PERSONALITY FACTORS, SELF-EFFICACY AND DEPRESSION IN CHRONIC RENAL PATIENTS AWAITING KIDNEY TRANSPLANT IN BRAZIL

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Abstract

The aim of this study was to assess personality factors, self-efficacy and depression in chronic renal patients awaiting kidney transplant. Patients (n = 65) were adults under hemodialysis treatment and on the kidney transplant list with average age of 49.11 years. Pearson correlation analysis showed positive associations between the factors Surgency (r=-.353, p<.01) Conscientiousness (r=.415, p<.01) and self-efficacy; Neuroticism had negative correlation with self-efficacy (r=-.389, p<.01) and total (r=.688, p<0.01), psychological (r=.627, p<0.01) and somatic (r=.673, p<.01) depression levels; and the factors Conscientiousness and Agreableness also correlated positively and significantly with age (r=.381, p<.01; r=.309, p<.05 respectively) and age at diagnosis (r=.450, p<.05; r=0.271, p<.01). Neuroticism was significantly a predictor ($R2$= .47, β=5.35, p<.01) of depressive symptoms, while Conscientiousness, Neuroticism and Surgency factors together were predictors of self-efficacy in these patients ($R2$= .33, β=.23, p<.05). Personality factors must be considered in patients on the kidney transplant list, because they impact on behavior and depression levels of these patients.

Keywords: Kidney transplantation, personality traits, self-efficacy, self-perception, depression

Factores de Personalidad, autoeficacia y depresión en pacientes con enfermedad crónica renal en espera para trasplante de riñón en Brasil

Resume

El objetivo del estudio fue evaluar factores de personalidad, autoeficacia y depresión en pacientes con enfermedad renal crónica en espera para trasplante de riñón. Los pacientes (n=85) eran adultos que realizaban tratamiento de hemodiálisis y estaban en lista de espera para trasplante de riñón, con edad media de 49,11 años. El análisis de correlación de Pearson mostró una asociación entre los factores Insurgencia (r=-0,353, p<0,01) Conciencia (r=0,415, p<0,01) y Autoeficacia. Neuroticismo tuvo correlación negativa con autoeficacia (r=-0,389, p<0,01) y los niveles de depresión total (r=0,688, p<0.01), psicológica (r=0,627, p<0.01) y somática (r=0,673, p<0,01); y los factores Conciencia y Amabilidad también se correlacionaron de forma positiva y significativa con edad (r=0,381, p<0,01; r=0,309, p<0,05 respectivamente) y edad en el diagnostico (r=0,450, p<0,05; r=0,271, p<0,01). Neuroticismo fue un predictor significativo ($R2$= 0,47, β=5.35, p<0,01) de los síntomas depresivos, mientras los factores Conciencia, Neuroticismo y Insurgencia juntos fueron predictores de autoficacia en los pacientes ($R2$= 0,33, β=0,23, p<0,05). Los factores de personalidad deben ser considerados en pacientes en lista de trasplante de riñón pues tienen implicación en la conducta y niveles de depresión en los pacientes.

Palabras-clave: trasplante renal, factores de personalidad, autopercepción, depresión

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Renal transplantation is an important therapeutic option both from the medical and socioeconomic points of view, indicating that transplanted patients show better quality of life after transplants, reaching levels similar to those of the general population (Brazilian Medical Association, 2010). According to statistical data released by the Brazilian Association of Organ Transplant (2010), between january-june, 2.291 kidney transplants were performed (24.1 pmp*). The average waiting time for a transplant in Brazil ranges from 1.6 years for heart and 11.1 years for kidney (Marinho, 2006).The delay has significant impacts on well-being, the probabilities of cure, the nature and extent of sequelae in patients, in family members involved and in society.

Personality factors have been considered important components in health related issues, in particular in chronic illness (Friedman & Schustack, 2004). However, the findings which refer to personality aspects and their relations to physical health are few, especially in organs transplants.

Some studies refer to the role of personality as important in health behaviors of patients with chronic renal insufficiency, indicating that personality may have an impact on adherence to the treatment (Dobbels et al., 2009; Wiebe & Christensen, 1996), on mortality (Christensen et al. 2002), as well as influencing patients to face the disease and treatment (Kidachi, Kikuchi, Nishizawa, Iruma & Kaneko, 2007; Pervin & John, 2004). Similarly, in patients on kidney transplant list, personality factors have had a relation with the development of skills for self-care, as well as with the management of personal issues, (Horsburgh, Beanlands, Locking-Cusolito, Howe & Watson, 2000).

Considering this, self-efficacy also has been an important construct to be evaluated in health. This concept was presented by Bandura (1977) who defined it as the ability of the subject to perform successfully a specific pattern of behavior. Thus, this perception tends to alter the expectations of effectiveness and the amount and intensity of efforts that the individual may employ on difficulties and problems which are experienced.

Although there are studies of self-efficacy patterns and chronic diseases, only a few researches that make reference to patients on the organ transplant waiting list are found. Devins et al. (1982) studied the perception of self-efficacy and negative mood in patients in dialytic treatment and renal transplanted patients. It was noted that low levels of self-efficacy were associated with depression, low self-esteem and subjective feelings of helplessness. A recent research carried out by Weng, Daí, Wang, Huang and Chiang (2008) investigated the effects of self-efficacy on self-care and depressive behavior in 177 renal transplanted patients assessed six months after transplantation. The self-efficacy and self-care behaviors had negative effects on depression symptoms, being self-efficacy a predictor of antidepressant symptoms in these patients.

In contrast, it is possible to find several researches which have been concerned with symptoms of depression in chronic renal patients. Depression has been related to mortality, morbidity and hospitalizations in patients treated with hemodialysis (Lopes et al., 2002), and to the quality of life (Noohi et al., 2007; Pérez-San-Gregorio, Martín-Rodríguez Díaz-Domínguez & Pérez-Bernal, 2006). Depression in these patients negatively influences the adherence to treatment, demonstrating greater difficulties in meeting medical prescriptions (Kaveh & Kimmel, 2001). Specifically regarding kidney transplants, depression has been associated with the behaviors of non-adherence to immunosuppressive therapy in these patients (Cukor, Newville, Alabama & Jindal, 2008).

The main purpose of this study was to assess the relationship between personality, self-efficacy and depression factors in Brazilian patients on the kidney transplant waiting list. In addition, the influence of personality factors in self-efficacy and in depression levels of patients on the waiting list for renal transplantation, as well as the difference in indices presented by men and women and young adults and older patients have been examined.

Method

Participants

Participants were 65 patients awaiting kidney transplant under hemodialysis treatment in the city of Porto Alegre (Brazil) and that were linked to the transplant program of a public hospital, which is a reference in renal transplants in the south of Brazil. From these, 26 patients were female and 39 male. All patients were in hemodialysis treatment and active standby for organs transplant list for at least one month. The sample corresponds to 75.5% of the total patients who are awaiting kidney transplant in this hospital between March and June, 2009, and 29.6% of the patients in the [name] province in the south of Brazil.

Procedure

To contact the patient, the researchers invited him/her to participate, explaining the objectives of the study and requesting the signing of a free and informed consent term. The application of instruments occurred during the hemodialysis session of each participant. All instruments were applied individually and researchers took notes of the answers, since patients were connected to a dialysis machine,

which made filling the protocols difficult. The total implementation time varied from 60 to 90 minutes. Regarding patients who were assessed with high levels of depression or showed some other emotional problem during data collection, the staff of the unit was contacted, communicating the patient's situation and asking for psychological support.

Measures:

- Sociodemographic and clinical patient data questionnaire: Includes data on the patient, family and social support, as well as issues related to the illness.
- Personality Factor Questionnaire - BFP[2] (Nunes, Hutz & Nunes, 2009): The BFP is a personality measure derived from Big Five Model (McCrae & John, 1992). Consists of 126 items that must be answered in a likert scale ranging from 1 (*Absolutely don't sympathize with the phrase*) and 7 (*It describes me perfectly*). Each factor comprises a set of facets and each facet a set of features, described below. The gross indices are transformed into percentiles. The percentiles points are: up to 14 (*very low*), 15-29 (*low*), 30-70 (*average*), 71-85 (*high*). The factors and the facets are: 1) Surgency factor: Communication facets (E1), Assurance, (E2) Dynamism (E3), and Social Interactions (E4); 2) Agreableness factor: Kindness facets (S1), Pro Sociability (S2) and confidence in people (S3); 3) Neuroticism factor: Vulnerability facets (N1), Emotional Instability (N2), Passivity (N3) and Depression (N4); 4) Conscientiousness factor: Competence facets (C1), Ponderation/Prudence (C2) and Commitment/Compromising (C3); 5) Openness factor: Interest in new ideas facets (O1), Liberalism (O2) and Search for news (O3). In this study Cronbach's alphas were: Surgency (.82), Agreableness (.75), Neuroticism (.88), Conscientiousness (.68) and Openness (.68), which resembles those of validation of the instrument for the Brazilian version.
- General Perceived Self-efficacy Scale (Schwarzer & Jerusalém, 1995): consists of 10 items that evaluate the individual's perception of self-efficacy. Answers range from 1 (*not true*) to 4 (*always true*). Cronbach's alpha of the present study was .80, which resembles the validation of the instrument for the Brazilian version (Teixeira & Dias, 2005).
- Beck Depression Inventory - (BDI) (Beck, Ward, Mendelson, Mock & Erbaugh, 1961): consists of 21 items that must be answered on a scale from 0 to 3. The manual for Beck Scales suggests that, in the case of patients who are on a weight loss diet, question 19 is to be excluded, which refers to voluntary weight loss. Thus, as hemodialysis patients have important water and nutritional restrictions that interfere in the gain and loss of weight, question 19 was excluded from this evaluation. In addition, the Brazilian version of BDI (Cunha, 2001) presents cognitive-affective items and others concerning somatic complaints, which are presented, subdivided in the scale. In this study, BDI points were calculated in three levels: Total Depression (excluding question 19), Psychological Depression (cognitive-affective) and Somatic Depression (somatic complaints). The Cronbach's alpha was .83.

Ethical Considerations

The research was approved by the [name] Ethical Committee and was carried out in accordance with general ethics principles. Informed Consent was obtained for all patients.

Study design and Statistical analysis

This paper is an *ex post facto* study. All the research protocols data were raised in SPSS 18.0 program database. Descriptive analysis were performed of results in general, from the group of men and women and patients older and younger than 50. To analyze the associations between variables correlations between the variables interest (Pearson), average comparison (Student's t test) and linear regression analysis were made to establish predictive models of personality variables about self-efficacy and depression levels. Cronbach's Alpha scales analyses have also been carried out to indicate the reliability of the instruments used.

Results

The 65 patients on the transplant waiting with ages between 25 and 72 years and average age of 49.11 years (*SD* = 11.58). The average age of diagnosis of chronic renal failure was 42.65 years (*SD* = 12.08). The average time in hemodialysis treatment was 52.86 months (*SD* = 36.28) and the average time on the organ transplant waiting list was 26.86 months (*SD* = 25.80). Table 1 shows the main sociodemographic data of the sample.

[2] BFP is the abbreviation for Bateria Fatorial de Personalidade, the original name of the questionnaire in Portuguese-Brazilian language

Table 1
Socio-demographic and clinical data

		N %
Gender	Male	39 (60%)
	Female	26 (40%)
Marital Status	Married/Live Together	37 (56.9%)
	Single/Divorced	28 (43.1%)
Labor	Currently working	15 (23,1%)
	Currently not working	50 (76,9%)
Children	Yes	53 (81,5%)
	No	12 (18,5%)
Living situation	Spouse	18 (27,7%)
	Children	11 (16,9%)
	Alone	12 (18,5%)
	Mother	3 (4,6%)
	Father	1 (1,5%)
	Sister	2 (3,1%)
	Spouse and children	18 (27,7%)
Religion	Agnostic	7 (10,8%)
	Catholicism	41 (63,1%)
	Kardecism	3 (4,6%)
	Evangelical	7 (10,8%)
	Adventism	2 (3,1%)
	Buddhism	1 (1,5%)
	Jehovah's Witness	1 (1,5%)
	Umbanda (Afro-Brazilian religion)	3 (4,6%)
		Mean (SD)
Age		49.11 (11.58)
Number of children		2.18 (1.90)
Age at diagnosis		42.65 (12.08)
Time in dyalisis (months)		52.86 (36.28)
Time in waiting list (months)		26,86 (25,80)

Possible differences between patients younger or older than 50 years in self-efficacy, depression and personality factors scores were analyzed, as suggested by Tsutsui et al. (2009). Concerning self-efficacy, participants older than 50 presented significantly larger average when compared to participants under 50 years (t=-2.24, p<.05). Surgency (t=-2.36, p<.05) and Conscientiousness factors (t=-2.50, p<.05) were also higher for participants older than 50.

Regarding to correlation analysis, age significantly correlated positively with Agreableness (r=0.30, p<.05), Conscientiousness (r=0.38, p<.01) and total self-efficacy factors (r=0.34, p<.01). Age at diagnosis significantly correlated positively with the factors Agreableness (r=0.27, p<.01) Conscientiousness (r=0.45, p<.01) and self-efficacy (r=0.29, p<.05), by showing that the older the age at time of diagnosis, the higher the indices of these factors. Neuroticism negatively correlated with Conscientiousness factor (r= -0.29, p<.05) and with total self-efficacy scores (r=-0.38 p<.01). Yet regarding total depression (r=0.68, p<.05), psychological (r=0.62, p<.01) and somatic scores (r=0.67, p<.01), the relation was significantly positive. Surgency factor showed positive correlation with the factors Conscientiousness (r=0.25, p<.05), Openness (r=0.37, p<.01) and total self-efficacy (r=0.35, p<.01). Surgency didn't show correlation with the other variables. Conscientiousness (r=0.41, p<.01) indicated significant positive relationship with self-efficacy, revealing that the degree of organization, persistence, control and motivation, which are characteristics of Conscientiousness, contribute positively to self-efficacy levels presented by

The comparison of self-efficacy and depression indices between men and women (independent samples t test) has shown no significant statistical differences between the groups. However, women have obtained higher values in Agreableness than men (t=-2.00, p<.05), while men have pointed higher values in Conscientiousness than women (t=2.71, p<.01). Regarding Neuroticism, Surgency and Openness, significant differences between men and women were not found.

patients. Openness didn't indicate correlation with self-efficacy scores or with depression indices. Finally, self-efficacy had significant negative correlation with Total depression (r=-0.39, p<.01), Psychological depression (r=-0.38, p<.01) and Somatic depression (r=-0.30, p<.01) scores, indicating that the highest levels of self-efficacy tend to decrease symptoms of depression in patients. Table 2 shows the values of correlation between the variables assessed in this study.

Table 2
Correlation Analysis

	1	2	3	4	5	6	7	8	9	10	11	12	13
Age	_	0.887*	0.063	0.028	-0.187	0.209	0.309*	0.381**	-0.104	0.343**	-0.038	-0.075	0.023
Age at diagnosis		_	-0.139	-0.124	-0.214	0.138	0.271*	0.450**	-0.118	0.298*	-0.054	-0.104	0.031
Time in dyalisis			_	0.531**	0.098	-0.078	0.063	-0.223	-0.142	-0.101	0.090	0.019	0.164
Time in waiting list				_	0.053	0.160	0.178	-0.104	0.087	0.025	-0.069	-0.056	-0.069
Neuroticism					_	-0.037	-0.200	-0.294*	0.135	-0.389**	0.688*	0.627**	0.673**
Surgency						_	-0.025	0.257*	0.376**	0.353**	-0.092	-0.073	-0.094
Agreableness							_	0.243	-0.073	-0.036	-0.124	-0.163	-0.036
Conscientiousness								_	-0.022	0.415**	-0.169	-0,147	-0,155
Openness									_	-0.029	0.050	0.099	-0.031
Self-Efficacy Total										_	-0.390**	-0.381**	-0.300*
Depression											_	0.923**	0.845**
Psy Depression												_	0.575**
Som Depression													_

1 – age; 2 – Ate at diagnosis; 3 – Time in dyalisis; 4 – Time in waiting list; 5 – Neuroticism; 6 – Surgency; 7 – Agreableness; 8 – Conscientiousness; 9 – Openness; 10 – Self-efficacy; 11 – Depression; 12 – Psychological depression; 13 – Somatic depression

Table 3 shows the results of regression analysis (Enter Method) for Depression and Neuroticism factor and Stepwise Method for self-efficacy and Conscientiousness, Neuroticism and Surgency factors. Neuroticism was significantly a predictor (β=5.35, p<.001) of depressive symptoms, explaining 47% of the variance of depression in the evaluated patients. Similarly, Neuroticism factor was significantly a predictor (β=3.18, p<.001) of psychological depression symptoms, explaining 39% of the variance of psychological depression symptoms in chronic renal patients evaluated in this study. Eventually, Neuroticism was also a predictor of somatic symptoms in chronic renal patients (β=2.16, p<.001), explaining 35% of the variance of depression somatic symptoms in these patients. Regarding the dependent variable self-efficacy, regression analysis showed that personality was significantly a predictor of self-efficacy levels in the three steps respectively (β=0.28, p<.01), (β=-0.31, p<.01), (β=0.23, p<.05). Conscientiousness factor alone predicts 19.0%, of self-efficacy variance, while Conscientiousness and Neuroticism factors are responsible for 28.0% of self-efficacy variance. Yet in step 3, concerning self-efficacy total construct, Conscientiousness, Neuroticism and Surgency personality factors together predict 33.0% of the variance (β=0.33, p<.05). The variables age and age at diagnosis were excluded from the equation by Stepwise method.

Table 3

Hierarchical regression analyses (Method Enter) for Depression and Neuroticism factor and Stepwise Method for Self-Efficacy and the Conscientiousness factors, Neuroticism and Surgency

	Depression Total (β)	Depression Psychological (β)	Depression Somatic (β)
Neuroticism	.68***	.62***	.59***
R^2	.47***	.39***	.35***
	Self-Efficacy		
	Step 1 (β)	Step 2 (β)	Step 3 (β)
Conscientiousness	.44***	.35**	.28**
Neuroticism	-	-.30**	-.31**
Surgency	-	-	.23*
ΔR^2	.19	.08	.05
R^2	.19***	.28**	.33*

*p<.05; **p<.01; ***p<.001

Discussion

The primary goal of this study was to investigate the relation among personality factors, self-efficacy and depression levels of patients on the waiting list for renal transplantation. Significant correlations related to personality construct and the regression analysis revealed that three personality scale factors were linked with self-efficacy: Surgency and Conscientiousness (in a positive way) and Neuroticism (in a negative way). Regarding depression, the only personality scale factor which had predicted was Neuroticism factor.

Previous studies with chronic renal patients have already indicated the importance Conscientiousness factor to patient engagement in healthier health behaviors and adherence to prescribed treatment programs (Wiebe & Christensen, 1996). Kidachi, Kikuchi, Nishizawa, Iruma and Kaneko (2007) suggest that patients in hemodialysis treatment that have high Agreableness, Surgency and Conscientiousness levels are able to maintain a better self-discipline and easily adapt to dialytic treatment. Agreableness and Conscientiousness factors have also been associated with positive health practices (Booth-Kewley & Vickers, 1994). Concerning Neuroticism factor, people with these characteristics have difficulty to maintain motivation for long or difficult tasks, usually dropping tasks before their completion, requiring stimulus to achieve their goals (Nunes et al.,2009) and difficult to adhere to treatment regime, that have negative consequences for their health and transplant (Chistensen et al., 2002). Taking into account the impact of chronic kidney disease and waiting for a transplant, the beliefs about the possibility of overcoming, as well as the possibility of more positive coping strategies should be considered in these patients. This way, self-efficacy perception is an important component against the adverse effects of the disease, treatment and waiting time to be transplanted, because it impacts on motivation to cope with stress. Thus, the higher the belief in personal capacities, the more likely people are to acquire positive health behaviors, obtaining the best results in the proposed treatments and reducing those behaviors that may adversely influence (Bandura, 2004).

Curtin et al. (2008) found positive association between self-efficacy and self-management behaviors, as: adherence to medication, communication with the caregivers, self-care, self-defense and care partnership, which are characteristics that promote benefits to the patient. Accordingly, in the present regression analysis, the results indicated that Surgency and Conscientiousness factors, as well as Neuroticism were predictors of self-efficacy, which is a closely related concept to behaviors of confrontation and self-care of chronic renal patients on the waiting list for kidney transplant. Thus, high levels of Surgency and Conscientiousness and low Neuroticism levels contribute to increased self-efficacy in participants of this research, allowing them greater emotional resources to cope with treatment and transplantation stressors and extending the possibility of adherence to treatment. Consequently, the results of this study suggest that these personality factors can have a positive effect on behavior, promoting a better sense of self-efficacy in patients on the renal transplant list, and might be able to minimize the psychological stress caused during transplant waiting time and allow a larger repertoire of healthy behaviors during the time on the list, which can reduce the impact of treatment negative effects till the transplant.

Regarding depression, Neuroticism factor was the only variable that had positive relationship and that was a predictor of depression symptoms. In renal transplanted patients, depression was associated with non-adherence to treatment (Rocha, Poli-de-Figueiredo, d'Avila & Saitovitch, 2001) and mortality (Kaveh & Kimmel, 2001). Thus, characteristics related to Neuroticism factor can negatively influence patients during the waiting

time for transplant, maximizing negative feelings and behaviors that contribute to a lower quality of life.

The variables age and age at diagnosis presented significant positive correlation with Agreableness and Conscientiousness factors and self-efficacy. The results indicate that older patients and older at the time of diagnosis patients seem to have more characteristics of altruism, cooperation and trust, which are some of the positive characteristics of Agreableness factor, along with organization, self-discipline and perseverance, being these characteristics correspondent to Conscientiousness factor. This leads us to believe that younger patients in dialytic treatment and that are waiting for a transplant suffer more intensively with the impact of diagnosis and treatment restrictions. Thus, it appears that older patients and more advanced age at time of diagnosis patients may have more emotional resources for the treatment and waiting for the transplant. The impact of diagnosis, the restrictions of the disease and treatment can be alleviated when patients already have some degree of maturity. Tsutsui et al. (2009) showed that patients who began hemodialysis before the age 50 and had a longer treatment reported problems in body functions and structures, while more patients with a shorter duration of hemodialysis reported problems in family relationships, indicating that the age of beginning and duration of treatment can have impacts on physical health and their relationships with others.

The fact that patients older than 50 present self-efficacy indices greater than younger patients is noticeable, in addition to personality characteristics concerning Surgency and Conscientiousness factors. According to Pervin and John (2004), personality factors may have small influences of age over the years. People with more advanced ages tend to indicate lower scores on Neuroticism, Surgency and Openness factors and tend to indicate larger values in Agreableness and Conscientiousness when compared to young adults of ages around 20 years. However, the development of personality traits in people with chronic diseases could be different, and more studies have to confirm this idea.

Concerning gender, men present higher scores in Conscientiousness factor and women in Agreableness factor. Kidachi et al. (2007) also found larger Agreableness scores in women with chronic kidney disease. Therefore, there are evidence that men and women experience in a different way the chronic kidney disease. Women are more likely to take on the responsibilities of the family environment, in addition to expressing more depressive affection, anxiety and personality disorders than men (Lew & Patel, 2007). In a Brazilian study, women treated with hemodialysis had smaller quality of life scores regarding both physical and mental aspect, if compared to men (Lopes et al., 2007). Through these results, women participating in this study appear to have their characteristics more focused on emotion; in contrast, the characteristics revealed by men appear to be more related to positive behavior.

The evaluation of personality in health seems to be a useful tool that provides important data on patient's emotional reality and his/her possibility to succeed in treatment while waiting for the organ. Thus, personality factors can have a positive or negative role on behavior, in addition to influencing the emotional state of the patient in different ways. From a practical point of view, personality assessment can be an important component in the overall assessment of the patient, assisting the team in dealing with the patient.

The findings of this study extend the knowledge about the influence of personality on self-efficacy and depression levels in patients on the renal transplant list, since there are few studies on the influence of these variables in this population. In addition, personality factors can be thought of as an important psychological parameter that can assist in developing increasingly effective intervention strategies with these patients, thus maximizing the global attention to the patient. The results found extend the knowledge about the mechanisms of personality and their relationship to health, in particular, in chronic kidney patients. However, new studies should be conducted in the area of personality and health, including new research variables to broaden the knowledge on the subject. Similarly, longitudinal researches should be considered, in order to assess the impact that these variables may have in the post-transplant period.

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