

Ego mechanisms of defense are associated with patients' preference of treatment modality independent of psychological distress in end-stage renal disease

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Abstract: Several parameters mediate the selection of treatment modality in end-stage renal disease (ESRD). The nephrology community suggests that patient preference should be the prime determinant of modality choice. We aimed to test whether ego mechanisms of defense are associated with patients' treatment modality preferences, independent of psychological distress. In 58 eligible ESRD patients who had themselves chosen their treatment modality, we administered the Symptom Distress Checklist-90-R and the Defense Style Questionnaire. Thirty-seven patients (53.4%) had chosen hemodialysis and 21 (46.6%) peritoneal dialysis. Patients who preferred peritoneal dialysis were younger (odds ratio [OR], 0.89; 95% confidence interval [CI]: 0.804–0.988), had received more education (OR, 8.84; 95% CI: 1.301–60.161), and were twice as likely to adopt an adaptive defense style as compared to patients who preferred hemodialysis (57.1% vs 27.0%, respectively; $P < 0.033$). On the contrary, the latter were more likely to adopt an image-distorting defense style (35.1% vs 14.3%; $P = 0.038$) and passive–aggressive defenses (OR, 0.73; 95% CI: 0.504–1.006). These results were independent of psychological distress. Our findings indicate that the patient's personality should be taken into account, if we are to better define which modalities are best suited to which patients. Also, physicians should bear in mind passive–aggressive behaviors that warrant attention and intervention in patients who preferred hemodialysis.

Keywords: end-stage renal disease, hemodialysis, peritoneal dialysis, ego mechanisms of defense, DSQ, psychopathology

Introduction

Patients with end-stage renal disease (ESRD) have an extremely limited range of treatment choices, namely transplantation or dialysis, either hospital in-center hemodialysis or peritoneal dialysis – whether continuous ambulatory peritoneal dialysis (CAPD), automated peritoneal dialysis (APD) or nurse-assisted automated peritoneal dialysis (aAPD). Transplantation remains the preferred mode of renal-replacement therapy with respect to both outcome and cost effectiveness.^{1,2} However, in Greece, only one ninth of patients with ESRD are on transplantation list,³ while the supply of donor organs still remains quite limited relative to worldwide demand, and thus the dialysis-dependent patient population continue to grow.⁴

Increasing patient numbers have resulted in pressure on dialysis centers and in a need to reorganize dialysis treatment, prompting a possible reorganization towards a greater use of “out-of-center” dialysis.⁵ A Danish health technology assessment

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suggests that the proportion of hemodialysis patients could be reduced to 55%,⁶ while English nephrologists propose a reduction 27%.⁷ However, in Greece, the percentage of patients in peritoneal dialysis is reported to be as low as 13.3%,³ despite dialysis centers being overwhelmed, as indicated by the fact that there is only one nurse for as many as 5.54 patients in hemodialysis.³

Several parameters mediate the selection of treatment modality in ESRD. Each of the existing options has its own strengths and limitations and the nephrology community continues to redefine which modalities are best suited to which patients.⁴ Among the medical, individual, social, financial, or patients' and nephrologists' attitudinal factors influencing modality selection, patient preference is the most important determinant of modality decisions.^{8,9} It has been pointed out that if a patient has no strong indication for or against a certain form of therapy, patient preference should be the prime determinant of modality choice.⁴ Investigating these factors influencing patients' preferences for treatment modality could help us to better define which modalities are best suited to which patients.

Individual characteristics previously demonstrated to be associated with the treatment selection have included the patient's body consciousness, coping strategies, perceived barriers to adherence, and preference for active involvement in one's health care delivery.^{10,11} Other investigators have found that the treatment selection appears to be independent of patient's age and sex and is determined by their educational level,¹² pre-dialysis educational programs,^{13,14} sense of autonomy and control,¹⁵ the doctor's and family's opinion,¹⁶ or specific personality traits such as a need for independence.¹⁵ Although several psychological factors seem to play a significant role in the selection of the treatment modality, there is little research-based discussion on the association between psychodynamic aspects of personality and treatment modality preference, while no study has focused on the relationship of ego mechanisms of defence with therapy selection.

Ego mechanisms of defense are defined as "automatic psychological processes that protect the individual against anxiety and from the awareness of internal or external dangers and stressors, mediating the individual's reactions to emotional conflicts and to internal or external stressors."¹⁷ Living with an end-stage disease such as ESRD is a severe psychological stressor and it is likely that the patient's dominant defense style may determine his or her psychological response and consequently his or her compliance with or adherence to treatment as well as treatment preferences. The response results from the activation of a cluster of defense

mechanisms and is also associated with the patient's capacity to cope with health stressors.^{18,19} Our previous research in patients with diabetes has shown that a "self-sacrificing" defense style underlies poor adherence to treatment regardless disease-related variables,²⁰ while several maladaptive defenses were found to be strongly associated with impaired health-related quality of life in scleroderma and cancer patients.^{21,22} We have also found a significant positive correlation between disease activity and defensive profiles in both ulcerative colitis and Crohn's disease patients.²³ Prompted by these findings, we aimed here to test the specific hypothesis that ego mechanisms of defense are associated with selection of treatment modality in ESRD. Since we have previously found that psychological distress mediates the relationship of defense mechanisms with several outcome variables in patients with rheumatoid arthritis,²⁴ but not in cancer patients,²² we also tested whether ego mechanisms of defense are independent correlates of treatment modality selection after adjusting for potential confounders, including psychological distress.

Patients and methods

Participants

The study design was cross-sectional. The sample comprised consecutive patients with a confirmed diagnosis of ESRD attending for years the outpatient department at the Renal Clinic of the Hippocraton General Hospital of Athens, Greece, during an 18-month period. The major inclusion criterion required that the patients chose their treatment modality (ie, hemodialysis or peritoneal dialysis), after the advantages and the disadvantages of each modality were explained in detail to the patients by their doctors. Exclusion criteria were: strong indication for a certain form of therapy (ie, social problems that limit the ability of patients to manage a home dialysis method, such as severe poverty and poor hygienic conditions, or lack of family support in the elderly who have many comorbid conditions or, on the other hand, living a long distance away from hemodialysis centers, which can make in-center hemodialysis impossible), inability to read and write Greek, history of psychotic illness, history of alcohol and/or drug abuse or history of dementia. Out of 92 invited patients, 58 patients were eligible and all agreed to participate in the study and signed informed consent was obtained. The high participation rate may be due to a good doctor-patient relationship, taking into consideration that all patients had been followed by the same experienced nephrologists throughout the course of the disease. It should

be also noted that dialysis treatment in Greece is publicly funded (ie, it is free to patients). The demographic characteristics of the patients who had chosen either hemodialysis or peritoneal dialysis are presented in Table 1. All the procedures followed were in accordance with the ethical standards on human experimentation (Helsinki Declaration of 1964) and were approved by the hospital's ethical committee.

Measures

The data collection was via a semi-structured interview performed by the same interviewer, completion of certain clinical and demographic information by the interviewer and completion of self-report questionnaires by each participant.

Psychological distress

Psychological distress was measured using the Symptom Distress Checklist-90-R (SCL-90-R), which is a 90-item multidimensional self-report symptom inventory designed to measure a wide range of psychopathological symptoms in psychiatric and medical patients,²⁵ namely symptoms of somatization, obsessive-compulsiveness, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. It also estimates the Global Severity Index (GSI) designed to measure overall psychological distress. Respondents rate items on a five-point scale reflecting their distress during the past seven days. A higher score indicates higher symptom intensity. Its utility in medical patients has been well documented^{25–27} and has also been standardized for the Greek population.²⁸

Defense mechanisms

To measure the patients' defensive profile we used the Defense Style Questionnaire (DSQ). This is an 88-item rating

scale that is designed to estimate behavior indicating four defense styles.²⁹ The "maladaptive action" style indicates the participants' inability to deal with their impulses by taking constructive action on their own behalf. The essence of the "image-distorting" style is the splitting of the image of self and other into good and bad and into strong and weak. The "self-sacrificing" style reflects a need to perceive one's self as being kind, helpful to others, and never angry. The "adaptive" style consists of the regarded mature defenses of humor, suppression, and sublimation.^{29,30} Each item is rated on a nine-point Likert interval scale. The validity of DSQ is established³⁰ and it has been widely used with Greek medical patients.^{19–23,31}

Statistical analysis

All the statistical analyses were performed using the Statistical Package for the Social Sciences (version 15.0; SPSS Inc., Chicago, IL, USA) for Windows. Summary statistics for all variables were calculated. Normality was tested by the Kolmogorov–Smirnov test.³² Univariate comparisons were conducted to assess differences in demographic and psychological variables between patients who preferred hemodialysis as compared to those who preferred peritoneal dialysis. Student's *t*-tests and chi-square tests were calculated as appropriate.³² All the *P*-values were two-tailed.

Defense styles used by individual patients were defined by dividing subgroups according to the following criterion: if a subject's score for each defense style was 0.5 standard deviations (SD) above the mean on a particular factor, we consider that this subject used that corresponding defense style, because a cut-off point of 0.5 SD has been considered to provide the best discrimination here.²⁹ Chi-square tests were calculated to assess differences in defense styles used by patients who preferred hemodialysis as compared to those who preferred peritoneal dialysis.³²

To test whether the defense styles used are associated with the treatment modality preferences independent of demographic variables and psychological distress, a multivariate logistic regression analysis was performed. The dependent variable was "treatment modality" (hemodialysis = 1, peritoneal dialysis = 2). Independent variables were: sex, age, education, and the statistically significant variables of psychological distress symptoms and defense styles based on the previous univariate analyses.

In order to test whether individual defences are associated with the treatment modality preferences independent of demographic variables and psychological distress, we repeated the previous multivariate logistic regression

Table 1 Demographic characteristics of ESRD patients who had chosen in-center hemodialysis (CHD) or peritoneal dialysis (PD)

Variables	CHD	PD	P value
N	37	21	
Gender: Female (N, %)	21 (56.7%)	8 (38.1%)	0.095 ^a
Age (years), range	25–82	45–80	
Age (mean ± SD)	64.76 ± 8.00	58.11 ± 13.4	0.024 ^b
Family status: married (N, %)	30 (85.7%)	20 (95.2%)	0.260 ^a
Educational level (N, %)			0.049 ^a
Basic lower education	21 (56.75%)	6 (28.57%)	
High-school education	14 (37.83%)	12 (57.14%)	
University educated	2 (5.40%)	3 (14.3%)	

Note: ^aChi-square tests; ^btwo-tailed *t*-tests.

Abbreviation: SD, standard deviation.

analysis. In this analysis, the defense styles were substituted by the statistically significant individual defenses, based on the results of the univariate analyses. The dependent variable was again the “treatment modality” (hemodialysis = 1, peritoneal dialysis = 2).

Results

Patient characteristics

Table 1 presents the demographic characteristics of ESRD patients who selected hemodialysis or peritoneal dialysis. Thirty-seven patients (53.4%) selected hemodialysis and 21 (46.6%) chose peritoneal dialysis. The majority of the patients were married (86.2%) and their age ranged from 25 to 82 years, with a mean (\pm SD) of 60.6 ± 12.1 years. Patients who selected peritoneal dialysis were younger ($P = 0.024$) and had received more education ($P = 0.049$) compared to patients who selected hemodialysis. In view of these differences, the major demographic characteristics were included in the subsequent multivariate analyses as independent variables.

Psychological distress

As shown in Table 2, patients who selected hemodialysis showed a tendency to present higher scores on all SCL-90 subscales as compared to those who selected peritoneal dialysis, but only the SCL-90 phobic anxiety subscale reached statistical significance ($P = 0.022$).

Defense styles and individual defenses

Defense styles used by individual patients are presented in Table 3. As shown in this table, patients who selected

Table 3 Defense styles used by individual patients who had chosen in-centre hemodialysis (CHD) or peritoneal dialysis (PD)

	CHD N = 37	PD N = 21
Maladaptive action	11 (29.7%)	7 (33.3%)
Image-distorting	13 (35.1%)	3 (14.3%) ^a
Self-sacrificing	13 (35.1%)	4 (19.0%)
Adaptive	10 (27.0%)	12 (57.1%) ^b

Notes: ^a $\chi^2 = 4.29$, $df = 1$, $P = 0.038$; ^b $\chi^2 = 4.52$, $df = 1$, $P = 0.033$. Because some patients reported testing multiple defense styles, the sum of percentages in any column may exceed 100%.

peritoneal dialysis were twice as likely to adopt an adaptive defense style as the patients who selected hemodialysis (57.1% vs 27.0%, respectively; $P = 0.033$) and the opposite was true with regard to the image-distorting defense style (14.3% vs 35.1%, respectively; $P = 0.038$). Regarding individual defenses used, patients who selected hemodialysis reported more frequent use of passive aggression ($P = 0.049$) and somatization ($P = 0.043$) than their counterparts who selected peritoneal dialysis (Table 4).

Multivariate analyses

Multiple logistic regression analysis with dependent variable the treatment modality (ie, hemodialysis or peritoneal dialysis) and independent variables the major demographic characteristics (ie, age, sex, and education) and the statistically significant psychological distress variables and defense style used (ie, symptoms of phobic anxiety, image-distorting defense style and adaptive defense style) showed that age,

Table 2 Symptoms of psychological distress of ESRD patients who had chosen in-center hemodialysis (CHD) or peritoneal dialysis (PD)

	CHD N = 37 (mean \pm SD)	PD N = 21 (mean \pm SD)	P value ^a
Somatization	1.60 \pm 0.92	1.39 \pm 0.80	0.421
Obsessive-compulsive	1.33 \pm 0.77	1.14 \pm 0.57	0.364
Interpersonal sensitivity	1.19 \pm 0.77	0.96 \pm 0.63	0.256
Depression	1.47 \pm 0.76	1.23 \pm 0.63	0.241
Anxiety	1.20 \pm 1.07	0.84 \pm 0.68	0.189
Hostility	0.87 \pm 0.81	0.80 \pm 0.83	0.783
Phobic anxiety	1.00 \pm 1.01	0.54 \pm 0.40	0.022
Paranoid Ideation	1.25 \pm 0.95	1.01 \pm 0.40	0.305
Psychoticism	0.65 \pm 0.51	0.61 \pm 0.40	0.773
Global Symptom Index	1.23 \pm 0.74	1.00 \pm 0.52	0.201

Note: ^aTwo-tailed t-tests; a higher score indicates higher symptom intensity.

Table 4 Ego mechanisms of defense of ESRD patients who had chosen in-center hemodialysis (CHD) or peritoneal dialysis (PD)

	CHD N = 37 (mean \pm SD)	PD N = 21 (mean \pm SD)	P value ^a
Neurotic denial	4.32 \pm 2.70	4.37 \pm 1.86	0.929
Projection	3.44 \pm 2.26	2.87 \pm 1.44	0.268
Passive-aggressive	4.75 \pm 3.47	2.90 \pm 3.02	0.049
Acting out	4.77 \pm 2.84	5.30 \pm 1.98	0.436
Splitting	4.96 \pm 3.02	4.31 \pm 3.03	0.465
Projective identification	1.68 \pm 2.00	1.25 \pm 0.91	0.290
Omnipotence	4.42 \pm 2.24	3.97 \pm 2.23	0.482
Undoing	5.15 \pm 3.36	6.15 \pm 3.51	0.324
Affiliation	4.74 \pm 3.24	6.63 \pm 3.16	0.345
Somatization	6.91 \pm 2.86	4.95 \pm 3.51	0.043
Hypochondriasis	4.38 \pm 2.70	4.49 \pm 2.67	0.879

Note: ^aTwo-tailed t-tests; a higher score indicates a more intense use of the specific defense.

education, and adaptive defense style were the variables most closely and independently associated with the treatment modality selection (Table 5). Patients who used an adaptive defense style were eight times as likely to select peritoneal dialysis as the patients who did not use this defense style (odds ratio [OR], 8.99; 95% confidence interval [CI]: 2.174–86.748; $P = 0.011$). Along the same lines, patients who had received more education were eight times as likely to select peritoneal dialysis as the patients who had received less education (OR, 8.84; 95% CI: 1.301–60.161; $P = 0.026$), whereas the higher the age of the patients the lower the possibility for peritoneal dialysis selection (OR, 0.89; 95% CI: 0.804–0.988; $P = 0.029$).

In order to better clarify the individual defenses that are possibly involved in the selection of the treatment modality, we repeated the previous analysis using as independent variables the significantly correlated with the treatment modality selection individual defenses (ie, passive–aggressive behavior and somatization), instead of the defense styles. As shown in Table 6, apart from the contribution of the major demographic variables (which is similar to the previous analysis), passive–aggressive behavior was the defense mechanism most closely and independently associated with the treatment modality selection: patients who adopted a passive–aggressive defense mechanism were less likely to select peritoneal dialysis compared to patients who did not use this defense mechanism (OR, 0.73; 95% CI: 0.504–1.006; $P = 0.043$).

Table 5 Psychological distress variables and defense styles most closely associated with the choice of peritoneal dialysis by ESRD patients (N = 58)

	Odds ratio (95% CI)	P value
Demographics		
Gender (1 = male)	3.981 (0.514–30.817)	0.186
Age	0.891 (0.804–0.988)	0.029
Educational level	8.847 (1.301–60.161)	0.026
Psychological distress		
Phobic anxiety symptoms	3.489 (0.617–19.746)	0.158
Defense styles		
Image-distorting	0.409 (0.040–4.143)	0.449
Adaptive style	8.994 (2.174–86.748)	0.011

Notes: Multivariate Logistic regression analysis with dependent variable the treatment modality (hemodialysis vs peritoneal dialysis) and independent variables the major demographic variables and the statistically significant variables of psychological distress symptoms and defense styles derived from the previous univariate analyses. The predictive values were calculated based on the probability of being in peritoneal dialysis and the cut-off value between hemodialysis and peritoneal dialysis was 0.500. Multivariate regression equation correctly classified 85.1% of the cases, with a Cox and Snell $r^2 = 0.440$.

Table 6 Psychological distress variables and ego mechanisms of defense most closely associated with the choice of peritoneal dialysis by ESRD patients (N = 58)

	Odds ratio (95% CI)	P value
Demographics		
Gender (1 = male)	1.882 (0.284–12.496)	0.513
Age	0.928 (0.850–1.013)	0.097
Educational level	6.286 (1.217–32.464)	0.028
Psychological distress		
Phobic anxiety symptoms	3.573 (0.713–17.892)	0.121
Ego mechanisms of defense		
Passive–aggressive	0.731 (0.504–1.006)	0.043
Somatization	1.065 (0.773–1.466)	0.700

Notes: Multivariate logistic regression analysis with dependent variable the treatment modality (hemodialysis vs peritoneal dialysis) and independent variables the major demographic variables and the statistically significant variables of psychological distress symptoms and individual defense mechanisms based on the results of the previous univariate analyses. The predictive values were calculated based on the probability of being in peritoneal dialysis and the cut-off value between hemodialysis and peritoneal dialysis was 0.500. Multivariate regression equation correctly classified 76.1% of the cases, with a Cox and Snell $r^2 = 0.355$.

Discussion

The results of the present study showed that ego mechanisms of defense are associated with patients' preference of treatment modality in ESRD, which confirms our main hypothesis. As our results showed, patients who selected peritoneal dialysis were younger, had received more education, had less phobic anxiety symptoms, and were twice as likely to adopt an adaptive defense style compared with patients who selected hemodialysis. In addition, ESRD patients who used an adaptive defense style were eight times as likely to select peritoneal dialysis as the patients who did not use this style. On the contrary, patients who selected hemodialysis were more than twice as likely to adopt an image-distorting defense style, while patients who use a passive–aggressive defense were much more likely to select hemodialysis as the patients who were not passive–aggressive. Interestingly, these results were independent of psychological distress, which confirms our second hypothesis.

Although increasing patient numbers have resulted in pressure on dialysis centers prompting a greater use of “out-of-center” dialysis,⁵ a decline in the percentage of patients with ESRD being treated with peritoneal dialysis has been recently observed,^{15,33,34} while the percentage of Greek ESRD patients being in peritoneal dialysis has been reported as low as 13.3%.³ Given these low and declining rates of patients being in peritoneal dialysis, there has been increasing interest in developing an understanding of what factors are important in influencing patients' decisions concerning dialysis modality.^{15,34,35}

In our study, 46.6% of ESRD patients had chosen peritoneal dialysis, after the advantages and the disadvantages of each modality were fully explained to the patients by their doctors. This high proportion of patients who selected peritoneal dialysis is in agreement with the results of previous studies, that found if patients with advanced renal failure were offered a free choice of dialysis modality, 45% of those who could receive both hemodialysis and peritoneal dialysis would choose peritoneal dialysis.³⁶ In addition, it has been also reported that if patients are actively involved in the decision concerning treatment modality, there is a substantially greater likelihood of the selection of peritoneal dialysis.^{33,35,37} Thus, our findings add further evidence for the significant role that patient preference might play in the selection of peritoneal dialysis as the preferred treatment modality in ESRD.

Among the demographic variables studied, age and educational level were the variables that differentiate our patients who had chosen peritoneal dialysis from those who had chosen hemodialysis. Consistent with the findings from other studies, patients who had chosen peritoneal dialysis were younger^{14,33,38–40} and had received more education¹² than the patients who had chosen hemodialysis, although some studies found no relationship of age with treatment modality selection.¹² It has been suggested¹⁵ that while physicians do not consider age *per se* to be a contraindication for home dialysis therapies,^{4,41–43} older age is associated with many medical and social comorbidities that make home dialysis difficult or impossible.⁴

The main finding of the present study was that specific personality traits, namely ego mechanisms of defense and defense style used, were associated with patients' preference of treatment modality, independent of psychological distress. To the best of our knowledge, this is the first study reporting an association of ESRD patients' defense style with their therapy preferences.

In general, in our study, patients who selected peritoneal dialysis used a more adaptive defense style, independent of age, sex, education, or psychological distress. The defenses that constitute the adaptive defense style—humor, suppression, and sublimation—are associated with good coping. Suppression allows an anxiety-provoking conflict to be put out of awareness until the individual is ready to deal with the issue. Humor reflects a capacity to accept a conflictual situation while taking the edge off its painful aspects and sublimation uses the anxiety-provoking impulse in the service of creative response.²⁹ Thus, adaptive style is associated with a constructive type of mastery of the conflict or distress.

This is important here, since patients on peritoneal dialysis face several risks which may well produce several forms of anxiety and distress. Peritoneal dialysis has been associated with risk of peritonitis^{44,45} and infection,⁴⁶ which have been associated with the patients' psychosocial profile and psychiatric history.⁴⁶ The patients' capacity to deal with the conflict and distress could define their capacity to adequately comply with the treatment requirements (eg, strict compliance, good health rules, and avoidance of insert infections). Thus, clinicians should pay attention to the patients' resources to cope with illness and, in patients who are candidates for peritoneal dialysis selection, the use of the DSQ could help clinicians to define which patients adopt an adaptive defense style, which in turn enhances the criteria for the most proper modality selection.

On the other hand, patients who had chosen hemodialysis showed a tendency to adopt an image-distorting defense style, while patients who used a passive–aggressive defense were much more likely to select hemodialysis. The essence of the image-distorting defense style is that the patient “splits” the image of self and other into good and bad, strong and weak, so he/she perceives others as “all good”, omnipotent and strong or “all bad”, devaluated and weak. Although in situations of stress these defenses could be invoked for adaptation,⁴⁷ ie, to trust in the “omnipotence” of the physician, this style is mostly associated with narcissistic and borderline personality disorders.⁴⁸ Often, the same individual (the physician) will be alternately idealized and devalued by these patients. Attention, understanding and, in selected cases, intervention in the patients' inner psychological structure could help the management of this immature coping, could facilitate the patient to better adjust to the treatment modality selected and improve the patient's compliance with treatment.

Of particular importance, to our opinion, is our finding that patients who use passive–aggressive defense mechanism habitually were much more likely to select hemodialysis. Passive–aggressive behavior is a defense mechanism in which the person indirectly and unassertively expresses aggression toward others,¹⁷ possibly through passivity, masochism, and turning against themselves.¹⁸ The resulting behavior includes failures or procrastinations, and even silly or provocative behavior in order to receive attention.¹⁸ There is also a façade of overt compliance masking covert resistance toward others, while passive aggression often occurs in response to demands for independent action or performance by the subject or when someone has disappointed the subject's wish to be taken care of, regardless of whether the subject has made this wish known.¹⁸ It is rather obvious that passive–aggressive behavior

might be dangerous, especially in patients in hemodialysis who, as a result of their treatment's demands, face several lifestyle or diet restrictions or even disappointments when their wish to be taken care of by their doctors and/or nurses is not fulfilled, whether justified or not. The therapist's task here is to help passive-aggressive patients to acknowledge their anger.⁴⁹ As Vaillant pointed out, "the clinician must continually point out the probable consequences of passive-aggressive behaviour as they occur, but in every interaction with the patients it is important to avoid humiliating comments about foolish, inexplicable behaviour. Nobody's pride is easier to wound than a person's who continually shoots himself or herself in the foot."⁴⁹

This study has some limitations, which need to be recognized. First, we used a cross-sectional design and the findings need to be replicated in a prospective study. Moreover, the drawback of using only self-report measures of independent psychological predictors means that we cannot refute the criticism that an underlying response style might have led to our results. In addition to this, the DSQ that we used is an attempt to describe an inferred intrapsychic phenomenon that may be out of a subject's awareness, an attempt that is fraught with difficulty.²⁹ A review of published studies, though, indicates strong evidence that adaptiveness of defense style as measured by DSQ correlates with mental health and change.⁵⁰ It is also possible that other factors, not included in the present study, such as social support, may have a mediating or moderating effect on patients' preference of treatment modality. Finally, our finding that ego mechanisms of defense are associated with treatment modality selection independent of psychological distress must be interpreted with caution, since the present sample size prevented us from performing a full mediation analysis,^{51,52} and therefore psychological distress was included in the logistic multivariable models as a confounder.

The main clinical implication of this study is that, in the absence of absolute clinical contraindications, the patient's personality should be taken into account in treatment modality selection. ESRD patients who used habitually an adaptive defense style preferred more frequently peritoneal dialysis, whereas patients who preferred hemodialysis showed remarkable high rates of passive-aggressive defense, and this should alert physicians bear in mind passive-aggressive behaviors that warrant attention and intervention in patients in hemodialysis. The DSQ could be a useful and time-efficient method for nephrologists to detect crucial personality traits that warrant attention if they are to suggest the most appropriate treatment modality. Further longitudinal studies are needed to confirm our findings with regard to the

role that ego mechanisms of defense play in the choice of treatment modality by ESRD patients, including also other important treatment modalities, such as the pre-emptive transplantation. This might provide key targets to define the potential psychological parameters that need to be addressed in order to offer the best suited treatment modality selection in ESRD patients.

Disclosures

The authors report no conflicts of interest in this work. This work is dedicated to the memory of Sonia Voudiclari.

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