of control and high exercise of self-care agency. While the study did indicate a high exercise of self-care agency of compliant patients, the health locus of

control of the compliant patient was found to be of external orientation. Other findings of the study suggested a lack of patient knowledge of prescribed medical regimen in all areas of compliance.

Recommendations for future nursing research include both larger and longitudinal studies on self-care, compliance, health locus of control, and educational endeavors in the patient on dialysis. The unique aspects of serious chronic illness should direct some reconsiderations of the concepts of multidimensional HLOC and self-care in the development and use of both new and revised measurement tools.

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LIST OF ABBREVIATIONS

Health Locus of Control	HLOC
Exercise of Self-care Agency	ESCA
Potassium.....	K ⁺
Phosphorus.....	PO 4
Blood Urea Nitrogen	BUN

CHAPTER I

INTRODUCTION

Patient compliance to prescribed health care regimen has been a long standing controversial issue for nursing. While valuing the end result of patient compliance, nursing has struggled with the process for attainment of this goal.

Viewed as passive adherence to a prescribed health care regimen, the concept of compliance has traditionally not addressed the issue of self-control over one's lifestyle or behavior (McCord, 1986). Compliance research has dealt with the behaviors of either a compliant or a non-compliant patient rather than with the issue of compliance or non-compliance as a choice of the individual (Burckhart, 1986). Some element of coercion can be identified in the concept of compliance in that the patient sees the health care professional as an authority figure and the only choice is perceived as that of right (compliance) or wrong (non-compliance) from the patient's point of view. (Barofsky, 1978; Burckhart, 1986). Beliefs about and expectations of compliance by health care professionals have failed to recognize the patient's need for autonomy. Health care professionals have expected compliance to occur simply because they believe it to be the best action for the patient to take. The patient has typically had little input

or decision making power in the planning of health care (Burckhart, 1986).

Interest in the concept of compliance has emerged in conjunction with advanced technologies now available in the medical field. People with chronic illnesses now have a longer life span due to advanced technology. The consumer of health care services has shown more interest in compliance through active participation in health promotion and maintenance. Compliance has become of interest to society through demands for reduction of high health care costs and the realization that non-compliance contributes to rising health care costs (Baer, 1986). Treatment of end stage renal disease is an area in which health care costs are high due to the advanced technology of dialysis and non-compliance.

Hemodialysis for the end stage renal disease patient is among the advances in technology that enable the chronic renal failure patient to experience a longer life span. It is also an area in which the effectiveness of the medical regimen is dependent upon the patient's compliance to prescribed treatment regimen, dietary restrictions, fluid restrictions and prescribed medications. The entire medical regimen is complex and includes modification of life style in order to maintain well-being.

Non-compliance in this population of patients may result in complications including nausea, vomiting, diarrhea,

hypotension, hypertension, congestive heart failure, pulmonary edema, cardiac arrhythmias, seizures, cerebral vascular accidents and/or death. Each of these complications results in more costly medications, more frequent or longer dialysis treatments, more frequent hospitalizations and increased costs related to long term complications.

The personal self-care system is composed of those actions the patient initiates toward self or the environment in order to maintain personal well-being (Orem, 1985). Hemodialysis is generally performed on an outpatient basis with the patient maintaining responsibility for personal self-care between treatments. Thus, the area of compliance to diet, medications, treatment appointments and fluid restrictions are components of the patient's self-care system. The extent of perceived control over personal health status by the patient influences the incorporation of compliance into the self-care system. Development of the compliance regimen into the individual's self-care system should begin early in the course of the disease and should include the patient as an active participant in the health care plan.

Purpose of Study

The purpose of this study was to investigate the relationships among the ability and willingness to perform self-care, the extent of perceived control over personal health care status by the patient, and compliance of the hemodialysis patient.

Background and Significance

Life style changes and behavior modification are necessary adjustments the hemodialysis patient must make in order to receive the maximum benefit of dialysis. These changes represent compliance to the prescribed regimen and must be incorporated into the patient's self-care system. Incorporation of these changes into the self-care system will be influenced by the patient's perception of the impact the self-care actions will exert on personal well-being and the ultimate outcome of the illness. The abilities of the patient to engage in deliberate actions of self-care will also influence the degree of compliance.

Non-compliance in the end-stage renal disease population is a very real nursing problem. Fluid overload, electrolyte imbalances, and failure to take medications contribute to making dialysis a complicated procedure with which nurses must deal, as well as creating a life

threatening situation for the patient. Non-compliance results in a general decline in the patient's perception of well-being and often leads to complications involving other body systems.

Benefits of incorporating compliance into the self-care system include less frequent hospitalizations, decreased amounts and kinds of medications, shorter lengths of dialysis treatments, fewer complications from involvement of other body systems and lower health care expenditures. In addition, the patient generally feels better and often can continue to work and to enjoy previous leisure activities. Inclusion of the patient in determining long term goals increases the commitment of the patient to the goals and allows the patient some control over the goals. Through mutual setting of goals and planning of self-care activities, the patient and nurse can explore alternate means of attaining the desired results, thus allowing the patient some decision making powers in these processes. With adequate knowledge, the patient can exercise the ability to recognize required actions and the ability to make decisions regarding the carrying out of prescribed actions.

Early identification of the renal patient who has a high potential for non-compliance would indicate a need by nursing for concentration on interventions such as emotional support and continued education to enhance patient

compliance. Early identification of the potential non-complier by nursing would permit early collaboration with other health team members (physician, dietician, social worker) in planning self-care activity with the patient. Nursing interventions which assist the patient to incorporate compliance into the self-care system will have an impact upon the outcome of individual dialysis treatments, long range health status of the patient, and financial costs of both treatments and management of complications.

Conceptual Framework

Self-care is defined by Orem (1985, p.31) as "the production of actions directed to self or to the environment in order to regulate one's functioning in the interests of one's life, integrated functioning and well-being." One's personal self-care system is inclusive of all the actions directed to self or the environment for the purpose of maintaining one's well-being and integrated functioning. Underlying Orem's theory of self-care is the basic assumption that all human beings have self-care requisites which include those of universal self-care requisites, developmental self-care requisites, and health deviation self-care requisites (Orem, 1985). Under normal circumstances, people learn to take care of themselves and

possess both a right and a responsibility for self-care (Orem, 1985).

Health deviation self-care requisites are those requirements of the individual which exist in relationship to illness, injury or pathology and for which the individual is receiving medical treatment (Orem, 1985). Both the "disease state and the measures used in its diagnosis and treatment" (Orem, 1985, p.99) result in health deviation self-care requisites.

Self-care agency is conceptualized by Orem (1985) as "taking the form of a set of human abilities for deliberate action" (p. 107). Orem (1985, p. 107) identifies these abilities as

1. the ability to attend to specific things (this includes the ability to exclude other things) and to understand their characteristics and the meaning of the characteristics;
2. the ability to apprehend the need to change or regulate the things observed;
3. the ability to acquire knowledge of appropriate courses of action for regulation;
4. the ability to decide what to do; and
5. the ability to act to achieve change or regulation.

"The content of self-care agency derives from its proper object, meeting self-care requisites, whatever those requisites are at specific moments" (Orem, 1985, p. 107).

Adequacy of self-care agency is measured by comparison of the self-care abilities of the individual to the therapeutic self-care requisites of the individual (Orem, 1985). A self-care deficit exists if the self-care agency is found to be inadequate to meet the self-care demands.

Orem (1985) recognizes that self-care deficits may stem from several conditions which include failure to exercise self-care actions, inadequate self-care actions, lack of sufficient knowledge to make self-care decisions, and deficits which result from newly imposed self-care demands related to health deviation self-care requisites. Of great importance is the realization that self-care deficits may occur not only due to failure to exercise self-care actions, but also when the self-care actions exercised are ineffective.

Self-care actions are deliberate actions by the individual and require individual decision making. Factors that may influence this decision making process include past experiences, learned cultural behaviors, habits, motivation toward meeting the self-care requisite, skills, goals and values, and knowledge. Orem (1985) states that deliberate action is "always self-initiated, self-directed, and controlled in regard to presenting conditions and circumstances" (p. 116). The individual may recognize self-care demands as self-care requisites or health care professionals may place the demands upon the individual. These demands may either be incorporated into the self-care system or the individual may ignore the demands. (Orem, 1985).

The chronic hemodialysis patient experiences many health deviation self-care requisites. There are deviations in

universal self-care requisites such as maintenance of adequate water, food and oxygen, and in elimination of wastes. Developmental self-care requisites are altered through the occurrence of an unexpected life event in the form of a chronic disease for which there is no cure. In order to effectively handle these health deviation self-care requisites, the individual must incorporate into the self-care system changes in diet and fluid intake as well as regular dialysis treatments and prescribed medications. These modifications in lifestyle when effectively carried out by the individual constitute patient compliance to prescribed regimen. Compliance to a prescribed regimen requires patient identification of health deviation self-care requisites and exercise of adequate self-care actions to satisfy these demands as conceptualized by Orem. The presence of self-care deficits as conceptualized by Orem is the result of failure to adequately meet these requisites or non-compliance.

Self-care deficits resulting from non-compliance will necessitate nursing action to increase the adequacy of the self-care agency. Orem (1985) identifies three systems of nursing, one of which is supportive-educative. As the chronic dialysis patient is responsible for self-care actions on an outpatient basis, the presence of self-care deficits related to health deviation self-care requisites will require much supportive-educative nursing intervention.

Active participation of the patient in assuming responsibility for self-care and in planning self-care actions and long-term goals will increase the adequacy of the self-care agency through better compliance to prescribed regimen. However, compliance can occur only if the individual has experienced adequate education regarding diet, fluid and medication regimens coupled with nursing encouragement and support for compliance to the regimen.

Orem recognizes that self-care actions must be congruent with the individual's beliefs and values if they are to be incorporated into the self-care system (Orem, 1985). The individual's beliefs that compliance to prescribed regimen will have a positive impact on the end results of the disease process will effect the incorporation of compliance into the self-care system. Health locus of control of the individual deals with the belief or disbelief that personal actions will have an impact upon the ultimate outcome of a given health related situation (Arakelian, 1980). Individuals with an internal health locus of control can be said to perceive their own actions as having a causal relationship to their health, whereas, those with an external health locus of control perceive fate or chance as having a causal relationship to their health.

In studying the dialysis patient's compliance behaviors and applying Orem's theory of self-care, one would expect to find a positive relationship between exercise of self-care

agency and internal health locus of control in the compliant or potentially compliant patient. In contrast, according to Orem's theory of self-care, a positive relationship would be expected to exist between an inadequate or low level of exercise of self-care agency, an external health locus of control, and non-compliance.

Statement of the Problem

This study was conducted for the purpose of investigating the relationship of health locus of control and exercise of self-care agency to compliance of the hemodialysis patient.

Research questions are:

1. What are the relationships among health locus of control, exercise of self-care agency and compliance of hemodialysis patients?
2. What is the difference in health locus of control of the compliant and the non-compliant hemodialysis patient?
3. What is the difference in exercise of self-care agency of the compliant and the non-compliant hemodialysis patient?

Operational Definitions

1. Compliance - the extent to which the patient's self-care actions include the health deviation self-care requisites of dietary restrictions as measured by serum potassium, serum protein, and blood urea nitrogen levels compared to acceptable lab values; fluid restrictions as measured by weight gains between treatments and compared to physician acceptable weight gains; and medications as measured by serum phosphorus levels and compared to acceptable lab values

2. Health locus of control - the belief or disbelief one has that self-care actions contribute to the health and well-being of oneself as measured by the Health Locus of Control Questionnaire indicating either an internal health locus of control, belief that one's actions have a causal relationship to one's health; or an external health locus of control, belief that fate or chance have a causal relationship to one's health

3. Self-care agency - the abilities of the patient to exercise deliberate, self-directed, and self-controlled actions as measured by the Exercise of Self-Care Agency instrument with a high score indicating the individual possesses the abilities necessary for adequate self-care actions required to satisfy the health deviation self-care

requisites which are imposed by renal failure and hemodialysis

Assumptions

1. All hemodialysis patients have self-care requisites which require deliberate self-care actions in order to satisfy the requisites.
2. Every hemodialysis patient has both a right and a responsibility to exercise actions of self-care.
3. Health deviation self-care requisites exist in conjunction with end stage renal disease and hemodialysis treatments.
4. Self-care deficits exist when the self-care agency is inadequate in satisfying the health deviation self-care requisites.
5. Instruments used are valid measurements of health locus of control and exercise of self-care agency when they are completed by or for the hemodialysis patient.
6. Hemodialysis patients will answer the questionnaires honestly and without bias.

CHAPTER II

REVIEW OF LITERATURE

Introduction

Compliance to prescribed dialysis regimen represents a challenge to both the patient and to the nephrology nurse. The prescribed dialysis regimen is one which is often complex and difficult to achieve; yet the patient's long-term well-being is influenced by compliance or non-compliance to the dialysis regimen. In spite of the clearly desirable need for following the regimen, non-compliance is often encountered in this patient population.

Attempts have been made to correlate compliance with variables such as denial, social support, pain, personality traits and religion. In addition, demographic characteristics of the hemodialysis patient including age, sex, race, marital status and educational level have been considered as possible indicators of compliance.

Self-care activities and health locus of control have not been studied extensively in the hemodialysis patient population. Dialysis patients have traditionally been dependent upon dialysis nurses for the majority of their dialysis related care. In addition, they have been found to exhibit high levels of denial which is thought to influence

their exercise of self-care and foster a dependence on others.

Compliance

Measurements of compliance and non-compliance of dialysis patients have included laboratory values of serum potassium, serum phosphorus, serum BUN levels and weight gains between dialysis treatments (Agashua et al., 1981; Hume, 1984; O'Brien, 1980). Researchers have used these criteria or some combination of these criteria to determine compliance and to relate compliance to specific variables.

Compliance data was reported as part of a pilot study in which patterns of individual decision making relative to therapeutic options in dialysis were addressed (O'Brien, Donley, Flaherty, & Johnstone, 1986). The pilot study was part of a four year longitudinal study in which the 35 subjects were patients who represented three major dialysis centers in east coast metropolitan areas. The overall impact of dialysis on the hemodialysis patient was measured using the Sickness Impact Profile (SIP). Compliance was measured by use of prepared dialysis regimen compliance scales. Results showed a trend toward positive compliance in the area of medications with a trend toward non-compliance in the area of fluid restrictions and diet. Areas in which the SIP identified the fewest problems were

those of social interactions, sleep, rest and eating. Moderate problems were identified in the areas of emotional needs, body care and movement. Severe problems were identified in the areas of alertness behavior, communication and home management. No data was reported as to relationships of these identified problems with the level of compliance of the patients. A second study of 10 dialysis patients replicated the pilot study. Compliance in this group was reported as moderate. Results from the longitudinal study are unavailable at this time.

The relationship of patient denial to compliance was explored by Streltzer, Seimsen, and Yanagida (1981) in a study of 31 hemodialysis patients of a hospital based outpatient dialysis center. Denial was measured by use of items taken from the Marlowe-Crowne Social Desirability Scale (MCSDS) while compliance was measured by records of weight gains between dialysis treatments. Results indicated high scores on denial in the hemodialysis population as compared to non-dialysis populations but no relationship was found to exist between denial and compliance.

Compliance of adult hemodialysis patients was expected to improve with implementation of nursing intervention aimed at helping the dialysis patient identify barriers and benefits of compliance in a study conducted in a Veterans Administration Hospital (Parker et al., 1985). Compliance of 8 dialysis patients was measured by evaluation of patient

weight gains between treatments, blood pressure, serum potassium, serum BUN, and serum phosphorus. The study used a quasi-experimental design with patients serving as their own control. Compliance values were obtained prior to implementation of nursing intervention to identify barriers and benefits of compliance based upon the Health Beliefs Model. Implementation took place over a four week period and included eight sessions with predetermined content. Compliance values were obtained after the implementation of the nursing interventions and compared to pre-implementation values. There was no notable improvement in compliance of the patients with the exception of a lowered blood pressure during the treatment period which was not maintained after the study was completed.

Binik et al. (1982) explored the effect of pain on compliance of 53 dialysis and transplant patients undergoing treatment in a hospital based dialysis unit. Compliance was determined by weight gains between treatments, serum potassium, serum phosphorus and serum BUN levels. Pain was assessed through direct patient interviews and use of the McGill Pain Questionnaire and the North Carolina Pain Questionnaire. No significant relationship was found to exist between pain and patient compliance.

O'Brien (1980) reported a three year study of 126 dialysis patients from three dialysis units based in an urban medical center, a military facility, and a city

general hospital. The purpose of the study was to determine if there was a significance between the presence of support systems of dialysis patients and their compliance. Results indicated a significant relationship between primary group expectational systems (family) and compliance, $r = .45$, $p = <.01$. A relationship between secondary expectational systems (nurses, etc.) and compliance was also found to be significant, $r = .69$, $p = <.01$. Sociodemographic data did not significantly correlate to compliance with the exception of finding decreased compliance in unskilled workers compared with increased compliance of professional workers. Single patients who had never been married demonstrated decreased compliance. Compliance was also found to decrease over time.

Investigation of the relationship between social support and compliance in dialysis patients was also reported by Hilbert (1985). The study group consisted of 26 dialysis patients. Compliance was measured by self-report of the patients as to medication compliance, fluid compliance and diet compliance. Further evaluation was done through examination of laboratory data and actual weights. Social support was measured by use of a support questionnaire consisting of items taken from the Inventory of Socially Supportive Behaviors. Two subscales, directive guidance (support from nursing, physicians, etc.) and affection (support from significant others) were utilized from this

questionnaire. Self-reported compliance was reported positively by 76% of patients. A positive relationship was noted between dietary and fluid compliance ($p = <.002$) and between medication and fluid compliance ($p = <.05$). Social support was found to be significantly related to compliance only in the directive guidance subgroup. Analysis of demographic variables including social class, religion, sex, person named as significant other and length of time on dialysis was done. The only variable found to be significantly related to compliance was time on dialysis. Patients who had been receiving dialysis for five years or more were more non-compliant.

A retrospective study by Manley and Sweeney (1986) reported positive relationships of global staff assessments of compliance to actual biological markers of compliance. The study was based on data gathered on 34 patients in an outpatient dialysis unit. Compliance data included weight and laboratory values of BUN and potassium. Compliance was rated as good, fair, or poor based on this data. Non-compliance as measured by the biological markers did not correlate significantly with increased complications or to length of time receiving dialysis treatments. The researchers found that 100% of the patients were rated as poor compliers.

Dietary compliance of the hemodialysis patient in relationship to nurse-patient interactions was studied by

Rorer, Tucker, and Blake (1988). Nurses (n = 13) and patients (n = 38) were randomly paired within the independent outpatient unit in which the study was conducted. A modified version of the Interaction Process Analysis (IPA) was used to measure interactions. Compliance was measured by average weight gain. Findings were significant for two variables compared to non-compliance: nurse emotionally positive and nurse emotionally negative. No relationship was found to exist between non-compliance and treatment related information given by nurses or to treatment related questions asked by nurses.

Parker (1981) compared anxiety in dialysis patients (n = 20) to complications occurring in hemodialysis patients. The complication of fluid overload (fluid non-compliance) was found to occur more frequently in persons with high levels of trait anxiety. This finding was thought to be related to the increased use of denial by anxious patients resulting in lower compliance although no evidence to support this explanation was collected.

Prediction of compliance to diet regimen was performed by Agashua et al. (1981) based on current behaviors of 35 dialysis patients. Data was gathered which included blood work and demographic information for the first twenty dialysis treatments. From this data predictions were made as to compliance or non-compliance of the patient in the future. Compliance was again measured for a later twenty

week period. The researchers found that they could predict non-compliance 80 - 83 % of the time based upon the original behaviors.

Winkokur, Czaczkes, and De-Nours (1973) investigated the relationship of intelligence and adaptation to dialysis. Intelligence of 38 chronic dialysis patients was measured using the Wechsler Bellevue Intelligence Test and the Rorshach Draw A Person and Sentence Completion Test. Adaptation to dialysis was measured by weight gains, potassium levels and vocational functioning. It was found that patients who continue to work after initiation of dialysis demonstrated increased compliance to diet. Diet adherence was correlated significantly with an intelligence subtest score of 8 or below on arithmetic scores (dull-normal level). These patients tended to adhere better to prescribed diet. Intelligence did not correlate significantly with other areas of adherence or compliance.

A study of 43 dialysis patients looking at personality factors as they relate to non-compliance was done by De-Nour and Czaczkes (1972). Non-compliance was measured by weight gains, serum potassium and serum sodium levels. Personality factors were identified by the interviewing of the patients by the authors. Decreased compliance was found to be related to low frustration levels, acting out of hostility and excessive primary gain from the sick role.

O'Brien (1982) found that religious faith related to compliance in a study of 126 dialysis patients from three large metropolitan hospital-based units. A more positive attitude toward the importance of faith was found to be the most positive assumption of sick role behavior as it was manifested by compliance to medical regimen.

Although several studies have been done looking for relationships between compliance and other variables of hemodialysis patients, none have been conclusive. Parameters of compliance in this patient population are readily available and can be objectively measured, however, the parameters have been utilized in varying ways within the studies on compliance. Research findings have varied depending on parameters used and some findings have been in conflict with other studies. No clear relationships between compliance and studied variables have been demonstrated and follow up studies have not been performed.

Self-Care

Starzomski (1986) reported the development and implementation of a comprehensive patient education program in which one of the stated objectives was that of enhancing self-care activities of the renal patients for which it was developed. The developers believed that the dialysis patient has the right and responsibility to exercise self-

care but also have the right to exercise decision-making in the selection of a mode of treatment combined with some control and decision-making in the planning of individual care. Evaluation of the program was performed through use of a pre and post evaluation instrument. Results indicated that patients felt the program was helpful to them in making dialysis related decisions as to treatment modalities, diet modifications and fluid modifications. The small size of the sample ($n = 7$) was cited as a limitation to generalization although data substantiated the need for individualized treatment programs.

Rosenbaum and Smira (1986) studied self-control skills and resourcefulness of hemodialysis patients in coping with the self-care demands of fluid restriction. Fifty-three dialysis patients from three hospital-based dialysis units took part in the study. Data regarding the patient's perception of past adherence to dialysis regimen, and the patient's health beliefs and coping mechanisms was assessed for a period of three months prior to the study, three months after the study and twelve months after the study. Weight gains were utilized for the same periods to determine compliance. Rosenbalm's Self-Control Schedule (SCS) scores were found to correlated with weight gains and confirmed the hypothesis that patient resourcefulness relates significantly to the ability of the patient to cope with fluid restrictions. The study failed to show relationships

between health beliefs, motivation, or perceived difficulty in complying, to actual compliance. High levels of self-control skills were found to be related to increased compliance.

A study by Stevenson (1984) of 10 hemodialysis patients examined problems as perceived by the patient as being related to the dialysis regimen. Identified problems included anxiety about self-care ($n = 6$), changes in lifestyle ($n = 7$), diet and fluid restrictions ($n = 6$), and dependency ($n = 4$). The purpose of the study was to identify patient problems from a patient's viewpoint. Implications cited from the results of the study included the suggestion for future research regarding those problems identified by the patients and how nursing can best assist the patient to overcome them.

Home hemodialysis as a treatment modality to increase self-care actions of dialysis patients thus decreasing patient dependency was reported by a group of physicians at Mayo Clinic (Johnson, et al., 1984). Other results expected included less stress to patients, enhancement of self-sufficiency and sense of self-esteem, and increased vocational rehabilitation. The study included 147 home hemodialysis patients who were followed for a period of 12 years. Compliance was a factor considered in the overall evaluation of the program and was found to be consistently satisfactory utilizing weight gains, serum potassium, serum

phosphorus and serum BUN levels as indicators. No significant relationships were found to exist between vocational rehabilitation and home hemodialysis. Although home hemodialysis reduced stress levels of the patients it was also found to increase family stress especially for spouses who assisted the patient and for children in the home.

A study of self-care practices of 230 patients of two hemodialysis centers in Hawaii was performed under the direction of King (1981). Self-care practices of use of non-prescribed treatments for chronic illness were evaluated. The study concluded that there was widespread use of non-prescribed treatments within this hemodialysis population. Most patients, however, used treatments which were not necessarily harmful or contraindicated even though they were used without the advice of medical personnel. The most frequently used self-care, non-prescribed treatments were those of prayer and exercise. The study also indicated that females were higher users than males while the characteristics of age, religion and education were not significantly related. The study indicated that self-care practices were not dependent upon medical recommendations and that patients perform non-prescribed self-care activities even when they are treated in a highly controlled medical care program.

Effects of self-care education on medical visits was explored in a study of 2,833 households by Vickery, et. al. (1983). The participating households were divided into 4 groups 3 of which received self-care information and the fourth which served as a control group. Interventions included a telephone information service for one group; written educational material for a second group; and individual counseling for the third group. All three groups which received self-care education were found to have fewer office visits than the control group. The most significant decrease in visits was demonstrated by the group who received written materials. These findings indicate that self-care actions can be influenced through self-care education.

Jones and Preuett (1986) studied the self-care activities utilized by hemodialysis patients with a sample group of 25 participants. Through an interview technique, patients identified specific self-care actions which they utilized to deal with stressors associated with hemodialysis. Four distinct patterns of self-care activity were identified: equalizing, substituting, withdrawing, and guarding. Actions identified under the pattern of equalizing included the balancing of time with work demands and with family activities and the balancing of financial demands of family and the illness. Substituting included actions of selecting alternative foods acceptable to the diet

restrictions and/or methods of dealing with thirst. Withdrawing included distancing oneself from discussions regarding the illness and from thoughts about the future outcome of the illness. Guarding included those actions taken to monitor the dialysis treatments and being alert to any body changes. The study indicated that hemodialysis patients adapt their self-care actions to deal with stressors associated with both the chronic disease and the treatment.

A study of patients being treated for hypertension was conducted by Swain and Steckel (1981) to determine the effect of clinic care, patient education and contingency contracting upon adherence to medical regimen. The sample included 115 patients all over the age of 18 years old. Patients were randomly assigned to one of the three interventions to be considered. Pre and post intervention tests of knowledge about their condition were administered. Results indicated that patients were lacking in knowledge about hypertension on the pre-test. Increased knowledge was demonstrated by both the group receiving patient education intervention and the group participating in contingency contracting. Blood pressure control increased significantly in the group participating in contingency contracting. These findings indicated that contingency contracting between the patient and the nurse resulted in self-care

actions which improved blood pressure readings and overall health in this sample.

The literature indicates that self-care and decision making are important issues in the hemodialysis patient population and suggest that these issues effect compliance of the hemodialysis patient. Problems which were identified by patients included issues which directly effect self-care and compliance, however, none of the studies directly deals with the exercise of self-care agency and compliance of hemodialysis patients. Studies are available which indicate that self-care actions of patients with other health problems have been affected by nursing intervention. Much has been written in nonresearch articles regarding self-care but few research studies have addressed this variable from a nursing perspective.

Health Locus of Control

Only one study was located which attempted to correlate health locus of control to compliance of hemodialysis patients. Brown and Fitzpatrick (1988) considered health locus of control, family support, and acceptance as variables affecting dietary compliance in a study of 41 hemodialysis patients. Instruments used were the Multidimensional Health Locus of Control, the Family Support Questionnaire, and an Acceptance of Dialysis Questionnaire.

Compliance was measured by weight gain, serum potassium and serum BUN levels. Dietary abuse was found to be high in 58% of the patients. Sex, social class and marital status were not found to be correlated to compliance. Increased length of time receiving dialysis was related to increased self report of compliance. Locus of control was not found to be significantly related to compliance in either patient self reports or by clinical indicators. Age and number of years on dialysis were not significantly related to locus of control.

A study reported by Saltzer and Saltzer (1987) examined the effects of chronic illness on locus of control. The chronic illness utilized in the study was that of acne and the sample included 116 college students. Results of the study indicated that scores on the Acne Locus of Control Scale (developed by the researchers) became more external with more serious experiences with the chronic condition. This finding suggested that in chronic diseases, experiences with or lack of experience with the health problem may influence the patient's locus of control.

Lynch, Ogg and Christensen (1975) reported a study of the effect of a counseling workshop on the locus of control of college students. Thirteen students participated in the workshop and completed both a pre and post workshop I-E (Internal-External) scale. A control group of 11 students who were not participating in the workshop also completed

the scales. Results indicated an increase in internality on post test results of those who participated in the workshop compared to no changes in the scores of the control group.

Muhlenkamp and Broerman (1988) reported a study of causal relationships among selected sociodemographic variables and locus of control related to health activities and health values. The sample size was 172 participants. Locus of control was measured by administration of the MHLC (Multidimensional Health Locus of Control Scale). Results of this study indicated that education directly affected all three dimensions of locus of control as measured by the MHLC. The value of health had no effect on MHLC.

Pawlicki (1976) examined the effects of self-directed behavior modification training on locus of control. Subjects were 55 psychology students, 26 of whom were enrolled in a course in self-directed behavior. The control group consisted of the remaining 29 students who were enrolled in a community psychology course. The I-E (Internal-External) scale was administered to both classes on the first day of class and again on the last day of class. Changes in scores of the students in the behavior modification training class showed a greater increase in internality than was seen in scores of the control group.

While only one study was directed toward health locus of control in hemodialysis patients and compliance, other studies have looked at factors which may effect one's health

locus of control. Among these factors are education, behavior modification and the effects of chronic illness which are also identified as factors which may effect compliance in hemodialysis patients. The studies indicated that health locus of control can be changed through nursing interventions.

Summary of Literature

Many studies have been conducted in attempts to determine the relationship of selected variables to compliance of the hemodialysis patient. Much of the research which has been done has been undertaken by researchers in disciplines other than nursing, and few studies have been done which have utilized a nursing theory as the framework of the study. Although many of these studies identify areas which nursing addresses, none of the studies address the specific relationship of exercise of self-care agency to compliance. Only one study was found which addresses the relationship of health locus of control to compliance in this population.

The field of nephrology nursing is a relatively recent development in nursing. Hemodialysis first became widely used in the 1970's. Although research has been done in the area of compliance and the renal patient, all variables have

not been explored and existing research has not been expanded upon.

The area of self-care and health locus of control are areas in which the dialysis nurse can have an impact upon the compliance of the renal patient. The question of the relationship of these variables to compliance of the hemodialysis patient remains unanswered.

CHAPTER III

METHODOLOGY

Design of Study

The study was a correlational, descriptive study of the relationships among exercise of self-care agency, health locus of control and compliance of hemodialysis patients. All patients were approached while undergoing treatment to eliminate the variable of different environments and different times. Contamination of treatments was controlled by the administration of tests to all participants in the study within the same unit and on the same treatment schedule on the same day. Transplantation as a motivator for compliance and self-care actions was eliminated by excluding those patients who are currently on a transplant waiting list. Patients with whom the researcher has interacted on a professional basis within the past 5 years were eliminated from the study in order to control for bias based on the participant's knowledge of the researcher's expectations in the area of compliance and self-care.

Extraneous variables which exist and cannot be controlled are:

1. Past exposure to compliance education may vary among patients.

2. Past experiences with non-compliance and the complications thereof may differ among patients.

3. Staff reactions and expectations of compliance may vary from unit to unit.

Instrumentation

The Exercise of Self-care Agency Scale (Appendix A) was used to evaluate the adequacy of the patient's self-care agency. This scale was developed by Kearney and Fleischer (1979) and is based on Orem's Self-care Theory. The scale consists of the elements of "(1) an attitude of responsibility for self-care; (2) motivation to care of self; (3) the application of knowledge to self-care; (4) the valuing of health priorities; and (5) high self-esteem" (Kearney & Fleischer, 1979, p. 27).

The instrument consists of a 5 point Likert scale ranging from very uncharacteristic (0) to very characteristic (4). The highest possible score on the instrument is 172, which indicates a high level of exercise of self-care agency. Reliability testing was done with a group of 76 nursing students utilizing the test-retest method with $r = .77$. Nursing students and psychology students ($n = 79$, $n = 84$, and $n = 153$) were also utilized to test reliability using the Spearman-Brown formula or split-half on three separate testings with $r = .80$, $r = .81$, and

$r = .77$ respectively. Mean scores on the instrument for nursing students was 122.72 ($n = 79$) with a range of 90 - 154 and standard deviation of 13.75; and 125.57 ($n = 84$) with a range of 81-157 and standard deviation of 14.26. Mean scores on the instrument for psychology students was 120.04 ($n = 153$) with a range of 91 - 151 and a standard deviation of 17.74 (Kearney & Fleischer, 1979).

Content validity was established by having the instrument reviewed by experts in self-care who were faculty members of the University of Southern Mississippi graduate nursing program. Comparison to the adjective checklist and Rotter internal-external locus of control instruments was utilized in establishing construct validity with significant correlations noted: adjective checklist for self-confidence, $r = .23$, $p = .05$; achievement, $r = .32$, $p = .01$; and intraception, $r = .26$, $p = .05$. A negative correlation was found with comparison to abasement, $r = -.35$, $p = <.01$.

The Health Locus of Control Scale (HLC) was used to assess the control an individual perceives oneself to have over one's own state of health. This instrument (Appendix B) was developed by Wallston, Wallston, Kaplan, and Maides (1976) and consists of a 6 point Likert scale ranging from strongly disagree (1) to strongly agree (6). Scores on the instrument may range from 11 (internal locus of control) to 66 (external locus of control).

Validity of the instrument was tested with a group of 22 women in a weight loss program by the test-retest method, $r = .71$. Reliability was tested with three separate groups of college students and a fourth sample group from the general community. Coefficient alphas for these sample groups varied from .40 to .72.

Criteria which was utilized to determine compliance included weight gains between treatments, and serum levels of potassium, phosphorus, and BUN (Appendix C). All laboratory data was reported by a certified laboratory and obtained from the patient chart. Content validity was established by having the instrument reviewed by a registered dietitian, a nephrologist and a nephrology nurse. Scoring of the data to determine compliance or non-compliance was done after determination of realistic and acceptable values in conjunction with a panel of experts consisting of two renal dietitians, one nephrologist, and three head nurses of dialysis units. Scoring of compliance (Table 3.1) was based upon methods reported by Brown and Fitzpatrick (1988). A score of 1 (indicating great abuse) to 4 (indicating excellent compliance) was assigned to each category of compliance (diet, fluid, and medications) according to predetermined, acceptable laboratory values. Mean scores of overall compliance were determined utilizing scores assigned to each individual variable. The median point of a scale of 1 - 4 (2.5) was used in determining

Table 3.1 Criteria used to score compliance.

	Excellent	Average	Some Abuse	Great Abuse
Clinical Measure	(4)	(3)	(2)	(1)
Weight Gain (kg)	< 1.0	1.0 - 1.9	2.0 - 2.4	> 2.5
K+ (mEq/l)	< 4.5	4.5 - 5.4	5.5 - 6.0	> 6.0
BUN (mg/dl)	< 50	51 - 80	81 - 100	> 100
PO 4 (mg/dl)	< 4.5	4.5 - 5.9	6.0 - 6.5	> 6.5

Source: Brown, J. & Fitzpatrick, R. (1988). Factors influencing compliance with dietary restrictions in dialysis patients. Journal of Psychosomatic Research, 32(2), p.193.

Note: Values adjusted and format adjusted for use with specific population based upon acceptable values identified by nephrologist, dieticians and head nurses. Scoring reversed from 4 being non-compliant to 4 being very compliant for ease in utilization of statistical software. Values for PO 4 added to table for use in this study.

compliance or non-compliance, with scores of 1 - 2.5 classified non-compliant and scores of 2.6 - 4 classified as compliant. Reliability was established through consultation with the physician, nurses, and dieticians of the three units in which data was gathered.

SUBJECTS

The sample for the study was a convenience sample taken from a population of 131 hemodialysis patients undergoing outpatient hemodialysis in units in Kingsport, Tennessee; LaFollette, Tennessee; and Knoxville, Tennessee. A sample size of 40 patients was selected through voluntary participation. Patients met the following criteria to be participants in the study:

1. Must be willing to voluntarily participate in the study.
2. Must have been receiving hemodialysis treatments for at least 6 months prior to initiation of the study.
3. Must not be currently on a transplant waiting list.
4. Must not be experiencing treatment related complications (hypotension, nausea, vomiting, or confusion) at the time of the interview.
5. Must not have had a nurse-patient relationship with the researcher within the past 5 years.

The participants included 19 male patients and 21

female patients of which 37 were white and 3 were black. Six patients lived in rural areas while 34 lived in cities or towns. Sixteen patients drove themselves to dialysis while 15 depended upon family and 9 upon public transportation. All patients had Medicare with 14 having Medicaid coverage and 18 having private insurance coverage. Patient ages ranged from 27 to 82 years with a mean age of 59.8 years. Time on dialysis ranged from 6 months to 204 months with the mean being 40 months. Patient diagnosis underlying end stage renal disease varied with the most common diagnoses those of chronic glomerulonephritis, diabetes mellitus, arterionephrosclerosis and hypertension. Other causes included polycystic disease, multiple myeloma, interstitial nephritis, obstructive hydronephrosis and lupus erythematosus.

Procedure

Approval of the research project was obtained from The University of Tennessee, Knoxville, Committee on Research Participation prior to initial contact with individual dialysis units or dialysis patients. Permission to utilize the dialysis units in the study was obtained from the administrator of each unit in written form (Appendix D) prior to initiation of the study. All participants signed

an informed consent statement (Appendix E) prior to initiation of the study.

Because the authors of the instruments did not include a time frame for administration a pilot study was conducted with 10 persons varying in age from 35 years to 70 years old in the researcher's home community to ascertain time required for completion of the instruments. The average time was 20 minutes.

Data collection techniques included (a) patient interview, (b) administration of written instruments, and (c) chart review. The patient interview included introductions and explanation of the project. The demographic data and screening tool was introduced and instructions given for completion of this form and the written instruments. The researcher was present for the administration of the written instruments and was available to assist any patient who could not read or write due to educational levels or due to being on dialysis at the time of the interview. No patients were identified who were illiterate. Patients whose dialysis needles prohibited writing were allowed to read the instrument and instruct the researcher what answers to mark. Patient charts were reviewed retrospectively to gather appropriate data including monthly laboratory test results, prescribed diet, prescribed medications, prescribed fluid restrictions and weight gains between dialysis treatments. Information was

gathered for a six month period retrospective to the initiation of the study. The same six month period applied to all patient records (June - November, 1990).

The researcher provided all necessary supplies for administration of written tests and for gathering of all data from the patient chart. Data collection took place over a period of two days in each unit.

Data Analysis

The research question regarding the relationships among health locus of control, exercise of self-care agency, and compliance of hemodialysis patients was answered through use of statistical analyses performed using the Statistical Analysis System computer software marketed by SAS Institute, Inc. Pearson Product Coefficient of Correlation calculations were performed between the variables of compliance scores, scores on locus of control and exercise of self-care agency. Correlations between age, number of medications the patients were taking, length of time the patients had been on dialysis, length of dialysis treatments and number of treatments per week were also performed. An alpha level of .05 was selected for use in this study. Because of the inequality of groups (compliant and non-compliant), descriptive analysis was performed on demographic variables using frequency tables and

percentages. Mean scores on the Health Locus of Control instrument and the Exercise of Self-care Agency Scale were utilized as the midpoint of scores for determination of internal or external HLOC and high or low ESCA. The midpoint of the compliance scale was utilized for determination of compliance or non-compliance.

Limitations

Limitations to this study include:

1. Use of a non-random sample related to convenience of the population which limits generalization.
2. Cognitive function of the dialysis patient may be altered by the disease process and/or the treatment.

CHAPTER IV

RESULTS

Relationships between Health Locus of Control, Exercise
of Self-care Agency and Compliance

Research question one. What are the relationships among health locus of control, exercise of self-care agency and compliance of hemodialysis patients?

Data used to address this research question included:

- 1) scores on the Health Locus of Control (HLOC) instrument;
- 2) scores on the Exercise of Self-care Agency Scale (ESCA);
- and 3) scores for compliance. The mean scores from the HLOC and ESCA instruments were utilized as the midpoint of scores for determination of internal or external HLOC and for determination of high or low ESCA. Table 4.1 summarizes this data while Table 4.2 summarizes the correlation coefficients of the variables of HLOC, ESCA and compliance.

Univariate analysis of the variables identified skewness and kurtosis on the ESCA instrument. Analysis of the distribution of scores on this instrument resulted in identification of one score of 57, which was outside the statistically acceptable 3 standard deviations from the mean for a normal distribution. This score was deleted from the statistical analysis as an outlier and correlations were

Table 4.1. Summary of scores on HLOC, ESCA and Compliance.

Instrument	Range of Scores	Mean	SD
HLOC N = 40	25 - 57	40.55	8.41
ESCA N = 39	93 - 156	121.97	12.59
Compliance N = 40	1 - 4	2.125	0.69

Table 4.2. Summary of correlation coefficients of HLOC, ESCA, and Compliance.

	ESCA	Compliance
HLOC	$r = .19, p = .23$	$r = .28, p = .07$
ESCA		$r = .29, p = .07$

performed utilizing the remaining 39 scores on the ESCA instrument. A review of Table 4.2 indicates:

1. There is no significant relationship between health locus of control and exercise of self-care agency of hemodialysis patients in this sample.

2. There is no significant relationship between health locus of control and compliance of hemodialysis patients in this sample.

3. There is no significant relationship between exercise of self-care agency and compliance of hemodialysis patients in this sample.

Research question two. What is the difference between health locus of control of the compliant and the non-compliant hemodialysis patient?

In this sample ($n = 40$), 10 (25%) patients were found to be compliant while the remaining 30 (75%) were found to be non-compliant. Eight (80%) compliant patients were found to have an external health locus of control. Sixteen (53%) non-compliant patients were found to have an external health locus of control compared to 14 (47%) with an internal health locus of control. Table 4.3 summarizes this data which suggests that a greater number of dialysis patients, both compliant and non-compliant, exhibit an external health locus of control. The difference between external and internal health locus of control within groups is greater in the compliant patients while non-compliant patients were

Table 4.3. Differences in HLOC of the compliant and non-compliant hemodialysis patient.

Group	Internal HLOC	External HLOC
Compliant (n=10)	20%	80%
Non-compliant (n=30)	53%	47%

more evenly divided between external and internal.

Research question three. What is the difference in exercise of self-care agency of the compliant and non-compliant hemodialysis patient?

Exercise of self-care agency of compliant patients and non-compliant patients was evaluated and the information summarized in Table 4.4. In this sample ($n = 40$), 7 (70%) compliant patients were found to have high levels of exercise of self-care agency. Non-compliant patients ($n = 30$) demonstrated minimal differences with 16 (53%) scoring high and 14 (47%) scoring low. In both groups, a greater number of patients scored high on exercise of self-care agency.

Relationships of Health Locus of Control, Exercise of Self-care Agency and Compliance to other Dialysis Related Variables

No significant relationships were found to exist between length of time on dialysis; number of treatments per week; length of treatments; ESCA; HLOC; or compliance.

A significant relationship was found to exist between the number of medications the patient was taking and the length of dialysis treatments, $r = .19$, $p = .02$. A second significant relationship was identified between the number

Table 4.4. ESCA of compliant and non-compliant hemodialysis patients.

Group	N	High Self-care Agency	Low Self-care Agency
Compliant	10	70%	30%
Non-compliant	30	53%	47%

of medications the patient was taking and the number of treatments per week, $r = .47$, $p = .002$.

A negative relationship was found to exist between the number of medications the patient was taking and overall compliance, $r = -.33$, $p = .04$.

Relationships of Health Locus of Control, Exercise of Self-care Agency and Compliance to Demographic Data

No significant relationship was found to exist between age of the patient and HLOC, ESCA or compliance in this sample.

Marital status was considered as a possible influencing factor on HLOC, ESCA and compliance. This information is summarized in Table 4.5. Compliance was found to be greatest in the single group which also showed a high internal HLOC and a low ESCA. Non-compliance was found to be greatest in the divorced group followed closely by married patients. The widowed group were higher in external HLOC and the divorced group higher in internal HLOC. The greatest differences in ESCA were found in the widowed and divorced groups.

Patients who live with their spouse had a high non-compliance rate (86%) while those who live by themselves or with a child demonstrated a non-compliance rate of 75%.

Table 4.5. Marital status influence on compliance, HLOC and ESCA.

Marital		Compliance		HLOC		ESCA	
Status	N	yes	no	ext.	int.	high	low
married	22	13%	77%	68%	32%	55%	45%
single	5	60%	40%	40%	60%	40%	60%
divorced	6	17%	83%	17%	83%	67%	33%
widowed	6	33%	67%	83%	17%	67%	33%
separated	1	---	100%	---	100%	100%	---

The highest external HLOC scores were exhibited by patients living with a spouse while the highest internal HLOC scores were found in patients living with a child. The highest ESCA scores were exhibited by those patients living with a child while the lowest was exhibited by a patient living in a nursing home. This data is summarized in Table 4.6.

Knowledge of Diet, Medications and Fluid Restrictions

The patient's knowledge of the diet prescribed for them was assessed by a question included on the demographic data and screening tool (Appendix F). This question asked the patient what kind of diet the patient was on and gave an opportunity for the patient to write an answer or to check an answer of "don't know." Responses to this question varied with some patients correctly stating the prescribed diet either in specific measurements, such as 2 gram sodium; or as a diet low in some a specific ingredient, such as low sodium. Nineteen patients answered the question with statements including: 1. I can eat anything I want to; 2. I am not on a special diet; or 3. none. These responses were considered to be an incorrect statement of the diet. The 16 patients who actually stated the diet gave accurate information. Five patients elected to answer this question with the "don't know" response. The differences in

Table 4.6. Effects of living arrangements on compliance, HLOC, and ESCA in hemodialysis patients.

N		Compliance		HLOC		ESCA	
Lives with		Yes	No	Ext.	Int.	High	Low
Spouse	22	14%	86%	68%	32%	55%	45%
Self	8	25%	75%	50%	50%	63%	37%
Child	4	25%	75%	25%	75%	75%	25%
Other	5	60%	40%	40%	60%	60%	40%
Nursing Home	1	---	100%	100%	---	---	100%

compliance to potassium and protein in these patients is contrasted in Table 4.7. Table 4.8 summarizes the data for HLOC and ESCA of these patients.

Those patients who stated their diet correctly were highly compliant to both potassium and protein. The highest compliance rates however were noted in the group who gave the diet incorrectly. The lowest compliance rates were noted in the group who chose to use the don't know option. All three groups scored higher on external HLOC while the group who incorrectly stated the diet scored highest on ESCA.

The same type question which was used for diet was also asked regarding medications and fluid restrictions. Only 3 patients were able to list the medications they take and these patients were all non-compliant in this area. Two of the patients scored as having an external HLOC and low ESCA. Twenty-two patients stated their medications incorrectly with the common error of all 22 being omission of medications. Of these 22 patients, 67% were non-compliant, 67% scored high on ESCA and 52% scored as having an internal HLOC. The remaining 16 patients elected to use the don't know response with 69% being non-compliant, 69% having an external HLOC, and an evenly divided percentage of scores on ESCA (50% high and 50% low). This data is summarized in Table 4.9.

Table 4.7. Dietary compliance to potassium and protein restrictions compared to knowledge of diet.

Knowledge of Diet	N	Compliance		Non-Compliance	
		K+	BUN	K+	BUN
Knew diet	16	63%	75%	37%	25%
Gave diet Incorrectly	19	74%	79%	26%	21%
Did not know Diet	5	60%	100%	40%	----

Table 4.8. HLOC and ESCA of patients with varied knowledge of diet.

Knowledge of Diet	N	HLOC		ESCA	
		Internal	External	High	Low
Knew diet	16	37%	63%	44%	56%
Gave diet Incorrectly	19	32%	68%	74%	26%
Did not know Diet	5	40%	60%	40%	60%

Table 4.9. Knowledge of medications and compliance, HLOC and ESCA

Knowledge of Medications	N	Compliance		HLOC		ESCA	
		Yes	No	Int.	Ext.	High	Low
Knew meds	3	---	100%	33%	67%	33%	67%
Gave meds Incorrectly	22	33%	67%	52%	48%	67%	33%
Did not know Meds	16	31%	69%	31%	69%	50%	50%

The patient's knowledge of fluid restrictions varied with 8 giving the correct response, 24 giving an incorrect response and 8 using the don't know option. The common error of those answering incorrectly was overstatement of the fluid restriction. Table 4.10 summarizes the data on fluid restrictions, compliance, ESCA and HLOC. Non-compliance was high in all 3 groups as was an external HLOC. ESCA was equally divided between high and low in those patients who knew their restrictions and in those who stated the restrictions incorrectly. A higher percentage of patients who elected to use the don't know response scored high on ESCA.

Table 4.10. Knowledge of fluid restrictions and compliance, HLOC, and ESCA.

Knowledge of Fluid	Compliance			HLOC		ESCA	
	N	Yes	No	Int.	Ext.	High	Low
Knew fluid	8	12%	88%	50%	50%	50%	50%
Gave fluid Incorrectly	24	12%	88%	46%	54%	50%	50%
Did not know Fluid	8	25%	75%	25%	75%	88%	12%

CHAPTER V

DISCUSSION AND SUMMARY

Orem (1985) suggests that self-care actions must be congruent with one's beliefs if they are to be incorporated into the individual self-care system. Health locus of control is conceptualized as being one's belief that one's self-care actions have a causal effect upon one's health and well-being (internal) or belief that individual health and well-being are determined by chance or fate (external). Another dimension of the external orientation which has been described, but not used in this study, is that of belief in powerful others. According to this conceptual framework, a relationship was expected to exist between an individual's health locus of control and exercise of self-care agency. However, for this sample, no significant relationship was identified between these variables.

Orem's Theory of Self-care would also suggest that a relationship would exist between health locus of control and compliance of an individual. More specifically, applying Orem's theory, a positive relationship was expected between an internal health locus of control and compliance and between an external health locus of control and non-compliance. This study did not identify a significant relationship between health locus of control and compliance

in this sample. In addition, the data showed that a greater number of compliant patients exhibited an external health locus of control in the sample.

Nursing (as have other disciplines) has traditionally valued an internal health locus of control. This valuing has extended into studies of attempts to change HLOC and two studies were cited in which a change toward a more internal HLOC was accomplished (Lynch, Ogg & Christensen, 1975; Pawlicki, 1976).

The finding of an external HLOC in a greater number of compliant patients was not congruent with the conceptual framework of the study nor was it congruent with traditional nursing values regarding HLOC. Looking at this data from a different perspective, it would seem that an external HLOC might be a desirable trait in hemodialysis patients. While this study utilized a unidimensional HLOC instrument, allowing determination of the HLOC as either internal or external, studies have been reported which have utilized multidimensional instruments (Brown & Fitzpatrick, 1988; Muhenkamp & Broerman, 1988) to further explore the external dimension of HLOC. Hochreich (cited in Arakelian, 1980) reported a dimension of external HLOC in which externally oriented persons strived for achievement while expecting less success than internally oriented persons expected (defensive HLOC).

Hemodialysis and compliance both place extraordinary

demands upon the end stage renal disease patient. Both the treatment and the changes in lifestyle require energy expenditure for patients in whom energy is compromised by the underlying disease. Perhaps then, the external HLOC of control is necessary for these patients to cope with the demands of the illness and the treatment. Salzer and Salzer (1987) reported finding changes toward an external HLOC related to more serious experiences with chronic disease. The experience of hemodialysis and the experience of drastic changes in lifestyle could be considered a very serious experience with the chronic disease, renal failure. Further inquiry into the HLOC of these patients might indeed identify an external HLOC not only as necessary for these patients but as an asset which nursing should tap in the struggle to attain patient compliance. Certainly an external orientation toward powerful others could be utilized by nursing in patient education aimed at patient compliance. Nursing should consider these suggestions prior to embarking on educational programs aimed at increasing internality of the patient's HLOC.

When considering the external HLOC in connection with self-care and Orem's theory, one should consider that if the external orientation of the patient is reflective of a belief in powerful others it would follow that incorporation of instructions from powerful others into the self-care

system would be congruent with the patient's beliefs as stated by Orem (1985).

According to Orem's Theory of Self-care (Orem, 1985), the more compliant patient would be expected to have a higher score on exercise of self-care agency. Therefore, a positive relationship was expected to exist between compliance and ESCA. This study failed to demonstrate a significant relationship between these variables although the relationship approached significance, $r = .29$, $p = .07$.

One patient in the sample scored lower than 3 standard deviations below the mean on the ESCA instrument which resulted in an unacceptable kurtosis (5.22) when univariate analysis of ESCA was performed. When this score was deleted from calculations as an outlier, the kurtosis was reduced to .30. It should be noted that with this score included in statistical analysis, the relationship between ESCA and compliance was significant, $r = .38$, $p = .01$.

Careful scrutiny of the data collected from this patient failed to identify an explanation for this outlier. The patient was a 61 year old married male who had been on hemodialysis for 6 months. The patient accurately stated prescribed diet, fluid restrictions and medications. The score on HLOC was an external score of 48. Responses on the ESCA instrument were spread across the Likert scale with the exception that no responses were found in the no opinion column. The patient was found to be non-compliant.

Although the study did not demonstrate a significant relationship between ESCA and compliance or between HLOC and compliance, the relationships between these variables approached significance. Additionally, a higher number of compliant patients were found to score high on ESCA, which was supportive of the conceptual framework. These findings suggest that the study should be repeated utilizing a larger sample size to assess possible relationships which may have been effected by the small sample size.

The significant relationships between the number of medications a patient was taking and the length of time on dialysis and the length of dialysis treatments were not unexpected relationships. It seems reasonable to expect more seriously ill patients to be those who require more medications, longer treatments and more frequent treatments. Likewise, the negative correlation between number of medications the patient was taking and overall compliance was not a surprising relationship. Many of the patients in the sample were required to take numerous medications with the average being 9. The inverse relationship between these variables is a phenomena common in many patients who are required to take numerous medications, although it can be identified as a self-care deficit related to the self-care demands placed upon the patient by the chronic illness.

The failure to demonstrate significant relationships between other dialysis related variables including total

length of time on dialysis, length of treatments, ESCA, HLOC and compliance was consistent with studies reported by O'Brien (1980) and those reported by Brown and Fitzpatrick (1988). However, Hilbert (1980) reported a significant relationship between time on dialysis and compliance which was not upheld by this study.

The finding of higher compliance rates in single patients in this sample was not congruent with the findings of O'Brien (1980) who reported that single patients were found to be less compliant.

Other data regarding marital status and living arrangements were not indepth enough in this study to allow for discussion of the social support system of the patients in the sample. While many possibilities exist for the differences noted between compliance, ESCA and HLOC in relation to marital status and living arrangements, further research is indicated to explore the impact of these variables upon the hemodialysis patient.

Additional findings of the study are those which deal with the patient's knowledge of diet, medications and fluid restrictions. While the study was not designed to consider these variables in their entirety, the data collected does suggest that a lack of knowledge of the dialysis regimen may exist in this sample. Sixty percent of patients were unable to correctly state the prescribed diet; 92.5% were unable to

correctly state the medications they were taking; and 80% were unable to state prescribed fluid restrictions.

Implications for Nursing

Compliance is an issue with which nephrology nurses must deal on a daily basis. It is an issue which has a great impact upon the well-being of the patient. Although this study did not demonstrate significant relationships between ESCA, HLOC and compliance which could be used to identify potential compliant and/or non-compliant patients, other implications for nursing can be recognized from the data.

The data compiled in the study suggest that many variables may impact upon the compliance of the hemodialysis patient. Individualization of the patient care plan to meet the specific patient need is indicated. Included in this individualization is the HLOC of the patient and how the nurse can utilize the patient's beliefs to improve both self-care and compliance rather than making attempts at changing the HLOC to meet nursing expectations.

Further research is indicated in the areas of HLOC, ESCA and compliance including the impact of the individual's social support system. Further research looking into the effect of chronic illnesses on the patient's ESCA, HLOC and compliance over time is indicated.

In depth evaluation of the patient's knowledge of the prescribed regimen should be performed on an ongoing basis. Educational programs should be individualized to meet the patient's needs in improving compliance and self-care. The patient's family or significant other should be included in educational programs.

The nursing system should include assessment of the adequacy of the self-care system on a continuing basis with interventions aimed at helping the patient to improve the adequacy of the self-care system in order to satisfy the self care deficits and/or demands which result from the chronic illness and the treatment.

Strengths and Limitations

This study was based upon a variable which impacts greatly upon not only the specialized population of hemodialysis patients but upon all patients with chronic disease processes. The underlying theory of self-care is a well-known nursing theory which has not been shown to have been thoroughly investigated in the hemodialysis population. To date, few studies have been reported utilizing the hemodialysis population and even fewer have reported significant findings related to compliance in this population. One of the strengths of the study is that it utilized a nursing theory and questioned the application of

the theory to the specialized population of hemodialysis patients.

A second strength of the study was the reliability and validity of the instruments used to measure exercise of self-care agency and health locus of control. Both instruments have been used over a period of years with proven reliability and validity.

Thirdly, parameters used to define compliance were parameters which have been used in many previous studies. The parameters are readily obtainable in this patient population and can be measured objectively.

A major limitation of the study was the small sample size ($n=40$) and the unevenness of the groups when the sample was divided into compliant ($n=10$) and non-compliant ($n=30$) patients. The unevenness of this division made statistical analysis difficult if not impossible to perform on some variables.

An additional limitation of the study was that of the inability to totally randomly select the sample. The population was one of convenience out of necessity and patients were self-selected through voluntary participation. Patients who chose to voluntarily participate in the study may have been those who exercise high levels of self-care. This variable could not be controlled and could have affected the results of the study. Those who chose not to participate may have been patients who were non-compliant

most of the time. This too could not be controlled and may have affected the results of the study.

Since the study was correlational and descriptive in nature, no causal relationships can be stated. This limits the application of the results in actually dealing with hemodialysis patients.

Recommendations

Recommendations resulting from this study include:

1. Longitudinal studies evaluating the impact of planned educational endeavors on compliance and self-care in the dialysis population are indicated.
2. Further research to determine relationships between exercise of self-care agency and compliance in hemodialysis patients should consider a larger sample size.
3. Future studies on the impact of knowledge of medical regimen and exercise of self-care should be considered.
4. Although the study failed to indicate a significant relationship of compliance to HLOC, the relationship between these variables approached significance; therefore, further research to determine if such a relationship would be significant in a larger sample is indicated.
5. Additional studies to explore the relationship of health locus of control and compliance utilizing a multidimensional HLOC instrument should be done.

6. Future research is indicated to determine relationships of exercise of self-care agency and health locus of control in other patient populations with chronic disease.

7. Application of the nursing theory of self-care should be implemented and evaluated for effectiveness in improving compliance in hemodialysis populations. Further research in this area should include other chronic disease populations.

8. Development of an instrument for measurement of exercise of self-care of hemodialysis patients should be considered utilizing compliance requirements which are unique to this specialized population.

9. Further research to determine what changes if any occur in the HLOC of the end stage renal disease patient with the experience of hemodialysis should be considered.

Conclusion

The study does not support the application of Orem's theory of self-care to compliance, ESCA and HLOC of the hemodialysis patient. The study suggests that rather than an internal HLOC related to increased compliance, the more compliant patients exhibit an external HLOC which is in conflict with not only the conceptual framework but with traditional nursing values. Although no significant relationships were identified between compliance and ESCA

in this sample, a higher number of compliant patients were found to score higher on the ESCA instrument.

The study suggests a deficit in knowledge of prescribed regimens in this sample supporting a need for nursing evaluation of patient knowledge and individualization of educational programs.

Recommendations for future nursing research can be identified from the study include both larger and longitudinal studies on self-care, compliance, health locus of control, and educational endeavors in the patient on dialysis. The unique aspects of serious chronic illness should direct some reconsiderations of the concepts of multidimensional HLOC and self-care in the development and use of both new and revised measurement tools.

LIST OF REFERENCES

REFERENCES

- Agashua, P. C., Lyle, R. C., Livesley, W. J., Slade P. D., Winney, R. J., & Irvin, M. (1981). Predicting dietary non-compliance of patients on intermittent haemodialysis. Journal of Psychosomatic Research, 25(4), 289-301.
- Arakelian, M. (1980). An assessment and nursing application of the concept of locus of control. Advances in Nursing Science, 3(1), 25-42.
- Baer, C. L. (1986). Compliance: The challenge for the future. Topics in Clinical Nursing, 7(4), 9-16.
- Barofsky, I. (1978). Compliance, adherence and the therapeutic alliance: Steps in the development of self-care. Social Science in Medicine, 12, 369-376.
- Binik, Y. M., Kalogeropoulos, A. G., Devins, D., Guttman, R. D., Hollomby, D. J., Barre', P. E., Hutchinson, T., Prud'Homme, M., & McMullen, L. (1982). Pain, control over treatment, and compliance in dialysis and transplant patients. Kidney International, 21, 840-848.
- Brown, J., & Fitzpatrick, R. (1988). Factors influencing compliance with dietary restrictions in dialysis patients. Journal of Psychosomatic Research, 32(1), 191-196.
- Burckhart, C. S. (1986). Ethical issues in compliance. Topics in Clinical Nursing, 7(4), 9-16.
- De-Nour, A. K., & Czaczkes, J. W. (1972). Personality factors in chronic hemodialysis patients causing compliance with medical regimen. Psychosomatic Medicine, 34(4), 333-334.
- Hilbert, G. (1985). An investigation of the relationship between social support and compliance of hemodialysis patients. ANNA Journal, 12(2), 133-136.
- Hume, M. R. (1984). Factors influencing dietary adherence as perceived by patients on long-term intermittent peritoneal dialysis. Nursing Papers: Perspectives en Nursing, 16,(1), 38-53.
- Jones, L. C., & Preuett, S. G. (1986). Self-care activities and processes used by hemodialysis patients. ANNA Journal, 13(2), 73-79.

- Johnson, W. J., Kurtz, S. B., Anderson, C. F., Mitchell, J. C., Zinche, H., & O'Fallon, W. M. (1984). Results of treatment of renal failure by means of home hemodialysis. Mayo Clinic Proceedings, 59, 663-668.
- Kearney, B. Y., & Fleischer, B. J. (1979). Development of an instrument to measure self-care agency. Research in Nursing and Health, 2(1), 25-34.
- King, R. (1983). The use of nonprescribed treatments by hemodialysis patients. Culture, Medicine and Psychiatry, 7(1), 57-76.
- Lynch, M. L., Ogg, W. D., & Christensen, M. G. (1975). Impact of a life planning workshop on perceived locus of control. Psychological Reports, 37, 1219-1222.
- Manley, M., & Sweeney, J. (1986). Assessment of compliance in hemodialysis adaptation. Journal of Psychosomatic Research, 30(2), 153-161.
- McCord, M. A. (1986). Compliance: Self-care or compromise? Topics in Clinical Nursing, 7(4), 1-8.
- Muhlenkamp, A. F. & Broerman, N. A. (1988). Health beliefs, health value, and positive health behaviors. Western Journal of Nursing Research, 10(5), 637-646.
- O'Brien, M. E. (1980). Hemodialysis regimen compliance and social environment: A panel analysis. Nursing Research, 21(1), 68-79.
- O'Brien, M. E. (1982). Religious faith and adjustment to long-term hemodialysis. Journal of Religion and Health, 21(1), 68-79.
- Orem, D. E. (1985). Nursing: Concepts of Practice (3rd ed.). New York: McGraw-Hill.
- Parker, K., Howell, M. H., Healy, K. E., Petrides, C. D., Owens, A., Powell, E. J., Rosson, Z., Royal, E., Simmons, C. C., & White, B. (1985). Nursing intervention based on the Health Belief Model and compliance in patients on chronic dialysis. Journal of Nephrology Nursing, 2(3), 144-151.
- Parker, K. P. (1981). Anxiety and complications in patients on hemodialysis. Nursing Research, 30(6), 334-336.

- Pawlicki, R. E. (1976). Effects of self-directed behavior-modification training on a measure of health locus of control. Psychological Reports, 39, 319-322.
- Rorer, B., Tucker, C. M., & Blake, H. (1988). Long-term nurse-patient interactions: Factors in patient compliance or non-compliance to the dietary regimen. Health Psychology, 7(1), 35-46.
- Rosenbaum, M., & Smira, K. B. (1986). Cognitive and personality factors in the delay of gratification of hemodialysis patients. Journal of Personality and Social Psychology, 51(2), 357-364.
- Saltzer, E. B., & Saltzer, E. I. (1987). Internal control and health: Which comes first? Western Journal of Nursing Research, 9(4), 542-554.
- Starzomski, R. C. (1986). Patient and staff involvement in decisions for ESRD treatment. ANNA Journal, 13(6), 325-329.
- Stevenson, J. A. (1984). Health related problems of patients on hemodialysis. Journal of Nephrology Nursing, 1(2), 101-105.
- Streltzer, J. & Siemsen, A. (1981). Denial in dialysis patients: Relationship to compliance and other variables. Psychosomatic Medicine, 43(3), 271-280.
- Swain, M. A., & Steckel, S. B. (1981). Influencing adherence among hypertensives. Research in Nursing and Health, 4, 213-222.
- Vickery, D. M., Kalmer, H., Lowry, D., Constantine, M., Wright, E., & Loren, W. (1983). Effect of a self-care education program on medical visits. JAMA, 250(21), 2952-2956.
- Wallston, B. S., Wallston, K. A., Kaplan, G. D., & Maides, S. A. (1976). Development and validation of the health locus of control (HLC) scale. Journal of Consulting and Clinical Psychology, 44(4), 580-585.
- Winkokur, M. Z., Czaczkes, J. W., & De-Nour, A. K. (1973). Intelligence and adjustment to chronic hemodialysis. Journal of Psychosomatic Research, 17(1), 29-34.

APPENDIXES

APPENDIX A

EXERCISE OF SELF-CARE AGENCY SCALE

EXERCISE OF SELF CARE AGENCY SCALE

For each of the following items, please circle the number that indicates how characteristic of you the attitude or behavior is.

	Very Characteristic	Somewhat Characteristic	No Opinion	Somewhat Uncharacteristic	Very Uncharacteristic
1. I would gladly give up some of my set ways if it meant improving my health.	4	3	2	1	0
2. I like myself.	4	3	2	1	0
3. I often feel that I lack the energy to care for my health needs the way I would like to.	4	3	2	1	0
4. I know how to get the facts I need when my health feels weakened.	4	3	2	1	0
5. I take pride in doing the things I need to do in order to remain healthy.	4	3	2	1	0
6. I tend to neglect my personal needs.	4	3	2	1	0
7. I know my strong and weak points.	4	3	2	1	0
8. I seek help when unable to care for myself.	4	3	2	1	0
9. I enjoy starting new projects.	4	3	2	1	0
10. I often put off doing things that I know would be good for me.	4	3	2	1	0
11. I usually try home remedies that have worked in the past rather than going to see a doctor or nurse for help.	4	3	2	1	0
12. I make my own decisions.	4	3	2	1	0
13. I perform certain activities to keep from getting sick.	4	3	2	1	0
14. I strive to better myself.	4	3	2	1	0
15. I eat a balanced diet.	4	3	2	1	0

	Very Characteristic	Somewhat Characteristic	No Opinion	Somewhat Uncharacteristic	Very Uncharacteristic
16. I complain a lot about the things that bother me without doing much about them.	4	3	2	1	0
17. I look for better ways to look after my health.	4	3	2	1	0
18. I expect to reach my peak wellness.	4	3	2	1	0
19. When I have a problem, I usually want an expert to tell me what to do.	4	3	2	1	0
20. I deserve all the time and care it takes to maintain my health.	4	3	2	1	0
21. I follow through on my decisions.	4	3	2	1	0
22. I have no interest in learning about my body and how it functions.	4	3	2	1	0
23. If I am not good to myself, I believe I cannot be good for anyone else.	4	3	2	1	0
24. I understand my body and how it functions.	4	3	2	1	0
25. I rarely carry out the resolutions I make concerning my health.	4	3	2	1	0
26. I am a good friend to myself.	4	3	2	1	0
27. I take good care of myself.	4	3	2	1	0
28. Health promotion is a chance thing for me.	4	3	2	1	0
29. I have a planned program for rest and exercise.	4	3	2	1	0
30. I am interested in learning about various disease processes and how they affect me.	4	3	2	1	0
31. Life is a joy.	4	3	2	1	0
32. I do not contribute to my family's functioning.	4	3	2	1	0
33. I take responsibility for my own actions.	4	3	2	1	0
34. I have little to contribute to others.	4	3	2	1	0
35. I can usually tell that I am coming down with something days before I get sick.	4	3	2	1	0

	Very Characteristic	Somewhat Characteristic	No Opinion	Somewhat Uncharacteristic	Very Uncharacteristic
36. Over the years I have noticed the things to do that make me feel better.	4	3	2	1	0
37. I know what foods to eat and keep me healthy.	4	3	2	1	0
38. I am interested in learning all that I can about my body and the way it functions.	4	3	2	1	0
39. Sometimes when I feel sick I ignore the feeling and hope it will go away.	4	3	2	1	0
40. I seek information to care for myself.	4	3	2	1	0
41. I feel I am a valuable member of my family.	4	3	2	1	0
42. I remember when I had my last health check and return on time for my next one.	4	3	2	1	0
43. I understand myself and my needs pretty well.	4	3	2	1	0

APPENDIX B

HEALTH LOCUS OF CONTROL SCALE

HEALTH LOCUS OF CONTROL SCALE (HLC)

This is a questionnaire 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 you are 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, then 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 circle only one number. 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. Be sure to answer every item. Also, 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.

	strongly disagree	moderately disagree	slightly disagree	slightly agree	moderately agree	strongly agree
1. If I take care of myself, I can avoid illness.	1	2	3	4	5	6
2. Whenever I get sick it is because of something I've done or not done.	1	2	3	4	5	6
3. Good health is largely a matter of good fortune.	1	2	3	4	5	6
4. No matter what I do, if I am going to get sick I will get sick.	1	2	3	4	5	6
5. Most people do not realize the extent to which their illnesses are controlled by accidental happenings.	1	2	3	4	5	6
6. I can only do what my doctor tells me to do.	1	2	3	4	5	6
7. There are so many strange diseases around, that you can never know how or when you might pick one up.	1	2	3	4	5	6
8. When I feel ill, I know it is because I have not been getting the proper exercise or eating right.	1	2	3	4	5	6

	strongly disagree	moderately disagree	slightly disagree	slightly agree	moderately agree	strongly agree
9. People who never get sick are just plain lucky.	1	2	3	4	5	6
10. People's ill health results from their own carelessness.	1	2	3	4	5	6
11. I am directly responsible for my health	1	2	3	4	5	6

APPENDIX C
Compliance Criteria

MEDICAL INFORMATION

LABORATORY VALUES:

Month	K+	Na+	BUN	PO4
1.				
2.				
3.				
4.				
5.				
6.				

Medications ordered per chart:

Diet ordered by chart:

Fluid restrictions ordered by chart:

Target weight per chart:

Dialysis days and hours per chart:

Is patient on an active transplant waiting list?

WEIGHT RECORD

#	Date	Pre	Post
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WEIGHT RECORD

Page 2 of 2

<u>#</u>	<u>Date</u>	<u>Pre</u>	<u>Post</u>
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APPENDIX D

PERMISSION FOR UTILIZATION OF DIALYSIS UNITS

COMMUNITY DIALYSIS SERVICES OF KINGSPORT

2612 JOHN B. DENNIS BYPASS / KINGSPORT, TENNESSEE 37660 / (615) 288-7711

NOVEMBER 8, 1990

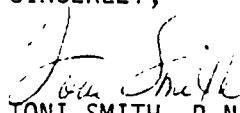
KAY G. MATLOCK, R.N., C.H.N.
RT.#4, BOX 899
JONESVILLE, VIRGINIA
24263

RE: RESEARCH PROJECT
DIALYSIS PATIENTS

DEAR MRS. MATLOCK:

I AM HAPPY TO GRANT PERMISSION FOR YOU TO INCLUDE COMMUNITY DIALYSIS CENTER, KINGSPORT, TENN. IN YOUR PROPOSED RESEARCH PROJECT ON HEMODIALYSIS PATIENTS. I HAVE REVIEWED THE INFORMED CONSENT AND QUESTIONNAIRES YOU FURNISHED AND WILL BE HAPPY TO HAVE OUR PATIENTS PARTICIPATE IN THE STUDY.

SINCERELY,


TONI SMITH, R.N.
UNIT ADMINISTRATOR

TS/nc

North Knoxville Dialysis Center, Inc.
P. O. Box 3577
4440 Walker Boulevard, N. E.
Knoxville, Tennessee 37917-0357
615-687-3436

November 13, 1990

Kay G. Matlock, RN, CHN
Route 4, Box 899
Jonesville, Virginia 24263

Re: Research Project
Dialysis Patients

Dear Ms. Matlock:

I am happy to grant permission for you to include North Knoxville Dialysis Center, Inc. Knoxville, Tennessee and the two affiliated satellite dialysis centers, LaFollette Dialysis Center, Inc. and Dialysis Associates West, Inc. in your research project on hemodialysis patients. I have reviewed the informed consent and questionnaires you furnished and will be happy to have our patients participate in the study.

Sincerely,


Janice Sitzlar, RN
Clinical Coordinator

APPENDIX E

INFORMED CONSENT

INFORMED CONSENT STATEMENT

Dear Participant:

You are invited to participate in a research study on problems which the hemodialysis patient experiences. Participation in the study is on a voluntary basis and will include completion of a five page questionnaire and analysis of data taken from the medical record (patient chart).

There are no known risks to you in participating in the study. Likewise, there are no identified benefits to participation. You may withdraw from the study at any time. All information will be collected while you are on dialysis at your regularly scheduled time. All information will be kept confidential with each patient being assigned a number. The number/name combination will be accessible only by myself. All information will be kept locked in a filing cabinet in the researcher's home office. Any information will be summarized as group data prior to use of the data in any published or non-published report.

Should you begin the study and decide to withdraw, there will be no penalty for doing so. If you have questions about the study or your participation, please feel free to contact me at the number listed below.

Thank you,

Kay G. Matlock, RN, CHN
Route 4, Box 899
Jonesville, Virginia 24263

Phone: 703-346-3782

INFORMED CONSENT

I have read and understand the above information. I voluntarily agree to participate in the study under the above stated conditions and give permission to the researcher, Kay G. Matlock, RN, CHN, to have access to my medical records.

Signed: _____

Date: _____

Witness: _____

Date: _____

APPENDIX F

DEMOGRAPHIC DATA AND SCREENING TOOL

DEMOGRAPHIC DATA AND SCREENING TOOL

Name _____

City and State of residence _____

Age: _____ Marital Status: Single Married Divorced Widowed

With whom do you live? _____ Relationship _____

Number of children _____ Number of children living in home _____

Are you employed? yes no If yes, number of hours worked per week _____

Occupation _____ Yearly income _____

Insurance coverage _____ Medicare: yes no Medicaid: yes no

How do you get to the dialysis unit? _____

What days do you have dialysis? _____

How many hours do you dialyze per treatment _____ Don't know _____

How long have you been on this schedule _____ Don't know _____

When were you last in the hospital _____ Don't know _____

What medications do you take ? _____ Don't know _____

What is your target weight? _____ Don't know _____

What kind of diet are you on? _____ Don't know _____

What fluid restrictions do you have _____ Don't know _____

Are you currently on a kidney transplant list? _____ Don't know _____

VITA

Kay Gibson Matlock was born in Kingsport, Tennessee on August 25, 1948. She lived there with her family until she moved to Jonesville, Virginia in 1987 with her husband, Neal. She is the mother of two daughters, Lisa Kay and Rhonda Suzanne.

Inspired by her mother, also a nurse, Kay earned her Associate of Science Degree in Nursing from East Tennessee State University in 1977. From 1977 through 1990 Kay held positions as staff nurse in critical care areas, including acute hemodialysis; head nurse of both medical-surgical nursing units and dialysis units; and house supervisor in a local hospital. In 1989 Kay earned her Bachelor of Science Degree in Professional Arts from St. Joseph's College in North Windham, Maine. She entered the University of Tennessee in 1989 and was awarded her Master of Science in Nursing Degree in 1991.

Kay was listed in the 1991 edition of Who's Who Among Students in American Universities and Colleges. She was honored by an invitation to Sigma Theta Tau honor society and was inducted in 1991.