

THE RELATIONSHIP OF KNOWLEDGE OF DIETARY REGIMEN  
TO COMPLIANCE IN HEMODIALYSIS PATIENTS

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We hereby recommend that the thesis prepared under  
our supervision by Rebecca L. Frey

entitled The Relationship of Knowledge of Dietary  
Regimen to Compliance in Hemodialysis Patients

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DEDICATION

The following is a dedication of the author's work to her husband, R. Bruce Frey, in appreciation of his love, support, and encouragement throughout the writing process. His love and support have been a constant source of strength and inspiration. His love and support have been a constant source of strength and inspiration. His love and support have been a constant source of strength and inspiration.

To my husband, R. Bruce Frey.

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CHAPTER 1  
INTRODUCTION

There has been a renewed interest in the field of prevention through patient education, especially for those individuals with chronic illnesses and diseases. Contributing factors to this trend have been an ever increasing number of disabling or chronic diseases in the United States population and an increasing public awareness of the need for health maintenance. The nursing profession has been challenged to provide qualified health education to consumers to promote a higher quality of life. Knowledge has been thought to have a positive effect on reducing premature deaths and unnecessary illness, as well as pain and suffering.

Within the chronic disease group of patients are those with chronic renal failure. Once these individuals have been diagnosed and are treated using hemodialysis, the disease and treatment affect their lifestyle, work, diet, interpersonal relationships and body image.

Most dialysis patients are placed on a regimen that requires from four to six hours on a hemodialysis machine, three times each week, and strict adherence to a prescribed dietary and fluid intake. Compliance to the regimen is an

essential factor for the survival of chronic renal failure patients being treated with hemodialysis (O'Brien, 1980).

#### Problem of Study

Based on the need to establish compliance to a prescribed dietary regimen in chronic renal failure patients, the following problem was addressed: Will there be an increase in patient compliance in chronic renal failure patients undergoing hemodialysis following a planned systematic teaching approach?

#### Justification of Problem

In the United States, about 55,000 persons are diagnosed with chronic renal failure and exist with the aid of artificial kidneys and regular hemodialysis. The hemodialysis treatments are not a temporary measure for these individuals, but a lifetime therapy upon which their lives depend. The only possible alternatives in therapy are kidney transplantation, if a suitable donor can be found, or physician prescribed peritoneal dialysis (Orr, 1981).

In the hemodialysis population, compliance to the whole treatment regimen, including diet and fluid intake, is necessary for survival. Yet, Blackburn (1977) reported a noncompliance of 51% to the prescribed diet as measured by interdialysis weight gain, 38% to the prescribed medication

as measured by blood phosphorus levels, and 21% to the prescribed diet as measured by blood potassium levels in hemodialysis patients. To establish the individual's knowledge of the dietary regimen, Blackburn administered a verbal test with 12 open-ended questions. Knowledge was assumed to exist "if the patient seemed to have produced the basic concepts" (Blackburn, 1977, p. 34). No other study was found to correlate knowledge with compliance in chronic renal failure patients (Blackburn, 1977; Hartman & Becker, 1978; Marston, 1970; O'Brien, 1980). However, Linde and Janz (1979) stated that knowledge does influence compliance in cardiac patients.

In studies of dialysis patients, factors related to noncompliance often were not identified. In the few studies where noncompliance was a variable, noncompliance was related to a psychological, sociological, demographic, or personality factors (Hartman & Becker, 1978).

Watchous, Thurston and Carter (1980) studied chronic renal failure patients' knowledge pre and post a programmed modular learning book on sodium and fluid restriction. Using a multiple-choice question test to measure knowledge, results indicated a 90% increase in knowledge post treatment.

The settings of previous studies of dialysis patients, when indicated, have been hospital affiliated or medical school affiliated (Blackburn, 1977; Hartman & Becker, 1978).

In contrast, the proposed setting for this study was a privately owned dialysis center and not related to a hospital or school; therefore the findings of this study may provide a broader knowledge base for nursing practice.

### Theoretical Framework

Festinger (1957; Festinger & Carlsmith, 1959), in his theory of cognitive dissonance, stated that the human organism tries to establish internal harmony, consistency, or congruity among his opinions, attitudes, knowledge, and values. Thus, there is a human drive toward consonance among cognitions.

Dissonance can exist after a decision has been made between two or more alternatives. The positive characteristics of the rejected alternative and the negative characteristics of the accepted alternative can both be dissonant with the decision. It follows that the negative characteristics of the rejected alternative and the positive characteristics of the accepted alternative both need to be consonant with the decision. Dissonance also occurs when rewards or punishment for overt behaviors vary with the individual's opinion (Festinger, 1957).

The magnitude of the dissonance or consonance between two cognitive elements is directly related to the importance of these elements to the individual. If the rewards

or punishments are just sufficient or the overt behavior is just barely not sufficient, the magnitude of the dissonance is the greatest when there is an attempt to elicit forced compliance. Once forced compliance is elicited, the magnitude of the dissonance decreases as the magnitude of the reward or punishment increases (Festinger, 1957).

In the presence of dissonance, the individual is under pressure to reduce that dissonance. The dissonance could be reduced by changing the individual's opinion or by magnifying the reward or punishment. Or, dissonance could be reduced by changing one's behavior to be consistent with the cognitions of what one's behavior should have been (Festinger, 1957; Festinger & Carlsmith, 1959).

Once the chronic renal failure patient is required to participate in hemodialysis for survival, dissonance with his past lifestyle occurs. The hemodialysis patient strives for consonance in his opinions, attitudes, knowledge and values with the treatment regimen, of which diet and fluid intake are a part. The magnitude of dissonance is related to the perceived importance of the regimen to the individual. For the hemodialysis patient, the dissonance can be reduced by complying to the treatment regimen, or the dissonance can be reduced by changing one's opinion of the importance of the diet to his health.

### Assumptions

The assumptions for this study were:

1. Dissonance with the past lifestyle occurs when an individual is diagnosed as having chronic renal failure with hemodialysis treatments and is prescribed a medical regimen.
2. The perceived importance of the diet alters one's compliance behavior.
3. Knowledge of what one's behavior should be changes one's present and future behaviors.

### Hypothesis

The following hypothesis was tested in this study:

There is a positive relationship between knowledge and compliance in chronic renal failure patients receiving hemodialysis treatments.

### Definition of Terms

For the purpose of this paper, the following terms were defined:

1. Chronic renal failure patients--individuals with nonreversible reduction of kidney function to less than 10% of the normal kidney function and creatinine clearance of 10 cc/minute or less (Knox, 1978). Operationally defined, it was the physician diagnosis of chronic renal failure taken from patients' charts.

2. Compliance--the adherence to the prescribed dietary and fluid restriction treatment. It was measured by the percentage of times the interdialysis weight was no greater than four pounds (Barlow, 1976).
3. Hemodialysis--the removal of body waste products by a machine which uses a semipermeable membrane and rinsing fluid or dialysate. The patient had an arterial and venous blood access to the machine filtration system. Operationally defined, it was the physician prescribed treatment for chronic renal failure by a dialysis machine directly through the patient's arterial-venous system.
4. Interdialysis Weight--weight in excess of the ideal weight or dry weight for that chronic renal failure patient. It was the difference between the patient's weight before the hemodialysis treatment on one date and the weight after the hemodialysis treatment from the immediately previous treatment day.
5. Knowledge--the condition of perceiving the acceptable food and fluid sources and proportion of that source with familiarity gained through understanding as measured by the Sodium and Fluid Restriction Test (Watchous, 1978).

6. Planned systematic teaching approach--the investigator's previously determined method of instructing the chronic renal failure patients in the hemodialysis center. The presentation was the investigator-prepared slide-tape program on sodium and fluid restriction based on Watchous' (1978) programmed instructional unit, via the self-contained audio-visual device.

#### Limitations

The following limitations were recognized:

1. The individual's awareness of participating in the study may influence his behavior or compliance.
2. The sample was one of convenience selected from a proprietary hemodialysis center, which may not be representative of all hemodialysis patients; therefore, generalizations cannot be made beyond this group.
3. There was no control group for comparison thus no cause and effect relationship can be stated.
4. The individual was exposed to the Watchous' Sodium and Fluid Restriction test only three times during the study.
5. The individual's responses may be influenced by other sources, which would in turn influence the final outcomes.

### Summary

Chapter 1 served as an introduction to the study of the relationship between knowledge and compliance in hemodialysis patients. The limited resources available to nurses caring for hemodialysis patients influenced the investigator to perform this study.

Chapter 2, Review of the Literature, contains background information on chronic renal failure, compliance, and factors which influence compliance, including knowledge. Chapter 3, Procedure for Collection and Treatment of Data, describes the setting, population, sample, instruments and the data collection procedure. Chapter 4, Analysis of Data, contains the data obtained in this study and their interpretation. Chapter 5, Summary of the Study, includes a brief summary with suggestions for further investigations.

## CHAPTER 2

### REVIEW OF THE LITERATURE

The diagnosis and treatment of a chronic renal failure disease in an individual affects every facet of that person's life. The frequency with which dialysis patients do not fully cooperate with their own treatment is so high as to label noncompliance the number one problem of rehabilitation. The therapeutic diet for hemodialysis patients is crucial for their health, yet noncompliance was reported to be 15-96% with a mean of 46% (Armstrong, 1978; Cummings, 1980).

The determinants of compliance have been multiple in number and interactionary in effect. Factors such as knowledge of regimen, motivation, complexity of regimen, locus of control, demographic variables and psychological components have been studied in the literature and will be discussed separately in this chapter.

Both the American Medical Association and the American Hospital Association agreed "that the provision of education for the patient was an appropriate aspect for health care delivery" (Brown, 1976, p. 20). Even though there was conflicting evidence on the relationship of education or knowledge to compliance, common sense indicates that if the

patient does not understand the regimen, compliance cannot be achieved (Gardner, 1981).

### Chronic Renal Failure

Chronic renal failure develops over months or years, unlike acute renal failure which has a rapid onset. The progressive loss of renal function has varied causes, with the majority of cases resulting from nephrosclerosis and glomerulonephritis. Other causes of renal failure are diabetic nephropathy, nephritis, cystic disease, collagen vascular disease, metabolic disorders and obstructive or congenital aberrations. Even though the causes of chronic renal failure are varied in origin the results in terms of the damage to the kidney are similar (Latos, 1980).

The normal kidney performs the continuous functions of controlling electrolytes, controlling water balance, removing wastes, producing and degrading hormones and participating in protein anabolism and catabolism. The kidney of a chronic renal patient can compensate to 50% of the normal kidney function. Where there is from 20% to 50% of the kidney function, diet and fluid restrictions and/or medications can adequately assist the compromised kidneys. However with less than 5-10% of normal kidney function, other medical interventions such as dialysis or renal

transplantation are necessary for the patient's survival (Burton, 1977; Kjellstrand, 1980; Knox, 1978).

With less than 5-10% kidney function, the term "end-stage renal disease" describes the body state and the necessary medical intervention of dialysis for continuation of life. End-stage renal disease is synonymous with chronic renal failure with less than 5-10% kidney function (Latos, 1980).

The symptoms of chronic renal failure are progressive with early symptoms of nocturia, nausea, fatigue and weakness. With increasing loss of kidney function, symptoms of loss of memory and fine cognitive behavior, irritability, and lethargy become apparent. Additional symptoms are foul-smelling breath, a metallic taste and generalized itching (Burton, 1977; Knox, 1978; Latos, 1980).

As the kidney function decreases to less than 10% of normal, uremia develops. Uremia is manifested by bruising, loss of muscle mass, progressive weakness and gastrointestinal alterations. The results of untreated uremia are seizures, coma, and finally death (Latos, 1980).

In the United States, the estimated cost of end-stage renal disease in 1980 was \$1.2 billion, up from \$283 million in 1974. The 27.2% annual increase in cost was the result of the number of persons being treated which in 1980 was 63,000 people, up from 19,000 in 1974. With the need to

limit expenditures, especially from the Medicare and Medicaid programs, there was a renewed emphasis on quality care at a reasonable cost. Programs which have the potential for cutbacks were identified as education, dietary consultation, and social services (Lowrie & Hampers, 1982; Ney, 1981).

From governmental surveys, the proprietary hemodialysis centers have provided the same service as hospital and home-based dialysis but at a reduced cost per person if all factors are taken into account. The current administration is advocating reimbursement based on the treatment and not the location of treatment which will influence the hospital and possibly the home-based hemodialysis facilities (Lowrie & Hampers, 1982).

### Hemodialysis

Hemodialysis is the standard treatment for chronic and acute kidney failure and that with which other treatments such as peritoneal dialysis, renal transplantation, and even home-care dialysis are compared. Hemodialysis has been used for the treatment of kidney failure since 1960 when Dr. Scribner opened a 12-bed unit in Seattle, Washington. With the scientific improvements, there has been an increase in the availability of hemodialysis and a reduction in initial complications (Leb, 1980).

Arteriosclerotic deaths and dialysis dementia have emerged as the most important long term complications of chronic hemodialysis. In 1978 of those dialyzed patients who died, 65% of the deaths were due to cardiovascular causes, while half of those 65% were due to hypertension. Hypertension when uncontrolled can lead to other complications, i.e., cardiomegaly, congestive heart failure and accelerated atherosclerosis. The causes of hypertension are primarily due to sodium and water retention which occur as the kidney loses its capacity to rid the body of excessive sodium and water, although another cause of hypertension is the absence of the renin inhibitor as a result of decreased kidney function (Gruber, 1980; Kjellstrand, 1980).

Two methods of controlling hypertension logically emerge, that of the dialysis process itself and adherence to salt and fluid restrictions. In addition to the dialysis treatment, compliance limiting body weight gain to no greater than one kilogram per day (or approximately four pounds) between treatments will most often result in satisfactory blood pressure control (Barlow, 1976; Gruber, 1980; Ulrich, 1981).

## Diet

Although the dietary regimen for chronic renal failure has been associated with the role of the dietitian, the philosophy of most dialysis programs has been that any member of the health team who has access to the laboratory data and medical knowledge has the right and obligation to institute discussion of the diet. It has been stated that improved dietary control plays a greater role than dialysis in control of chronic renal failure (Gardner, 1981; Wineman, Sargent & Piercy, 1977).

The diet of the patient with chronic renal failure is based on the objective of decreasing the work of the kidneys. The composition of the diet should be 10-15% protein, 35% fat and 50-55% carbohydrate. Sodium restriction is based on laboratory values, sodium excretion and body weight and is usually prescribed to be 2-4 grams per day in contrast to a "normal" American intake of 3-10 grams per day. The water intake is restricted to 500-600 ml over the 24 hour urine output (St. Jeor, Sneed, & Schoolwerth, 1980; Watson, 1980).

The overall principles of the dietary regimen were judicious regulation of protein intake, fluid balance, sodium balance, restriction of potassium and phosphate, adequate caloric intake and supplementation of vitamins

Burton, 1977). The complexity of this diet was emphasized by Swendseid (1977) for, with the restriction of sodium and potassium with low protein foods, uremia toxicity can be controlled. These alterations, however, often contribute to body wasting and other symptoms of malnutrition (Swendseid, 1977).

Body weight has been the fundamental method of assessing nutritional status in the chronic renal failure patient and is related to the height and sex of the individual. "Dry weight" is defined as that weight at which the blood pressure is normal and there is no detectable peripheral edema. Another term used in hemodialysis which approximates dry weight is the "ideal weight" or post dialysis finishing weight (Compty, 1981).

Once an individual is diagnosed as having chronic renal failure, a diet is prescribed restricting fluids, sodium, potassium, phosphate and protein. Both patient understanding of and compliance with the dietary regimen are essential to decrease work of the kidneys and optimize body functioning.

#### Knowledge

In the studies reviewed there are conflicting statements about the relationship of knowledge to compliance. Most authors agree that patient education is the responsibility of every member of the health team. In

addition, patients have become more knowledgeable and have demanded information (Winslow, 1976). Further statements that teaching provides the patient control over his life and results in increased self-esteem and self-respect were made (Morris, 1981). Winslow (1976) stated that:

only by giving the patient knowledge and responsibility to care for himself can we convert the present "illness care" to a "health care." (p. 213)

Audio-visual media have been shown to increase knowledge, e.g., teaching diabetics their dietary regimen (Spiegel, 1967). Marson (1973) stated that increase in knowledge of hemodialysis techniques occurred following audio-visual presentation for staff and patients. Dahmer, Pietaka, and Walther (1976) and Jones (1976) found a significant increase in knowledge by medical students using audio-visual media. Audio-visual materials have been shown to relieve repetitive teaching and be rated relatively high in quality by nursing instructors and students (Kerpelman, 1975; Koch, 1975). In addition, the use of a structured teaching method was associated with decreased rehabilitation time in presurgical patients (Lindeman & Van Aernam, 1971).

Dodge (1969) correlated information giving and the rejection or the acceptance of the information by the participant. She found that information was rejected when comprehension required additional information than that person possessed. Information was embraced when education

was adequate. Once again, the information was ignored when it was not regarded as important because prior knowledge existed. Another study reported that new knowledge had also been found to reinforce previous knowledge, thus increasing compliance (Tagliacozzo & Ima, 1970).

Knowledge was associated with increased compliance to a therapeutic regimen in clinic patients (Hecht, 1974; Tagliacozzo & Ima, 1970), in cardiac patients (Linde & Janz, 1979), and in hemodialysis patients (Weiss, 1980). In comparison, Bille (1977b) and Lowe (1970) reported no correlation between knowledge and compliance to a health regimen for myocardial infarction patients or for maternity patients, respectively.

Some explanations of the problems of patient education have been proposed. First, Finnerty (1978) found that education in the absence of a mutual relationship was worthless. Ulrich (1981) stated that the current teaching approaches by the nephrology team may not be effective. Finally, St. Jeor et al. (1980) stated that there was no uniform practice or standard set of educational materials for comparison.

#### Compliance with Therapeutic Regimen

Compliance has been defined by Sackett and Haynes (1976) as:

the extent to which the patient's behavior (in terms of taking medications, following dietary regimen or other altered changes in lifestyle) coincides with the clinical prescriptions. (p. 1)

Noncompliance to the therapeutic regimen can lead to complications, hospitalization or death for chronic renal failure patients, especially those diagnosed as having end-stage renal disease. Kaplan De-Nour and Czaczkes (1972) stated that the areas least adhered to in the prescribed treatment for hemodialysis patients were first in fluid restrictions and second in sodium intake level.

Compliance to therapeutic regimens has been a factor in recent studies of different patient populations. The development of new, effective drugs and the use of general hospitals for acute care has led to the need for the chronically ill person to be responsible for his own health at home (Blackwell, 1976; Marston, 1970). Specifically for the patients with chronic renal failure, the high cost of hemodialysis treatments, the increasing number of patients, and the efforts to use outpatient facilities have altered the mode of treatment. Thus, patient adherence to the prescribed treatment and total cost reduction have become the highest priorities (Lowrie & Hampers, 1982).

Overall compliance statistics reported in the literature reviewed varied from 15-96% noncompliance to the

therapeutic regimen. In a review of 19 compliance studies, Armstrong (1978) stated that an average of 46% adhered poorly to the prescribed regimen. This was consistent with Kaplan De-Nour and Czaczkes (1972), who recorded 50% non-compliers to their prescribed diet. Ulrich (1981) also noted a 52% noncompliance to diet as measured by interdialytic weight gains. Difficulty in making comparisons occurs due to the variation in the definition of compliance and the means used to measure it. Many studies in previous literature reviews have attempted to identify characteristics of noncompliers (Davis, 1967; Marston, 1970; Sackett & Haynes, 1976). Factors correlated with noncompliant behavior have been complexity of regimen, locus of control, motivation, demographic variables and psychological factors. Each of these factors will be discussed separately below.

#### Complexity of Regimen

Researchers have stated that the complex nature of the end-stage renal disease regimen influences adherence to the program. The prescribed treatment affects diet, schedule, ability to work, family relationships and psychological performance (Hartman & Becker, 1978; O'Brien, 1980). Marston (1970) reported that the number of recommendations such as diet, number of medications, or exercise were associated with the compliance. The greater the number of

recommendations, the greater the noncompliance. Finnerty (1978) reported that compliance to a therapeutic regimen of two or fewer recommendations had a significantly greater adherence than three or more recommendations.

Medications appear to be the easiest treatment to follow, while restrictions on behavior or alterations in personal habits are more difficult. Davis (1968) pointed out that well-established routines such as smoking, drinking, eating and physical activity are the hardest to change. Recent studies of hemodialysis patients are consistent with the findings that therapeutic regimens of diet and multiple medications have the lowest adherence (Blackburn, 1977; Ulrich, 1981).

### Locus of Control

Locus of control as defined by Rotter (1966) has important implications concerning an individual's coping style. Internal control is defined as contingent upon one's own behavior, whereas external control is related to factors outside one's power such as luck, fate or chance. The hemodialysis patient was found to have more external locus of control than internal control (Evans, 1981; Poll & Kaplan De-Nour, 1980; Ulrich, 1981). Evans (1981) and Mock and Kopel (1977) compared home dialysis patients to

facility-dialyzed patients and reported that home patients were more internally controlled.

When correlating diet compliance to locus of control, Poll and Kaplan De-Nour (1980) noted a positive relationship between noncompliance and external locus of control. The length of time on dialysis treatments was not found to correlate with locus of control (Poll & Kaplan De-Nour, 1980). However, Evans (1981) stated that patients on hemodialysis for longer than eight years were more internally controlled than those with less than eight years of treatment. Since the locus of control represents the perception of that individual, Ulrich (1981) recommended that the therapeutic approach should depend on the way the individual views himself (governed by internal or external control) to achieve greater compliance.

### Motivation

Cummings (1980) has stated that motivation is the key element in the success of therapeutic regimens. Motivation is defined as that force or drive within the individual which makes him take action (Anger & Anger, 1975). Several determinants of motivation were that of self-concept, external locus of control, options, perception, internal needs, external goals, and healthy independence. External locus of control allowed the person to believe that active

participation would not alter the disease course. Also, if the illness had benefits of resolving predialysis conflicts or decreasing individual demands, compliance would be reduced (Anger & Anger, 1975).

For the hemodialysis patient, motivation to comply with the therapeutic regimen is a problem since the merits of compliant behavior cannot be rewarded with more fluids, prohibited foods or elimination of dialysis. Wenerowicz (1979) reported increased compliance by the behavior modification technique, using personal attention and television viewing as rewards. Patterson and Miller (1981) also found increased compliance with behavioral modification for one hemodialysis patient using individual needs as the basis of rewards. The possibility of identifying individual internal needs and rewarding compliant behavior based on these needs is an area of proposed future research (Wenerowicz, 1979).

#### Demographic Variables

Demographic variables on the whole have not been found to be indicators of compliance to a therapeutic regimen. Most investigators have stated that age, sex, or socio-economic status were not significantly related to compliance (Davis, 1968; Foster, Cohn, & McKegney, 1973; Kaplan De-Nour, Shanan, & Garty, 1977-78; Marston, 1970). There were varied reports of the significance of the effect of

education on compliance. In two studies, adherence was found to correspond to education and intelligence, especially in males on hemodialysis (Kaplan De-Nour et al., 1977-78; Watchous, 1978). In contrast, Foster et al. (1973) found no relationship between education and compliance with another group of hemodialysis patients.

The presence of support groups, whether they were family, significant others, doctors or nurses, correlated positively with increased compliance (Connelly, 1978; Miller & St. Jeor, 1980; O'Brien, 1980; Schmidt, 1977). The personal attitudes, behaviors and expectations of the hemodialysis nursing staff correlated positively with compliant behaviors in the patients (O'Brien, 1980). However, Marston (1970) and Kaplan De-Nour et al. (1977-78) found that marital status, per se, was not an indicator of compliance.

Additive effects or interaction effects of the doctor-patient relationships were found to correlate with patient compliance. When the doctor gave the impression of rejecting, controlling, or not allowing the patient to verbalize his feelings, compliance decreased. However, explanation and reciprocal understanding between doctor and patient increased compliance with the medical regimen (Davis, 1966; Schmidt, 1977).

Watchous, Thurston, and Carter (1980) as well as Hartman and Becker (1978) discovered that greater length of time on dialysis was associated with greater compliance. Other studies have discussed an increase in compliance during the first six months on dialysis (Kaplan De-Nour & Czaczkes, 1976; Watchous et al., 1980). Possible explanations of this relationship have been the newness of the treatment, fear, anxiety or attentions from support groups of family or health professionals (Kaplan De-Nour & Czaczkes, 1976). O'Brien (1980) found no significant relationship between length of time on dialysis and compliance, however compliant behavior appeared to increase over time.

### Psychological Factors

Many personality factors have been studied to gain insight into their effect on compliance. Kaplan De-Nour and Czaczkes (1972, 1976) found that a low tolerance to delay gratification, "acting out," depression, anxiety, and gains from the sick role were correlated with noncompliance. Greenberg, Weltz, Spitz, and Bizzozero (1975) stated that the ability to cope with the dependency of dialysis was associated with adherence.

Denial has been defined as an adaptive mechanism which enables the individual to deal with chronic renal failure. Greenberg et al. (1975) and Short and Wilson (1969) found

that denial was not shown to influence adherence significantly in hemodialysis patients. Yet, Kaplan De-Nour et al. (1977-78) found that hemodialysis patients who did not use defense mechanisms, such as denial, displacement and projection, had increased compliance. In another study, Baldree, Murphy, and Powers (1982) found that optimism and controlling the situation, not denial, were used as coping mechanisms for the stressor of "uncertainty" for patients receiving hemodialysis treatments.

Body image has also been studied in relation to compliance. Bille (1977a) found that individuals with myocardial infarction and a positive body image reported higher compliance with prescribed treatment. When Foster et al. (1973) studied hemodialysis patients, they found no significant relationship between compliance and psychosocial factors. Hypothesized in the study was that the weight gain of the hemodialysis patient was an adaptive attempt to reconstitute a disintegrating body image (Foster et al., 1973).

Finally, perceived severity of the illness was demonstrated to be an indicator of compliance (Hartman & Becker, 1978; Ulrich, 1981). The perceived severity of the illness correlated positively with increased adherence. However, this relationship does not offer strategies for modifying behaviors, but rather only indicates a

tool for identifying compliers and noncompliers (Hartman & Becker, 1978).

#### Summary

From the review of literature it is apparent that patients with chronic renal failure treated with hemodialysis must comply to complex therapeutic regimens on which their lives depend. It is also recognized that compliance to the regimen is a problem for these patients. The identification of the determinants of compliance to increase adherence has been a priority in recent studies.

Results of studies of the effect of knowledge on compliance are inconclusive. Some investigators concluded that planned patient education programs modify compliance, however others have found that knowledge of a therapeutic regimen does not positively correlate with compliance.

## CHAPTER 3

### PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

This study was a quasi-experimental study of hemodialysis patients in a proprietary setting. Patient knowledge and compliance to the sodium and fluid restrictions were studied following a planned systematic teaching program. The procedure for the collection and treatment of data is presented in this chapter.

This study used a one-group pre-post test design (Polit & Hungler, 1978). The independent variable of the study was the knowledge of sodium and fluid restrictions. The dependent variable was the compliance of chronic renal failure patients on hemodialysis treatment.

#### Setting

The setting for this study was a large private hemodialysis center in an urban area of the southwestern United States. The testing and systematic teaching program took place in the area of the hemodialysis treatments. At this unit three groups of approximately 25 patients had hemodialysis daily, with a schedule for dialysis treatments of Monday, Wednesday, and Friday or Tuesday, Thursday, and Saturday.

### Population and Sample

All the hemodialysis patients treated three times a week at the urban hemodialysis center comprised the population. All the patients had been diagnosed as having chronic renal failure by a physician and hemodialysis was part of the prescribed treatment.

The population was screened based on specific criteria. Criteria for inclusion in the sample included the following:

1. Adults, age 18 or older.
2. Not requiring hemodialysis in an isolation setting.
3. On hemodialysis longer than three months.
4. Not diagnosed with liver, heart or other disease, which could result in non-patient control over weight gain.
5. Ability to hear and see.
6. Ability to read and write English.

The patients who met the criteria were contacted in the hemodialysis setting by the investigator or the dialysis nurse. The experiment of "evaluating a dietary slide-tape presentation" was explained by the investigator. The first 30 hemodialysis patients voluntarily consenting to participate were included in the study. Consequently, the sample was a nonprobability, convenience sample of 30 hemodialysis

patients. If the patient requested to be withdrawn or if his medical condition dictated, the individual was excluded from the study.

#### Protection of Human Subjects

The human rights of the participants and the agency were protected in the following way:

1. Thesis proposal submitted to and approved by Texas Woman's University.
2. Physician and agency permission (Appendix A).

The individual's rights were protected in the following manner:

1. Each individual was asked to voluntarily participate by the investigator.
2. Each individual was given a written explanation (Appendix B) of the study and any additional information requested by the patient was provided by the investigator.
3. Individuals were told they might discontinue participation at any time during the study.
4. Each individual's permission was documented with his/her signature and a witness's signature (Appendix B).
5. Only one list of participants existed, which was locked in the investigator's home during the study and was destroyed after the study.

6. Each participant was assigned a number which appeared on the demographic sheet and tests. The individual was only referred to by number during the study.
7. The letter "A" for pretest, "B" for posttest and "C" for four-week posttest appeared on the test forms along with the corresponding number of the participant.

#### Instruments

The instruction program was based on Watchous' (1978) programmed module Let's Talk About Sodium and Fluid Restriction in Chronic Renal Failure. Content validity of this book was established by a practicing physician in hemodialysis, two hemodialysis patients, one hemodialysis nurse and three University of Kansas nursing faculty members (Watchous, 1978). The investigator-prepared slide-tape presentation contained the same material, with word changes for the method of presentation only, for example "list" had been changed to "name." Permission to use the book, as well as the accompanying Sodium and Fluid Restriction Test (Watchous, 1978) was received from the author (Appendix C).

The slide-tape presentation was via a self-contained audio-visual device with viewing screen both set up and operated by the investigator. The slide carousel sat on top of the viewing screen and was synchronized with the

accompanying tape for automatic operation. The 25-minute presentation could be stopped by the investigator or viewer at any point in time without interfering with the content of material if the need arose. The audio-visual device allowed for one-to-one visualization. The attached earphones allowed the participant viewing the presentation privacy without interference from the surrounding environment; likewise, the earphones prevented the presentation from interfering with other patients undergoing hemodialysis.

An investigator-designed demographic data sheet was completed by the participants. Items included sex, marital status, previous exposure to teaching of diet and fluid restrictions, education, age, and years on dialysis (Appendix D). Statistical information was calculated for these demographic variables which were correlated to compliance.

Watchous' (1978) Sodium and Fluid Restriction Test was administered before, after, and four weeks after the slide-tape program. This 10-question test covered questions on sodium and fluids and their effects on the body of a patient with chronic renal failure (Appendix E). Based on the teaching objectives of the programmed module, content validity of the test was obtained from three University of Kansas nursing faculty in Watchous' (1978) study.

There were 52 possible responses on the 10-item test, 26 of the answers were correct. Only the 26 correct answers were reviewed for the participants' response. Each answer was worth one point, thus the test score could range from 0 to 26. Reliability was established by administration of the test to 10 patients with chronic renal failure undergoing hemodialysis treatment. The Kuder-Richardson 20 (KR-20) correlation coefficient, which measures reliability through internal consistency (Polit & Hungler, 1978) was applied to the scores. The KR-20 for the scores of these 10 patients was  $r = .88$ .

Existing weight scales at the dialysis center were used for weight documentation on the Weight Data Sheet (Appendix F). Hemodialysis patients were on a set schedule for treatments on either Monday, Wednesday, and Friday or Tuesday, Thursday, and Saturday at the same time for each day for hemodialysis. Although the same person did not weigh all patients, the same scales were used throughout the study.

#### Data Collection

On the first day of the study, the investigator approached the patients after they had been stabilized on the hemodialysis unit. The investigator had the informed consent for study signed by the participants and witnessed. In addition, the investigator had set up the equipment by

placing the audio-visual device on an over-the-bed table for one-to-one presentation of the program. For the comfort of the participant during the study, clipboards were provided for writing. The participant was requested by the investigator to complete the demographic data sheet (Appendix D) and then the Sodium and Fluid Restriction Test "A" (Appendix E).

Following the completion of these forms, the instructional program using a self-contained audio-visual presentation device with viewing screen and earphones was presented to each participant individually by the investigator. Immediately following the presentation, the participant was requested to complete the Sodium and Fluid Restriction Test "B" (Appendix E).

The investigator recorded the patients' pre and post hemodialysis treatment weights for the past two weeks on the Weight Data Sheet (Appendix F) from their medical records. From these weights, the investigator calculated the interdialysis weights.

Twenty-eight days after the initiation of the study, the investigator again approached the participants after they had been stabilized on the hemodialysis unit. Each patient was requested to complete the Sodium and Fluid Restriction Test "C" (Appendix E). Again, the investigator recorded the patient's pre and post hemodialysis treatment

weights since the presentation date from their medical records. The weights were recorded on the Weight Data Sheet (Appendix F) and the interdialysis weights were calculated from these weights.

#### Treatment of Data

To determine the relationship between the extraneous variables and compliance, the following statistical tests were performed. First, the Mann-Whitney U test was applied to sex, marital status and presence or absence of previous teaching and the percentage of times the interdialysis weights were no greater than four pounds, for both pre and post slide-tape presentation. Secondly, for the ratio level variables, the Pearson's product-moment correlation was applied to the age, educational level, and length of time on dialysis and the percentage of times the interdialysis weights were no greater than four pounds, for both pre and post the teaching method.

The relationship between knowledge gain over the four week time period was calculated. The Hotelling T-Square test (Harris, 1975) was applied to the knowledge scores, pre to post and post to four-week post tests.

Finally, to determine the relationship between knowledge and compliance, the Pearson's product-moment correlation was applied to the pretest knowledge scores and the pre

slide-tape percentage of times the interdialysis weights were no greater than four pounds. Then for comparison of this result, the Pearson's product-moment correlation was applied to the four-week posttest knowledge scores and the post slide-tape percentage of times the interdialysis weights were no greater than four pounds.

CHAPTER 4  
ANALYSIS OF DATA

This quasi-experimental study was designed to determine the relationship between knowledge and compliance to a dietary regimen. The data were collected from 30 conveniently selected chronic renal failure patients who received hemodialysis treatments at a proprietary center. Knowledge scores of fluid and sodium restrictions were obtained from the participants at the dialysis center during the dialysis treatment three times during the four week study. The compliance, as measured by the percentage of times the interdialysis weights were no greater than four pounds, was obtained from the medical records both pre and post slide-tape presentation. Analysis of the data is presented in this chapter.

Description of Sample

The sample for this study consisted of 30 subjects diagnosed as having chronic renal failure and receiving hemodialysis treatments at a proprietary center. Six subjects were withdrawn from the four-week study for the following reasons: two refusals to continue, one complication with the hemodialysis treatment, two hospitalizations

and one transfer to another treatment center. Thus, the final sample for this study was comprised of 24 subjects.

Of the 24 participants in the study, 10 (41.7%) were male and 14 (58.3%) were female. The group was divided by marital status with 10 (41.7%) being single, divorced, separated or never married and 14 (58.3%) married. The ages of the subjects ranged from 29 to 63 years. The mean age was 50 years with a standard deviation of 9 years. Table 1 categorizes the subjects' ages.

Table 1  
Frequency and Percentage Distribution of Hemodialysis  
Patients by Age

Age in Years	Number of Subjects	Percent of Total
20-29	1	4.2
30-39	2	8.3
40-49	8	33.3
50-59	10	41.7
60-69	3	12.5
Total	24	100.0

Educational level of the participants ranged from 7th grade to 6 years post high school with a mean of 12th grade and a standard deviation of two grades. Fifteen subjects (62.5%) had a high school education or greater.

The length of time on hemodialysis treatment ranged from three months to nine years and five months, as reported by the subjects. The mean length of therapy was one year and nine months with a standard deviation of three years and four months. Table 2 depicts the length of time on hemodialysis treatments.

Table 2

Frequency and Percentage Distribution of Length of Time of Hemodialysis Treatments

Number of Years	Number of Subjects	Percent of Total
Less than 1 year	5	20.8
1	5	20.8
2	1	4.2
3	4	16.7
4	0	0.0
5	2	8.3
6	2	8.3
7	1	4.2
8	1	4.2
9	3	12.5
Total	24	100.0

Twenty (83.3%) of the subjects reported that they had received previous teaching on fluid and sodium restrictions. In contrast, four (16.7%) individuals acknowledged no previous teaching in this area.

### Findings

In this study, the Sodium and Fluid Restriction Test (Watchous, 1978) was administered to 24 patients with chronic renal failure undergoing hemodialysis. The Kuder-Richardson 20 (KR-20) was applied to the 24 study subjects' scores. The KR-20 for the pretest was  $r = .95$  and for the four week posttest, it was  $r = .88$ .

To determine the knowledge of the subjects, the Fluid and Sodium Restriction Test was administered three times throughout the study and raw scores were calculated. The possible range of scores for this test was 0 to 26. The raw scores of the pretest ranged from 2 to 26. The mean for the group was 16 with a standard deviation of 6.5. In comparison, the raw scores for the posttest ranged from 8 to 26 with a mean of 20.5 and a standard deviation of 5.1. For the final test (four week posttest), the raw scores ranged from 8 to 26 with a mean of 19.1 and a standard deviation of 5.3.

The Hotelling  $T^2$ -Square test was applied to the knowledge scores with the result of the Hotelling  $T^2 = 451.72$ . The calculated  $F$  value for the test was 137.48 with 21 degrees of freedom. The level of significance was  $p < .001$ . This indicates a significant difference between the knowledge scores over time with the greater scores following the teaching program.

The Pearson product-moment correlation coefficient for the pretest and posttest was  $r = .83$  and the level of significance was  $p < .001$ . The positive relationship between the pretest and four week posttest was  $r = .52$  and the level of significance was  $p = .005$ . Even though the Pearson product moment correlation value between the pretest and four week posttest was less than the correlation value between the pretest and posttest value, there was still a significant positive relationship ( $p = .005$ ). The correlation value between the posttest and four week posttest was  $r = .73$ , and the level of significance was  $p < .001$ . This indicates a positive correlation between the posttest and four week posttest. Table 3 shows the correlation coefficients and levels of significance.

The compliance values were the percentage of times the interdialysis weights were no greater than four pounds. The pretest compliance values for the two weeks prior to the slide-tape presentation ranged from 0-100% with a mean of 30.9 and a standard deviation of 33.6. In comparison, the posttest compliance values for the four weeks after the slide tape presentation ranged from 0-100% with a mean of 32.3 and a standard deviation of 29.2.

The Pearson product-moment correlation coefficient between the pretest compliance and four week posttest

Table 3

Pearson Product-Moment Correlations of Knowledge Scores and Compliance Values of Hemodialysis Patients

	Pretest	Posttest	Four Week Posttest	Pretest Compliance	Four Week Posttest Compliance
Pretest	--	.83**	.52*	.06	-.13
Posttest		--	.73**	.20	-.04
Four Week Posttest			--	.23	.17
Pretest Compliance				--	.81**
Four Week Posttest Compliance					--

\* $p < .01$

\*\* $p < .001$

compliance was  $r = .81$  and the level of significance was  $p < .001$ . This indicates a significant positive relationship between the compliance values.

To determine the relationship between the knowledge raw scores and the compliance to the percentage of weight gain no greater than four pounds between dialysis treatments, the Pearson product-moment correlation was applied. There was no relationship between pretest and posttest

compliance ( $r = .06$ ) and between four week posttest and four week posttest compliance ( $r = .17$ ). Again, Table 3 represents these values and levels of significance.

To determine the relationship between the extraneous variables and compliance, the Mann-Whitney  $U$  test was applied to sex, marital status and presence or absence of previous teaching for both pre and post slide-tape presentation. There was found to be no statistical significance in the values.

In addition, the Pearson product-moment correlation was applied to age, educational level, length of time on dialysis and compliance for both pre and post slide-tape presentation. As with the other extraneous variables, there was no statistically significant relationship between the variables.

#### Summary

This chapter presented the description of the sample of 24 patients with chronic renal failure undergoing hemodialysis. In this study it was demonstrated that there was a significant correlation between knowledge scores on the pretest and posttest and on the pretest and four week posttest by the application of the Pearson product-moment correlation. There was also a statistically significant

difference in knowledge over time as measured by the Hotelling T-Square test.

No significant relationship was found between the knowledge raw scores and the compliance by percentages of times the weight gains were no greater than four pounds between dialysis treatments. In addition, there was no significant relationship found between the extraneous variables and compliance. However, there was a statistically significant positive relationship between pre and post slide-tape presentation compliance scores unrelated to the teaching approach.

CHAPTER 5  
SUMMARY OF THE STUDY

This study was conducted to determine if knowledge of fluid and sodium restrictions would increase compliance to the therapeutic regimen. This chapter contains the summary and discussion of the findings. Conclusions, implications, and suggestions for further research are included in this chapter.

Summary

A quasi-experimental study was conducted in a proprietary dialysis center to determine whether there was a positive relationship between the patient's knowledge of fluid and sodium restrictions and the compliance to the prescribed health regimen. Twenty-four patients comprised the sample. The sample contained 10 males and 14 females ranging in age from 29 to 63 years.

The Sodium and Fluid Restriction Test (Watchous, 1978) was administered three times during the four-week study to the participants. In addition, a demographic data sheet was completed by each individual to correlate the demographic variables to the compliance values.

Compliance scores were calculated for both pre and post slide-tape presentation intervals. The compliance was

measured by the percentage of times the interdialysis weight gain was no greater than four pounds for each participant.

The knowledge scores were not found to correlate with the compliance values. Although there was an increase in knowledge scores following the planned systematic teaching approach, both immediately following and four weeks later, these scores were not related to the compliance behavior.

#### Discussion of the Findings

The results of this study are consistent with other studies. Studies conducted by Bille (1977b) and Lowe (1970) reported no correlation between knowledge and compliance to a health regimen in myocardial infarction patients or maternity patients, respectively. This investigator studied patients with chronic renal failure receiving hemodialysis treatments and found that patient knowledge was not related to compliance with prescribed therapeutic regimens. Also, those individuals who were compliant before the slide-tape presentation tended to continue to be compliant and those who were noncompliant tended to continue to be noncompliant. Thus, knowledge did not seem to be the significant factor that influenced patient compliance.

Results indicated that knowledge scores ranged from 2 to 26, with 26 being the maximum score, for the pretest and 8 to 26 on the posttest and four week posttest. There was

a significant positive correlation between the pretest and posttest and the pretest and the four week posttest. This indicated that knowledge changed positively during the study, even with the individual decrease in knowledge scores between the posttest and four week posttest. These results were consistent with Watchous, Thurston, and Carter (1980) who reported a statistically significant  $p = .002$  for the programmed module, Let's Talk About Sodium and Fluid Restriction in Chronic Renal Failure, on which this slide-tape presentation was based. Other studies using audio-visual media have found a significant increase in knowledge scores (Dahmer, Pietaka, & Walther, 1976; Jones, 1976; Marson, 1973).

There was no significant relationship between sex, marital status, age and educational level with compliance. These results are consistent with other researchers who found no relationship between demographic variables and compliance (Davis, 1968; Foster, Cohn, & McKegney, 1973; Marston, 1970). The length of time on hemodialysis treatments was not found to correlate with compliance in the study conducted by O'Brien (1980). Such was the case found by this investigator. However, other researchers have found a significant difference with length of time on dialysis and compliance (Hartman & Becker, 1978; Kaplan De-Nour & Czaczkes, 1976; Watchous et al., 1980).

Tagliacozzo and Ima (1970) found that previous knowledge was reinforced by new knowledge, thus increasing compliance. In this study, the investigator found no significant correlation between the presence or absence of previous teaching and the compliance values.

#### Conclusions and Implications

Based on the findings of this study, it was concluded that the level of knowledge of fluid and sodium restrictions was not related to patient compliance. This suggests that factors or combinations of factors other than knowledge may influence compliance. Thus, the factors of compliance need to be identified, especially as related to chronic renal failure patients.

The teaching of patients is still a priority for the provision of quality care. Nurses need to be involved in the teaching programs, of which teaching tool development is a part. In addition, the teaching tools need to be evaluated by the patients and the medical personnel for quality and appropriateness of content, both immediately after the exposure and over time.

Nurses need to be aware that teaching by itself does not ensure knowledge of the subject matter, indicating that testing of the knowledge level is essential. Teaching and knowledge of the desired lifestyle changes does not

necessarily mean the individual's behavior will change to be compliant with the desired outcomes. Therefore, the following recommendations for further research are suggested.

#### Recommendations

Based upon the findings and conclusions of this study the following recommendations for research are presented:

1. Investigations should be conducted into the determinants of compliant behaviors.
2. The present study should be replicated using an experimental design.
3. Replication of this study should be done in another type of hemodialysis center.
4. Continued investigations into the teaching approaches and their effect on knowledge for different populations should be undertaken.

APPENDIX A

AGENCY AND PHYSICIANS' PERMISSIONS

TEXAS WOMAN'S UNIVERSITY  
COLLEGE OF NURSING  
DENTON, TEXAS 76204

DALLAS CENTER  
1810 INWOOD ROAD  
DALLAS, TEXAS 75235

HOUSTON CENTER  
1130 M. D. ANDERSON BLVD.  
HOUSTON, TEXAS 77030

AGENCY PERMISSION FOR CONDUCTING STUDY\*

THE \_\_\_\_\_

GRANTS TO Rebecca L. Frey, R.N.

a student enrolled in a program of nursing leading to a Master's Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

The relationship of knowledge of sodium and fluid restriction as measured by test scores and compliance as measured by interdialysis weights.

The conditions mutually agreed upon are as follows:

1. The agency ~~(may)~~ (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency ~~(may)~~ (may not) be identified in the final report.
3. The agency (wants) ~~(does not want)~~ a conference with the student when the report is completed.
4. The agency is (willing) ~~(unwilling)~~ to allow the completed report to be circulated through interlibrary loan.
5. Other \_\_\_\_\_

Date: 4/1/82

Rebecca L. Frey  
Signature of Student

\_\_\_\_\_  
Signature of Agency Personnel  
Elizabeth Anderson  
Signature of Faculty Advisor

\* Fill out and sign three copies to be distributed as follows: Original-Student; First copy - agency; Second copy - TWU College of Nursing.

/bc

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5. Other \_\_\_\_\_

Date: 4/7/82

Rebecca L. Frey  
Signature of Student

[Signature]  
Signature of Agency Personnel  
[Signature]  
Signature of Faculty Advisor

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5. Other \_\_\_\_\_

Date: 3/21/82

Rebecca L. Frey  
Signature of Student

Elizabeth Cook  
Signature of Faculty Advisor

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Date: 4/13/82

Rebecca L. Frey  
Signature of Student

\_\_\_\_\_  
Signature of Agency Personnel  
Richard D. ...  
Signature of Faculty Advisor

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5. Other \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date: 4/5/70

Rebecca L. Frey  
Signature of Student

\_\_\_\_\_  
Signature of Agency Personnel  
Elizabeth  
Signature of Faculty Advisor

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5. Other \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date: 4/1/82

\_\_\_\_\_  
Signature of Agency Personnel  
[Signature]  
Signature of Faculty Advisor

[Signature]  
Signature of Student

\* Fill out and sign three copies to be distributed as follows: Original-Student; First copy - agency; Second copy - TWU College of Nursing.

APPENDIX B

INFORMED CONSENT

## WRITTEN CONSENT FORM

My name is Rebecca L. Frey, RN, a graduate student at Texas Woman's University College of Nursing. I am developing a slide-tape presentation on sodium and fluid restriction and I would appreciate your evaluation of this program. I have obtained permission from the dialysis center and your physician to conduct this presentation and its evaluation. I would appreciate your participation.

If you agree to participate in this study, please read and sign the following (a copy of this form, signed and witnessed, will be given to you and a second copy will be made for my files):

1. I understand that I will be asked to:
  - a. Complete short written tests prior to and after the slide-tape presentation.
  - b. View the slide-tape program.
2. I understand that participation in the program may help me understand my diet to a greater degree and I understand that the right and wrong answers will be reviewed with me.
3. I understand that no medical service or compensation is provided to me by Texas Woman's University or Rebecca L. Frey as a result of injury from participation in this program.
4. My questions regarding this program will be answered by the investigator. I may terminate my participation in the program at any time.

---

Participant's Signature

---

Date

---

Witness's Signature

---

Date

APPENDIX C

PERMISSION FOR INSTRUMENT

**THE UNIVERSITY OF KANSAS**

Division of Continuing Nursing Education  
School of Nursing  
College of Health Sciences  
39th and Rainbow Blvd., Kansas City, Kansas 66103  
(913) 588-1610

February 2, 1982

Rebecca L. Frey  
14010 Kingsride Lane  
Houston, Texas 77079

Dear Ms. Frey:

Thank you for your interest in the study by Sandra Watchous which I directed. I have talked with Sandra Watchous who was the primary investigator in the study, and she is willing to share these materials with you. I am sure she would appreciate receiving information about your completed study, either in the form of an abstract or summary of your findings.

I am enclosing a copy of the test and a copy of the manual which was used in this study. We do not have it copyrighted but ask that you acknowledge both Sandra Watchous and myself. I edited the material used for the programmed instruction and was very involved in the entire study; thus, I would like to have the booklet returned when you have finished with it. Also, I would like to have a copy of your thesis when it is completed. This would serve as payment for the materials.

I wish you well in your study and look forward to receiving your finished product. It is a long tedious road, but it also is very rewarding. Please let me hear from you.

Sincerely,

Hester I. Thurston, R.N., Ed.S.  
Professor, Medical/Surgical Nursing  
Director, Continuing Nursing Education

Enclosures

cc: Sandra Watchous

HIT/vh

APPENDIX D

DEMOGRAPHIC DATA SHEET

## PERSONAL DATA SHEET

Please check or fill in the appropriate blank.

Sex

Male

Female

Marital Status

Single (Never married, Divorced, Widowed)

Married

Previous teaching on diet and fluid restriction

Yes

No

Education

4th grade

5th grade

6th grade

7th grade

8th grade

9th grade

10th grade

11th grade

High School graduate

Post High School graduate  years

Age

years

Years on dialysis

years  months

APPENDIX E

SODIUM AND FLUID RESTRICTION TEST

## SODIUM AND FLUID RESTRICTION TEST

Circle the correct answers. There may be more than one correct answer to some questions. Circle all of the correct answers.

1. Which of the following foods must be counted in your daily fluid intake?
  - A. Sauce
  - B. Cucumbers
  - C. Jello
  - D. Tomatoes
  - E. Ice Cream
  - F. Soup
  
2. Which of the following food additives contain large amounts of sodium?
  - A. Baking Soda
  - B. Salt
  - C. Sugar
  - D. Cornstarch
  - E. Baking Powder
  - F. Flour
  
3. If your blood pressure is high, which of the following signs might you notice?
  - A. Swelling of ankles
  - B. Headaches
  - C. Feeling dizzy
  - D. Blurred vision
  - E. Feeling tired
  
4. A serious complication of fluid overload is:
  - A. Nausea
  - B. Hunger
  - C. Anemia
  - D. Fluid on the lungs
  - E. Feeling irritable
  
5. A sign that fluid has collected on your lungs is:
  - A. Leg cramps
  - B. Weight gain
  - C. Difficulty breathing
  - D. Headaches
  - E. Ankle swelling
  
6. In chronic renal failure, drinking a lot of fluid might cause:
  - A. Increased blood pressure
  - B. Weight gain
  - C. Ankle swelling
  - D. Headaches
  - E. Increased body fluid

7. In chronic renal failure, how does sodium affect the body?
  - A. Retains fluid
  - B. Decreases fluid
  - C. Decreases kidney function
  - D. Increases urine output
  - E. Interferes with digestion
  
8. The amount of water and sodium in the body fluid is normally controlled by the kidney.
  - A. True
  - B. False
  
9. Which of the following foods contain large amounts of sodium?
  - A. Hotdogs
  - B. Cucumbers
  - C. Soup
  - D. Apples
  - E. Nuts
  - F. Peaches
  - G. Tomatoes
  - H. Potatc Chips
  
10. In chronic renal failure, the amount of sodium:
  - A. Increases in the body fluid
  - B. Increases in the urine
  - C. Decreases in the body fluid
  - D. Decreases in the urine
  - E. Remains the same in the urine

WEIGHT MEASUREMENT FORM

DATE

WEIGHTS

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

APPENDIX F

WEIGHT MEASUREMENT FORM

## WEIGHT DATA SHEET

Patient No. \_\_\_\_\_

Weights	Interdialysis Weights
1	
2	1
3	2
4	3
5	4
6	5
7	6
<u>Date of Slide Tape Presentation</u>	
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12

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