Depression and Marital Dissatisfaction in Patients With End-Stage Renal Disease and in Their Spouses

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• **Little research has been performed assessing patients with end-stage renal disease (ESRD) as parts of marital dyads or within family structures. Recent findings suggest patient interactions within such systems are associated with patient outcomes. To evaluate the relationship between level of patient depression and spouse psychosocial status, 55 couples in which one partner was undergoing chronic hemodialysis therapy for ESRD were interviewed. Two variables that alone and in interaction with one another were expected to relate to the spouse's level of depression and marital satisfaction were investigated: patient depression level and spouse's perceived social support. Depression was assessed using the Beck Depression Inventory (BDI). Spouses' levels of depressive affect correlated directly with patient BDI scores. A significant two-way interaction for spousal depression (patient depression and spousal support) supported viewing spouses' adjustment as a function of the interaction between spouse and patient factors. Additionally, a main effect of perceived spousal social support on spousal marital satisfaction indicated that spouses reporting high levels of social support had the least marital strain. The severity of the patient's illness did not correlate with any of the predictor variables or measures of spousal adjustment, but spouses reported significantly lower functional status for patients than did nephrologists. Spouse and patient levels of depression are related, although causal relationships cannot be determined by these studies. Moreover, spouse perception of marital satisfaction is related to depression scores. These findings suggest the patient with ESRD functions in a psychosocial dyad. Spouse psychosocial status could impact on the level of patient depression, and the spouse might be amenable to interventions that could improve patient outcome.**

INDEX WORDS: Depression; marriage; marital satisfaction; marital conflict; social support; functional status; Karnofsky performance status scale.

A VARIETY OF psychological disorders and stresses complicate the course of patients with renal disease.[1-4] Spouses of chronically ill patients are also at risk for both psychological distress and compromised physical health.[5-7] End-stage renal disease (ESRD) provides an example of a chronic illness that can be debilitating for both marital partners. As with many chronic illnesses, the spouse, like the patient with ESRD, must accommodate to an intrusive illness and its treatment demands and is frequently called on to contend with a series of crises that may at times be unpredictable and burdensome. Although moderate to excessive levels of depression or subjective stress have been documented in healthy spouses of patients with ESRD,[8-13] some spouses show few adverse reactions to living with a husband or wife treated with dialysis. Previous studies have not adequately explored this variability in spousal reactions and have given little consideration to factors related to psychological outcomes of members of the marital dyad. Few studies have assessed patient perceptions in the context of marital, familial, and treatment systems, linking adjustment to patient medical and marital status, but some data suggest these may be associated with clinically significant outcomes.[2,14] Because individual adjustment can be viewed as taking place within the context of such larger social subsystems as the marital dyad,[12,15] the degree of the nonpatient spouse's emotional distress and marital dissatisfaction may impact critically on the patient. Recently, we showed that perception of marital discord was associated with increased mortality in a population of African-American women with ESRD,[14] but the contribution of the spouse to marital adjustment was not assessed in that study.

Although estimates of the prevalence of depression in dialysis patients are varied, there appears to be a high frequency of moderate to severe levels of depression among this patient popula-

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tion.[2,16-18] Depression may detract substantially from the quality of life of patients with ESRD[1,2,14,16,19,20] and is particularly problematic given that dialysis patients are at increased risk for suicide[2,16,21] and may have greater rates of mortality associated with increased depressive affect.[2,16,22,23] Thus, a patient with a high level of depressive symptoms can be viewed as a significant source of stress for the spouse with whom he or she lives. Studies of a variety of chronically ill populations have shown associations between levels of depressive affect in patients and their spouses[6,24-26]; however, correlations have generally been only in the moderate range.[25,27] It is clear that in investigating the nonpatient spouse's response to chronic illness, one must consider more than the patient's reaction to the illness. Similarly, although depressive affect in spouses of chronically ill patients has been linked to some degree to perceived illness demands,[28] objective measures of the severity of the patient's illness are by themselves not necessarily predictive of either partner's psychosocial status or level of adjustment. The influence of spousal social support on spousal and patient psychosocial status within the context of patient severity of illness and depression has rarely been studied in ESRD populations.

Chronic illness may have a profound effect on a marriage, often creating new sources of marital tension or amplifying existing marital problems. Strains may include, among other factors, changes in the sexual relationship,[1-3,8] communication problems,[29] and perceptions of decreased intimacy.[30] Disruptions in the marriage brought on by illness and treatment demands may lead to spousal distress, although the converse may also be true. The nonpatient spouse's level of depressive affect may negatively impact on the marital relationship and affect the patient and his or her medical course. Identification of variables related to both outcomes can be used in designing effective interventions for both the healthy spouse and chronically ill partner.

The purpose of the present study is to investigate two sets of specific factors (patient and spouse depression level and spousal perception of social support and marital satisfaction) that alone and in interaction with one another might relate to emotional and marital adjustment among ESRD dyads. Both the patient's level of depressive affect and severity of the patient's illness may function as stressors for the spouse. We hypothesized that patient depressive affect would correlate with spouse psychosocial status, and the most adverse stress reactions would be reported by spouses who perceived low levels of social support and were married to or cohabiting with patients with high depression scores.

METHODS

Subjects

Couples in which one partner was being treated for ESRD were invited to participate in the study. Couples were recruited from four medical centers in the Washington, DC, metropolitan area at which the ill partners were undergoing in-center hemodialysis (HD) treatment on a regular thrice-weekly schedule. Couples in which the patient showed signs of dementia, failed to pass a Mini–Mental Status Examination,[31] or was infected with human immunodeficiency virus were excluded from the study. In addition, only couples in which the patient had been undergoing HD for at least 6 months were recruited for participation, as previously described.[14] All subjects provided informed consent for the study, and the study was approved by the institutional review boards of the medical centers providing dialysis.

Measures

Comorbidity

ESRD severity coefficient. A severity coefficient was calculated for each patient based on the criteria of Plough et al,[32] using the patient's age and additional concurrent illnesses. The coefficient was determined by multiplication of the patient's relative mortality risk based on age and the risk of additional comorbid illnesses present, described in our previous studies.[17,22,33] Pretreatment blood urea nitrogen (BUN) levels were abstracted from patients' medical charts during the month in which patients were interviewed.

Perceived Patient Functional Status

The Karnofsky Performance Status Scale. The Karnofsky score, assessed by healthcare workers, has been used frequently as a measure of the degree to which HD patients are physically rehabilitated.[1,2,20,34-36] The Karnofsky score provides a rating of the patient's functional capacities ranging from normality (100) to death (zero) in 10-point decrements. Intermediate ratings focus on the patient's ability to work, ability to care for self, and the need for hospitalization or institutionalization. The scale has been extensively used in studies of patients with ESRD (reviewed in[20,35]). Both physician Karnofsky ratings and ratings from the nonpatient spouses were collected. Physician and spousal Karnofsky ratings were used to assess the relationship between perceptions of the patient's physical state and the nonpatient spouse's adjustment.

A battery of questionnaires that included the following measures was administered to the subjects by a trained psychologist.

Depressive Affect

Beck Depression Inventory. The Beck Depression Inventory (BDI)[37] is a 21-item index that assesses both somatic and emotional aspects of depression. Items on the BDI are presented in a four-point Likert scale format. Zero on the scale represents the absence of a problem, and 3 represents an extreme problem, with total scores ranging from zero to 63. A diagnosis of depression is made for a score greater than 10, and severe depression, for a score of 16 or higher.[38] Craven et al[39] showed that a BDI score of 15 or higher had high diagnostic sensitivity and specificity in dialysis patients with ESRD. The scale shows excellent reliability and validity[37,38] and has been used extensively in patients with chronic renal disease.[2,23,39]

Typically, the somatic aspects of depression are included in diagnostic evaluations and scoring systems,[2,16,17,22] although symptoms of medical illness can make the diagnosis of depression more difficult in patients with a chronic medical illness.[2,16,17,22] To assess this issue, several years ago, we devised the Cognitive Depression Index (CDI),[2,16,17,22] a 15-item scale in which somatic items of the BDI have been deleted. We used this measure in several populations of patients with ESRD.[17,22,23,33] Unfortunately, except in early studies,[17,22] the CDI has not provided discriminative power compared with the BDI. The meaning of the CDI in people in the absence of medical illness is unclear. The CDI was assessed in all patients in this study.

Marital Satisfaction and Conflict

Dyadic Adjustment Scale and Dyadic Satisfaction Subscale. The Dyadic Adjustment Scale (DAS)[40] is a 32-item self-report measure intended for use with either married or unmarried cohabiting couples. The DAS contains four subscales of dyadic adjustment: dyadic consensus, dyadic satisfaction, dyadic cohesion, and affectional expression. The Dyadic Satisfaction Subscale (DAS-S) was used in this study, as in our previous studies.[14,35] Items 1 to 7 on the DAS-S address the frequency of marital conflict and perceptions of the marriage. They are presented in a six-category Likert scale format, with responses ranging from "always" to "never." The remaining items present similar rating scales and address the frequency of physical affection between the partners, overall happiness with the relationship, and their feelings about its future success. Good internal consistency and initial validity data have been reported,[40,41] and the scale has been used in patients with ESRD treated with HD.[14,35] Higher scores signify greater perception of marital satisfaction.

Social Support

The Multidimensional Scale of Perceived Social Support. The Multidimensional Scale of Perceived Social Support (MSPSS)[42] is a 12-item questionnaire that measures perceived social support from friends, family, and a special person (a confidant, such as a spouse, spiritual pastor, or medical staff member) and their sum, the total perceived social support. Four items pertaining to each area of support are presented. Items are answered using a seven-point rating scale that ranges from "very strongly disagree" (1) to "very strongly agree" (7). The MSPSS shows excellent validity and good internal consistency and test-retest reliability for the three subscales and overall test.[42] It has been used by us previously in studies of patients with chronic renal disease[2,14,33,35] and predicted survival in patients with ESRD treated with HD.[33]

Procedure

Patients were interviewed individually in the dialysis units by one of the authors (B.D.), a trained psychologist. The BDI was read to the patients, and interviews were paced according to patients' comfort and energy levels. Karnofsky Performance Status Scale scores were obtained from staff nephrologists. Patients were asked at the time of their interviews for permission to contact their spouses. The following questionnaires were administered by the psychologist to nonpatient spouses during scheduled telephone interviews: the Karnofsky Scale for assessment of the patient by the spouse and the spouse's response to the BDI, DAS-S, and MSPSS. Couples were mailed a small monetary compensation for participating in the study.

Statistical Considerations

Correlations were assessed using Pearson's correlation coefficient. Interactions were assessed using two-way analysis of variance. To examine two-way interaction effects, median splits were used to determine high versus low group status for both predictor variables (patient depression and spouse's perceived total social support). Spouses with MSPSS scores of 62.5 or higher were assigned to a high-support group, whereas a low-support group consisted of subjects with MSPSS scores less than 62.5. Subjects married to or cohabiting with patients with BDI scores of 9 or higher made up a high–patient-depression group, whereas subjects married to or cohabiting with patients with BDI scores les than 9 were assigned to a low–patient-depression group. Data are presented as mean ± SD. *P* less than 0.05 is considered the level of statistical significance.

RESULTS

Four dyads were excluded before invitation to the study because of the presence of acquired immunodeficiency syndrome or known human immunodeficiency virus infection in the patient. Four dyads were excluded before invitation to the study because patients were disoriented or demented or had psychiatric illnesses. Thirteen of the 68 couples invited to take part in the study declined, yielding 55 couples and a recruitment rate of 80.1%. Mean patient age was 56.0 ± 12.6 years (range, 32 to 79 years; Table 1), 76.4% of patients were men (n = 42), 23.6% were women (n = 13), 89.1% of patients were black (n = 49), and 7.3% were white (n = 4). Mean duration of time since patients first underwent HD treatment was 34.8 ± 39.8 months (range, 6 to 152 months). Of the 55 couples, 48 couples were married

Table 1. Patient and Spouse Characteristics

Variable	No. of Subjects	Mean	SD
Patient age (y)	55	56.0	12.6
Patient duration of ESRD (mon)	55	34.8	39.8
Patient predialysis BUN (mg/dL)	55	72.6	15.7
Patient Severity Index	55	2.6	1.1
Spouse age (y)	55	51.9	13.3
Spouse education (y)	55	13.1	2.9
Years married or cohabiting	55	25.5	13.2
No. of children per couple	55	2.5	1.8
No. of children in household	55	0.84	1.1
Patient BDI score	55	10.3	7.1
Patient CDI score	**55**	**6.2**	**5.2**
Spouse BDI score	55	7.9	5.7
Spouses' marital satisfaction (DAS-S)	54	35.6	7.0
Spouses' social support (total MSPSS)	54	60.9	16.3

NOTE: N = 55 couples.

(87.3%) and 7 couples were cohabiting (12.7%). Couples had been married or cohabiting for a range of 2 to 55 years. The modal number of children in the family was two, with a mode of zero children residing in the household at the time of the interview.

Of the spouses, 85.5% were black (n = 47), l0.9% were white (n = 6), and 3.6% (n = 2) were of a different ethnicity than the patient. The mean age of nonpatient spouses was 51.9 ± 13.3 years (range, 29 to 78 years), 76.4% of spouses were women (n=42), and 23.6% were men (n = 13). The average education of spouses was 13.1 ± 2.9 years of school. The majority of spouses (56.4%; n = 31) were employed on a full-time basis.

Spouses rated the patients' Karnofsky functional status almost 10 points less than physicians (69.1 ± 17.0 versus 77.6 ± 16.61; $P < 0.001$). There was no difference in mean patient Karnofsky ratings reported by male and female spouses. Spouse Karnofsky ratings correlated with nephrologists' assessments ($r = 0.40$; $P < 0.002$). According to physicians' ratings, the average patient was functioning at a level at which he or she was able to care for himself or herself, but was unable to carry on "normal activity" or do "active work." Spousal ratings indicated a lower level of function, with the patient requiring "occasional assistance." There was a significant inverse correlation of patient and spouse age and spouse assessment of patient Karnofsky score ($r = –0.40$; $P < 0.003$ and $r = –0.37$; $P < 0.005$, respectively). Spouses' perceptions of perceived total social support and spouses' assessments of patients' Karnofsky scores correlated ($r = 0.31$; $P < 0.03$; Table 2) with greater spousal levels of perceived social support associated with spousal perception of better patient functional status.

Patient mean BDI score was 30.4% higher than the mean BDI of the nonpatient spouse (10.3 ± 7.0 versus 7.9 ± 5.7; $P < 0.0l$), signifying a greater level of depressive affect. The overall mean score for patients was in the range of mild depression. Seven patients (12.7%) and six spouses (10.9%) had total BDI scores of 16 or higher, consistent with clinical depression. The mean CDI score of patients was 6.2 ± 5.2, similar to that found in previous studies.[14,16,23,33] There was no difference between mean CDI scores of male and female patients. There was no difference in mean psychological assessments of male and female spouses. Patient BDI and CDI scores correlated with spouse BDI scores ($r = 0.49$; $P < 0.01$ and $r = 0.51$; $P < 0.001$; Tables 2 and 3) and inversely correlated with spousal measures of perceived social support ($r = –0.27$; $P < 0.05$ and $r = 0.51$; $P < 0.001$). Thus, the greater the social support reported by spouses, the lower the level of depressive affect reported by patients.

Mean spouse MSPSS score for perception of

Table 2. Correlations Between Patient Medical Characteristics and Level of Depressive Affect and Spouse Psychosocial Variables

	R		
Variable	Patient BDI	Spouse BDI	Spouse MSPSS
Patient severity coefficient	0.01	0.06	0.01
Patients BUN	0.01	0.03	0.14
Patient duration of treatment for ESRD	0.06	−0.10	0.03
Patient BDI		0.49*	−0.27†
Patient CDI		**0.51‡**	**−0.26†**
Karnofsky rating by spouse	−0.23	0.23	0.31§
Karnofsky rating by nephrologist	−0.14	−0.11	0.10

*$P < 0.01$.
†$P < 0.05$.
‡$P < 0.001$.
§$P < 0.03$.

Table 3. Correlations Between Variables and Level of Spouse Depressive Symptoms and Marital Satisfaction

	R	
Variable	Spouse BDI	Spouse DAS-S
Patient BDI	0.49*	
Spouse BDI		−0.64†
Spouse marital satisfaction (DAS-S)	−0.64†	
Spouse perceived social support (total MSPSS)	−0.63†	0.61†
Spouse perceived social support from patient	−0.68†	0.64†
Spouse perceived social support from family	−0.55†	0.62†
Spouse perceived social support from friends	−0.41*	0.35†

*$P < 0.001$.
†$P < 0.001$.

total support was 60.9 ± 16.3, similar to those of normative populations and patients with renal disease in our studies.[33] The mean marital satisfaction score (DAS-S) of spouses was 35.6 ± 7.0, somewhat lower than that of normative samples.[14] Spouses' levels of depressive affect correlated with patients' levels of depression and inversely correlated with their levels of perceived social support (Table 3). There also was a significant negative correlation between extent of spousal depressive symptoms and spousal marital dissatisfaction, indicating that spouses who were less happy with their marriages tended to be more depressed ($r = –0.64$; $P < 0.0001$). Neither the patient severity of illness measure nor blood urea nitrogen (BUN) level, duration of patient ESRD, or physician Karnofsky assessments were found to correlate with patient BDI score or level of spouse depressive affect or perception of social support.

It was hypothesized that both patient level of depression and spousal psychosocial status would be influenced by spousal social support and depression, but they would be independent of the actual severity of the patient's illness. There was a significant interaction between level of patient depressive symptoms and spousal perception of social support ($P < 0.03$), such that spouses in the low-support/high–patient-depression group had significantly greater mean BDI scores than the remaining three support and depression subgroups (Fig 1). When spousal marital dissatisfaction was examined as the criterion variable, the hypothesized two-way interaction was not significant.

Of the four subgroups representing the possible social support/patient depression categories, spouses with low support who were married to or cohabiting with patients with high levels of depressive symptoms had the lowest mean marital satisfaction scores. Spouses married to or cohabiting with patients who had higher depression scores had significantly higher mean BDI scores than spouses married to or cohabiting with patients with lower BDI scores (9.7 ± 6.5 versus 5.8 ± 4.0; $P < 0.05$). Mean spousal marital satisfaction was not significantly different for spouses of patients with high and low levels of depressive affect.

Spouses' perceived social support was related to both spousal depression and spousal marital dissatisfaction. Spouses with greater perceived social support had significantly lower mean depression scores than spouses with lower perceived social support (5.0 ± 4.4 versus 10.9 ± 5.5; $P < 0.0003$). Similarly, spouses reporting greater levels of social support had significantly greater mean DAS-S scores than spouses report-

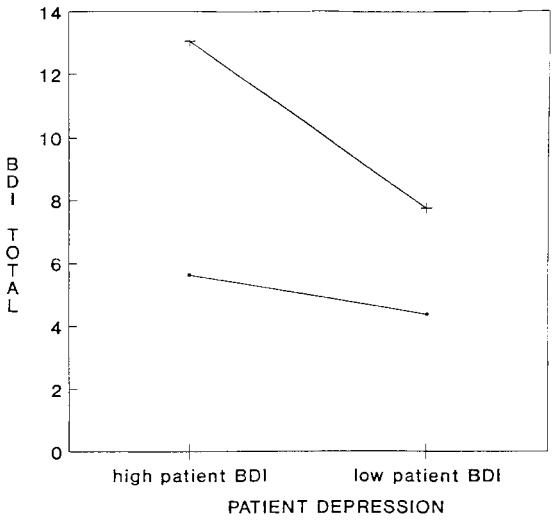

Fig 1. Spousal depression as a function of spousal support and patient depression. Upper line represents high spousal social support participants and lower line represents low spousal social support participants. The vertical axis indicates the level of spouse depression.

ing lower levels of social support (39.1 ± 4.7 versus 32.0 ± 7.2; $P < 0.0004$).

DISCUSSION

Levels of patient depressive affect correlated with spouse BDI scores. Conversely, objective measures of patient illness did not correlate with spouse psychosocial status. These findings suggest that the HD couple with a patient or spouse with a high level of depression may be viewed as a "depressed dyad," with the patient potentially at greater mortality risk.[2,23] Our results support the view that the adjustment of both partners is interdependent, suggested by Kerns and Weiss[43] and Revenson,[44] and that interactions with a depressed patient may deplete the nonpatient spouse's coping resources, particularly when the spouse perceives a lack of social support. Our data are consistent with the view that having to deal with a patient's distress may reduce the healthy spouse's ability to provide support to the patient,[44] which in turn may influence the level of the patient's depressive affect. However, the interrelation between spouse and patient adjustment has important implications for the patient with ESRD. Patients may react to functional and emotional impairment in their spouses with an increase in their own depressive symptoms, a perception of decreased social support, and/or an inability to cope with the stress and burdens of their illness. In addition, depression in healthy spouses could impair their ability to carry out the caregiver role.

An unexpected result of patient evaluation by Karnofsky scores assessed by both the nephrologist and spouse was that spouses of patients viewed the patient to be more debilitated than did physicians. It is not clear which perception may be a more accurate view of the functional status and real demands of the patients, although physicians' ratings have predicted mortality (P.L. Kimmel et al, unpublished data, and[45]). However, the spouse view was that the perceived functional status of the patient was one requiring a considerable level of assistance by a helper (or the spouse). Some evidence that the spouse's perception of the functional status of the patient is related to the spouse's psychosocial status is suggested by the correlation between the spouse's Karnofsky ratings and spouse perception of social support.

Because objective patient illness measures, including physician Karnofsky rating, were not related to level of spouse depressive symptoms or perception of social support, it is important to have an independent evaluation of how the spouse views the patient's level of function. Level of spouse depressive affect and magnitude of negative outlook may result in a more negative view of patient functional status, rather than an accurate assessment of functional level. If the physician is aware of the more negative assessment of a spouse, this may alert the treatment team to address patient and spouse psychosocial functioning. Because spouse Karnofsky ratings were significantly related to spouse perception of social support, this represents a locus of potential intervention.

Failure to find significant correlations between the patient's severity of illness measure and other objective parameters of patient medical status and any of the spouse's psychosocial variables supports the view that the spouse's response is not determined by the patient's disease severity, but rather is influenced by a network of psychosocial and perceptual variables. When spousal depression was examined, data provided strong support for a spouse social support level–patient depression level model of spouse depression. The significant interaction between spousal social support and patient depression suggests that social support buffers against the effects of the patient's level of depressive affect. If they perceived high levels of social support were available, spouses of depressed patients were no more susceptible to depression than spouses of nondepressed patients. However, if such support was unavailable, the extent of depressive affect reported by spouses of depressed patients increased. This perception in turn is related to the extent of the patient's depressive affect.

Our findings show that spouses of the more highly depressed patients were more depressed than spouses of patients with lower depression scores. This result is in agreement with other studies involving dialysis couples.[25,27] However, unlike the present study, these two studies did not examine the relationship between patient and spouse psychosocial status in interaction with other variables. In addition, spouses perceiving low support were more depressed than spouses with high support. This is in agreement with the

study of Burton et al,[46] who found that spouses who felt a part of a supportive network were less distressed during the patient's first 3 months of home dialysis treatment. Thus, social support is important for all spouses of HD patients, but particularly for spouses in a dyad with depressed patients. If limited resources are available, this group should be targeted for intervention.

When spousal marital dissatisfaction was examined, spouses with low social support were less satisfied with their marriages than spouses with high support. In addition, spouses who were less happy with their marriages tended to be more depressed, and vice versa. A spouse who perceives more social support feels happier in the dyadic relationship and is less depressed and therefore should be able to provide more social support to the patient. Because social support is related to both patient depression and patient mortality,[33,47,48] interventions designed to increase the social support perceived by spouses could influence both spousal depression and marital dissatisfaction and possibly even the extent of patient depression and patient life span.

As variables related to spousal psychosocial status are identified, researchers need to test the effectiveness of intervention strategies. Social support groups for ESRD spouses reporting low support might offer a valuable source of information sharing and emotional validation and could also allow for reality testing regarding spouses' perceptions of their patient partners. Physicians need to be attuned to psychological needs of the nonpatient spouse because complications in spousal adjustment may affect the patient's physical and mental health and possibly the patient's longevity.

Future research might also include examination of possible gender differences in nonpatient spousal adjustment. Valid sex comparisons were not possible in this sample given the small number of male spouse participants. These data were collected in a population composed primarily of African-American patients and spouses. The findings should be reconfirmed in other ethnic populations before these results can be generalized to the ESRD HD population as a whole. We conducted telephone interviews to assess depressive affect, perception of social support, and marital conflict in the spouses. In general, differences between data acquired in face-to-face interviews and telephone interviews are minor. Differences are most marked when assessing behaviors that are embarrassing to report, such as some sexual behaviors, criminal behaviors, arrests for driving under the influence of substances, and substance abuse. Telephone interviews are almost as close to the most accurate measures, generally derived in questionnaires. However, telephone interviews have been used in acquiring valid data regarding depression.[49] It remains to be seen whether future studies of ESRD dyads will show similar results when comparing both means of obtaining spouse data.

We conclude that married patients with ESRD function in a complex psychosocial dyad that may be susceptible to possibly harmful depression. Both spouse and patient may be amenable to and benefit from interventions directed not only at the patient, but at the spouse.

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