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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

PSYCHOLOGICAL ASPECTS RELATED TO THE ADJUSTMENT OF HEMODIALYSIS PATIENTS

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

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degree of

DOCTOR OF PHILOSOPHY

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ALFRED GALAZ, JR.

Norman, Oklahoma

1972

PSYCHOLOGICAL ASPECTS RELATED TO

THE ADJUSTMENT OF HEMODIALYSIS PATIENTS

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Psychological Aspects Related to the Adjustment of Hemodialysis Patients

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Abstract

Five personality variables of 24 chronic center hemodialysis patients were studied in relationship to medical and emotional adjustment. The main findings were that individuals rated as making a good emotional adjustment tended to score toward the internal end of the locus of control continuum on Rotter's I-E Scale and toward the extraversion end of the continuum on The Maudsley Personality Inventory (MPI). The converse was true for those rated as making a poor emotional adjustment, with those subjects scoring toward externalization and introversion. Significant relationships were not found between scores on neuroticism-stability dimension (MPI), Tennessee Self Concept Scale, Social Readjustment Rating Questionnaire and emotional adjustment ratings. None of the test scores significantly correlated with medical adjustment ratings, although medical and emotional adjustment ratings correlated with each other beyond the .01 level.

Psychological Aspects Related to the Adjustment of Hemodialysis Patients

Alfred Galaz, Jr.

University of Oklahoma

With the advent of hemodialysis, the lives of people with chronic renal failure can now be prolonged. An enormous physical and psychological price, however, is involved for many patients. Patients are constantly faced with psychological stresses such as fear of death, loss of independence, loss of self-esteem, additional medical problems, and loss of income. Beard (1969) observed that patients with renal failure face the "dilemma" of fearing death along with the fear that "even if they live, their lives may not be acceptable." How then can a person cope with this drastic change of life style? And what are the differing characteristics of those who can or can not adjust to this altered quality of life?

A number of studies have used the Minnesota Multiphasic Personality Inventory (MMPI) to suggest the extent of psychological adjustment to hemodialysis (Sampson and

Prati, 1972; Short and Wilson, 1969; Sand et al., 1966; and Wright et al., 1966). Patients with poorer adjustments were found to score higher on the K scale (defensiveness) than on any other scale (Sand et al., 1966). Wright et al. (1966) reported that hemodialysis patients scored significantly higher than did "normals" on both uncorrected and corrected versions of the Hysteria Scale. However, Sand et al. (1966) reported that the "better" dialysis patients showed fewer somaticizing defenses (Hypochondriasis and Hysteria Scales) than did the potentially less adaptive patients, but that the "better" patients had relatively higher scores on the Depression Scale. Using the MMPI, Short and Wilson (1969) demonstrated that, as stress increased, there was an increase in denial (Welsh's Repression Scale) and a decrease in anxiety (Welsh's Anxiety Scale). Sampson and Prati (1972), at the Seventh Annual Meeting of the Southeastern Dialysis and Transplantation Association, reported that not only the dialysis patients but also the patient's assistants demonstrated denial and hysteric-like complaints to ward off an inundation of anxiety, as measured by the MMPI. Beard (1969) found that, in the fourteen patients he studied, denial was the mechanism most utilized against

the fear of death. Glassman and Siegel (1970) suggested that denial was used extensively since hemodialysis patients did not differ significantly from the test norms on the California Personality Inventory and the Shipman Anxiety-Depression Scales, even though the behavioral observations of the patients while in the hospital yielded quite different conclusions from the test results. Glassman and Siegel went on to suggest that the patient's scores on paper and pencil tests represented the patient's fantasy of "how he would like to feel" and the clinical observation, "a statement of how he is." Their contact with the patients, however, suggested that the patients were depressed, lethargic and prone to manifest a number of somatic complaints.

DeNour et al. (1968) followed nine patients for one year and used a battery of tests which included the Raven, Kohns, Draw-a-Figure, Taylor's Manifest Anxiety Scale, Barron's Ego Strength Scale, Sentence Completion Test, Miro Test, and the Rorschach. Their findings were that the dialysis patients tried to answer as a "normal" person would have done. They also found that the patients tended to block any expression of aggression and dependency through the defenses of denial, displacement, isolation, projection, and reaction formation.

Goldstein and Reznikoff (1971) employed Rotter's locus of control scale to further investigate the denial reactions of hemodialysis patients. Comparing twenty-two male hemodialysis patients with twenty-four male patients in the convalescent stage of a minor medical condition, they found that the dialysis patients were significantly more externally oriented on the locus of control continuum than the control group. This finding suggests that the dialysis patients perceive events as occurring on a random or chance basis, independent of their own behavior or control.

Sand et al. (1966) evaluated candidates for hemodialysis with a psychiatric interview and psychological tests using the Wechsler Adult Intelligence Scale, Minnesota Multiphasic Personality Inventory, Thematic Apperception Test and the Rorschach. They found that the adaptive patients, as measured by staff ratings, differentiated from the less adaptive patients in showing:

> ... (1) higher intelligence, (2) a less defensive attitude about admitting to anxiety or emotional difficulty, (3) less reliance on emotional defenses that involve the use of physical symptoms (for example, hypochondriasis and hysteria), (4) more satisfactory emotional support from family members.

Method

Subjects

The subjects for this study consisted of 24 patients (18 men and 6 women) in the Hemodialysis-Renal Transpant Service sponsored jointly by the University of Oklahoma School of Medicine and the Oklahoma City Veterans Administration Hospital, both located in the University of Oklahoma Health Sciences Center. They consisted of patients receiving training for eventual home dialysis, incenter maintenance, and support for consideration for a kidney transplant. All patients had been on dialysis for a minimum of at least three months and some had been on dialysis for as long as three years with an average of about one year for most patients. The subjects varied widely in age, education, occupation and intelligence.

Assessment Instruments

In order to test for degrees of powerlessness, estrangement, emotional instability, self esteem and social readjustment the following instruments were utilized.

The Maudsley Personality Inventory

The Maudsley Personality Inventory is a brief test (ten to fifteen minutes to complete) that is constructed

to measure two dimensions called extraversion-introversion (E) and neuroticism-stability (N) (Eysenck, 1969). This test is made up of 48 questions, 24 for each dimension, and is constructed so that the dimensions are orthogonal.

Tennessee Self Concept Scale

The Tennessee Self Concept Scale consists of 100 self-description items and was designed to objectively assess a person's concept of himself (Fitts, 1965). There is no time limit; it usually takes within ten to twenty minutes to complete. It was scored according to the Clinical and Research Form.

The Social Readjustment Rating Questionnaire

The Social Readjustment Rating Questionnaire is made up of 43 questions dealing with life events which may be considered "life stress," "emotional stress," "object loss," etc. (Holmes and Rahe, 1967). This questionnaire was modified by asking each subject to respond to each of the questions only if they had experienced the life event within one year prior to or during dialysis. A score was computed for each subject according to The Social Readjustment Rating Scale which has assigned a weight to each of the life events (Holmes and Rahe, 1967).

Rotter's I-E Scale

The I-E Scale was designed to measure the degree to which an individual generally believes that his own behavior is responsible for important happenings in his life versus the extent to which he characteristically feels that events which affect him are controlled by powerful external forces (e.g., luck, fate, social institutions, etc.). Subjects who embrace the former outlook are said to be internals; those who accept the latter view are called externals. To determine the depth to which the subjects feel a sense of powerlessness, The Internal-External Locus of Control (I-E) Scale was administered (Rotter, 1966). This test consists of 23 pairs of statements, one of which represents an internal position and the other an external position. The subject was asked to select the statement which best agreed with his point of view. The score is the total number of external choices.

Procedure

Each test was individually administered while the patient was on the dialysis machine according to standardized procedure. In order to learn more about the situational effects of being on incenter dialysis as opposed to being at

home and relatively free of the stress of dialysis, Rotter's I-E Scale and The Maudsley Personality Inventory were administered twice; once while on dialysis and again at home. Because of physical difficulties in writing, turning pages, and sitting up while on the kidney machine, with the writing arm of some patients immobilized, each patient was allowed to complete the Tennessee Self Concept Scale and The Social Readjustment Rating Questionnaire in his own home.

A rating system was employed in order to determine the patient's level of medical and emotional adjustment. Medical adjustment was rated according to a five point scale with five representing excellent adjustment and one representing extreme difficulty. The criteria used for medical adjustment were such factors as: weight gain, acceptance of diet, attitude toward their helping partner, and resistance or cooperation toward learning how to set up the machine. A triple rating system, utilizing two raters and a judge, was used. The two raters made their scoring decisions independently, with a final judge rating only if the first two independent raters were in disagreement. The two raters and the judge were nurses who had been working with the patients and had access to the medical records.

Emotional adjustment was evaluated also by two raters and a judge. However, their information came from an audio-taped interview of the patient and spouse, nurse, social worker, psychologist, or any other person having some contact or knowledge of the patient's emotional adjustment since being on dialysis. The two raters were clinical psychologists, while the judge was a social worker from the dialysis unit. Emotional adjustment was rated on a seven point scale on six facets. However, ratings 5, 6, and 7 were treated as 3, 2, and 1 ratings respectively, since they represented an over-compensation and equally distant in emotional adjustment, leaving rating 4 as the ideal adjustment possible. The six facets comprising emotional adjustment were: (1) quality of relationship with significant others, (2) quality of social involvement with others, (3) degree of general activity level, (4) self image, (5) emotional stability, and (6) quality of emotional adaptability.

Results

Correlations were computed for all possible variable combinations, including the correlations between each of the tests with medical, emotional and the composite of medical and emotional adjustment. Table 1 presents the

intercorrelation matrix for the variables with the means and standard deviations.

Insert Table 1 about here

It will be noted that there were significant relationships between Rotter's I-E Scale and emotional adjustment ($r = -.48$, $df = 22$, $p < .05$) and extraversion and emotional adjustment ($r = .45$, $df = 22$, $p < .05$). These data suggest that individuals more internally directed were better adjusted emotionally, and the more extraverted individuals showed better emotional adjustment.

There was not a significant relationship between the neuroticism-stability dimension, self concept, and social readjustment with either medical or emotional adjustment.

It is interesting to note that there was a significant relationship between medical and emotional adjustment ratings ($r = .65$, $p < .01$). The correlations indexing the inter-rater agreement for both medical and emotional adjustment were .66 and .83 respectively. Both of these correlations are significant beyond the .01 level. When combining medical and emotional ratings there were also significant relationships between the internal-external locus of control scale and combined adjustment and between

the introversion-extraversion dimension and combined adjustment.

Employing a Matched-Group t Test, there were no significant differences in the patient's taking The Maudsley Personality Inventory and Rotter's I-E Scale under two different conditions, at home and while on the dialysis machine.

Other significant results from Table 1 suggested that the more externally directed individuals tended to score higher on the neuroticism dimension ($p < .01$). And the greater the neuroticism score the lower was their self concept score ($p < .01$). The more extraverted individuals tended to show less of a magnitude of social readjustment ($p < .05$).

The optimum combination of all tests for predicting medical adjustment is given by the multiple regression equation, $\hat{Y}_{med} = -.46X_1 + .36X_2 - .08X_3 - .46X_4 + .13X_5 + 5.12$. Where X_1 = I-E Scale score, X_2 = extraversion-introversion score, X_3 = neuroticism-stability score, X_4 = Tennessee Self Concept score, and X_5 = Social Readjustment Rating Scale score. The multiple correlation (obtained) = .61. However, the multiple correlation was not significantly better than the best single predictor (extraversion-introversion scale)

for predicting medical adjustment ($F = 1.41$, $df = 4$ & 18).

The optimum combination of all tests for predicting emotional adjustment is given by the multiple regression equation, $\hat{Y}_{emo} = -.44X_1 + .38X_2 - .18X_3 - .29X_4 + .04X_5 + 3.67$. The multiple correlation (obtained) = .64. Again the multiple correlation was not significantly better than the best single predictor (Rotter's I-E Scale) for predicting emotional adjustment ($F = 1.37$, $df = 4$ & 18).

The optimum combination of all tests for predicting the combination of medical and emotional adjustment is given by the multiple regression equation,

$\hat{Y}_{total} = -.50X_1 + .40X_2 - .14X_3 - .42X_4 + .98X_5 + 8.78$.

The multiple correlation (obtained) = .67. This correlation was not significantly better than the best single predictor (Rotter's I-E Scale) for predicting the combination of medical and emotional adjustment ($F = 1.44$, $df = 4$ & 18).

Discussion

The results of this study provide support for the generalization that those individuals having made the better adjustment to life as a hemodialysis patient perceived events as contingent more upon their own behavior, while those making a poorer adjustment tended to perceive events which affect

them as being controlled by powerful external forces of which they had little control. The implications for either of these positions seem to reflect the degree of responsibility a patient is willing to take in his own role in treatment. As suggested by Goldstein and Reznikoff (1971), the patient who is at the external end of the locus of control continuum tends to perceive that his behavior is unrelated to his condition and is likely to reject a real commitment to his treatment. This can be reflected by the extent to which a patient subscribes to his prescribed dietary regimen, which may have dire consequences should the patient disregard his diet.

The extraversion-introversion dimension of The Maudsley Personality Inventory indicated a significant association with the degree of adjustment, especially emotional adjustment. The better adjusted patients tended to score more highly on the extraversion end of the continuum, with the more poorly adjusted patients scoring at the introversion end. These results seem to be consistent with the clinical observation that the better adjusted patients continue with their active social life while the poorer adjusted patients become more withdrawn and disinclined to participate in social activities. Some patients have ex-

pressed the fear that association with others may stimulate a topic of discussion which will turn to the patient's medical problems and that he will be seen as a "person to pity."

Although, as a group, the dialysis patients scored lower on self concept than the normative group for this scale ($p < .01$), there was no significant difference between good and poor adjusters. The literature, however, is replete with observations suggesting that dialysis patients tend to deny any loss of self esteem. Wright et al. (1966) reported that when kidney patients rated their fellow patients, the tendency was to see them as less happy than other people in general, but denied this to be true in reference to themselves. DeNour et al. (1968) reported that kidney patients' self image scores were disproportionately high on sentence completion tests and suggested that "this inflated self image reflects their struggle against dependency by unrealistically trying to master uncontrollable situations." It may be that in our study, using the Tennessee Self Concept Scale (a self rating scale), similar defenses were in effect as in Glassman and Siegel's study (1970). That is, the patient was responding to "how he would like to feel" rather than a rating of "how he actually feels he is."

The most flagrant evidence of denial was found on the Social Readjustment Rating Questionnaire. Thirteen of the 24 patients responded in the negative to the question, "Have you experienced any personal injury or illness?" Six of the 24 patients responded in the negative to the question, "Has there been a change in your eating habits?" These answers seemed to reflect a denial that they had an illness and the reality that their diet rigidly prescribes a low salt, protein and liquid intake.

To further test the effects of being on a dialysis machine, Rotter's I-E Scale and The Maudsley Personality Inventory were administered under two conditions, at home and while on the dialysis machine. The results did not indicate that there were significant differences in responding under these two conditions for any of the scales, suggesting a consistancy of outlook rather than reacting to the acute effects of a dialysis situation.

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TABLE 1

Intercorrelation Matrix with Means and Standard Deviations

for all Test Results, Medical and Emotional Ratings

	1	2	3	4	5	6	7	8	$\bar{X}$	s.d.
1	1.00	-.18	.52**	-.35	.36	-.36	-.48*	-.46	8.67	4.62
2		1.00	-.19	.06	-.46*	.36	.45*	.44	24.33	7.31
3			1.00	-.72**	.08	-.04	-.26	-.16	22.50	12.93
4				1.00	.05	-.22	.01	-.12	339.10	46.22
5					1.00	-.23	-.32	-.30	315.79	145.80
6						1.00	.65**	.92**	3.29	1.21
7	(N = 24)						1.00	.89**	2.57	1.05

1 = Rotter's I-E Scale, 2 = Extraversion-Introversion dimension (MPI),
3 = Neuroticism-Stability dimension (MPI), 4 = Tennessee Self Concept Scale,
5 = Social Readjustment Rating Scale, 6 = Medical Adjustment Rating,
7 = Emotional Adjustment Rating, 8 = Total of Medical and Emotional Adjustment Ratings.

* significant at or beyond the .05 level.
** significant at or beyond the .01 level.

APPENDIX A

PROSPECTUS

PROSPECTUS

CHAPTER I

INTRODUCTION

Science has recently made it possible to take over the function of defective vital organs through the use of mechanical techniques. One such method is to prolong the lives of people with chronic renal failure through the use of chronic hemodialysis. But what are the psychological consequences of subjecting an individual to a life as a chronic patient, who must remain attached to a machine, approximately six hours at a time, two to three times a week? Beard (1969) has suggested that all dialysis patients eventually face the "dilemma" of fearing "that their lives will be cut short by an untimely death" and, at the same time, fearing "that even if they live, their lives may not be acceptable."

The quality of life while on hemodialysis is one of the most stressful life situations imaginable. The patient is constantly faced with psychological stress such as fear of death, loss of independence, loss of self-esteem, additional medical problems, and loss of income.

Initially, the patient's immediate reaction on learning that hemodialysis will be available to him appears to be gratitude. There is generally a rapid improvement in health, but later the patient realizes that he must have dialysis

again and again in order to maintain this condition. The patient is then faced with the anxiety that the mechanical pump will break down and he will die or that something else disastrous will happen to him because of some mechanical failure. Cramond et al. (1967) reported that the patient goes through a mourning reaction at which time there is anger felt against the medical profession for its failure to be omnipotent. Some hostility is directed at those who are to go on living; others feel a sense of being punished.

DeNour et al. (1968) argued that the main problem of patients in hemodialysis is dependency. All patients are completely dependent on the machine. Incenter hemodialysis care restricts the patient's geographical mobility, curtailing vacations and dictating where he may establish residence. The patient is also dependent upon the medical team treating him. Cramond et al. (1967) described the patient's dependency on and emotional attachment to the staff as another source of anxiety, for there is anxiety that there will be staff changes and that new staff members will not understand his needs. Not only is the patient dependent on the machine and on the staff, but he is also dependent on his spouse, who frequently helps in operating the machine. Because of the forbidding costs of dialysis, the patient is dependent on society to keep him alive, as often he cannot afford to pay for his own treatment. Insurance coverage is usually inadequate, and most hospitals write off the remainder of charges not covered by the patient's insurance. Independence

is also curtailed by the need for close adherance to a diet. In order to control his electrolytes and fluid and to minimize his uremic symptoms between dialysis, the patient must maintain a strict diet. Cramond et al. (1967) reported that chronic renal patients accustomed to dietary control had worked through their difficulties but that for the patients of an acute onset of renal failure this was another stress situation. Dietary restrictions block accustomed stress outlets such as eating, taking alcohol, or smoking excessively. Abram et al. (1971) in a survey of 201 hemodialysis centers found that the incidence rate of suicide for kidney patients was more than 400 times that of the normal population. From the 3,478 hemodialysis patients in his sample, approximately five percent ended their lives by suicide. One hundred seventeen of the 192 suicidal patients died from ingestion of excess fluids or from wavering from their prescribed diets.

There are a number of events which threaten a hemodialysis patient's self-esteem, even though there is an effort to deny any loss of it (Glassman & Siegel, 1970; Short et al., 1969; DeNour et al., 1968). For male patients, a "role-reversal" frequently occurs as a consequence of inactivity or loss of occupation. While his wife is employed and away from home, the male patient finds that he is expected to take over some of the household duties. As medical complications arise and the uncertainty of his future increases, the patient often becomes less attentive

to his home responsibilities and becomes more and more a spectator, no longer involved in family decisions. Also, in many instances the male patient declines in masculine vigor and in sexual capacity (Short et al., 1969). Because of a loss of physical energy, there is often a decrease of social activities and a certain reluctance to associate with others for fear that the topic of discussion will turn to the patient's medical problems and that he will be seen as a "person to pity." He may feel that he is avoided by friends and associates. The presence of a cannula is a constant reminder that he is a kidney patient.

Another psychological stress which the hemodialysis patient has to contend with is the ever-present threat of additional medical problems. Schreiner and Maher (1965), in studying 11 patients over a five-year period, have noted several medical problems to which hemodialysis patients are susceptible. Mostly, there is the likelihood of infection or clotting of the cannula. The dialysis patient, needing to keep the cannula sites clean in order to minimize risk of infection, finds it necessary to avoid activity that could damage the implanted cannula.

The majority of patients experience loss of status within their community by financial losses, which may result in loss of their home and possessions or in bankruptcy. Simmons & Simmons (1972) report that hospital center dialysis costs approximately $14,000 per year. Home dialysis is estimated at $10,000 to $12,000 for the first year, when

equipment is purchased, and at $4,000 per year thereafter. Along with the cost of hemodialysis, there is the additional expense of repeated visits because of additional medical problems associated with hemodialysis. There are heavy transportation costs involved. Because of the time required for dialysis and because of physical restrictions, the patient often loses his job or, at the very least, suffers a decrease in job responsibility.

For many patients, the process of hemodialysis is an additional stress. In summarizing the emotional reactions of nine patients over a two-and-a-half year period, Shea et al. (1965) divided the dialysis event into three stages, each eliciting different emotions. Reactions occurring before dialysis consist mostly of apprehension, insomnia, and irritability, resulting in the need for companionship. The second stage is characterized by the patient's anxiety at the beginning of dialysis and at the end, when the shunt is connected and when it is disengaged from the cannula. The intervening period, however, is considered "boring" or "tiresome." It often consists of restlessness, irritability, and impatience as the length of dialysis increases. The longer the dialysis, the less tolerance the patient seems to have. The third stage, after dialysis, is usually experienced as relief and gratitude. There is sometimes an unrealistic contention that he "feels better" than he actually does, even when there is nausea and headache.

Lewis et al. (1969), in reviewing the survival rate of 302 patients from 14 dialysis centers, found that after one year the survival rate was 87%; for two years, it was 77%; for three years, 67%.

Abram (1968) reported that because of the paucity of dialysis centers there are approximately 5,000 deaths per year in the United States of patients who potentially could be treated through dialysis. There are approximately 1,000 patients in the United States receiving hemodialysis, at a cost of between $10,000 to $12,000 per year each. Many centers will continue to employ some form of selection process until there are enough kidney machines to dialyze all who are ill or until there are enough kidneys to transplant to those who are being dialyzed.

Although "emotional maturity" has usually been one of the criteria used for the selection of patients for hemodialysis, many centers vary in their selection criteria. For example, some use the "first come, first served" policy with little emphasis on selection process (Retan and Lewis, 1966; Gombos et al., 1964). Most other centers, however, evaluate patients medically, psychologically, and socially for their hemodialysis and kidney transplantation programs (Abram and Wadlington, 1968; Beard, 1969). These general criteria seem to have persisted since selection was first instituted. Wilhelm Kolff (1964), the inventor of the artificial kidney, stated that:

> Committees should be formed not to exclude certain patients from treatment, but to establish possibilities for more treatment. Do we really subscribe to the principle that social standing should determine selection? Do we allow patients to be treated with dialysis only when they are married, go to church, have children, have a job, a good income and give to the community chest?

Moore (1971), on the other hand, stated that:

> The stress of living with these treatments is considerable. For some, because they come to their illness with little ability to deal with great and prolonged stress, the life allowed by the treatments is barely tolerable. Therefore, even if there were sufficient manpower, materials, and money to treat every person dying in renal failure, some selection process might still be needed.

Moore goes on to say that only "those who want it and who can live with it" should be dialyzed.

For some people the type of life with dialysis may not be an important enough goal to justify the accompanying stress and sacrifice. The question arises, then, concerning who are those who can cope with the stress; what characteristics do they need?

There are conflicting results in the literature regarding adjustment to hemodialysis. Kolff (1962) reported that, out of six patients, one did not "adapt" to chronic dialysis. DeNour et al. (1968) followed 9 patients in chronic hemodialysis for one year and found that the patients were mainly "content, functioned well in everyday life, and were nearly free of psychiatric symptoms." Sand et al. (1966) reported that of 23 patients the staff evaluated 6 as superior, 15 as adequate, and only 2 as poorly adjusted.

On the other hand, Shupak et al. (1967) reported that only 12 out of 26 "unselected" patients adapted satisfactorily. Retan and Lewis (1966) reported that 3 out of 8 patients experienced severe psychiatric disturbances. Shea et al. (1965) reported that of 9 patients observed over a two-and-a-half year period, all manifested significant psychological reactions while on the dialysis program, while only three were able to compensate well, at a superficial level.

Discrepancies among rating systems used to determine the degree of adjustment and lack of diagnostic instruments may account for the differences apparent in psychological adjustment at various dialysis centers. Norris (1967) classified patients into three groups and was able to suggest the kind of adjustment needed for each patient within each group. The conformist type was characterized by many passive and dependent traits and should be helped to avoid dependency and to promote independence. The masculine type was characterized by independence and was predicted to have trouble with hemodialysis but not with rehabilitation. The adaptive type had a history of success and did not use a great deal of denial but was able to acknowledge his anxiety and depression. The adaptive type was not predicted to experience any problems.

Using a scale from one to three, Meldrum et al. (1968) rated 24 male veterans according to four criteria and found a 38% predictive error in their evaluation attempt. The four

criteria rated were: (1) ability to cooperate with medical recommendations; (2) ego strength; (3) stability of family structure; (4) adjustment to society.

A number of studies have used Minnesota Multiphasic Personality Inventory (MMPI) results to suggest the extent of psychological adjustment to hemodialysis (Wright et al., 1966; Sand et al., 1966; Short and Wilson, 1969). Patients with poorer adjustments were found to score higher on the K scale (defensiveness) than on any other scale (Sand et al., 1966). Wright et al. (1966) reported that hemodialysis patients scored significantly higher than did "normals" on both uncorrected and corrected versions of the Hysteria Scale. Sand et al. (1966) reported that the "better" dialysis patients showed fewer somaticizing defenses (Hypochondriasis and Hysteria Scales) than did the potentially less adaptive patients, but that the "better" patients had relatively higher scores on the Depression Scale. Using the MMPI, Short and Wilson (1969) demonstrated that as stress increased there was an increase in denial (Repression Scale) and a decrease in anxiety (Anxiety Scale). Beard (1969) found that, in the fourteen patients he studied, denial was the mechanism most utilized against the fear of death. Denial was found to be used to the extent that hemodialysis patients did not differ significantly from the test norms on the California Personality Inventory and the Shipman Anxiety-Depression Scales, even though the behavioral observations of the patients while in the hospital yielded quite different

conclusions from the test results (Glassman and Siegel, 1970). The discrepancy was recognized with the suggestion that the patient's scores on paper and pencil tests represented the patient's fantasy of "how he would like to feel and the clinical observation, a statement of how he is." Contact with the patients suggested that they were depressed, lethargic and prone to manifest a number of somatic complaints.

DeNour et al. (1968) followed nine patients for one year and used a battery of tests which included the Raven, Kohns, Draw-a-Figure, Taylor's Manifest Anxiety Scale, Barron's Ego Strength Scale, Sentence Completion Test, Mira Test, and the Rorschach. Their findings were that the dialysis patients tried to answer as a "normal" person would have done. They also found that the patients tended to block any expression of aggression and dependency through the defenses of denial, displacement, isolation, projection, and reaction formation. In formulating some dynamics concerning the selection of future patients for hemodialysis, DeNour et al. (1968) suggested:

> ...that patients for whom dependency is more acceptable and/or patients for whom feelings and expressions of aggression are less threatening, might adapt to hemodialysis without the extreme mobilization of defenses and will not need to adapt at the cost of constriction of ego functions and/or overt psychiatric symptoms.

Sand et al. (1966) evaluated candidates for hemodialysis with a psychiatric interview and psychological tests using the Wechsler Adult Intelligence Scale, Minnesota Multiphasic Personality Inventory (MMPI), Thematic Apperception Test

and the Rorschach. They found that the adaptive patients, as measured by staff ratings, differentiated from the less adaptive patients in showing:

> ...(1) higher intelligence, (2) a less defensive attitude about admitting to anxiety or emotional difficulty, (3) less reliance on emotional defenses that involve the use of physical symptoms (for example, hypochondriasis and hysteria), (4) more satisfactory emotional support from family members.

Goldstein and Reznikoff (1971) employed Rotter's concept of locus of control to further investigate the denial reactions of hemodialysis patients. Comparing twenty-two male hemodialysis patients with twenty-four male patients in the convalescent stage of a minor medical condition, they found that the dialysis patients were significantly more external on the locus of control continuum than the control group. This finding suggests that the dialysis patients perceive events as occurring on a random or chance basis, independent of their own behavior or control.

In summarizing the literature of the psychological aspects of chronic hemodialysis, Glassman and Siegal (1970) conclude that:

> ...(1) until available resources meet the patients' demands, selection criteria are needed; (2) psychological evaluation is a valuable and necessary part of the selection procedure; (3) the unique experience of this treatment is the chronic dependency; (4) regardless of the premorbid personality, a certain constellation of ego defenses seem mobilized by the stress of chronic dialysis, i.e., denial, displacement and reaction formation; (5) the use of home dialysis is a psychologically valuable method of decreasing the dependency of the patient if

the patient is made responsible for his own dialysis program; (6) once selection has been made psychological data is a valuable phase in helping the patient to adjust to the stress of the program.

PROPOSAL

The studies presented above have suggested that there are certain psychological variables associated with chronic hemodialysis. It is the intention of this study to assess the relationship of certain personality variables and an individual's social and medical adjustment to chronic hemodialysis. This study is not designed to investigate the various personality characteristics of a person prior to his encounter with hemodialysis. Neither is this study designed to compare the psychological personalities and reactions of dialysis patients with other populations.

The psychological variables to be looked at are: internal-external locus of control, introversion-extraversion, neuroticism-stability, self-concept, and the extent of psychological loss. Each of these variables will be studied with regard to the degree of emotional and medical adjustment a patient makes to chronic hemodialysis.

Goldstein and Reznikoff (1971) reported that dialysis patients scored higher on external locus of control than did a control group. This study intends to determine if within the dialysis group the internal-external dimension is related to adjustment.

Several studies (Menzies et al., 1968; Beard, 1969; McKegney and Lange, 1971; and DeNour et al. 1968) have pointed to the observation of feelings of estrangement and loneliness and a loss of interest in the environment experienced by some patients. The introvert-extravert dimension will be used to study this relationship to adjustment.

Shea et al. (1965) and Retan and Lewis (1966) and others have observed significant psychological symptoms in patients on chronic hemodialysis. Therefore, the neuroticism-stability dimension will be investigated with regard to adjustment.

Some investigators (Beard, 1969; Cramond et al., 1967; Wright et al., 1966; Sand et al, 1966) have either implicitly or explicitly suggested the lowering of the dialysis patient's self-concept as related to adjustment. This study will attempt to determine the relevance of self-concept to adjustment.

Rahe et al. (1964) have reported that social events requiring change in ongoing life adjustment are significantly associated with the onset of illness. The relationship of what has been called "life stress," "emotional stress," "object loss," etc., will be compared to the adjustment of the hemodialysis patients in this study.

The specific hypotheses of this study are: (1) that patients with an external locus of control will have a poorer adjustment to hemodialysis. (2) Patients with a poorer adjustment to hemodialysis will be more introverted. (3) Patients with a poorer adjustment to hemodialysis will

be more neurotic. (4) Patients with a poorer adjustment to hemodialysis will have a lower self-concept. (5) Patients with a poorer adjustment to hemodialysis will have experienced a greater magnitude of psychological loss.

CHAPTER II

METHOD AND PROCEDURE

Subjects

The subjects for this study will consist of 24 patients (18 men and 6 women) in the Hemodialysis-Renal Transplant Service sponsored jointly by the University of Oklahoma School of Medicine and the Oklahoma City Veterans Administration Hospital, both located in the University of Oklahoma Health Sciences Center. They will consist of patients receiving training for eventual home dialysis, incenter maintenance, and support for consideration for a kidney transplant. All patients will have been on dialysis for a minimum of at least three months and some will have been on dialysis for as long as three years with an average of about one year for most patients. These subjects will vary widely in age, education, occupation and intelligence.

Assessment Instruments

The Maudsley Personality Inventory

The Maudsley Personality Inventory is a brief test (ten to fifteen minutes to complete) that is constructed to measure two dimensions called extraversion-introversion (E) and neuroticism-stability (N) (Eysenck, 1962). The test is based on theoretical background and has experimental validation

of the concepts of extraversion and neuroticism (Eysenck, 1947, 1952, 1957, and 1960).

> Briefly, extraversion, as opposed to introversion, refers to the outgoing, uninhibited, impulsive and sociable inclinations of a person. Neuroticism refers to the general emotional instability of a person, his emotional overresponsiveness, and his liability to neurotic breakdown under stress (Eysenck, 1962).

This test is made up of 48 questions, 24 for each dimension, and is constructed so that each dimension is independent of the other.

Tennessee Self Concept Scale

The Tennessee Self Concept Scale consists of 100 self-description items and was designed to objectively assess a person's concept of himself (Fitts, 1965). There is no time limit; it usually takes within ten to twenty minutes to complete. It can be scored according to a Counseling Form or a Clinical and Research Form. The Clinical and Research Form will be used in this study.

The Social Readjustment Rating Questionnaire

The Social Readjustment Rating Questionnaire is made up of 43 questions dealing with life events which may be considered "life stress," "emotional stress," "object loss," etc. (Holmes and Rahe, 1967). This questionnaire will be modified by asking each subject to respond to each of the questions only if they have experienced the life event within one year prior to or during dialysis. A score will be computed for each subject according to The Social Readjustment

Rating Scale which has assigned a weight to each of the life events (Holmes and Rahe, 1967).

The I-E Scale

The I-E Scale was designed to measure the degree to which an individual generally believes that his own behavior is responsible for important happenings in his life versus the extent to which he characteristically feels that events which affect him are controlled by powerful external forces (e.g., luck, fate, social institutions, etc.). Subjects who embrace the former outlook are said to be internals; those who accept the latter view are called externals. To determine the depth to which the subjects feel a sense of powerlessness, The Internal-External Locus of Control (I-E) Scale will be administered (Rotter, Seeman, & Liverant, 1966). This test consists of 23 pairs of statements, one of which represents an internal position and the other an external position. The subject is asked to select the statement which best agrees with his point of view. The score is the total number of external choices.

Procedure

The subjects will be asked to volunteer for this study so that we may learn more about the personality of people receiving renal dialysis. Each test will be administered individually to each patient and will be administered according to standardized procedure. Each of the tests will be accompanied with the standardized instructions for that particular test.

The patients will complete Rotter's I-E Scale and The Maudsley Personality Inventory while on dialysis. Because of physical difficulties in writing, turning pages, and sitting up while on the kidney machine, with the writing arm of some patients immobilized, each patient will be allowed to complete the Tennessee Self Concept Scale and The Social Readjustment Rating Questionnaire in his own home.

In order to learn more about the situational effects of being on incenter dialysis as opposed to being at home free of the stress of dialysis, Rotter's I-E Scale and The Maudsley Personality Inventory will be administered for a second time in the patient's home.

A rating system will be employed in order to determine the patient's level of adjustment. Two levels of adjustment, medical and emotional, will be evaluated. Medical adjustment will be rated according to a five point scale (Appendix D). Emotional adjustment will be rated on a seven point scale on six facets (Appendix D).

Medical adjustment will be determined by a triple rating system (two raters and a judge). The two raters will make their scoring decisions independently. A final judge will then inspect these ratings and make a third and decisive rating only when the first two independent raters are in disagreement. The two raters and the judge for the evaluation of medical adjustment will be nurses who have been working with these patients and have access to the patients' medical records. The same set of nurses will rate all the patients.

Emotional adjustment will be evaluated also by two raters and a judge. However, their information will come from audiotaped interviews of the patient and spouse, nurse, social worker, psychologist, or any other person having some contact or knowledge of the patient's emotional adjustment since being on dialysis. The two raters will consist of a Veterans Administration Hospital staff psychologist and a clinical psychology intern. The judge will be a social worker from the dialysis unit and will make the decisive rating only when the first two independent raters are in disagreement.

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APPENDIX B

SEX, AGE, EDUCATION, MARITAL STATUS, OCCUPATION AND MONTHS ON DIALYSIS FOR ALL SUBJECTS

SEX, AGE, EDUCATION, MARITAL STATUS,

OCCUPATION AND MONTHS ON DIALYSIS

FOR ALL SUBJECTS

Subject Number	Sex	Age	Years of Education	Marital* Status	Occupation (Previous)	Months on Dialysis
1	F	26	12	D	Factory Worker	15
2	F	30	9	M	Housewife	8
3	F	60	14	M	Housewife	5
4	F	25	16	S	Teacher	21
5	F	23	12	D	Typist	4
6	F	31	11	D	Cocktail Waitress	10
7	M	36	12	M	Sheet Metal Assem.	6
8	M	63	10	M	Welder	8
9	M	44	12	M	Busness Mangt.	3
10	M	30	11	M	Warehouseman	3
11	M	42	12	M	Salesman	5
12	M	45	12	W	Niteclub Operator	14
13	M	44	8	M	Policeman	26
14	M	38	12	M	Air Force	6
15	M	54	9	M	Farmworker	9
16	M	40	12	M	Milk Delivery	6
17	M	46	14	M	Surveyor	6
18	M	49	13	M	Computer Progm.	36
19	M	53	16	M	Engineer	38
20	M	47	18	M	College Teacher	3
21	M	47	12	M	Policeman	6
22	M	46	11	M	Car Dealer	36
23	M	49	13	M	Hair Stylist	14
24	M	27	11	M	Machinest	7

* S = Single; M = Married; D = Divorced; W = Widower

APPENDIX C

DIRECTIONS AND FORMAT FOR THE MODIFIED SOCIAL READJUSTMENT RATING QUESTIONNAIRE

MODIFIED

SOCIAL READJUSTMENT RATING QUESTIONNAIRE

Within A Year Prior To Dialysis Or While You Have Been On Dialysis Have You Experienced Any Of These Life Events?

1. Death of a spouse? _____YES _____ NO

   If yes, explain_____

2. Have you had a divorce? _____YES _____ NO

   If yes, explain_____

3. Have you been separated from your spouse? ___YES ____NO

   If yes, explain_____

4. Have you been to jail? _____YES _____NO

   If yes, explain_____

5. Has there been a death of a close family member?

   _____YES _____NO

   If yes, explain_____

6. Have you experienced any personal injury or illness?

   _____YES _____NO

   If yes, explain_____

7. Have you been married within this period? ___YES ___NO

   If yes, explain_____

8. Have you been fired at work? _____YES _____NO

   If yes, explain_____

9. Has there been a marital reconciliation? ____YES ____NO

   If yes, explain_____

10. Did you retire from your job? ____YES ____NO

    If yes, explain_____

11. Has there been a change in the health of any family member other than yourself? ____YES ____NO

    If yes, explain_____

12. Has there been a pregnancy? ____YES ____NO

    If yes, explain_____

13. Have you experienced any sex difficulties? ____YES ____NO

    If yes, explain_____

14. Has there been a gain of a new family member?

    ____YES ____NO

    If yes, explain_____

15. Have there been any business readjustments within this period? ____YES ____NO

    If yes, explain_____

16. Has there been a major change in your financial state, e.g., a lot worse off or a lot better off than usual?

    ____YES ____NO

    If yes, explain_____

17. Has there been a death of a close friend? ____YES ____NO

    If yes, explain_____

18. Has there been a change to a different line of work?
_____YES _____NO

If yes, explain_____

19. Has there been any change in the number of arguments with your spouse, e.g., either a lot more or a lot less?
_____YES _____NO

If yes, explain_____

20. Have you taken on a mortgage greater than $10,000, e.g., purchasing a home, business, etc.? ___YES ____NO

If yes, explain_____

21. Has there been a foreclosure of your mortgage or loan?
_____YES _____NO

If yes, explain_____

22. Has there been a change in responsibilities at work, e.g., promotion, demotion, transfer, etc.? ____YES __NO

If yes, explain_____

23. Has a son or daughter left home, e.g., marriage, attending college, etc.? _____YES _____NO

If yes, explain_____

24. Have you had any trouble with your in-laws? __YES ___NO

If yes, explain_____

25. Have you had any outstanding personal achievement?

_____YES _____NO

If yes, explain_____

26. Has your spouse begun or stopped work? ____YES _____NO

If yes, explain_____

27. Have you begun or ended school? ____YES ____NO

If yes, explain_____

28. Has there been a change in your living conditions, e.g., building a new home, remodeling, deterioration of home or neighborhood? ____YES ____NO

If yes, explain_____

29. Has there been a change in your personal habits, e.g., dress, manners, associations, etc.? ___YES ___NO

If yes, explain_____

30. Have you experienced any trouble with your boss? ____YES ____NO

If yes, explain_____

31. Has there been a change in your working hours or conditions? ____YES ____NO

If yes, explain_____

32. Has there been a change in your residence? ___YES ___NO

If yes, explain_____

33. Have you changed to a new school? ____YES ____NO

If yes, explain_____

34. Have you changed your recreation habits? ___YES ___NO

If yes, explain_____

35. Has there been a change in your church activities, e.g., a lot more or a lot less than usual? ___YES ___NO

If yes, explain_____

36. Has there been a change in your social activities, e.g., clubs, dancing, movies, visiting, etc.?

_____YES _____NO

If yes, explain_____

37. Have you taken on a mortgage or loan less than $10,000, purchasing a car, TV, freezer, etc.? _____YES _____NO

If yes, explain_____

38. Has there been a change in your sleeping habits, e.g., a lot more or a lot less sleep, or change in part of the day when asleep? _____YES _____NO

If yes, explain_____

39. Has there been a change in the number of family get-togethers, e.g., a lot more or a lot less than usual?

_____YES _____NO

If yes, explain_____

40. Has there been a change in your eating habits?

_____YES _____NO

If yes, explain_____

41. Have you had a vacation? _____YES _____NO

If yes, explain_____

42. Did you celebrate Christmas any differently? ___YES__NO

If yes, explain_____

43. Have you had any minor violations of the law, e.g., traffic tickets, jay walking, disturbing the peace, etc.?

_____YES _____NO

If yes, explain_____

APPENDIX D

MEDICAL AND EMOTIONAL

RATING SCALES

RATING ON PATIENT'S MEDICAL ADJUSTMENT

TO HEMODIALYSIS

Excellent Adjustment	Good	Fair	Poor	Extreme Difficulty
5	4	3	2	1

RATING ON HEMODIALYSIS PATIENTS

FOR EMOTIONAL ADJUSTMENT

I. Quality of relationship with significant others:
e.g., spouse, parents, etc.

Overly Independent			Flexible		Demanding Complaining Overly Dependent	
7	6	5	4	3	2	1

II. Quality of interpersonal involvement with others:
e.g., social activities, visitations with friends, etc.

Extreme Involvement			Adequate		Withdrawal Apathy	
7	6	5	4	3	2	1

III. Degree of general activity level:
e.g., occupation, volunteer work, keeping busy, etc.

Extremely Active			Adequate for Situation		Withdrawal	
7	6	5	4	3	2	1

IV. Self Image

Extreme Narcissism			Realistic		Self-depreciatory	
7	6	5	4	3	2	1

V. Emotional Stability

Euphoric or Manic Excitement			Balanced			Severe Depression
7	6	5	4	3	2	1

VI. Quality of emotional adaptability:

No Inner Direction Hyper Compliant and Open			Flexible			Rigid and Defensive
7	6	5	4	3	2	1

APPENDIX E

TEST SCORES AND

MEDICAL AND EMOTIONAL RATINGS

FOR ALL PATIENTS

TEST SCORES AND

MEDICAL AND EMOTIONAL RATINGS

FOR ALL PATIENTS

Subject Number	1	2	3	4	5	Medical Rating	Emotional Rating	Total Rating
1	10	15	37	296	432	2	2.5	4.5
2	16	24	23	284	206	1	1.0	2.0
3	4	27	16	379	121	4	4.0	8.0
4	20	14	41	284	658	3	1.3	4.3
5	2	18	16	382	297	3	2.6	5.6
6	9	24	36	297	154	4	1.5	5.5
7	8	38	18	384	86	4	3.8	7.8
8	6	24	16	376	203	3	2.2	5.2
9	1	26	6	393	531	4	2.3	6.3
10	7	13	26	289	456	4	2.3	6.3
11	9	26	28	316	284	2	3.8	5.8
12	12	26	14	350	249	4	1.8	5.8
13	10	30	30	252	415	3	2.8	5.8
14	9	36	15	384	267	4	3.3	7.3
15	12	18	44	297	370	3	1.8	4.8
16	10	28	34	337	253	5	4.0	9.0
17	4	21	8	390	145	3	3.0	6.0
18	9	20	21	375	427	5	4.0	9.0
19	8	30	3	363	455	4	3.7	7.7
20	1	26	2	434	184	5	4.0	9.0
21	9	12	35	296	286	2	1.0	3.0
22	11	22	30	368	53	2	1.7	3.7
23	17	28	32	284	385	3	1.7	4.7
24	5	40	39	328	185	4	2.5	6.5

1 = Rotter's I-E Scale, 2 = extraversion-introversion (MPI), 3 = neuroticism-stability (MPI), 4 = Tennessee Self Concept, 5 = Social Readjustment Rating Scale.

APPENDIX F

TEST SCORES

UNDER TWO CONDITIONS:

DURING DIALYSIS AND AT HOME

TEST SCORES

UNDER TWO CONDITIONS:

DURING DIALYSIS AND AT HOME

Subject Number	1_d	1_h	2_d	2_h	3_d	3_h
1	10	13	15	11	37	41
2	16	12	24	16	23	27
3	4	8	27	22	16	36
4	20	20	14	15	41	38
5	2	3	18	17	16	10
6	9	9	24	24	36	32
7	8	7	38	38	18	26
8	6	6	24	16	16	10
9	1	3	26	31	6	10
10	7	8	13	10	26	31
11	9	3	26	32	28	26
12	12	10	26	28	14	22
13	10	7	30	26	30	36
14	9	12	36	38	15	11
15	12	11	18	24	44	44
16	10	9	28	26	34	40
17	4	2	21	22	8	4
18	9	3	20	17	21	16
19	8	5	30	36	3	2
20	1	1	26	24	2	0
21	9	10	12	15	35	46
22	11	9	22	24	30	38
23	17	7	28	35	32	36
24	5	6	40	37	39	42

1 = Rotter's I-E Scale, 2 = extraversion-introversion (MPI), 3 = neuroticism-stability (MPI).

d = test taken during dialysis, h = test taken at home.