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Patient Life Engagement, Spouse Marital Adjustment, and Dietary Compliance of Hemodialysis Patients

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This study investigated the hypothesis that dietary compliance among chronic hemodialysis patients is related to their engagement in social, vocational, and recreational activities and to marital adjustment of their spouses. Sixty-eight chronic hemodialysis patients and their spouses were studied. Lower levels of interdialysis fluid weight gain, indicating dietary compliance, were found to be significantly related ($p < .001$) to higher spouse marital adjustment scores. A significant canonical correlation ($p < .001$) was also found between the level of dietary compliance and the variables of marital adjustment and engagement in life activities. It is suggested that, for chronic hemodialysis patients, dietary compliance and overall rehabilitation processes require a sense of control through engagement in various aspects of their lives.

More than 42,000 patients in the United States have renal failure and require chronic hemodialysis treatment for life maintenance (Hunt, 1979). Sackett and Snow (1979) suggest that only 54% of the patients with long-term treatment regimens comply to them, thus risking life-threatening health problems.

Yet it is not difficult to understand noncompliance by hemodialysis patients, when one considers the severe restrictions and negative experiences that the treatment regimen often entails. Typically, hemodialysis patients must restrict the intake of salt, potassium, protein, calories (2500–3000 per day), and fluid (2 to 5 cups per day) (Czaczkes & De-Nour,

1978; Levy, 1974). Furthermore, the hemodialysis treatment procedure requires being connected to an artificial kidney machine three times per week for 3 to 5 hours each time, while the machine filters toxic waste and excess fluids from the blood. Many patients experience nausea and other side effects from dialyzation (Calland, 1972).

Hemodialysis treatment also restricts family activities and the work that a patient can do (McKevitt, Jones, & Marion, 1986; Schreiber & Huber, 1985). In a study of the quality of life of patients with kidney disease, Evans et al. (1985) found that dialysis patients had a lower overall quality of life than both transplant patients and individuals in the general population. Chubon (1986) found that dialysis patients evidenced quality-of-life scores that were similar to those of a prison inmate population.

The psychological stresses common among hemodialysis patients are major contributors to the reduced quality of life that many hemodialysis patients and their families experience (Armstrong, 1978). Depression, anxiety, feelings of dependency, sexual performance anxiety, financial distress, and marital and family discord occur among patients who comply and those who do not comply to the treatment regimen, though the impact of hemodialysis tends to be less severe among compliant patients (Czaczkes & De-Nour, 1978; Finkelstein, Finkelstein, & Steele, 1976; Finkelstein & Steele, 1978; Kutner, Fair, & Kutner, 1985; Melamed & Siegel, 1980; Tucker, Chennault, Green, Ziller, & Finlayson, 1986).

The many problems brought about by renal disease and hemodialysis are in part avoidable. Considerable evidence suggests that morbid and mortal conditions might be prevented by patients' control of their personal habits that effect health care compliance (Becker, 1974; Di Matteo & Di Nicola, 1982; Knowles, 1977). Poll and De-Nour (1980) found that hemodialysis patients with internal loci of control were more compliant, accepting of their disability, and active vocationally.

Patients, however, rarely function in a social vacuum. In most cases, their families constitute the most important social context within which illness and maladaptive behavior occur and are accepted or rejected (Huber & Tucker, 1984; Parsons & Alexander, 1973). According to Speidel, Koch, Balck, & Kniess (1979), a spouse's reaction to a hemodialysis patient's illness and consequent lifestyle changes is often a major factor in the marital and sexual problems that commonly occur among such couples. In addition, negative or upsetting interactions among family members may have severe negative effects on the patient's health and the outcome of medical care (Leigh & Reiser, 1977; Lynch, Paskewitz, Gimbel, & Thomas, 1977). Overprotectiveness, criticism, and hostility toward patients by their spouses or parents have been found to be associated with high relapse rates and return to the hospital (Vaughn & Leff, 1976; Vaughn, Snyder, Jones, & Falloon, 1981).

Clearly, hemodialysis potentially impacts on all aspects of the lives of hemodialysis patients, yet the resulting problems are often denied, as a way of coping with stress (Freyberger, 1973; Schlebusch, Botha, & Bosch, 1984). The unresolved psychological problems of hemodialysis patients indeed contribute to a sense of being out of control of their lives (Poll & De-Nour, 1980; Nichols & Springford, 1984).

The specific nature of the interrelationships among patient control factors, marital and family dynamics, and patient health care behavior remains unclear. Thus, the purpose of this study was to investigate empirically the relationships among specific aspects of these variables. We examined the relationships among (1) experiencing control over one's life, as shown in life engagement (social, recreational, and vocational behaviors); (2) marital adjustment of spouse; and (3) patient compliance to the dietary regimen.

METHOD

Subjects

Volunteer participants in this study were 69 married chronic hemodialysis patients and their spouses. The patients were solicited from five outpatient hemodialysis centers—three in Florida, one in Alabama, and one in New York. These centers were the first five to agree to participate in the study, from among centers where (1) the patients were similar on the variables of age, dialysis tenure, and compliance; and (2) the researchers knew at least one staff member who would assist in getting permission to conduct the study. Of the patients who participated in the study, 72% were males and 28% were female; 52% were white, 42% were black, and 6% were Hispanic. They had been on renal dialysis from 6 to 180 months ($M = 43$; $SD = 31$) and were between 30 and 79 years old ($M = 59$; $SD = 11$). Their education ranged from 0 to 17 years ($M = 9$; $SD = 4$). These patients were the target subjects of this research, with their spouses providing research data about patients and their lives.

Instruments

Two written questionnaires were administered to the spouses of the patients. One was the Locke Marital Adjustment Questionnaire (Locke & Wallace, 1959); the other was the Demographic and Life Engagement Questionnaire, which we developed for use in this study. The latter solicited various kinds of information about the patient from the spouse: sex; ethnic origin; age; level of education; dialysis tenure; estimated weekly hours typically engaged in vocational, recreational, and social activities; and number of medications prescribed for the patient, as recalled by the spouse.

A Medical Data Sheet was completed for each patient by a nurse or social worker at each dialysis center. The mean serum potassium level and mean interdialysis fluid weight gain over the 3 months prior to data collection were recorded. These were the two measures of compliance used in this study. The number of medications actually prescribed for each patient also was reported.[1]

Procedure

Married hemodialysis patients were told about the study by a nurse or social worker at each selected center. We gave each a written description of the study, to insure optimal standardization of the procedures. Patients were asked to solicit participation of their spouses in a study of marital and other factors that might be associated with healthy living on hemodialysis.

Spouses who agreed to participate in the study were given or mailed research questionnaires and instructed to give or mail independently completed, unidentified questionnaires to a specified nurse or social worker. Patients were told before agreeing to participate in the research that their spouses' responses to the questionnaires would not be shared with them. The researchers collected the completed questionnaires, which had been coded so that the medical data sheet for a patient could be matched with the questionnaire completed by his or her spouse.

RESULTS

A canonical correlational analysis was applied to the data to determine if there was a significant relationship between the dependent and independent variables. The two measures of compliance—mean interdialysis fluid weight gain (*W*) and mean serum potassium level (*K*)—were the dependent variables. The independent variables were (1) marital adjustment score of spouse (*MAS*); (2) the sum total of weekly hours of patient engagement in social (*SOC*), vocational (*VOC*), and recreational (*REC*) activities, as estimated by the patient's spouse (*ACTIVITY*); (3) tenure on dialysis (*TOD*); (4) age; (5) number of years of education (*EDUC*); (6) actual number of prescribed medications (*MED*); (7) number of prescribed medications as estimated by spouse (*EMED*); and (8) the difference between the actual number of prescribed medications and the number as reported by spouse (*MED-EMED*).

[1]Copies of the Demographic and Life Engagement Questionnaire and the Medical Data Sheet are available to interested readers. Requests for copies should be addressed to Carolyn M. Tucker, Ph.D., Department of Psychology, University of Florida, Gainesville, Florida 32611.

The canonical correlation related the linear combination of dependent variables to the linear combination of independent variables, thus revealing global relationships between two sets of variables. This procedure determines the relationship between the standardized canonical coefficients for the optimal linear combination of independent variables and the optimal linear combination of dependent variables (Huck, Cormier, & Bounds, 1974). A significant canonical correlation of .58 was found ($F = 3.536$; $p < .001$).

Table 1 shows that *MAS, AGE,* and *MED* were the only independent variables that showed a significant relationship to the independent canonical variable. The dependent variable *W* was also found to be significantly related to the canonical variable, while *K* was unrelated.

Pearson's correlation analysis was performed to examine all possible relationships among the individual independent and dependent variables. As shown in Table 2, a significant negative correlation of .39 was found between *W* and *MAS*. Thus, lower fluid weight gains (*W*) indicating dietary compliance were significantly associated with higher spouse marital adjustment. A significant positive correlation was also found between life engagement in recreational activities (*REC*) and serum potassium level (*K*). However, *K* was not significantly related to the canonical variable and thus does not appear to be a valid measure of compliance. Fluid weight gain (*W*), however, was significantly related.

Table 2 also shows that a significant negative correlation was found between *MED-EMED* and *W*, indicating that spouse overestimation of the number of different medications taken by the patient (lower *MED-EMED*) was related to dietary noncompliance (higher *W*). Conversely, underestimation of the number of different medications taken (higher *MED-EMED*) was related to patient compliance (lower *W*). In addition,

TABLE 1. Correlations between the Independent and Dependent Variables and Their Canonical Variables

Independent Variable	V_1	Dependent Variable	W^1
EDUC	0.047	*K*	0.062
TOD	0.145	*W*	0.980*
VOC	0.215		
REC	−0.198		
SOC	−0.245		
AGE	−0.444*		
MED	0.310*		
MED-EMED	−0.382		
MAS	0.533*		

*$p < .001$

TABLE 2. Correlations among Dependent and Independent Variables

Independent Variable	Dependent Variable	
	K	*W*
AGE	−0.030	−0.233
EDUC	−0.050	−0.033
TOD	0.008	0.163
MED	−0.108	0.238
EMED	−0.106	0.261*
MED-EMED	0.080	−0.304*
VOC	0.120	0.163
SOC	−0.009	−0.000
REC	0.263*	−0.122
ACTIVITY	0.019	0.095
MAS	0.080	−0.394**

*$p < .05$
**$p < .001$

a significant positive correlation was found between *EMED* and *W*, indicating that higher estimation of prescribed medications was related to greater noncompliance.

Some significant correlations were found among the life engagement and demographic variables. *AGE* was negatively related to the variables *EDUC* ($p < .01$), *VOC* ($p < .0001$), *REC* ($p < .05$), and *ACTIVITY* ($p < .0001$). The older patients were less educated and less active. *TOD* was negatively related ($p < .05$) to *VOC*, *REC*, and *ACTIVITY*. Patients who had been on dialysis longer were less active.

DISCUSSION

This study examined the relationship between life engagement (involvement in social, recreational, and vocational activities), spouse marital adjustment, and compliance of hemodialysis outpatients to their dietary regimens. A significant correlation was found between the group of dependent variables (measures of dietary compliance) and the group of independent variables (marital adjustment and engagement in life activities). Potassium level (*K*) alone, however, had a very low canonical factorial load as a measure of compliance, and it was not significantly correlated with the optimal linear combination of all the independent variables, as was fluid weight gain (*W*). Thus, potassium did not appear to be a valid measure of dietary compliance.

The finding of a significant correlation between the combination of life-engagement factors and dietary compliance, but nonsignificant correlations among most of the individual life-engagement factors and the

dietary compliance measures, merits special note. This suggests that, for dialysis patients, personal control over various aspects of their lives is conducive to controlling their diets and other health care behaviors. Rehabilitation that involves multifaceted intervention in a number of areas of a patient's life, rather than just in one area (e.g., vocation), is therefore suggested.

Indeed, personal control appears to be an important determinant of quality of life of the hemodialysis patients in this study. According to Evans et al. (1985) and Chubon (1986), quality of life of dialysis patients, like that of individuals in the general population, is dependent upon health and participation in various aspects of life. Specifically, quality of life depends on both health care behavior and participation in work, social, and marital activities. Regulation of one's time and energy to enable these quality-of-life activities to occur in combination, as in the present study, requires personal control. Furthermore, it is likely that a sense of personal control through involvement with spouses and life activities is conducive to marital adjustment, which in turn provides a supportive environment for health care behavior (e.g., dietary compliance).

The finding in this study that spouses who reported higher marital adjustment were those who had partners who as patients evidenced better dietary compliance suggests that spouses' behaviors and attitudes are important influences on patients' health care behaviors. Spouses experiencing high marital adjustment may emit more supportive behaviors that are conducive to dietary compliance than spouses experiencing low marital adjustment. A spouse of a patient who is not satisfied with her or his marriage is likely to focus on that dissatisfaction, leaving less time and motivation to attend to the patient's treatment regimen. It may, however, be that compliant patients experience better health than noncompliant patients, and thus are better able to be involved in marital enrichment activities that are important for spouse marital satisfaction. Spouses may thus be motivated to reciprocate with involvement in and support of compliance and rehabilitation efforts by the patient.

The significant relationships between spouses' estimations of prescribed medications and patients' compliance levels suggest that spouses' knowledge about and perceptions of patients' medical regimens may influence compliance. The findings that overestimation of medications was associated with noncompliance and underestimations with compliance suggest that perceiving the spouse as more sick than is the case may possibly be associated with patient noncompliance, while seeing the patient as less sick than is the case could be associated with compliance. If such associations really exist, further support is provided for involvement of patients in as many routine activities as possible, avoiding the perception of being a "sick" person.

Future research suggested by the present study might include inves-

tigations of the effects of increased marital satisfaction and patient activity on compliance/noncompliance, overall rehabilitation, and quality-of-life considerations. Knowledge of spouses about the medical regimens and health condition of patients should also be examined as a factor in patient dietary compliance.

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