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The Use of Guided Imagery in the Control of Food and Liquid Intake of Hemodialysis Patients

Thomas E. Higgins
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THE USE OF GUIDED IMAGERY IN THE CONTROL OF FOOD
AND LIQUID INTAKE OF HEMODIALYSIS PATIENTS

By
Thomas E. Higgins

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Education
Department of Counseling and Personnel

Western Michigan University
Kalamazoo, Michigan
December 1984

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THE USE OF GUIDED IMAGERY IN THE CONTROL OF FOOD
AND LIQUID INTAKE OF HEMODIALYSIS PATIENTS

Thomas Higgins, Ed.D.

Western Michigan University

This research was undertaken in order to clarify the relationship between guided imagery and the control of food and liquid intake by hemodialysis patients. There have been a number of studies dealing with the negative psychological states experienced by hemodialysis patients. A behavioral manifestation of these psychological states is the problem of maintaining proper food and liquid intake and this is a major problem for most patients.

One technique used by individuals to cope with negative psychological states and to learn healthy behaviors is guided imagery. The purpose of this study was to determine if a relaxation technique coupled with guided imagery could enable hemodialysis patients to maintain appropriate food and liquid intake.

One research hypothesis for this study stated that hemodialysis patients exposed to a relaxation/guided imagery tape will demonstrate a lower intake of food and liquid than patients not exposed to this tape within the same time period. Another research hypothesis stated that the higher the level of ability at guided imagery the more likely there will be a change in weight and anxiety. Null hypotheses were utilized to test the research hypotheses.

Twenty hemodialysis patients from Lockwood-MacDonald Hospital in
Petoskey, MI, were assigned to experimental and control groups. A randomized-experimental-control group-pretest-posttest design was utilized with weight change and anxiety change as criterion variables. A t test and the Spearman-Rank Order Correlation were used to test statistical significance of the null hypotheses.

The results did not support the existence of a relationship between guided imagery and control of food and liquid intake. Also, the results did not support the existence of a relationship between level of guided imagery and change in anxiety. However, there was determined a significant relationship between level of guided imagery and weight change.

It was concluded that the level of ability at guided imagery is related to the ability to control food and liquid intake. Guided imagery may be a valid therapeutic intervention with hemodialysis patients that demonstrate the ability to image.
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Thomas E. Higgins
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CHAPTER I

INTRODUCTION

Since the middle part of the 1960's, there have been a number of studies and reports dealing with the psychological characteristics of hemodialysis patients. There have been reports of such psychological states as anxiety, apprehension, depression, hopelessness and helplessness. A behavioral manifestation of these psychological states is the problem of maintaining proper food and liquid intake. Appropriate food and liquid intake is essential to the maintenance of health in these patients.

Individuals who developed chronic renal failure were doomed to die until the development of an effective means of hemodialysis in the 1960's. Since this medical development thousands of individuals have had their lives sustained due to improved techniques in hemodialysis. Despite the life-sustaining contributions made by dialysis, complex medical and psychological problems have made this artificial means of life difficult. Emotional problems among these patients are frequent. There are reports of the common occurrence of anxiety and apprehension, both immediately before and during dialysis. Between dialysis treatments there is an almost constant interplay of depression and anxiety. Depression seems to result from feelings of helplessness, loss of control and mourning the loss of independence and health. Anxiety appears to be related to heightened uncertainty of one's meaningful future, from the prospect...
of death, from changing family and work roles, and from shifting
relations with hospital staff. Unfortunately, the treatment of
anxiety in these patients by pharmacological means is rendered
difficult and hazardous by their poor renal functioning. Moreover,
depression introduces the dimension of suicidal risks.

When kidney function is impaired or entirely absent, a person's
food and liquid intake must be altered to conform to the kidney's
limited or absent function. Impaired kidneys are unable to ade­
quately filter the waste products which result from the nutritional
metabolic activity of the body nor are they able to regulate the
body's fluid balance properly. Waste products and fluid accumulate
in the blood and in the tissues, and as a result the person develops
edema. If the condition is allowed to go unchecked, the person can
become quite ill and may even develop a life-threatening state. For
these reasons, it becomes necessary for the person with impaired or
absent kidney function to have professional assistance to monitor
diet and fluid intake carefully. Such monitoring involves regulating
the intake of protein, sodium, potassium, fluid, and calories. These
substances are regulated to minimize the waste products produced by
the body's use of protein; to avoid too much or too little fluid in
the body; and to maintain sodium, potassium, and chloride ion levels
within normal limits. In addition to monitoring food and liquid
intake the more seriously impaired patient must be treated by hemo­
dialysis. Hemodialysis is a mechanical process designed to filter
waste products from the blood and to regulate body fluid.

The regulation of food and liquid intake is a major problem for
most patients on maintenance hemodialysis. Patient's satisfaction with life may be seriously compromised by the required changes in food and liquid patterns. This is especially frustrating for patients with intense oral needs. Further, these restrictions almost always come into major conflict with usual family eating patterns. Either the entire family must suffer through changes in diet, or the hemodialysis patients' food and liquid intake pattern becomes different from that of the family, increasing the isolation of the patient from the family. Repeated transgressions against the diet are often seen in patients, who, in their conflict between independence and dependency on dialysis, "act out" their striving for independence. Binges of overeating or drinking also occur as manifestations of the patients' suicidal behavior. A patient should typically gain up to three pounds between dialysis sessions. Food and liquid abusers gain between three and sixteen pounds between sessions. It appears that the least contaminated variable for measuring adherence to food and liquid intake is the weight of the patient. The patient's weight is therefore measured at each dialysis session.

One technique used by individuals to cope with negative psychological states and to learn more healthy behaviors is guided imagery. Guided imagery coupled with relaxation has been used to assist individuals to achieve desired goals. Gawain (1978) stated that guided imagery is the process of forming images and thoughts in the mind, consciously or unconsciously, and then transmitting them to the body as signals or commands. The key to guided imagery is
imagination. Imagination is the ability to create an idea or a mental picture in your mind. In guided imagery you use your imagination to create a clear idea of what you want. Then, you focus regularly on the idea, or mental picture, giving it positive energy, until you achieve the desired effect.

Benson (1976) described the relaxation response as an innate, integrated set of physiological changes that can be elicited by psychologic means. The physiological changes consist, in part, of decreased oxygen consumption, respiratory rate, heart, and muscle tension. Increases are noted in skin resistance and EEG alpha wave activity. These changes are distinctly different from the physiologic changes noted during quiet sitting or sleeping. These changes are hypothesized to result from an integrated, hypothalmic response leading to decreased sympathetic nervous system activity.

Simonton, Simonton, and Creighton (1981) believed that relaxation enhances the guided imagery process because: 1) it reduces the effect of tension in the body; 2) the patient learns to accept the body for better health; 3) it reduces fear; and 4) it breaks the cycle of tension and fear. Olshan (1980) stated that relaxation is the foundation of all imagery techniques. The reason is that when the mind and the body are relaxed, many physiological changes occur, including the increase in the body's ability to produce endorphins. He stated that in a state of deep relaxation the conscious mind goes "to sleep", so that all messages will be funneled to the subconscious mind and the involuntary nervous system. The unconscious mind contains priceless resources that can be mobilized.
for personal growth and healing. Throughout psychological history, theoreticians have proposed the existence of a "center" in the psyche that directs, regulates, and influences the course of an individual's life.

Simonton et al. (1981) stated that guided imagery is not only an effective motivational tool for recovering health, but is also an important tool for self discovery and for making creative changes in other areas of life. In guided imagery people create mental images of desired events. By forming an image, a person makes a clear mental statement of what he/she wants to happen. By repeating the statement, he/she soon comes to expect that the desired event will indeed occur. As a result of positive expectations, a person begins to act in ways consistent with achieving the desired results.

Samuels and Bennett (1980) stated that because of the large size of the visual cortex in the brain, the ability to visualize is a powerful tool for activating mental energy.

Simonton et al. (1981) used relaxation and guided imagery with cancer patients quite successfully. They found the difference between patients who remained healthy and those that died was that the patients that remained healthy had a belief that they exerted some influence over the course of the disease. Their guided imagery process involved a period of relaxation, during which the patient would mentally picture a desired goal or result. With the cancer patient, this would mean attempting to visualize the cancer, the treatment destroying it and, most importantly, the body's natural defenses helping the patient to recover. They believed this
technique could be used with other illnesses and with assisting people in obtaining other goals.

Purpose

Food and liquid intake is important to maintenance of health in hemodialysis patients. However, the maintenance of appropriate food and liquid intake is a major problem to many of these patients. The reason for the abuse of food and liquid intake appears to be related to complex psychosocial factors. Many researchers have found relaxation and guided imagery procedures to be an effective means of enhancing health and in achieving desired goals.

The purpose of this study is to determine if relaxation and guided imagery can enable hemodialysis patients to maintain appropriate food and liquid intake. It appears that the least contaminated dependent variable is the weight of the hemodialysis patient between dialysis sessions.

Objectives

The objectives of this research are:

1. to develop a relaxation/guided imagery scheme that may be utilized as a therapeutic procedure with hemodialysis patients.

2. to measure the degree of relationship between the extent of guided imagery employed by hemodialysis patients and the ability to control, within prescribed limits, their food and liquid intake.
CHAPTER II

REVIEW OF RELATED LITERATURE

Hemodialysis

The review of the literature will be divided into six parts: 1) hemodialysis, 2) psycho-social factors, 3) guided imagery, 4) guided imagery with hemodialysis patients, 5) physio-biological factors, and 6) the State-Trait Anxiety Inventory. This chapter will also have sections on the hypotheses generated in the study and the limitations of the study.

Schlesinger (1980) stated that dialysis is at least as old as the ancient Romans, who discovered that steaming hot baths could remove urea from the body. It worked but left the patient in a weakened, dehydrated state. It remained for a Dutch physician practicing in the Netherlands some 18 centuries later, to develop the first clinically successful artificial kidney. The advent in the 1940's of cellophane and heparin contributed to the technical feasibility of his work. Following its introduction in the Netherlands, dialysis spread to other parts of Europe where further modifications took place. From Europe, the concept of the artificial kidney traveled to North America, where the first dialysis was performed at Toronto General Hospital in Canada. However, it was in the 1950's that investigators brought dialysis to the point of being a practical treatment methodology.
The Scribner shunt at the start of the 1960's provided an answer to the problem of blood access. However, the shunt presented some problems such as infections, bloodclotting and dislodging of the shunt which could cause life threatening hemorrhages. The development of the internal fistula was another technological breakthrough. The internal fistula allowed for direct access to arteries and veins and was not as cumbersome as the shunt. Chronic hemodialysis was now possible without the problems of shunt disconnection due to trauma, or infection due to contamination of the puncture of the skin and cannula. Another major benefit of the internal fistula was the release of the patient from the constant tyranny of repetitive vascular access surgeries. As these vessel access breakthroughs made chronic hemodialysis not only feasible but practical, modifications in the artificial kidney machines available in the 1960's made dialyzers, themselves, safer and more efficient (Swanbrow, 1980).

Swanbrow (1980) stated that in the 1960's, renal disease was recognized as a public health problem of considerable magnitude. Over three million Americans were estimated to suffer from infections of the kidneys. The National Kidney Foundation attributed over 100,000 deaths annually to kidney disease, making it the fourth largest cause of death in the United States. In addition to mortality, it exacted a heavy toll in prolonged morbidity. Among American women and for the entire population under the age of 25, the greatest loss of working time was caused by kidney disease.

This growing recognition of the scope and consequence of renal disease led, on the one hand, to increased efforts to understand the
etiology of renal disease and on the other hand to increased therapeutic efforts. The increased emphasis on therapeutic efforts led to the development of technology that led to treatment of chronic dialysis. Until this time, most physicians used hemodialysis only for acute cases, such as trauma or poisonings.

Lettieri (1980) stated that the future of nephrology in the United States was changed dramatically in the 1970's by a single act: the passage of legislation which created the End-State Renal Diseases (ESRD) Medicare Program. Through government funding, treatment for renal failure in the United States could now be opened to the general population: to the old as well as the young, to the elite as well as the outcast. So the history of dialysis in the seventies became a story of program expansion. In the course of a decade the dialysis patient population in the United States grew from 5,000 patients in 1972 to over 40,000 patients in 1979. Clearly, the focus of nephrology during the 1970's was upon dialysis technology and the development of new modalities. However, vascular access, a problem which haunted dialysis patients since the creation of the first artificial kidney, continued to cause difficulty for long-term dialysis patients in the 1970's. Although some refinements were made, there were essentially no major breakthroughs in the 1970's comparable to the development of the Scribner shunt and the Brescia-Crimino fistula in the 1960's.

The future of dialysis in the 1980's appears to be in the direction of increased usage of home dialysis and transplantation. The government is urging the expanded use of the more cost-effective
practices of home dialysis and transplantation. The prospect of alternative therapies or adjunctive therapies is another direction which may be pursued in the 1980's (Letteri, 1980).

Springer (1975) stated that psychologists can play an important role in nephrology. In addition to being capable of providing psychotherapeutic and psychodiagnostic services, they can provide comprehensive rehabilitative, preventative, group counseling, consultative and research services to patients with end-stage renal disease and to the health professionals who treat them. Psychotherapeutic services provided by psychologists should include crisis intervention techniques, supportive, preventative, marital and family counseling as well as consultative services to the nephrology unit. Psychodiagnostic services may include evaluations for patient selection, patient counseling and training, and research.

Psycho-Social Factors

Studies on the psycho-social aspects of maintenance hemodialysis began not long after Scribner made this therapeutic approach a practical one by the invention of the arteriovenous (A-V) shunt. Belding H. Schribner (1974), often referred to as the "father of modern hemodialysis", made these comments regarding the emotional factors related to hemodialysis:

Today, psycho-social problems represent the major cause of disability among patients that depend for their survival on the artificial kidney; but it was not always that way. As I pointed out in the Presidential Address to the American Society for Artificial Organs in 1964, the day to day life of a dialysis patient (in the early 1960's) was a continual battle for survival and no one knew from one day to the next what lay ahead. Because patients and physicians were allies
in a continual fight for survival, there was no time to worry about much else. Patients were basically "happy" and the dire predications of emotional breakdowns and suicide made so easy because of the ever present arterio venous shunt, usually did not materialize. As long as the struggle for survival was the main issue, emotional problems were suppressed.

In that same address I predicted that as technical and medical improvements in hemodialysis techniques resulted in healthier patients and the threat of death dropped into the background, that emotional rather than medical problems would then become dominant, and the suicide rate would rise. These predictions have proven reasonably accurate and therein lies the challenge to the medical profession and the importance of this book (p. xi).

Little was written prior to Schribner's introductory address in 1964. Since the middle part of the 1960's there have been a number of studies and reports dealing with the psychological responses of hemodialysis patients (Wright, Sand, and Livingston, 1966; McNamara, 1967; Abram, 1968; Short and Alexander, 1969; Shambough and Kanter, 1969). Of particular interest is Shea's et al. (1965) report of the common occurrence of anxiety and apprehension, both immediately before and during dialysis. They reported that each of the nine patients in their study demonstrated significant psychological reactions while on hemodialysis. They concluded that the additional stress of dialysis seemed to precipitate schizophrenic like episodes in two patients, a psychotic depressive reaction in one patient, and a number of severe neurotic depressive reactions in all but one of the other patients. They reported dependency problems and that a few patients frequently subjected their cannulated arm to unnecessary trauma.

Retan and Lewis (1966) reported that three out of eight patients had severe emotional difficulties related to hemodialysis. Five of
the patients reported thoughts of suicide and other symptoms of depression. Chronic dialysis requires a substantial investment in hardware, as well as time and supporting personnel. They believed that a successful rehabilitation program may require patient selection in areas of motivation, intelligence, and emotional stability.

Crammond, Knight, and Laurence (1967) reported that between dialysis treatments there is an almost constant interplay of depression and anxiety. Depression appears to be related to feelings of helplessness and mourning the loss of health and independence. Anxiety appears to be related to uncertainty about one's future, about the possibility of death and about changing hospital staff relationships.

Isiadinso, Sullivan, and Baxter (1975) reported that patients undergoing maintenance hemodialysis for chronic renal failure are often faced with emotional problems caused by their illness. The limitations imposed on life by chronic uremia and the attendant treatment call for some form of psychological adjustment. They studied 84 patients and administered a battery of psychological tests to each patient. The results of the psychological tests determined that most patients had average or above intelligence quotients. They found signs of anxiety, fear, hostility, aggression, denial, depression and in some cases, suicidal behavior. Fear of death was detected in a large number of patients and feelings of dependency were common. On the night before dialysis most patients experienced anxiety, fear, ambivalence, and insomnia. Dialysis was pictured as a severe discomfort, and some patients referred to it as a "torture
Buchanan and Abram (1975) stated that in the 1960's hemodialysis patients were often moribund, manifesting the symptoms of end stage renal failure at the time they began dialysis. They stated that although this is still occasionally true, more often patients are accepted into a hemodialysis program at an earlier phase in their renal failure. For the less physically ill patient starting dialysis, two general stages can be described. The initial stage represents the acute psychological responses of dialysands. A second and permanent state follows in which the long term adaptational process sets in, challenging all the patients resources.

In the acute state most patients accept dialysis well. The early reactions are hope for future well being and anticipated benefits from increased efficiency. The chronic adaption state occurs when anxiety over the unknown future changes to a realization that dialysis is a way of life. Despair and doubt replace a panacean expectation of the treatment. Buchanan and Abram (1975) stated that the principal psychological reactions in this stage are regression and/or depression, although a variety of symptoms may be present. Denial was also found to be an important psychological reaction.

Springer (1975) reviewed the literature on the emotional problems of hemodialysis patients and reported that in the early days of dialysis, reports centered on emotional problems of patients which were new and unknown to the field. The reports suggested that dialysis patients were apt to develop severe emotional reactions to their treatments, and the quality of life for these patients was
questioned. The eventual response to these early studies was a series of reports which seemingly said that not all patients had to experience these problems but that many patients could lead relatively normal lives with a minimal number of emotional problems. These findings were also unique at the time. Finally, the published reports identified "problems of living" as being unique to dialysis patients because of the increased intensity and duration of stresses. These stressors included multiple losses, conflicts, and frustrations which were directly related to the patients' dependency upon machines to sustain life.

Lohmann (1982) stated that kidney disease which results in renal failure creates a multitude of physical and psychological problems for the individual. Dialysis treatments and transplantation provide the only means available to extend the life of the patients. Without these medical treatments, death is inevitable. That a patient's life is affected in some way by renal failure is accepted as fact. How it is affected may vary from individual to individual. The concept of the "marginal man" has been used to describe the influence of renal failure on the physical/psychological state of the patient. "The chronic renal patient is a marginal man in his own right in that he is suspended in a state of limbo between the world of the sick and the world of the well, belonging to neither, yet part of both" (Landsman, 1975, p. 32).

This inability to function "normally" in society, the inability to choose an appropriate life style, creates in many cases, a chronic state of stress, which manifests itself in various physical and
psycho-social ways. Those in the field of nephrology are well aware of the impact of renal failure on the patient. In the future dialysis treatment will include adjunctive therapies that will assist the patient to cope with psycho-social stressors.

Guided Imagery

Samuels and Samuels (1981) stated the history of guided imagery deals with the waxing and waning of two basic mental processes: verbal thought and visual thought. Primitive man lived his existence in integral connection with his environment. Every event and natural force was animated with his inner vision. His basic consciousness was visual. He thought, felt, and lived visually. Often little distinction was made between sleeping and waking activities, between visions and perceptions. Dreams and fantasies were valued more than cognitive thought.

With the development of language and a written system for recording it, rational thought came to dominate. Words came to function as labels allowing man to detach himself from his experience and analyze it, as well as separate himself from nature. With these changes came the birth of civilization, law and order, the development of philosophical and moral systems, and the growth of mathematics and the sciences. The price of civilization for man has been the loss of his sense of wholeness and a search for missing pieces.

Samuels and Samuels (1981) stated that the earliest record of guided imagery experiences was in the form of pictures, visual images. During the Ice Age (60,000 to 10,000 B.C.) cave dwellers in
France, Spain, Africa and Scandinavia painted on the walls of their caves representations of the images they saw. A second kind of image that has been found in these caves is pictures of men wearing animal masks. Jaffe (1968) speculated that when primitive man put on the mask of an animal, he became one with the animal and gained power over it. When a person holds such an image in his mind he is compelled to participate in its reality. All his senses are awakened: he "sees", "smells", "hears", and "feels" more intensely. And since extremely vivid internal images cannot be distinguished from an external experience, the imager and the image become one. The author stated primitive man did not separate himself from the plants and animals in his environment. He saw himself as part of the unity encompassing both the physical and the spiritual, the visible and the invisible.

Philosophers and priests in every ancient culture used guided imagery as a tool for growth and rebirth. The Egyptian Hermes philosophy was based on primacy of mind as opposed to matter. The philosophy stated that images held in the mind affect the physical universe. The corollary to this thought is that a particular image held in the mind will bring about a particular effect. Guided imagery in the form of concentration on an image was employed as part of Indian yoga practices in very ancient times. In the sixth century A.D., Trantic Yoga became popular in India and permeated both Buddhism and Hinduism. This type of yoga is the most highly developed system man has achieved for holding images in the mind for effect. Biblical Jews frequently recorded such visualizations as
visions and visionary dreams. Most religions have used visualization as one of their basic techniques for helping people to realize their spiritual goals. The visualizer lives, or relives the experience with great involvement. This is an important tenet of Christianity.

One of the most basic uses of guided imagery is that of healing the body. The shaman often visualizes himself going on a journey, finding the sick person's soul, and returning it to him. The Navaho Indians use guided imagery in which a number of people participate. The rite helps the patient image himself as healthy. The Egyptian followers of Hermes, who believed everything is mind, thought disease was to be cured by imagining perfect health. Jayne (1925) stated that holding in mind the image of a healing god was believed to bring about a state of health in the physical world. Hermetic principles of healing with the mind influenced ancient Greeks, medieval, and some modern forms of healing.

Christian Science is based on the concept of God as infinite, divine Mind. Disease is essentially a product of the human mind and through deep, concentrated prayer the action of this divine Mind is brought to bear in human experience to heal physical disease. Other religious denominations and groups such as the Rosicrucians have also used imagery in healing.

Modern western medicine is rediscovering guided imagery as a healing tool. Jacobson (1942) conducted experiments proving that when people picture themselves running, the muscles in the body associated with running contracted in small, but definite amounts. Luthe (1969) described Schultz's "Autogenic Training" as a technique
which utilizes relaxation, autosuggestion, and imagery in the treatment of certain medical disorders.

Psychologists and philosophers have long accorded inner images as being of primary importance in their thinking. Aristotle believed that thought itself was composed of images. He also believed that images have the power to stimulate a person's emotions and motivate him to effort. Locke believed that thought consisted of images derived from perceptions of the outer world. Pioneering psychologists like William James, Frances Galton, and Edward Titchener believed that the image was a fundamental concept in psychology. In the early twentieth century, psychology became preoccupied with the scientific methodology of the physical sciences. Imagery took a back seat to the science of behavior.

In the 1960's a new interest emerged in the more abstract inner processes of the mind. Holt's (1964) paper entitled, "Imagery: The Return of the Ostracized", welcomed back imagery as an important area of scientific pursuit. The growth of interest in imagery since the 1960's is part of a new climate of thought in the west. This new climate has been manifested in an interest in all forms of imagery; in the experience of Eastern religions and philosophy, in hypnotism, and in the hallucinatory drugs, and altered states of consciousness.

From its beginning, psychiatry has used techniques based on people's ability to create images. Since Freud's time, psychotherapists have asked patients to form spontaneous images in their minds. Jungian therapists also use imagery to help a person get in touch with his unconscious. Currently, guided imagery is being used
in a number of different psychotherapeutic techniques, including Guided Affective Imagery, directed daydreams, psychosynthesis, and behaviorist desensitization.

Gawain (1978) describes guided imagery as the process of forming images and thoughts in our mind, consciously or unconsciously, and then transmitting them to the body as signals or commands. The author stated that the key to using creative imagery is imagination. Imagination is the ability to create an idea or a mental picture in the mind. In creative guided imagery one uses his/her imagination to create a clear idea of what he/she wants. Then he/she focuses regularly on the idea, or mental picture, giving it positive energy until he/she achieves the desired effect. Gawain stated that whatever type of medical treatment is used, from conventional medicine to more holistic therapies, creative guided imagery is always a helpful supplement. It is one that the patient can use himself in conjunction with what his doctor or practitioner advise.

He stated that when the subject feels completely relaxed, he/she should imagine the thing he/she wants, exactly as he/she would like it. The subject is to see their problems gone, or as greatly improved. Positive statements or affirmations are a most important part of creative guided imagery. It is not "positive thinking". It involves our deepest attitudes toward life and toward ourselves. He stated that this is why learning the technique can become a process of deep and meaningful change and growth. In the process, we may discover many ways in which we are holding ourselves back, blocking ourselves from achieving satisfaction and fulfillment because of our
fears and limiting concepts.

Hulschnecker (1951) stated that:

The fact the mind rules the body is, in spite of its neglect by biology and medicine, the most fundamental fact which we know about the process of life. . . . the body, . . . carries out the most complex and refined motor activities under the influence of such psychological phenomena as ideas and wishes. All our emotions we express through physiological processes: sorrow by weeping; amusement by laughter; and shame by blushing. All emotions are accompanied by physiological changes: fear by palpitation of the heart; anger by increased heart activity; elevation of blood pressure and changes in carbohydrate metabolism; despair by a deep inspiration and expiration called sighing (p. 120).

The author stated that if the mind and body are one in normal functioning, namely in health, cannot mind and body be one in illness? Whether we fight the battle in reality or only in a dream, whether we labor physically or in the mind, the demands on our body are equally real.

McQuade and McQuade (1974) placed emphasis on the whole self, as distinguished from the rational, ego-centered fragment of the self so prominently featured in conventional Western culture. People "possess feelings and capacities outside the realm of intellect, or even conventional drives, often irrational, often of no practical use, which, however, need to be expressed and exercised, or the person is not fully human. Night dreams, daydreams, fantasy, trances more or less hypnotic, hallucinations mild and strong, all are forms of consciousness expansion and all are natural and enriching functions of the human mind" (p. 171).

Guenther and Kawamura (1975) stated that positive mental attitudes produce positive situations for man's growth, while negative ones have the opposite effect. The only way to overcome
negative states or events is to strengthen the positive ones. To
give an example, when assiduousness and confidence are present, there
is no room for arrogance or skepticism. While negative emotions
merely reinforce negative attitudes, positive emotions lead to growth
and health. The authors stated that "the Way" in Buddhist Psychology
is a short term for the fact that man controls his future because of
his ability to perceive, to know, and to order what he perceives and
knows. "The Way" involves the whole personality which is as much
body as it is feelings, mind, and man's set of values and interpre­
tations. The Buddhist "Way" is thus most comprehensive in being a
growth and health psychology.

Shames and Sterin (1978) stated that they would like to share
the most powerful tool that medical science has at its disposal. It
is one that each of us has at our disposal. No matter what they are
called there are states of consciousness different from both waking
and sleeping. One such state is called the "alpha state" which
corresponds quite closely to a state of mind in which the normal
agitation is largely missing. When a person registers alpha waves,
the mind is both alert and very relaxed. The normal inner chatter of
the waking mind is temporarily quiet. It is as if the more destruc­
tive aspects of the mind have gone to sleep, leaving the creative
aspects to flourish unimpeded.

The name of the state, or the exact nature of its brain waves,
is not what is important. What is important is to realize the
tremendous power and potential in this blend of alertness and
relaxation. In such a state we can have surprising control over our
mental functioning for jobs like memory recall or problem solving. In addition, we can have increasing power over our physical being. Self-diagnosis, self-healing, and habit modification are all within our grasp. To harness the energy we must simply imagine the desired result. Some behavior modification techniques involve seeing a picture of yourself acting differently. If you vividly picture yourself behaving in a different way, the actual behavior often follows.

Pelletier (1977) stated that induced guided imagery can be employed to stimulate the creative imagination, and when used while in a state of passive concentration, it is a powerful tool to mobilize the resources of both mind and body. Guided imagery has been described as a bridge between the different levels of the self. Imagery is a means of discovering the dynamics of the mind and understanding the symbolic discourse between mental events and between mind and body. Where the mind tends to focus, the emotions and physiology are likely to follow. The author stated that the link between imagery and neurophysiological alterations remains an enigma, there is increasing evidence that subtle mental phenomena can have a profound positive or negative impact upon an individual's psycho-physiology. Exploring the potential of this impact is one of the most stimulating areas in the frontiers of holistic approaches to healing.

The central premise of Simonton et al. (1981) was that an illness is not purely a physical problem but rather a problem of the whole person. An illness includes not only body but mind and emotions. They believed that emotional and mental states play a
significant role both in susceptibility to disease, and also in the recovery from all illnesses.

The authors believed that relaxation is a necessary prelude to guided imagery. Relaxation can reduce the negative effects on the body of stress, tension, and fear. Relaxation can be used by the body to acquire better health. When in a state of relaxation, they discovered that guided imagery is not only an effective motivational tool for recovering health but is also an important tool for self-discovery and for making creative change in other areas of life. They stated that in creative guided imagery, people create mental images of desired events. By forming an image, a person makes a clear mental statement of what he wants to happen. By repeating the statement, the individual soon comes to expect that the desired event will indeed occur. As a result of positive expectations, a person begins to act in ways consistent with achieving the desired result.

Johnston (1974) stated that our normal waking consciousness is but one special type of consciousness. Within the human mind are many worlds, uncharted and unknown. Johnston stated it is too early to predict the future of the new branch of medicine based on passive concentration and imagery. However, one of the most significant aspects of it all is that we are coming to form a medicine in which the patient will heal himself and in which the role of doctors and nurses will be radically changed. It makes healing creative and positive rather than a process to be undergone.

Bechtel (1982) stated that the unconscious mind processes information in an abstract, symbolic way. The only language it
understands is that of symbolism and imagery. To get to the unconscious mind we need a new language, the language of imagery. Imagery techniques are a way of reestablishing contact between body and mind. An image of healing becomes real through a mysterious transformation we are only beginning to understand. Bechtel stated that the mind has the ability to trigger the body's self cure, given the proper suggestion. Imagery is so powerful that in some cases, it has been known to reverse the effects of strong drugs. Relaxation and guided imagery techniques are the single most important therapies we can offer to chronically ill individuals with a wide variety of problems. In a state of deep relaxation, the conscious mind goes "to sleep", so that all messages will be funneled to the subconscious mind and the involuntary nervous system.

Stanton (1982) in a study on locus of control had an experimental group receiving relaxation, suggestion, and imagery (RSI). There were two control groups, one receiving a lecture on locus of control and the other receiving no treatment. The experimental group on measures of locus of control was significantly more improved than control groups. Stanton described the RSI technique and stated that relaxation, the first element, involves a person learning how to "let go" both physically and mentally. Once the individual can do so, one becomes more open to suggestion. The conscious "watch dog" mind seems to relinquish some part of its strict supervisor function and permit suggestions to reach the unconscious mind more readily. Although an individual will continue to resist suggestions contrary to self wishes, that individual will more effectively absorb those
suggestions the individual desires to hear. These suggestions help one change in the way or ways most desired. Therefore, in a relaxed state, one is able to accept that one can be energetic, healthy, decisive, able to cope effectively with problems, self-confident, and less dependent on external events.

Imagery involves the individual as one would like to be, initiating action, asserting himself/herself instead of passively reacting, setting and attaining goals, and generally behaving in a new way indicative of taking control of life. This imagery is to be as vivid as possible, with people not only "seeing" the situation but also attempting to use as many other senses as possible. Often a person may be able to "hear", "touch", or "smell" appropriate elements of a situation.

Samuels and Samuels (1981) stated that if there are two important "new" concepts in twentieth century American life, they are meditation and imagery. Meditation clears and concentrates the mind; imagery puts an image in it which can profoundly affect the life. In a sense, man has long been in conflict between the power his visual images have over him and the control he can exert over his environment through the spoken word. They stated that the last 2000 years reads like a history of the social suppression of imagery and, therefore, a denial of one of our most basic mental processes. For imagery is the way we think. Before we had words we had images. Imagery is the heart of the biocomputer. The human brain programs and self-programs through its images. Riding a bicycle, driving a car, learning to read, baking a cake, playing golf are all skills
acquired through the image making process. Imagery is the ultimate consciousness tool. "Visualization is the other side of human nature, the primitive darkness, the energizing nonrational flow, the connection to the source, the artist's inspiration, the path in the right hemisphere of the brain, the Dionysius to civilization's Appolian rigidity, the door to the fountainhead" (p. 181). Imagery is not just an idea; it is one half of consciousness. It is one way we think, perhaps the more basic way.

Ornstein (1972) stated that psychologists have been studying how specific areas of the brain deal with different thought processes. Psychologists believe the brain's two hemispheres function in specialized distinct ways. The left hemisphere which controls the right side of the body is predominantly involved with analytic, logical thinking, especially in verbal and mathematic functions. The right hemisphere which controls the left side of the body is primarily responsible for orientation in space, artistic endeavor, crafts, body image and recognition of faces. The right hemisphere is the one that deals with visual, intuitive, and nonlinear thought. It also appears involved in dreaming.

Ornstein (1972) reports that various types of thought, including seeing with the mind's eye, produce "active restriction of awareness to one single unchanging process, and the withdrawal of attention from ordinary thought" (p. 122). He also believed that this experience de-automatizes ordinary thinking. "The 'mystic' experience, brought about by concentrative meditation, de-automatization exercises, and other techniques intended to alter ordinary, linear
Consciousness is, then, a shift from that normal, analytic world containing separate, discrete objects and persons to a second mode, an experience of unity, a mode of intuition. This experience is outside the province of language and rationality" (p. 138).

Ornstein (1975) believed that people can train the right hemisphere in order to build up the intuitive side of themselves by viewing geometric forms. Imagery enables a person to concentrate on internalized geometric forms, thus strengthening the right hemisphere. Other methods Ornstein lists for developing intuitive functions are learning crafts and paying attention to dreams. He believes that when the right hemisphere or intuitive mode is developed, de-automization, freeing of body energies, physiological self-control and lack of attachment are the result.

Samuels and Samuels (1981) believed that when a person consciously imagines he gains the ability to hold his mind on one object, to concentrate. This one-pointedness of mind is a state that has special properties: alertness, clarity of thought, identification with the object, and a feeling of participation in the imagery. The feeling of identification-participation causes a person to be less involved in himself as an entity separate from the world around him. It goes beyond the awareness of his personality. The image he holds becomes the only thing in his awareness and his awareness of it expands. The only goal he has in relation to the image is to hold it in his mind. This one-pointedness of mind is associated with tremendous energy surrounding both the visualizer and the image, and the unity of the two.
Samuels and Samuels (1981) stated that anatomists have also been aware of pathways between the cerebral cortex, where images are stored, and the autonomic nervous system which controls the involuntary muscles. The autonomic nervous system controls sweating, blood vessel expansion and contraction, blood pressure, blushing and goose pimpling, the rate and force of heart contraction, respiratory rate, dryness of mouth, bowel mobility, and smooth muscle tension. There are also pathways between the autonomic nervous system and the pituitary and adrenal cortex. The pituitary gland secretes hormones which regulate rate of secretion of other glands: especially the thyroid, sex, and adrenal glands.

The authors stated that nervous innervation of the voluntary and involuntary muscle is also associated with the physical expression of emotion. When an image or thought is held in the mind, there is neuronal activity in both hemispheres of the brain. Nerve fibers lead from the cerebral hemisphere to the hypothalmus, which has connections with the autonomic nervous system and the pituitary gland. When a person holds a strong fearful image in his mind his body responds via the autonomic nervous system. Likewise, when a person holds a strong, relaxing image in his mind, his body responds with a lowered heart rate, decreased blood pressure, and all muscles tend to relax.

If the image a person holds in his mind manifests itself in the outer world, then each person is a creator and guided imagery is the mechanism of his creation, thus guided imagery becomes reality and reality, as a person generally thinks of it, is a reflection of his
internal images. Science and metaphysics are beginning to agree—each person has the power to create and change their world, through imagery the inner world and outer world become one.

Samuels and Samuels (1981) stated that since the late 1800's psychologists have written extensively about people's differing abilities to image. In 1883 Galton theorized that people have characteristic modes of thought, such as visualization (thinking in images) and verbalizations (thinking in words). At that time, psychologists believed that people were either one or the other—verbalizers or visualizers. A number of psychologists have come to the conclusion that people cannot be categorized as either visualizers or verbalizers. They believe that people generally use both modes of thought, although one person may use images or words more than another person. The extent to which a person uses imagery depends a great deal upon cultural factors such as education and experience.

Richardson (1969) stated that imagery is an inner state of mind. In order to imagine effectively, people have to put themselves in a state in which they can be aware of inner processes. It is helpful to separate oneself from distracting and chaotic external stimuli. Richardson suggests finding a quiet, tranquil place. Eventually, it becomes possible to focus so clearly on internal stimuli that even external stimuli recede from consciousness. A person also needs a quiet mental state. This means putting aside, as far as possible, ordinary concerns. Body relaxation then, is the first step in learning how to improve the ability to create images. Conscious relaxation further removes extraneous stimuli, thereby allowing a
person to concentrate more intensely on his inner state. Body
relaxation has been found by several researchers to facilitate the
flow of internal images.

Guided imagery may be simple and direct such as picturing
something one will do that day. It may be subtle and complex such as
picturing oneself as a friendly, outgoing person. People hold images
of goals they are attempting to achieve and visualizations of them­
selves in relation to those goals. Goals may be immediate and long
range, conscious and unconscious. They may be goals people want to
achieve or feel they ought to achieve. All these goals are held in
the mind in forms of guided images.

Maltz (1960) wrote that the creative mechanism within you is
impersonal. It will work automatically and impersonally to achieve
goals of success and happiness, or unhappiness and failure, depending
on goals which you yourself set for it. Present it with "success
goals" and it functions as a "success mechanism". Present it with
negative goals, and it operates just as impersonally and just as
faithfully as a "failure mechanism". Like any other servo-mechanism,
it must have a clear-cut goal, objective, or problem to work upon.
The goals that our own creative mechanism seeks to achieve are mental
images or mental pictures which we create by the use of imagination.

Richardson (1969) has demonstrated the value of mental practice
in achieving goals. Mental practice has been used in work, athletics,
and in relieving anxiety. The author demonstrated the value of
imagining an upcoming situation or the symbolic rehearsal of a
physical activity in the absence of any gross muscular movement.
Richardson found the ability to control an image more important than its vividness, and that mental practice is more effective if the visualizer "feels", as well as, "sees" the activity he is symbolically practicing. Simeons (1966) stated that because of imagery's powerful effects on the body, it has been used in a number of fields relating to body image. One such field is weight control. When a person visualizes himself as thin, and images himself as eating less, he automatically begins to lose weight.

Guided Imagery With Hemodialysis Patients

The literature on the use of guided imagery with hemodialysis patients is quite sparse. However, there are two studies that have been similar techniques quite successfully. Dy and Fabbri (1972) in a single case study, utilized combinations of relaxation, guided imagery, autosuggestion, and hypnosis to treat a highly anxious hemodialysis patient. In this case, overwhelming anxiety was diminished, dependency on an artificial respirator was extinguished, and the patient became medically manageable. This technique was determined to be a useful ancillary technique and seemed more helpful and safer than pharmacological tranquilizers. Dimond (1981) utilized hypnosis with guided imagery as an aid in the tranquilization of a hemodialysis patient who was experiencing anxiety and apprehension about the dialysis process. The presenting problems included hyperemotionality during dialysis and an inability by dialysis technicians to secure an adequate blood flow volume. The problem appeared to be linked to the patient's perceived threat to her independence.
Results suggested that hypnosis with guided imagery may be employed in situations to achieve symptom relief and to alter the personal discomfort produced by loss of physical security and independence. The treatment seemed to provide the patient with a sense of mastery and helped her to perceive some freedom in a situation which, to the patient, apparently lacked any possibility of free choice.

The use of guided imagery with hemodialysis patients is quite limited, and in the above cases, was used in conjunction with hypnosis. A review of the literature found no studies utilizing only relaxation and guided imagery with hemodialysis patients.

Physio-Biological Factors

Pamplin, Light, and Hyman (1974) stated that blood chemical analysis and the patient's weight are important measures of the success of renal dialysis. Blood chemical analysis is conducted consistently on such measures as:

1. Hematocrit
2. Sodium
3. Potassium
4. Bicarbonate
5. Chloride
6. Protein
7. Serum Albium
8. Calcium
9. Phosphorus
10. Blood Urea Nitrogen (BUN)
The weight of hemodialysis patients is taken before and after dialysis. Mc Govern (1982) stated that the recommended weight gain between dialysis treatments is approximately three pounds for a person of average size. The patient who is taking too much liquid or is not controlling his food intake will gain over three pounds between treatments. Some abusers have gained as much as sixteen pounds between sessions.

Oleszek (1983) stated that the least contaminated variable in determining food and liquid abuse is the patient's weight between dialysis sessions. The biochemical factors can be influenced by other factors such as other medical problems and problems in the dialysis process itself.

Reichsman and Mc Keegney (1980) stated that diet is a major problem for most patients on maintenance hemodialysis, requiring restrictions on fluid, electrolyte, and protein intake.

McGovern (1982) stated that when kidney function is impaired or entirely absent, a person's diet and fluid intake must be altered to conform to the kidney's limited or absent function. Impaired kidneys are unable to adequately filter the waste products which result from the nutritional and metabolic activity of the body, nor are they able to regulate the body's fluid balance properly. Waste products and fluid accumulate in the blood and in the tissues, and the person develops edema and becomes ill. If the condition is allowed to go unchecked, the person can become seriously ill. For these reasons, it becomes necessary for the person with impaired or absent kidney function to have professional assistance to monitor diet and fluid intake.
intake carefully. Such monitoring involves regulation of intake of protein, sodium, potassium, fluid, and calories. The regulation of these substances is done to minimize the waste products produced by the body's use of protein; to avoid too much fluid; and to maintain sodium, potassium, and chloride ion levels within normal limits.

Gombos, Lee, Horton, and Cummings (1964) conducted four case studies and found that two of the four patients did poorly on dialysis. They did poorly as a result of dietary indiscretions which resulted in edema and hyperkalemia. DenNour and Czaczkes (1972) studied 43 patients on chronic hemodialysis in an attempt to identify personality factors causing noncompliance with the dialysis regimen. The authors used compliance to the dietary regimen, i.e., compliance to fluid, potassium, and salt restrictions, as indicators for noncompliance. Their results indicated that on the whole, adherence to the diet was poor, with 45% of the patients being rated as abusers. Low frustration tolerance and primary and secondary gains from the sick role were found to be the most frequent causes for noncompliance. Other factors contributing to noncompliance, but to a lesser degree, included acting out behavior, denial of the sick role, and suicidal behavior. The authors hypothesized that the high rate of noncompliance could be attributed, at least in part, to high levels of aggression among patients. They attributed these high levels of aggression to the dependency and loss of mastery caused by hemodialysis treatment. Kluthe (1982) stated that the nutritional management of patients under dialysis treatment is of importance in acute renal failure. Abel, Beck, Abott, Ryan, Barnett, and Fischer
(1973) demonstrated in a controlled study that hyperalimentation decreases significantly the death rate and increases the repair velocity of tubular damage. Kluthe (1982) stated that individually steered nutrition, balanced according to the special needs of the patient, seems today, to be an important part of the therapy.

It appears that food and liquid intake is related to the well being of hemodialysis patients. An important part of their therapy is adherence to a strict food and liquid regimen. It also appears that adherence to this regimen is a major problem to these patients. The literature indicated that there are various psycho-social factors that interfere with the adherence to the food and liquid regimen. It is apparent that some psychological modality is needed to address this problem. It appears that one future direction in the treatment of hemodialysis patients will be in such adjunctive areas as psychological interventions.

The State-Trait Anxiety Inventory

Anxiety is a very complex concept and has been defined variously. The definition is often dependent on one's conceptual framework. Jacobson (1964) defined anxiety as "excitation of the cerebrospinal as well as the autonomic nervous system when a menace is recognized or imagined and efforts are made to meet or avoid it" (p. viii).

Beck and Rush (1975) distinguished between anxiety and fear. They stated that fear is an ideation whereas anxiety is an emotion. Fear is the anticipation of the possibility that something dreaded or unwanted may occur while anxiety is an unpleasant emotional state.
They stated, "fear may be regarded as a predisposition to perceive a specific set of conditions as a threat and to react with anxiety when exposed to these conditions" (p. 74). Spielberger (1975) conceptualized anxiety as an integrated process. He stated that anxiety is "a complex sequence of cognition, affect, and behavioral events that is evoked by some form of stress. This process may be initiated by stressful external stimulation or by internal cues that are perceived or interpreted as threatening" (p. 137).

Anxiety, then, appears to be a complex process involving both psychological and physiological components. It is a combination of various cognitive, emotional, and behavioral elements which closely interact with each other. Anxiety may be elicited by either an external stimulus and/or an internal one.

Spielberger, Gorsuch, and Lushene (1970) continue to refine the definition of anxiety by separating anxiety into two distinct constructs: state anxiety and trait anxiety. State anxiety is conceptualized "as a transitory emotional state or condition of the human organism that is characterized by subjective, consciously perceived feelings of tension and apprehension, and heightened autonomic nervous system activity" (p. 3). State anxiety may vary in intensity and fluctuate over time. Trait anxiety refers to individual characterological differences in anxiety proneness. It refers to the differences between people in their tendency to respond to situations perceived as threatening, with elevations in state anxiety. As a psychological concept, trait anxiety has the characteristics of a class of constructs referring to acquired
behavioral dispositions. Acquired behavioral dispositions "involve residues of past experience that predispose an individual both to view the world in a particular way and to manifest 'object-consistent' response tendencies" (p. 3).

Speilberger et al. (1970) stated that in general, it would be expected that those who are high in trait anxiety will exhibit state anxiety elevations more frequently than low trait anxiety individuals because they tend to react to a wider range of situations as dangerous or threatening. High trait anxiety persons are also more likely to respond with increasing state intensity in situations that involve interpersonal relationships which pose some threat to self esteem. Circumstances in which failure is experienced, or in which an individual's personal adequacy is evaluated are particularly threatening to persons with high trait anxiety. However, whether or not individuals who differ in trait anxiety will show corresponding differences in state anxiety depends upon the extent to which a particular situation is perceived as dangerous or threatening.

The State-Trait Anxiety Inventory (STAI) will be used in this study to assess and compare subjects state (A-State) and trait (A-Trait) anxiety. Each scale has 20 statements. The A-State scale statements ask adult subjects how they feel at this moment while the A-Trait scale statements ask them to indicate how they generally feel. It is a paper and pencil inventory which can easily be self-administered. The A-State and A-Trait scales are printed on opposite sides of a single test page form and are identified to subjects as a Self-Evaluation Questionnaire. The A-State scale is designated as
STAI Form X-1 and the A-Trait is designated as STAI Form X-2. The range of possible scores on each form varies from a minimum score of 20 to a maximum score of 80. Subjects respond to each STAI item by rating themselves on a four point scale.

The STAI (Form X) was standardized and normed on college freshmen, undergraduate college students, high school students, male psychiatric patients, general medical and surgical patients, and young prisoners. Test-retest reliability correlations taken from college undergraduates were reasonably high. The correlations for the A-Trait scale ranged from .73 to .86 while those for the A-State scale were relatively low, ranging from .16 to .54. The low r's for the A-State scale were anticipated because a valid measure of A-State should reflect the influence of unique situational factors existing at the time of testing. Alpha coefficients for internal consistency were reasonably high, ranging from .83 to .92 for A-State and .86 to .92 for A-Trait. Thus, the two scales appear to have a high degree of internal consistency. Concurrent validity of the A-Trait scale is also quite high. The correlation between the A-Trait scale and the Taylor Manifest Anxiety Scale (TMAS) was .80; between it and the IPAT Anxiety Scale was .75; and .52 with the Zuckerman Affect Adjective Checklist. The three comparison scales are considered reasonable alternative measures of the A-Trait. The construct validity of the A-State was high and alpha reliabilities ranged from .83 to .94. This data was obtained from male and female college students experiencing both normal and examination conditions. Correlations between the A-State and A-Trait scales will vary depending on the
type and amount of stress present when the A-State scale is administered. Under standard conditions, correlations between the two scales ranged from .44 to .67 and from .11 to .67 under more stressful experimental conditions (Spielberger et al. 1970, pp. 9-12).

Several authors have critically reviewed the STAI and determined it to be a valid measure of both state and trait anxiety. Dreger (1978) stated that the STAI is one of the best standardized measures of anxiety, if not the best. The author stated that the STAI "appears to be deservedly popular, in that reliabilities are nearly as high as one would expect for intelligence scales; it demonstrates expected differences among groups of persons; and its state form generates nonrandom factor structures when used over time" (p. 1095). Katkin (1978) stated that "it appears that the STAI is an excellent choice for the clinical psychologist or personality researcher looking for an easy-to-administer, easy to score, reliable and valid index of either individual differences in proneness to anxiety or individual differences in transitory experiences of anxiety" (p. 1096). It appears that these authors, after extensive review, view the STAI as one of the most valid instruments for the measurement of the construct, anxiety. Consequently this instrument was selected for use in this study.

Research Hypotheses

In summary, the literature review allows for the following conclusions. Hemodialysis patients experience unique psychological
stressors which are related to strong negative emotional states. Anxiety is one strong emotional state that is experienced by most hemodialysis patients. A behavioral manifestation of negative emotional states is food and liquid abuse and this abuse is a major problem for these patients. One technique used by individuals to cope with negative psychological states and to learn healthy behaviors is guided imagery. One research hypothesis in this study is that hemodialysis patients exposed to a relaxation/guided imagery tape will demonstrate a lower intake of food and liquid than patients not exposed to this tape within the same time period. Another research hypothesis is that the higher the level of ability at guided imagery the more likely there will be a change in weight and anxiety.

Limitations of the Study

There were several limitations to this study. A major limitation resulted from the setting of the study. The study was conducted in an applied setting rather than a more formal research setting. In an applied setting it can be more difficult to control all the relevant variables affecting all subjects. Because of the setting the subjects were not randomly selected from the general population but were selected from hemodialysis patients in a hospital setting. Consequently, the conclusions of the study can be generalized only to hemodialysis patients in hospital settings. The setting resulted in providing the study with a small sample size. Large sample sizes are often preferable to small sample sizes. Isaac and Michael (1981) stated that "large-sample statistics involve smaller
sampling errors, greater reliability, and increase the power of a statistical test applied to the data" (p. 96). Another limitation related to the setting was the health of the patients. Hemodialysis patients are high risk patients who can become quite ill. Because of variability of their condition they are not reliable subjects. They may have to be terminated from the study because of the onset of a major illness or they may be absent to the point where their results may be invalid. This could also increase the problem of a small sample size.

Another important limitation was that prior to subject selection the hospital instituted a policy which divided the subject population into two groups. The hospital had been a regional facility for hemodialysis but was going to decentralize. One group of patients was to be dialyzed at Munson Medical Center in Traverse City, a second group was to dialyze at Lockwood-MacDonald Hospital in Petoskey, and a third group was to dialyze alternatively between Alpena Hospital and Lockwood-MacDonald Hospital. The separation of the population into these separate groups could possibly introduce some uncontrolled variability which could affect the validity of the study.
CHAPTER III

METHOD

Subjects

The population for this study was selected from hemodialysis patients at Lockwood-MacDonald Hospital in Petoskey, Michigan. Lockwood-MacDonald is an affiliate of Northern Michigan Hospitals, Incorporated. Lockwood-MacDonald's nephrology department is a regional center for hemodialysis patients in Northern Michigan. The total population from which the experimental and control groups were drawn comprised 30 patients. Of the total population available, 20 patients agreed to participate in the experiment. The 20 patients agreed to sign Participation Consent Forms and had the opportunity to listen to cassette tapes twice a week. The 20 patients were composed of 7 men and 13 women between the ages of 41 and 70. All were from Northern Michigan, and all were experiencing inpatient hemodialysis. The 20 subjects were randomly divided into an experimental group of 10 and a control group of 10. Two of the original experimental group did not complete the study because of a stated lack of interest, which resulted in an experimental group of eight subjects. Five of the control group did not complete the study, resulting in a control group of five. One subject did not complete the study because of stated exhaustion, one subject moved to Florida, two became seriously ill, and one lost interest.
Procedure

To initiate the research, permission was solicited from the hospital administration and received (Appendix A and B). Cooperation from hospital staff was important to the success of the experiment. To elicit this cooperation, letters were forwarded to appropriate hospital staff. The letters explained certain aspects of the experiment and outlined appropriate procedures for the staff to follow (Appendix C). Individuals from the sample population were forwarded letters. The letters informed them about aspects of the experiment, outlined procedures, and requested subject participation (Appendix D). Volunteer subjects from the sample population signed the Participation Consent Form indicating their willingness to voluntarily participate in the experiment (Appendix E).

Both experimental and control groups listened to cassette tapes. The experimental group listened to a Relaxation/Guided Imagery tape while the control group listened to a Relaxation tape. The Relaxation/Guided Imagery tape was adapted from two sources. The relaxation sequel of the Relaxation/Guided Imagery tape was adapted from Surwit's (Surwit, 1977) relaxation scheme, while the guided imagery sequel was adapted from Simonton's (Simonton et al. 1981) guided imagery procedures utilized with cancer patients (Appendix F). The Relaxation tape was adapted from Surwit's (Surwit, 1977) relaxation procedure (Appendix G). The Relaxation/Guided Imagery scheme became the independent variable, while the Relaxation scheme served as a control for this independent variable and as a method of assuring compatibility of procedure for the variable, anxiety. An
important aspect of the experiment was to measure the degree of guided imagery experienced by experimental subjects. The Imagery Vividness Scale was designed to measure the degree of guided imagery experienced by the experimental group (Appendix H). The scores on this scale were utilized to test research hypotheses and to measure the level of guided imagery experienced by the experimental group. The level of guided imagery became an independent variable. A Relaxation Rating Scale was designed for the control group and functioned as a method of assuring comparability of procedure with the use of the Imagery Vividness Scale (Appendix I). A Daily Instruction Form was designed and utilized by subjects (Appendix J).

Each subject was provided a notebook that contained the appropriate cassette tape, the appropriate rating scale, and a Daily Instruction Form. Each subject in both experimental and control groups agreed to listen to the appropriate tape and to fill out the appropriate rating scale a minimum of twice a week. Hospital staff provided subjects the notebooks and materials at each dialysis session. The study commenced on November 14 and terminated on December 9. This was a four-week time period with a potential of three dialysis sessions per week. Each subject had the potential of listening to cassette tapes a maximum of 12 times during the four week experiment.

Research Design

The design of this study was intended to facilitate reporting the measurement of change in weight and anxiety level resulting from
the exposure of subjects to a Relaxation/Guided Imagery scheme. In order to achieve this objective a randomized experimental-control group - pretest - posttest design was utilized with average weights and the State-Trait Anxiety Inventory (STAI) scores as criterion variables. Subjects were randomly divided into two groups. The groups were randomly assigned to an experimental group and a control group, each group consisting of 10 subjects. All subjects were administered the STAI as a pre-test and as a post-test (Appendix K). The average weight of each subject four weeks prior to the experiment was used as a criterion variable, and the average weight obtained was compared to the average weight of each subject during the four-week experiment. Experimental subjects' scores on the Imagery Vividness Scale were tabulated throughout the length of the study and were used as a criterion variable. These scores were compared to measures of weight and level of anxiety to determine if a significant relationship existed between these variables. All subjects signed the Participation Consent Form, received an identical letter, a notebook, and a tape recorder. The notebook contained a cassette tape, a rating scale, and daily instructions. The major differences between the experimental and control groups consisted of only the experimental group being exposed to guided imagery and the Imagery Vividness Scale.

Variables

The dependent variables in this study include the following:

1. the food and liquid intake of all subjects as determined by
comparing the mean weights of experimental and control groups during the four week experimental period;

2. the food and liquid intake of all subjects as determined by measures of weight prior to the experiment and during the experiment;

3. the anxiety levels (state and trait) of experimental subjects prior to pre- and post-testing on the STAI (Form X).

The independent variables are:

1. the use of guided imagery in effecting change in experimental group subjects;

2. the level of guided imagery in effecting change in experimental group subjects.

Instrumentation

One criterion variable was each subject's weight, and weight was used to measure the dependent variable - food and liquid intake. The weight of each subject was recorded prior to and after each dialysis session. In this experiment, the weight prior to each dialysis session was tabulated and averaged. Average weight over a period of four weeks prior to the experiment was compared to average weight during the four-week experiment. Oleszek (1983) stated that the least contaminated variable for the measurement of food and liquid abuse is the weight of the patient before each dialysis session. A patient should typically gain up to three pounds between dialysis sessions. Food and liquid abusers gain between 3 and 16 pounds between sessions.

The State-Trait Anxiety Inventory (STAI) was used to measure the
dependent variable - anxiety (Appendix K). The STAI is composed of two separate self-report scales used to measure two distinct anxiety concepts: 1) state anxiety (A-State) and 2) trait anxiety (A-Trait). The STAI A-State scale consists of 20 statements asking adults how they feel at this particular moment. The STAI A-Trait scale consists of 20 statements asking adults how they feel generally. The A-State and A-Trait scales are printed on opposite sides of a single-page test form and are identified to subjects as a Self-Evaluation Questionnaire. The A-State is designated as Form X-1, and the A-Trait is designated as Form X-2. The STAI has been standardized and normed, resulting in reliability and validity data that is sufficient for use as a valid instrument for research purposes. It has been described as one of the best instruments for the measurement of anxiety.

The Imagery Vividness Scale (IVS) was used to measure subjects' ability to guided imagery and was specifically designed for this study. The IVS is composed of 10 questions related to the respondent's ability to utilize guided imagery. Each question is rated on a five-point scale, from five being "very clear" to one being "no" or "not clear at all." The IVS was scored by experimental subjects after each guided imagery experience. It was hypothesized that one's ability to employ guided imagery is directly related to change in dependent variables.

The control group participated in as many activities as the experimental group. The Relaxation Rating Scale was designed for the control group as a method of assuring comparability of procedure for
the experimental group's use of the IVS. The experimental group differed from the control group in experiencing a guided imagery scheme and the use of the IVS. Although data was available from the Relaxation Rating Scale, this data was not utilized in the study. This data was not needed to test research hypotheses. The Relaxation Rating Scale was designed specifically for this study and was also composed of 10 questions. These questions were related to the ability to relax, and each question is rated on a five-point scale, from five being "excellent" to one being "not at all." It was scored by subjects after each relaxation experience.

Operational Hypotheses and Procedures for Data Analysis

The following operational hypotheses will be tested to evaluate the research hypothesis:

1. The mean weight for hemodialysis patients experiencing a relaxation/guided imagery tape will be different than the mean weight of patients not exposed to this tape within the same time period. A t test for independent means will be utilized to determine statistical significance between the two groups.

2. The Spearman Rho Correlation Coefficient between experimental subjects IVS scores and their weight change is not equal to 0.

3. The Spearman Rho Correlation Coefficient between experimental subjects IVS scores and their A-State anxiety score changes is not equal to 0.

4. The Spearman Rho Correlation Coefficient between
experimental subjects IVS scores and A-Trait score changes is not equal to 0.

A probability of .05 for committing a type 1 error will be used to test all of the null hypotheses corresponding to the previous operational hypotheses.
 CHAPTER IV

DATA ANALYSIS

This study attempted to clarify the relationship between guided imagery and the control of food and liquid by hemodialysis patients. The effects of the independent variable - guided imagery was determined by comparing the mean weights of experimental and control groups during the four week experimental period. To determine the effects of guided imagery on the control of food and liquid intake, experimental and control group means were compared on measures of weight. The statistical test to be utilized to determine statistical significance between the two groups was a t test for independent means.

To determine the effects of the level of ability at guided imagery on weight and anxiety level, scores on the Imagery Vividness Scale (IVS) of experimental group subjects were compared to measures of weight and anxiety level. Weight changes between average weight four weeks prior to the experiment and average weight during the experiment were used as a criterion variable. Scores on the State-Trait Anxiety Inventory (STAI) were used to measure anxiety level. The STAI measures both A-State and A-Trait anxiety and scores on these two scales were utilized as measures of anxiety level. Differences between pre and post testing on A-State anxiety scores and A-Trait anxiety scores were used as criterion variables. The
Spearman Rank-Order Correlation was utilized to determine a linear relationship between scores on the IVS and the criterion measures - weight change, A-State anxiety score changes, and A-Trait anxiety score changes. The .05 level of significant was chosen for all statistical analyses and was used to accept or reject the null hypotheses investigated. A two tailed test was used in statistical analysis.

Initially 30 hemodialysis patients comprised the population. From the population, 10 subjects were randomly assigned to an experimental group and 10 subjects were randomly assigned to a control group. At the termination of the experiment, there remained an experimental group of eight and a control group of five.

Null Hypothesis 1. Subjects exposed to a relaxation/guided imagery tape within a four-week time period will not demonstrate significant changes in food and liquid intake when compared to subjects exposed to a relaxation tape for the same time period as determined by comparing the mean weights of experimental and control groups.

In order to test Null Hypothesis 1, a t test was computed on measures of weight change between experimental and control groups. The t score obtained was .082, resulting in a probability of .936. This resulted in a $p > .05$. 

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TABLE 1
Correlated t-test for Experimental and Control Group on Weight

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>8</td>
<td>154.5</td>
<td>32.74</td>
<td>.082</td>
<td>11</td>
<td>.936</td>
</tr>
<tr>
<td>Control</td>
<td>5</td>
<td>152.5</td>
<td>31.22</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Alpha = .05

p > .05

The lack of significance on measures of weight change between the experimental and control groups made suspect the notion that a relationship existed between guided imagery and weight change. Null Hypothesis 1, therefore, was not rejected.

**Null Hypothesis 2.** Subjects exposed to a relaxation/guided imagery tape who demonstrate an ability for guided imagery, as determined by scores on the Imagery Vividness Scale (IVS), will not have significant changes in food and liquid intake, as determined by weight change when IVS scores are compared to measures of weight change by the Spearman Rho Correlation Coefficient. The Spearman Rho Correlation will be equal to 0.

In order to test Null Hypothesis 2, data from the experimental group was utilized. The experimental group was composed of eight subjects. The level of guided imagery was compared to measures of
weight change in experimental subjects. A Spearman Rank-Order Correlation was computed between Imagery Vividness Scale (IVS) scores and weight changes. The critical $r$ was $\pm .643$, while the obtained $r$ was $-.759$ resulting in significance at the $< .05$ level.

**TABLE 2**

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>Critical $r$</th>
<th>$r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVS Scores</td>
<td>8</td>
<td>$\pm .643$</td>
<td>$-.7591^*$</td>
</tr>
<tr>
<td>Weight Control</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Alpha = .05

* $p < .05$, two tailed

* Significance at the less than .05 level

The determination of significance indicated that a relationship existed between level of guided imagery and weight change. The correlation was inverse, indicating that the higher the level of ability at guided imagery, the more likely there will be a reduction in weight. Guided imagery may be a viable method in assisting hemodialysis patients to control food and liquid intake. Thus, Null Hypothesis 2 was not accepted. The conceptual hypothesis was accepted as a result of rejecting the null hypothesis that the Spearman Rho between IVS scores and weight change is zero.
Null Hypothesis 3. Subjects exposed to a relaxation/guided imagery tape who demonstrate an ability for guided imagery, as determined by scores on the Imagery Vividness Scale (IVS) will not have significant changes in anxiety, as determined by scores on the A-State anxiety scale when IVS scores are compared to A-State scores by the Spearman Rho Correlation Coefficient. The Spearman Rho Correlation Coefficient will be equal to 0.

In order to test Null Hypothesis 3, data from the experimental group was utilized. The level of guided imagery was compared to measures of A-State anxiety change. Scores from IVS were compared to score differences on the A-State anxiety scale. A Spearman Rank-Order Correlation was computed between IVS scores and A-State anxiety score changes. The critical $r$ was $+.643$, while the obtained $r$ was $.143$, resulting in a $p > .05$.

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>Critical $r$</th>
<th>$r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVS Scores</td>
<td>8</td>
<td>$+.643$</td>
<td>$.143$</td>
</tr>
<tr>
<td>A-State Scores</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Alpha = .05

$p > .05$
Support was not found for the existence of a relationship between IVS scores and A-State anxiety score changes. Null Hypotheses 3, therefore, was not rejected.

**Null Hypothesis 4.** Subjects exposed to a relaxation/guided imagery tape who demonstrate an ability in guided imagery, as determined by scores on the Imagery Vividness Scale (IVS) will not have significant changes in anxiety, as determined by scores on the A-Trait anxiety scale when IVS scores are compared to A-Trait scores by the Spearman Rho Correlation Coefficient. The Spearman Rho Correlation Coefficient will be equal to 0.

In order to test Hypothesis 4, data from the experimental group was utilized. The level of guided imagery was compared to measures of A-State anxiety change. Scores from IVS were compared to scores on the A-State anxiety scale. A Spearman Rank-Order Correlation was computed between IVS scores and A-State anxiety scores. The critical r was ±.643, while the obtained r was .251, resulting in a p > .05.
TABLE 4
Spearman Rank-Order Correlations for the Comparison of IVS Scores with A-Trait Anxiety Score Changes in Experimental Subjects

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>Critical r</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVS Scores</td>
<td>8</td>
<td>0.643</td>
<td>0.251</td>
</tr>
<tr>
<td>A-Trait Scores</td>
<td></td>
<td>0.643</td>
<td>0.251</td>
</tr>
</tbody>
</table>

Alpha = .05

Support was not found for the existence of a relationship between IVS scores and A-trait anxiety change scores. Null Hypothesis 4, therefore, was not rejected.
CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This research was undertaken in order to clarify the relationship between guided imagery and the control of food and liquid intake by hemodialysis patients. It was also undertaken to develop an appropriate guided imagery scheme that could be effectively utilized by these patients.

Since the middle of the 1960's there have been a number of studies and reports dealing with the psychological characteristics of hemodialysis patients. There have been reports of such psychological states as anxiety, apprehension, depression, hopelessness, and helplessness. A behavioral manifestation of these psychological states is the problem of maintaining proper food and liquid intake. Appropriate food and liquid intake is essential to the maintenance of health in these patients.

The regulation of food and liquid intake is a major problem for most patients on maintenance hemodialysis. A patient should typically gain up to three pounds between dialysis sessions. Food and liquid abusers gain between 3 and 16 pounds between sessions. It appears that the least contaminated variable for measuring adherence to food and liquid intake is the weight of the patient. The patient's weight is, therefore, measured at each dialysis session.

One technique used by individuals to cope with negative psychological states and to learn more healthy behaviors is guided
imagery. Guided imagery, coupled with relaxation, has been used to assist individuals to achieve desired goals. Gawain (1978) stated that guided imagery is the process of forming images and thoughts in the mind, consciously or unconsciously, and then transmitting them to the body as signals or commands. Simonton et al. (1981) stated that a formal relaxation procedure enhances one's ability for imagery.

The purpose of this study was to determine if a relaxation technique coupled with guided imagery can enable hemodialysis patients to maintain appropriate food and liquid intake. The objectives of this research were:

1. to develop a relaxation technique/guided imagery scheme that may be utilized as a therapeutic procedure with hemodialysis patients;

2. to measure the degree of relationship between the extent of guided imagery employed by hemodialysis patients and the ability to control, within prescribed limits, their food and liquid intake.

One research hypothesis for this study stated that hemodialysis patients exposed to a relaxation/guided imagery tape will demonstrate a lower intake of food and liquid than patients not exposed to this tape within the same time period. Another research hypothesis stated that the higher the level of ability at guided imagery the more likely there will be a change in weight and anxiety. The research hypotheses were operationalized as follows:

1. The mean weight for hemodialysis patients experiencing a relaxation/guided imagery tape will be different than the mean weight of patients not exposed to this tape within the same time period.
2. The difference between experimental subjects IVS scores and their weight change will not be equal to 0.

3. The difference between experimental subjects IVS scores and their A-State anxiety score changes will not be equal to 0.

4. The difference between experimental subjects IVS scores and their A-Trait anxiety score changes will not be equal to 0.

In order to test the operational statement of the research hypotheses, null hypotheses in terms of the parameters, means and Spearman Rhos, were utilized.

1. Subjects exposed to a relaxation technique/guided imagery tape, within a four-week time period, will not demonstrate significant changes in food and liquid intake when compared to subjects exposed to a relaxation tape for the same time period as determined by comparing the mean weights of experimental and control groups.

2. Subjects exposed to a relaxation/guided imagery tape who demonstrate an ability for guided imagery, as determined by scores on the Imagery Vividness Scale (IVS), will not have significant changes in food and liquid intake, as determined by weight change when IVS scores are compared to measures of weight change by the Spearman Rho Correlation Coefficient. The Spearman Rho Correlation Coefficient will be equal to 0.

3. Subjects exposed to a relaxation/guided imagery tape who demonstrate an ability for guided imagery, as determined by scores on the Imagery Vividness Scale (IVS), will not have significant changes in anxiety, as determined by scores on the A-State anxiety...
scale when IVS scores are compared to A-State Scores by the Spearman Rho Correlation Coefficient. The Spearman Rho Correlation Coefficient will be equal to 0.

4. Subjects exposed to a relaxation/guided imagery tape who demonstrate an ability for guided imagery, as determined by scores on the Imagery Vividness Scale (IVS), will not have significant changes in anxiety, as determined scores are compared to A-Trait scores by the Spearman Rho Correlation Coefficient. The Spearman Rho Correlation Coefficient will be equal to 0.

The population for this experiment was selected from hemodialysis patients at Lockwood-MacDonald Hospital in Petoskey, Michigan. From a population of 30 patients, 20 subjects were randomly divided into an experimental group of 10 and a control group of 10. A randomized experimental-control-group pretest-posttest design was utilized with weight and STAI scores as dependent variables. All subjects were administered the STAI as a pretest and as a posttest. Experimental and control groups were compared with weight as the criterion variable. Group means were compared by a t test for independent means.

Experimental subject scores on the IVS were tabulated throughout the study and were used as an independent variable. These scores were compared to measures of weight and levels of anxiety. Scores on the IVS of the experimental group were compared to criterion variables - weight change, A-State anxiety scores, and A-Trait anxiety scores. Comparisons were made to determine if a relationship existed between these variables. The Spearman Rho was the
A statistical method utilized to determine if the relationships were different from 0.

In order to test Null Hypothesis 1, a t test was computed for independent means on measures of weight change between experimental and control groups after the experimental group experienced four weeks of guided imagery. The resulting t was .082, resulting in a probability of .936. This resulted in a $p > .05$ and therefore, Null Hypothesis 1 was not rejected.

In order to test Null Hypothesis 2, data from the experimental group was utilized. The level of guided imagery was compared to measures of weight change in experimental subjects. A Spearman Rank-Order Correlation was computed between IVS scores and weight changes. The critical r was +.641, while the obtained r was -.759, resulting in significance at the $p < .05$ level. The determination of significance indicated that a significant relationship existed between the level of guided imagery and weight change. Therefore Null Hypothesis 2 was rejected.

In order to test Null Hypothesis 3, data from the experimental group was utilized. The level of guided imagery was compared to scores on the A-State anxiety scale. A Spearman Rank-Order Correlation was computed between IVS scores and A-State anxiety scores. The critical r was +.643, resulting in a $p > .05$. The Null Hypothesis was not rejected.

In order to test Null Hypothesis 4, data from the experimental group was utilized. The level of guided imagery was compared to measures of A-Trait anxiety. Scores from the IVS were compared to
scores on the A-Trait anxiety scale. A Spearman Rank-Order Correlation was computed between IVS scores and A-Trait anxiety scores. The critical r was +.643, while the obtained r was .251, resulting in a p > .05. Null Hypothesis 4, therefore, was accepted.

Conclusions

The results obtained from testing Null Hypothesis 1 did not indicate an existence of a relationship between guided imagery and the control of food and liquid intake. This finding made suspect the notion that guided imagery is an effective method for hemodialysis patients to utilize in their control of food and liquid intake.

It may be that for guided imagery to be effective, guided imagery should be viewed as an adjunct to therapy rather than as therapy in itself. Singer (1974) stated "the efficacy of imagery may essentially depend on the following factors: 1) clear discrimination by the client of his or her own ongoing fantasy processes; 2) clues provided by the therapist concerning alternative ways of approaching various situations; 3) awareness of generally avoided situations; 4) encouragement by the therapist to engage in covert rehearsal of alternatives; and 5) consequent decrease in fear of making overt approaches to the avoided situations" (p. 423). Meichenbaum (1978) proposed "that the following three psychological processes explain the effectiveness of all imagery-based techniques: 1) the feeling of control which the client gains as a result of the monitoring and rehearsing of various images; 2) the modified meaning or changed internal dialogue that recedes, attends, and succeeds examples of
maladaptive behavior; and 3) the mental rehearsal of alternative responses that lead to the enhancement of coping skills" (p. 423). It is apparent that both researchers advocate mutual involvement by the therapist and client in a therapeutic process when utilizing an imagery-based therapy.

Frank (1975) stated, "All methods of promoting healing or attitude change through personal influence seem to require their object to participate actively in the proceeding. He must do much of the work himself. Moreover, characteristically the nature of his activities is not completely prescribed, so that he must take some initiative" (p. 110). In this experiment the subjects did not participate in the development of the guided imagery scheme or have a basic understanding of the theoretical framework underlying the use of guided imagery. The subjects were passive recipients rather than active participants. In future development of a guided imagery scheme the aim may be having the subject be a part of the decision making process. Philosophically, the subject should be viewed as a responsible human being with a degree of choice.

Imagery-based therapy may be more effective if viewed as a part of the therapeutic relationship. A therapeutic relationship was not established with research subjects. Hammond, Hepworth, and Smith (1978) stated that the efficacy of therapy is dependent upon the development of a therapeutic relationship. They indicated that preconditions for a therapeutic relationship between therapist and client are empathic communication, respect, authenticity, and confrontation. These conditions are a prerequisite for behavioral
change to occur. Imagery-based therapy, to be effective, should be viewed as part of the total process of therapy.

It also may be that guided imagery in the pursuit of behavioral change is not universally effective. It may be that certain individuals can utilize guided imagery more effectively than others. Sheikh (1983) stated that a relationship existed between creativity, cognitive style and the capacity for imagery. This finding suggests that to optimize imagery-based therapy a pre-selection process should be incorporated to select subjects with more potential for this therapy. Sheikh (1983) stated that preliminary research indicated that the assessment of creativity and cognitive style would be beneficial for the selection of individuals who can utilize imagery-based therapy. However, the author cautioned that at the present time there is no way of clearly determining whether some characteristics of the client (e.g., sex, age, cognitive style) makes one a more suitable candidate for imagery-based therapies. Clearly this is an important area for further research.

The results obtained from testing Null Hypothesis 2 indicated that a relationship existed between the capacity for guided imagery and the control of food and liquid intake. This finding suggests that guided imagery may be a viable intervention in assisting hemodialysis patients to control their food and liquid intake. The capacity for imagery appears to be the important variable. Future research and practice should focus on measuring the capacity for imagery and/or improving the capacity for imagery.

Several researchers have utilized instruments measuring the
capacity for imagery and found a relationship between capacity to image and behavioral change (Sheehan, 1967; Forisha, 1978; Richardson, 1969). The selected instrument for measuring capacity for imagery should be standardized and normed and be easily administered by hospital staff. The instrument could be utilized as a standard procedure in nephrology units to select patients capable of controlling food and liquid intake by the use of guided imagery. Food and liquid abuse is a continuing problem and the use of this instrument could aid in managing this abuse.

Betts (1909) determined that there were strong individual differences in the capacity to image. The author stated that few subjects lacked the ability to evoke images when required, but marked individual differences were found in the degree of clearness and vividness of imagery. Sheikh (1983) stated that it took some time for the notion of individual differences in imagery capacity to be integrated into research. Samuels and Bennett (1980) stated that even though there are individual differences in capacity to image that everyone can learn to image. The authors developed a series of exercises to teach individuals to develop their capacity for imagery. These teaching techniques could be utilized with hemodialysis patients that demonstrate lower capacities for imagery. By teaching this skill more patients could benefit from a guided imagery modality. Guided imagery appears to be a viable intervention for therapists to use with hemodialysis patients.

The results from testing Null Hypotheses 3 determined that support was not found for the existence of a relationship between
capacity for guided imagery and A-State anxiety. The results from testing Null Hypothesis 4 determined that support was not found for the existence of a relationship between capacity for guided imagery and A-Trait anxiety. It may be that a relaxation technique does not reduce either state or trait anxiety in hemodialysis patients.

Several authors (Gawain, 1978; Shames and Sterin, 1978; Pelletier, 1977) indicated that relaxation is a necessary prelude to effective guided imagery. Jacobson (1978) indicated that relaxation reduced anxiety. Simonton et al. (1981) indicated that a formal relaxation procedure is an important component of a guided imagery scheme. Relaxation quiets the mind and allows the subject to image more clearly. The findings of this research make suspect the notion that a formal relaxation procedure is a necessary component of a guided imagery scheme. In this research the ability for guided imagery was found to be related to weight change, but these same subjects did not demonstrate changes in state or trait anxiety. The development of a guided imagery scheme may not need a formal relaxation procedure.

Sheikh (1983) stated that absorption into one's inner world with its increased probability of becoming aware of imagery can occur in a waking state as well as in the hypnogogic state and the dream state. Foulkes and Fleisher (1975) demonstrated in a study with 20 relaxed, waking subjects lying on a bed for 45-60 minutes that 11 of them experienced spontaneous images of hallucinatory vividness, often with novel content and typically in color. Even though these subjects were relaxed, they did not experience a formal relaxation procedure. Their relaxation procedure was to recline on a bed. Morgan et al.
(1965) found that 11 of 18 subjects reported images when placed in a reclining position, compared with only 3 out of 18 subjects when in a sitting position. Relaxation in this study was defined as subjects lying in a reclining position. Segal (1967) determined that experimental and physiological evidence supports the common sense expectation that lying down is more relaxing than sitting up. Allowing subjects to recline may suffice as the relaxation procedure in a guided imagery scheme. Those involved in practice research may want to develop a guided imagery scheme without a formal relaxation procedure.

Recommendations

The relationship between guided imagery and control of food and liquid intake requires further research. Future research in this particular area demands a larger sample size. Isaac and Michael (1981) stated that "large-sample statistics involve smaller sampling errors, greater reliability, and increase the power of a statistical test applied to data" (p. 96). Future research might involve the development of a pre-selection process based on assessing personality characteristics that are more conducive to imagery-based therapy. Sheikh (1983) stated that creativity and cognitive style are related to the capacity for imagery.

The level of guided imagery was assessed in relationship to weight change. A relationship was found between the level of guided imagery and weight change. This finding needs to be further explored and refined utilizing additional measurements of the level of guided
imagery. The utilization of further instrumentation might enhance the ability to determine the need for further works with patients in developing their capacity for guided imagery. It may also be appropriate to compare subjects who demonstrate a low capacity for guided imagery with subjects who demonstrate a high capacity for guided imagery. The groups could be compared on measures of behavioral change.

One of the purposes of this research was to develop an appropriate guided imagery scheme. This research did not support the notion that a formal relaxation procedure is necessary for effective guided imagery. In the development of a guided imagery scheme the formal relaxation procedure could be eliminated. Comparing two guided imagery schemes, one without a formal relaxation procedure and one with a formal relaxation procedure, could be a basis for further research.

Imagery-based therapy has been conceptualized as a unique therapy. It might be more appropriate to conceptualize imagery-based therapy as an adjunct to other therapies rather than an isolated modality. Imagery-based therapy should elicit the involvement of the client in the development of a guided imagery scheme. It might be more effective to view the client as a responsible individual with the capacity for decision making. When utilizing imagery-based therapy, it should be viewed within the context of a therapeutic relationship. Hammond et al. (1978) found a significant relationship between the development of a therapeutic relationship and client behavioral change. Viewing imagery-based therapy in this light might improve its effectiveness.
APPENDICES
July 8, 1983

Ann Oleszek
Northern Michigan Hospitals
Petoskey, Michigan

Dear Ann:

I am writing to obtain permission to conduct research on the Nephrology Unit with hemodialysis patients. The research is in conjunction with my doctoral program at Western Michigan University. The research is part of a total program culminating in a doctoral degree in Agency Counseling. The core of this program is courses in counseling and psychology and will culminate in licensure as a psychologist. The program is in the Counseling and Personnel Department at Western Michigan University.

I am also conducting the research with the assistance of Dr. Paul Sullivan from Psychological Services in Petoskey. The purpose is twofold: to meet partial requirements for my doctoral degree; and to provide a service to hemodialysis patients. I am enclosing my personal resume for further information about my background and experience.

Thank you.

Sincerely,

Thomas E. Higgins

950 Briar Lane
Gaylord, Michigan 49735

517-732-9785
Tom Higgins
950 Briar Lane
Gaylord, MI 49735

July 28, 1983

Dear Tom,

This is to inform you that Dr. Wiegand and the rest of our nephrologists have given the go-ahead on your research study.

Sincerely,

Anne E. Oleszek
Director
Renal Unit
August 25, 1983

Staff, Renal Unit
Northern Michigan Hospitals, Inc.
Lockwood-MacDonald Division
416 Connable Avenue
Petoskey, Michigan

Dear Staff:

I would appreciate your assistance in a research project. The project is a part of my doctoral program at Western Michigan University. The purpose of the project is to determine if taped relaxation is beneficial to hemodialysis patients. If the project is successful, it should prove beneficial to all hemodialysis patients.

Volunteer patients will be asked to sign a participant consent form, fill out a short questionnaire, listen to a 15 minute relaxation tape, and fill out a rating scale after each tape session. Patients will listen to the tapes for four weeks. At the end of four weeks, it will be determined whether or not relaxation is beneficial to the patients.

Your assistance is needed if the project is to be successful, so your help will be greatly appreciated. If you have any further questions, please contact Anne Oleszek.

Thank you.

Sincerely,

Thomas E. Higgins
Doctoral Student
Western Michigan University

72
August 26, 1983

Patients
Renal Unit
Northern Michigan Hospitals, Inc.
Lockwood-MacDonald Division
416 Connable Avenue
Petoskey, Michigan

Dear Patient:

I would like to ask your assistance in doing a research project. The purpose of the research is to find if relaxation is helpful to patients undergoing hemodialysis.

Previous research has shown that relaxation is helpful to patients undergoing hemodialysis. If you choose to participate you will be asked to listen to a 15 minute relaxation tape while you dialysis. The research should benefit all hemodialysis patients and your help is truly needed and appreciated. If you are interested, please contact Anne Oleszek.

Thank you.

Sincerely,

Thomas E. Higgins
Doctoral Student
Western Michigan University
APPENDIX E

Participation Consent Form

I, __________________________________________ voluntarily choose to participate in the doctoral dissertation research project of Mr. Tom Higgins between ________________ and _________________. I understand and give permission to participate in pre and post testing which will consist of psychological and physiological measures. I understand that the results of these testings will be kept confidential and will not be shared with anyone without my permission.

(Signed) ______________________________________

(Date) ________________________________________
APPENDIX F
RELAXATION/VISUALIZATION TRANSCRIPT

Let your eyes drift shut and settle down the best you can...
For the next few moments begin to adopt an attitude that nothing is of much importance other than concentrating on this exercise and relaxing... Begin by directing your internal attention to your feet... Do not tense your feet, simply study their level of tension... Now, under your control, say the word relax to yourself and slowly let any existing tension go. Study the relaxation as it comes into those muscles, under your control... Pleasantly, deeper and deeper, under your control. Simply allow your feet to relax...
Now focus your attention on the muscles of your thighs... Assess the amount of tension present in this part of your body... Study the tension without making any movement. Now think the word relax and let the tension go, studying the relaxation as it flows into your legs, under your control, deeper and deeper... As your legs continue to relax focus your attention on the buttock. Assess the amount of tension that is present in these large muscles. Now, again, say the word relax to yourself and let the tension go. Feel the relaxation coming into these muscles, under your control... as if you were sinking into a soft cushion, pleasantly, deeper and deeper. Let the chair support your weight and try to follow the flow of relaxation just a little deeper... Now focus your attention on your abdomen... Study the level of tension present in this muscle. Think the word relax and allow the tension to disappear. Let your abdomen sag, relaxing more and more, under your control... It doesn't matter what
you look like when your relax. What's important is that your relaxing deeper and deeper. Notice that your breathing moves downward as this muscle relaxes. Abdominal breathing is relaxed breathing... Now direct your attention to your hands... Notice if any tension is present in your muscles and forearms... think the word relax and slowly let the tension go, allowing the relaxation to flow deeper and deeper from your hands to your arms... to the rest of the muscles in your body... Now concentrate on the muscles in the back of the neck and in the shoulders. Concentrate on any tension that might be present in these muscles... Study the tension and now under your control, relax and let the tension go... Let your shoulders sag and come forward... Your shoulders are drooping, more and more. Your head tilting forward, more and more, relaxing. As your head comes forward, let it rest in any position that is comfortable... Now focus your attention on your forehead, notice if any tension is present in this area and if so, let it go, under your control... As you relax, imagine your forehead becoming smoother and smoother, like a piece of rumpled silk smoothing over the top of your head and down over the upper part of your face. Allow the relaxation to spread from the forehead to the muscles in the eyes and from the eyes to the muscles around your mouth. As your mouth relaxes, study the relaxation as it flows to your cheeks, under your control. Allow your lips to part slowly, your jaw to sag, your face to become expressionless, relaxing deeper and deeper. Continue relaxing for a moment or two and enjoy the feelings in your body which you have allowed to occur under your control...
Now, create a mental picture of the dialysis machine... Visualize it in a form that makes sense to you... Picture the machine pumping fluid throughout your body... Imagine yourself becoming stronger and stronger as the fluid circulates throughout your body... Imagine yourself as becoming more healthy and more in control of your life... See yourself as developing more self confidence... the key to your success is confidence... Confidence in yourself... Confidence in your ability to do so... Whatever you truly want to do... Confidence that you will accomplish your goals through the power of your own mind... the power of your own thought. What you imagine and tell yourself has the greatest of power over your life... What you tell yourself determines whether you feel cheerful, or gloomy and worried... and the way you feel determines to a great extent, the health and well being of your physical body... When you are bothered and unhappy, your body simply cannot function properly... What you tell yourself and how you see yourself has an enormous impact on your life... Imagine yourself becoming more energetic and at the same time, less tense, less nervous, less worried or anxious. Tell yourself that your mind and body are relaxed, calm, and you are at peace with the universe... and because you are calm and at ease, you will have greater energy and your mind will be clearer, and sharper, and more focused... Consequently, you will be able to see problems in perspective and handle them easily, efficiently, effectively, and confidently, without becoming bothered or tired out.

Above all, stop telling yourself that you can't do something which you want very much to do, like controlling your food and liquid
intake. Control of food and liquid intake is important to your health... Now imagine yourself becoming more and more healthy. Picture yourself as you would like to be... the key to this picture is your control of food and liquid intake...

Let the muscles in your eyelids lighten up, become ready to open your eyes, and become aware of the room... Now let your eyes open and you are ready to resume your usual activities.

Fill out the Imagery Vividness Scale.
APPENDIX G

RELAXATION TRANSCRIPT

Let your eyes drift shut and settle down the best you can... For the next few moments begin to adopt an attitude that nothing is of much importance other than concentrating on this exercise and relaxing... Begin by directing your internal attention to your feet... Do not tense your feet, simply study their level of tension... Now, under your control, say the word relax to yourself and slowly let any existing tension go. Study the relaxation as it comes into those muscles, under your control... Pleasantly, deeper and deeper, under your control. Simply allow your feel to relax... Now focus your attention on the muscles of your thighs... Assess the amount of tension present in this part of your body... Study the tension without making any movement. Now think the word relax and let the tension go, studying the relaxation as it flows into your legs, under your control, deeper and deeper... As your legs continue to relax, focus your attention on the buttock. Assess the amount of tension that is present in these large muscles. Now again, say the word relax to yourself and let the tension go. Feel the relaxation coming into these muscles, under your control... as if you were sinking into a soft cushion, pleasantly, deeper and deeper. Let the chair support your weight and try to follow the flow of relaxation just a little deeper... Now focus your attention on your abdomen... Study the level of tension present in this muscle. Think the word relax and allow the tension to disappear. Let your abdomen sag, relaxing more and more, under your control... It doesn't matter what
you look like when you relax. What's important is that you're relaxing deeper and deeper. Notice that your breathing moves downward as this muscle relaxes. Abdominal breathing is relaxed breathing... Now direct your attention to your hands... Notice if any tension is present in your muscles and forearms... Think the word relax and slowly let the tension go, allowing the relaxation to flow deeper and deeper from your hands to your arms... to the rest of the muscles in your body... Now concentrate on the muscles in the back of the neck and in the shoulders. Concentrate on any tension that might be present in these muscles... Study the tension and now under your control, relax and let the tension go... Let your shoulders sag and come forward... Your shoulders are drooping, more and more. Your head is tilting forward, more and more, relaxing. As your head comes forward, let it rest in any position that is comfortable... Now focus your attention on your forehead, notice if any tension is present in this area and, if so, let it go, under your control... As you relax, imagine your forehead becoming smoother and smoother, like a piece of rumpled silk smoothing over the top of your head and down over the upper part of your face. Allow the relaxation to spread from the forehead to the muscles in the eyes and from the eyes to the muscles around your mouth. As your mouth relaxes, study the relaxation as it flows to your cheeks, under your control. Allow your lips to part slowly, your jaw to sag, your face to become expressionless, relaxing deeper and deeper. Continue relaxing for a moment or two and enjoy the feelings in your body which you have allowed to occur under your control...
Let the muscles in your eyelids lighten up, become ready to open your eyes, and become aware of the room... Now let your eyes open and you are ready to resume your usual activities.
APPENDIX H

IMAGERY VIVIDNESS SCALE

IMAGE RATING SCALE

5 - very clear  4 - moderately clear  3 - fairly clear  2 - unclear  1 - no

Date _____________

Place the appropriate number in the designated slot.

Rating

1. Could you imagine the dialysis machine? (  )
2. Could you imagine the blood flowing through your body? (  )
3. Could you imagine yourself as more healthy? (  )
4. Could you imagine yourself as being more confident? (  )
5. Could you imagine yourself as being in more control over your life? (  )
6. Could you imagine yourself as having more energy? (  )
7. Could you imagine yourself as being more relaxed? (  )
8. Could you imagine yourself as you would like to be? (  )
9. Could you imagine yourself as being more in control of your food intake? (  )
10. Could you imagine yourself as being more in control of your liquid intake? (  )

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### APPENDIX I

Relaxation Rating Scale

<table>
<thead>
<tr>
<th>Rating Scale</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-Excellent;</td>
<td></td>
</tr>
<tr>
<td>4-Good;</td>
<td></td>
</tr>
<tr>
<td>3-Average;</td>
<td></td>
</tr>
<tr>
<td>2-Below Average;</td>
<td></td>
</tr>
<tr>
<td>1-Not at All</td>
<td></td>
</tr>
</tbody>
</table>

Place the appropriate number in the designated slot.

<table>
<thead>
<tr>
<th></th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Could you relax your feet?</td>
<td>( )</td>
</tr>
<tr>
<td>2. Could you relax your lower legs?</td>
<td>( )</td>
</tr>
<tr>
<td>3. Could you relax your thighs?</td>
<td>( )</td>
</tr>
<tr>
<td>4. Could you relax your abdomen?</td>
<td>( )</td>
</tr>
<tr>
<td>5. Could you relax your buttocks?</td>
<td>( )</td>
</tr>
<tr>
<td>6. Could you relax your lower back?</td>
<td>( )</td>
</tr>
<tr>
<td>7. Could you relax your upper back?</td>
<td>( )</td>
</tr>
<tr>
<td>8. Could you relax your shoulders?</td>
<td>( )</td>
</tr>
<tr>
<td>9. Could you relax your arms?</td>
<td>( )</td>
</tr>
<tr>
<td>10. Could you relax your forehead?</td>
<td>( )</td>
</tr>
</tbody>
</table>
APPENDIX J

Daily Activities

1. Obtain tape folder with tape.
2. Obtain tape recorder and earphones.
3. Listen to tape.
4. Fill out rating scale.
5. Return materials to appropriate place.
SELF-EVALUATION QUESTIONNAIRE
Developed by C. D. Spielberger, R. L. Gorsuch and R. Lushene

STAI FORM X-1

NAME _________________________________________________ DATE __________

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken the appropriate circle to the right of the statement to indicate how you feel right now, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

1. I feel calm ................................................................. 0 1 2 3
2. I feel secure .......................................................................... 0 1 2 3
3. I am tense ........................................................................ 0 1 2 3
4. I am regretful ...................................................................... 0 1 2 3
5. I feel at ease .................................................................... 0 1 2 3
6. I feel upset .......................................................................... 0 1 2 3
7. I am presently worrying over possible misfortunes ........ 0 1 2 3
8. I feel rested .......................................................................... 0 1 2 3
9. I feel anxious ..................................................................... 0 1 2 3
10. I feel comfortable .......................................................... 0 1 2 3
11. I feel self-confident ...................................................... 0 1 2 3
12. I feel nervous ....................................................................... 0 1 2 3
13. I am jittery ........................................................................ 0 1 2 3
14. I feel “high strung” ......................................................... 0 1 2 3
15. I am relaxed ...................................................................... 0 1 2 3
16. I feel content ....................................................................... 0 1 2 3
17. I am worried ..................................................................... 0 1 2 3
18. I feel over-excited and “rattled” ................................. 0 1 2 3
19. I feel joyful ...................................................................... 0 1 2 3
20. I feel pleasant ..................................................................... 0 1 2 3

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SELF-EVALUATION QUESTIONNAIRE
STAI FORM X-2

NAME __________________________________________ DATE ____________________

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you generally feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

21. I feel pleasant .............................................................................................................

22. I tire quickly .............................................................................................................

23. I feel like crying ....................................................................................................... 

24. I wish I could be as happy as others seem to be ..................................................

25. I am losing out on things because I can't make up my mind soon enough .... 

26. I feel rested .............................................................................................................

27. I am "calm, cool, and collected" ...........................................................................

28. I feel that difficulties are piling up so that I cannot overcome them .............

29. I worry too much over something that really doesn't matter ....................... 

30. I am happy .............................................................................................................

31. I am inclined to take things hard ........................................................................ 

32. I lack self-confidence ...........................................................................................

33. I feel secure ...........................................................................................................

34. I try to avoid facing a crisis or difficulty ............................................................

35. I feel blue ............................................................................................................... 

36. I am content .......................................................................................................... 

37. Some unimportant thought runs through my mind and bothers me ..........

38. I take disappointments so keenly that I can't put them out of my mind ....... 

39. I am a steady person ............................................................................................

40. I get in a state of tension or turmoil as I think over my recent concerns and interests ............................................................

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