Correlation between coping style and quality of life among hemodialysis patients from a low-income area in Brazil

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Abstract

Quality of life (QOL) is an important outcome among end-stage renal disease patients and can be associated with modifiable behaviors. We analyzed the correlation between coping style and QOL among hemodialysis patients. We studied 166 end-stage renal disease patients undergoing hemodialysis. They were older than 18 years, under hemodialysis for at least 3 months, and had never received a transplant. Quality of life was assessed by SF-36 and coping style was scored by the Jalowiec Coping Scale. Emotion-oriented coping and problem-oriented coping scores were compared according to sex, comorbidity, and socioeconomic status by the Mann-Whitney test. Correlations between QOL and 2 coping styles (emotion-oriented coping and problem-oriented coping) were adjusted for age, time on dialysis, hemoglobin, creatinine, albumin, calcium-phosphorus product, and Kt/V by backward stepwise linear regression. There was no difference between coping scores according to sex, comorbidity, and socioeconomic status. Emotion-oriented coping was independently and negatively associated with 4 QOL dimensions: physical functioning, role-physical, role-emotional, and mental health. Our results indicate that patients with high emotion-oriented coping scores should be seen at risk for poor QOL. Patient education in coping skills may be used to change the risk of poor QOL.

Key words: Coping, end-stage renal disease, hemodialysis, quality of life

INTRODUCTION

End-stage renal disease (ESRD) presents the same main problem all over the world: kidney transplants, which offer a better quality of life (QOL) and longer survival, are not accessible to all patients who need them.^{1–3} Kidney transplants are not advisable to some because of medical contraindication, but the main reason preventing transplants is the shortage of organs. The time on the waiting list can be as long as 10 years.⁴ In Brazil, among 73,605 patients under dialysis, there are 32,650 qualified for transplants, but only 8%—including retransplants—receive them each year.^{5,6} Therefore, many patients un-

dergo conventional hemodialysis (HD) for extended long periods and suffer several medical complications and poor QOL.

Traditionally, in diseases with high mortality, doctors seek objective medical markers of poor outcome: physical signs and laboratory and radiological data. But subjective feelings about patients' perceived life quality can be a strong prognostic marker.^{7–9} Indeed, more than a marker, QOL is becoming the principal outcome among HD patients, as mortality remains high.

We have been working on QOL since 2004 with a very specific sample of HD patients from a low-income area of northeast Brazil, a region with only 1 renal unit. And, like others, we have found QOL to be associated with modifiable factors (anemia, nutritional status) as well as unmodifiable ones (age).^{10–13} Recently, we began to take interest in the way patients cope with the difficult

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situations involved in their treatment, and whether the coping style can be associated with the level of QOL they achieve.

End-stage renal disease requires individuals to make a number of adjustments. To do so, patients need to understand their situation (cognitive effort) and modify their behavior (behavioral effort). The result of these efforts determines their coping style. In this way, coping operates as a mediator between treatment-related stressors and outcomes, such as treatment compliance, psychological distress or QOL.^{14,15} In Brazil, we do not have data on any kind of interaction between coping style and outcomes among HD patients. Besides this lack of studies, we became even more motivated to study coping styles when we learned that the way patients cope can be modified by adaptation training programs.¹⁶ In fact, coping tests are simple and can be used by dialysis staff without psychologists' help. If coping style as a modifiable factor is associated with QOL, patient education in coping skills can be used to change the risk of poor QOL.

Therefore, we aimed to seek a correlation between coping style and QOL among HD patients.

MATERIALS AND METHODS

Sample

We included ESRD patients undergoing HD during October 2008 in the only renal unit in the north of Ceará state, northeast Brazil. The criteria for inclusion were age older than 18, at least 3 months on dialysis, and without previous transplantation. One hundred and sixty-six patients were included from a total of 193. The reasons for noninclusion were: 12 with <3 months on therapy, 6 with previous transplants, 6 refusals, and 3 under 18 years old. All patients were undergoing conventional HD with polysulfone dialyzers (maximum number of reuses=12). The study protocol and informed consent were approved by the ethics committee of Vale do Acaraú University.

Measurement of QOL

We used the validated Brazilian version of the Medical Outcomes Study 36-Item Short Form Health Questionnaire (SF-36) to measure the QOL level.¹⁷ This is a well-validated 36-item questionnaire covering issues relating to physical, psychological, and social functioning that generates scores from 0 (worst) to 100 (best) for 8 subscales of QOL: physical functioning (PF), role-physical (RP), bodily pain (BP), general health (GH), vitality (VT),

social functioning (SF), role-emotional (RE), and mental health (MH). Physical functioning scores patients' performance related to daily activities, RP regards the impact of physical health on life, BP evaluates pain level and its impact on normal daily activities, GH evaluates subjective perception about present and future health status and resistance to illness, VT scores patients' feelings about their energy, VT, and moments of fatigue, SF scores the impact of health on routine social activities, RE measures the influences of emotional status on daily activities, and MH scores humor and well-being, including depression and anxiety.

Coping test

We used the first version of Jalowiec Coping Scale, which consists of 40 items to determine the coping style.¹⁸ This is a well-validated instrument, based on the cognitive theory of psychological stress and coping proposed by Lazarus and Folkman.¹⁹ It has been used in several studies of ESRD patients.^{20–24} The 40 items are grouped into 2 styles: problem-oriented coping (POC), comprising 15 items (scores ranging from 15 to 75), and emotion-oriented coping (EOC), comprising 25 items (scores ranging from 25 to 125). Problem-oriented coping aims to make direct changes in a stressful situation, whereas EOC seeks to ameliorate emotions associated with the problem.^{25,26} Subjects are evaluated about coping styles according to the 5-point Likert scale, ranging from "never do" to "always do."

Patient data

The demographic data, time on dialysis, and underlying etiology of ESRD were assessed in unit records. The underlying kidney disease was classified by clinical criteria and not by histopathology. Classification of socioeconomic status (SES) was according to the criteria of the Brazilian Association of Research Institutes.²⁷ This validated instrument is used in marketing surveys and population censuses and grades SES into 5 subgroups: A (best status) through E (worse status). Its criteria include educational level of the head of household and ownership of household appliances. Approximately, subgroup A corresponds to a monthly household income >US\$ 2500, B between US\$ 840 and 2500, C between US\$ 500 and 840, D between US\$ 200 and 500, and E for those under US\$ 200. Each patient was assigned a low-, medium-, or high-risk index based on comorbidity, as described by Khan et al.²⁸ Khan's comorbidity index takes into consideration the age in the 3 classes and 9 comorbidities:

diabetes, myocardial infarction, angina pectoris, congestive heart failure, liver cirrhosis, obstructive pulmonary disease, systemic collagen disease, pulmonary fibrosis, and visceral malignancies. The laboratory results were those routinely measured in HD patients: creatinine, albumin, hemoglobin, calcium and phosphorus, and Kt/V. Kt/V was estimated using a second-generation Daugirdas²⁹ formula.

Statistical analyses

We performed a descriptive analysis (mean $\pm$ SD, percentage) to assess the characteristics of the sample.

Coping scores related to EOC and POC were compared according to sex, comorbidity (high vs. medium vs. low, and also high vs. medium+low), SES (B+C vs. D+E) by the Mann-Whitney test.

For univariate analysis, we calculated the Pearson correlation coefficient between coping and QOL score.

In the multivariate analysis, correlations of coping and QOL score were adjusted for age, time on dialysis, hemoglobin, creatinine, albumin, calcium-phosphorus product, and Kt/V by backward stepwise linear regression.

Statistical significance was considered to be a P value of <0.05 . All the statistical analyses were performed using the SPSS version 13.0 program package.

RESULTS

The sample characteristics are shown in Table 1.

The QOL and coping scores are shown in Table 2.

There was no difference between coping scores according to sex, comorbidity, and SES (Table 3).

In the univariate analysis, EOC presented a linear and negative correlation with the following QOL dimensions: RP, RE, and MH. POC was positively correlated with GH (Table 4).

In the multivariate analysis, only EOC was independently and negatively associated with the 4 QOL dimensions: PF, RP, RE, and MH. Table 5 shows all significant regression coefficients.

DISCUSSION

We were able to detect that the EOC scores of our patients were associated with QOL.

Our sample characteristics are typical of underdeveloped areas. Firstly, there are few diabetics, low mean age and comorbidity grade, and the predominance of glomerulonephritis as the primary renal disease. Secondly, most of the patients have a very low SES, which means that 70% live with a monthly income of $<US\$$ 500 per family.

Table 1 Sample characteristics

Variables	
Sex	
Male	101 (60.8)
Female	65 (39.2)
Age	44.4 $\pm$ 15.6
Socioeconomic status ^a	
B	7 (4.2)
C	40 (24.1)
D	97 (58.4)
E	22 (13.3)
Primary kidney disease	
Glomerulonephritis	71 (42.8)
Hypertensive nephrosclerosis	38 (22.9)
Diabetes	16 (9.6)
Polycystic kidney disease	11 (6.6)
Obstructive uropathy	7 (4.2)
Lupus	4 (2.4)
Chronic pyelonephritis	4 (2.4)
Indetermined	15 (9.0)
Time on dialysis (months)	52.3 $\pm$ 50.8
Comorbidity ^b	
Low	131 (78.9)
Medium	28 (16.9)
High	7 (4.2)
Laboratory	
Creatinine (mg/dL)	12.6 $\pm$ 3.6
Hemoglobin (g/dL)	8.5 $\pm$ 1.7
Albumin (g/dL)	4.3 $\pm$ 0.4
Calcium-phosphorus product (mg ² /dL ²)	46.6 $\pm$ 13.4
Kt/V	1.5 $\pm$ 0.5

Data are means $\pm$ SD, or percentages (in parentheses).

^aMonthly household income in US\$: A >2500 , B=840–2500, C=500–2499, D=200–499, and E <200 .

^bKhan index.

Table 2 Coping and quality of life scores

Variables	Scores (mean $\pm$ SD)
Quality of life dimensions	
Physical functioning	55.4 $\pm$ 25.5
Role-physical	42.5 $\pm$ 42.1
Bodily pain	59.7 $\pm$ 30.1
General health	46.1 $\pm$ 21.3
Vitality	56.0 $\pm$ 23.4
Social functioning	69.2 $\pm$ 30.3
Role-emotional	59.6 $\pm$ 45.2
Mental health	64.2 $\pm$ 22.0
Coping	
Problem-oriented coping	51.4 $\pm$ 8.4
Emotion-oriented coping	68.1 $\pm$ 9.6

Table 3 Problem-oriented and emotion-oriented coping scores according to categorical variables

Variables	Problem-oriented coping		Emotion-oriented coping	
	Scores (mean $\pm$ SD)	P	Scores (mean $\pm$ SD)	P
Sex				
Male	51.1 $\pm$ 8.6	0.501	67.4 $\pm$ 9.8	0.215
Female	52.0 $\pm$ 8.0		69.3 $\pm$ 9.1	
Comorbidity ^a				
Low	51.5 $\pm$ 8.2	0.906	68.1 $\pm$ 9.7	0.902
Medium+high	51.3 $\pm$ 9.3		67.9 $\pm$ 9.4	
Socioeconomic status ^b				
B+C	51.9 $\pm$ 6.9	0.622	67.9 $\pm$ 7.3	0.857
D+E	51.3 $\pm$ 9.0		68.2 $\pm$ 10.4	

Data are means $\pm$ SD.

^aKhan index.

^bMonthly household income in US\$: A > 2500, B = 840–2500, C = 500–2499, D = 200–499, and E < 200.

Based on the laboratory profile, the patients have good control of their calcium-phosphorus product, dialysis dose is adequate and albumin is within the normal range. However, anemia is not controlled. Low mean hemoglobin could explain the more affected QOL among these patients when compared with a similar Brazilian sample with a better control of anemia.³⁰

We are aware that coping styles are dynamic: they change in the same person for each kind of stress and over time.¹⁹ Despite this, researchers try to recognize a pattern among patients with chronic diseases. Several studies have aimed to discover what coping style is more used among patients undergoing dialysis (POC or EOC), but the results are contradictory.^{31,32} Some tendencies to cope according to disease profile (acute/chronic, curative/palliative) can be identified. Cancer patients undergoing

Table 5 Regression coefficients of relationship between quality of life dimensions and emotion-oriented coping (EOC) score and clinical variables

Quality of life dimensions	Variables	Regression coefficients	P
Physical functioning	EOC score	– 0.425	0.032
	Age	– 0.611	<0.001
	Hemoglobin	2.490	0.046
	Creatinine	1.384	0.018
	Kt/V	– 10.069	0.008
Role-physical	EOC score	– 0.896	0.013
	Age	– 0.674	0.004
	Albumin	20.056	0.016
Role-emotional	EOC score	– 1.225	0.002
	Age	– 0.616	0.015
Mental health	EOC score	– 0.475	0.013
	Creatinine	1.527	0.005

surgery and radiation therapy (good expectation of chance of cure) present higher POC scores than new cases (more uncertain) and terminal patients (less possibility of cure) who have high EOC scores.³³

HD is a palliative care associated with well-known stress factors.^{22,34–36} Survival is stationary and QOL has been converted to the main outcome. We chose to study the coping style in a perspective of a modifiable factor potentially associated with the QOL level. In this way, we used scores summarized in 2 categories rather than the other Jalowiec method, which categorizes 8 coping styles. We know it is a simplification, but it is clinically adequate because it facilitates the coping testing as a screening method before referring patients to psychologists, who then can propose psychological interventions to encourage patients to develop favorable coping behaviors.

In this context, our results indicate that patients with high EOC scores should be seen as at a risk for poor

Table 4 Correlation coefficients between scores of problem-oriented and emotion-oriented coping and quality of life

Quality of life dimensions	Problem-oriented coping		Emotion-oriented coping	
	r	P	r	P
Physical functioning	– 0.012	0.873	– 0.113	0.148
Role-physical	– 0.116	0.136	– 0.191	0.014
Bodily pain	0.015	0.844	– 0.008	0.919
General health	0.162	0.037	0.132	0.090
Vitality	0.101	0.195	– 0.040	0.612
Social functioning	0.022	0.779	– 0.102	0.191
Role-emotional	– 0.149	0.055	– 0.248	0.001
Mental health	0.018	0.823	– 0.250	0.001

QOL, including dimensions of physical (PF, RP) and mental (RE, MH) aspects of QOL. In line with our results, EOC has been associated with negative outcomes in chronic diseases, including ESRD.^{37–39} EOC was correlated to poor psychological adjustment and depression in a sample comprising diverse chronic diseases.³⁷ Additionally, patients with psoriasis who more frequently used EOC reported higher levels of disability, lower MH, and lower QOL.³⁸ About ESRD, Dunn et al.³⁹ found among spouses of continuous ambulatory peritoneal dialysis patients that the more the EOC was used, the worse was the marital adjustment.

Unfortunately, we cannot detect a causality in a transversal study and identify if EOC affects QOL or if low QOL makes the patients cope this way. However, there are studies of the question of how EOC can be linked to worse QOL.^{20,40} Gilbar et al.⁴⁰ demonstrated a correlation between denial and EOC style. Denial and avoidance in the context of illness cause psychological distress, which could affect the mental aspects of QOL. On the other hand, denial interferes with seeking medical attention and adhering to a medical regimen, which can explain the low physical QOL. Additionally, Klang et al.²⁰ found a relationship between EOC and a more passive character and a sense of powerlessness. Passivity and powerlessness can provoke depressive feelings and a lack of patients' involvement in their own care, possibly affecting physical and mental aspects of QOL.

Beside being limited to causality interactions, our study has limitations concerning the particularity of the sample, which does not allow generalization to more typical patients in HD (diabetics, older patients with higher comorbidity). Additionally, in a more heterogeneous sample, one could find associations between demographic variables and coping styles that we could not. Further studies in Brazil with people with different SES are necessary to address this question. Finally, due to the dynamic nature of coping behaviors, it would be worthwhile to carry out longitudinal studies. But, to our knowledge, there is no other Brazilian study about the relationships between coping and QOL. Hence, we can consider the present results as preliminary, but sufficiently indicative of the value of coping tests for professionals involved with HD patient care.

In summary, our results suggest that in a particular sample of Brazilian HD patients, EOC style was associated with poor QOL level. Patient education in coping skills may be used to change the risk of poor QOL.

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