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Quality of life and spirituality of patients with chronic kidney disease: pre- and post-transplant analysis

Qualidade de vida e espiritualidade de pacientes com doença renal crônica: análise pré e pós-transplante

Calidad de vida y espiritualidad de los pacientes con insuficiencia renal crónica: análisis pre y posterior al trasplant

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ABSTRACT

Objective: to compare the quality of life (QoL) of patients under dialysis and after kidney transplant; correlate the QoL of transplant patients to sociodemographic, morbid and spirituality/religiosity variables. **Method:** prospective study with a quantitative approach, with a sample of 27 patients who underwent peritoneal dialysis or dialysis undergoing kidney transplant. QoL and spirituality were assessed by the KDQOL-SF and WHOQOL-SRPB tools, being correlated with sociodemographic and economic variables. **Results:** the dimensions of total mental component, kidney disease effects and kidney disease burden showed significant improvement in the post-transplant period, with p <0.0004. There was a significant correlation between four dimensions of spirituality and seven dimensions of QoL; p ranged from 0.04 to 0.006. **Conclusion:** there was a significant improvement in QoL in the post-transplant period. The dimensions of spirituality: wholeness and integration, spiritual connection, wonder and inner peace were positively correlated with seven dimensions of QoL.
Descriptors: Renal Insufficiency; Chronic; Kidney Transplantation; Quality of Life; Spirituality; Religion.

RESUMO

Objetivo: comparar a qualidade de vida (QV) de pacientes renais em diálise e após transplante renal; correlacionar a QV dos pacientes transplantados às variáveis sociodemográficas, mórbidas e de espiritualidade/religiosidade. **Método:** estudo prospectivo, de abordagem quantitativa, com amostra de 27 pacientes que realizavam diálise peritoneal ou hemodiálise, submetidos ao transplante renal. A QV e a espiritualidade foram avaliadas pelos instrumentos KDQOL-SF e WHOQOL-SRPB; foram correlacionadas às variáveis sociodemográficas e econômicas. **Resultados:** as dimensões componente mental total, efeitos da doença renal e sobrecarga imposta pela doença renal apresentaram melhora significativa no período pós-transplante, com p<0,0004. Houve correlação significante entre quatro dimensões da espiritualidade e sete dimensões da QV; *p* variou de 0,04 a 0,006. **Conclusão:** houve melhora significativa da QV no período pós-transplante. As dimensões da espiritualidade: totalidade e integração, conexão espiritual, admiração e paz interior apresentaram correlação positiva com sete dimensões da QV.
Descritores: Insuficiência Renal Crônica; Transplante de Rim; Qualidade de Vida; Espiritualidade; Religião.

RESUMEN

Objetivo: comparar la calidad de vida (CV) de pacientes renales en diálisis y después de um trasplante de riñón; correlacionan la CV de los pacientes trasplantados con las variables sociodemográficas, mórbidas y de espiritualidad/religiosidad. Método: estudio prospectivo con enfoque cuantitativo, con una muestra de 27 pacientes sometidos a diálisis peritoneal o hemodiálises sometidos a trasplante renal. La CV y la espiritualidad fueron evaluadas por los instrumentos KDQOL-SF y WHOQOL-SRPB; ellos se correlacionaron con variables sociodemográficas y económicas. **Resultados:** las dimensiones totales del componente mental, los efectos de la enfermedad renal y la sobrecarga impuesta por la enfermedad renal mostraron una mejora significativa en el período posterior al trasplante, con p <0,0004. Hubo una correlación significativa entre cuatro dimensiones de espiritualidad y siete dimensiones de la CV; p varió de 0.04 a 0.006. **Conclusión:** hubo una mejora significativa en la CV en el período posterior al trasplante. Las dimensiones de la espiritualidad: integridad e integración, conexión espiritual, maravilla y paz interior se correlacionaron positivamente con siete dimensiones de la CV.
Descriptores: Insuficiencia Renal Crónica Trasplante de Riñón; Calidad de Vida; Espiritualidade; Religión.

INTRODUCTION

Chronic kidney disease (CKD) is a negative outcome of several non-communicable chronic diseases. Diabetes mellitus and high blood pressure are the main causes in several countries. The incidence varies among ethnicities, social determinants and health condition, being associated with a five to tenfold increase in cardiovascular mortality and reduced quality of life (QoL) when compared to the general population[1]. Although the survival rate is widely used to assess the success of dialysis treatment and kidney transplant, patients' perception of their QoL needs to be valued. A study showed the relationship between QoL, mortality and poor adherence to dialysis treatment when QoL is compromised[2].

QOL is a multidimensional concept and, when related to health, includes subjective reporting of symptoms, side effects, functionality in multiple life domains, and overall perception of life satisfaction[3]. A research has shown positive correlation between spirituality and QoL[4].

A study with cancer patients demonstrated the relationship between QoL and religious-spiritual coping (RSC), since those with higher RSC scores had better perception of QoL[5]. Another investigation that evaluated the role of spirituality in cancer patients and their caregivers found that spiritual care improved the spiritual well-being of patients and caregivers[6].

The survey on the profile of religiosity/spirituality (R/S) and its relationship with QoL among adolescents with HIV also revealed higher levels of emotional well-being among adolescents who attended religious services, feeling the presence of the divine. and identity as religious. The social dimension of QoL was also significantly higher in this group[7].

Studies have already established an association between spirituality and QoL in people with CKD. In an integrative literature review, the benefits that were found included modalities of situational coping, such as strengthening of hope, social support, and coping with pain; related to mental health, such as lower risk of suicide and fewer depressive symptoms; improvement in QoL perception and renal function after transplant[8].

In another quasi-experimental study of dialysis patients, it was found that there was a significant improvement in spiritual well-being, self-esteem, and self-efficacy in the group receiving care in their spirituality in relation to the control group[9].

Considering that CKD has significant impact on many aspects of life, a comprehensive care approach, including spirituality, is desirable in order to improve overall health[10].

OBJECTIVE

To compare the quality of life (QoL) of patients under dialysis and after kidney transplant; correlate the QoL of transplant patients to sociodemographic, morbid and S/R variables.

METHOD

Ethical aspects

The study was approved by the Research Ethics Committee of *Universidade Federal de São Paulo*, according to Resolution 466/12 of the Brazilian National Health Board (CNS – *Conselho Nacional de Saúde*), which regulates research involving humans. All patients agreed to participate in the research[11].

Design, place and period

This is a prospective study with a quantitative approach, according to STROBE Statement recommendations. It was performed with transplanted patients in the city of São Paulo who initially underwent dialysis or peritoneal dialysis in 2007 and who were reopened after kidney transplant in July 2014 and February 2016[12].

Population and sample: inclusion and exclusion criteria

Inclusion criteria were selected patients who participated in a previous multicenter study[13] conducted in 2007 (whose database was made available kindly by the lead author), who underwent dialysis (n=249) or peritoneal dialysis (n=228) and who subsequently underwent kidney transplant (n=63). Of these, 6 died, 26 were not found due to incompatible data recorded in the register (telephone and address), 2 lost the graft, 1 refused to participate in the new stage of the study and 1 could not answer the questionnaires due to the difficulty in understanding the questions.

The statistical calculation of the final sample considered significance level of 5% and test power of 80%, revealing that 16 patients (8 peritoneal dialysis and 8 dialysis) would be sufficient for the study. However, the final sample consisted of 27 transplant patients, of which 12 had peritoneal dialysis and 15 had dialysis (pre-transplant phase). The minimum period of 3 months for kidney transplant was also considered to compose the sample.

Exclusion criteria included patients who had lost their graft, refused to participate in the study and had insufficient functional health literacy.

Study protocol

Transplant records of the state of São Paulo were consulted for the inclusion of the name and registration number of individuals to verify among the initial group of 477 patients evaluated in the first stage of the research, which underwent kidney transplant so that they could be reassessed.

After collecting information, we sought contact of transplanted patients for more than three months via telephone to schedule a new evaluation at a more convenient time for the patient via telephone.

Sociodemographic, economic and QoL data were collected with the Kidney Disease and Quality of Life - Short Form (KDQOL-SF) tool[14], and aspects related to spirituality, such as the World Health Organization Quality of Life - Spirituality, Religiousness and Personal Beliefs (WHOQOL-SRPB) tool[15]. KDQOL-SF, translated and validated to Portuguese, consists of 80 items that assess the individual's general health, physical, mental and specific items of CKD[14].

The general items are divided into the dimensions: functional capacity, physical aspects, pain, general health, vitality, social aspects, emotional aspects and mental health. Specific items are: symptoms and problems, kidney disease effects, kidney disease burden, work situation, cognitive function, quality of social interactions, sexual function, sleep, social support, professional dialysis team support, and patient satisfaction. Scores range from 0 to 100, and the higher the scores the better the QoL.

In addition, through a tool-specific algorithm, two scores can be measured: Physical Component Summary (PCS) and Mental Component Summary (MCS). Score ranges from zero to one hundred, with the highest scores being the best QoL levels. According to the authors, the questions that evaluate functional capacity, physical aspects, pain, general health have higher correlations with physical component, while vitality, social aspects, emotional aspects and mental health are more correlated with the mental component[16].

WHOQOL-SRPB assesses the impact of spiritual and personal beliefs on QoL. It is applicable to populations of different cultures and religions or populations without religion, but with a certain philosophy, moral or ethical code. It has eight dimensions: connection to being or spiritual strength, meaning in life, admiration, wholeness and integration, spiritual strength, inner peace, hope/optimism and faith. The facets result from the sum of each item belonging to it. The higher the score, the better the QoL. The answer to each question (26 in total) is scored on a scale of 1 to 5. The mean scores of the dimensions and the total score are converted to a scale of 0 to 100.

Statistical analysis

For statistical analysis, the analysis of variance (ANOVA) was performed, followed by Mann-Whitney's t-test and Kruskal-Wallis's test to compare QoL before and after transplant, as well as sociodemographic characteristics. Spearman's correlation coefficient was used to correlate Spirituality and QOL. The significance level adopted was 5% ($p < 0.05$).

RESULTS

Table 1 shows the sociodemographic profile of patients with CKD who underwent transplant. The mean age was 55.1 years, with female prevalence (63%) and white skin color (66.7%). Family income between 3 and 7 minimum wages (44.4%) stood out, with the retired being the most prevalent occupation (48.1%). Elementary school (44.4%), Catholic religion (70.4%) and marital status (55.6%) were the most common among participants.

Table 2 shows the dimensions of QoL that showed significant change after kidney transplant of CKD patients. The dimensions that showed improvement were the total mental component, the kidney disease effects and kidney disease burden. After transplant, total physical component worsened.

Table 3 presents the dimensions of QOL that correlated with sociodemographic characteristics. Female participants had worse scores in the dimensions of sleep, social support and social aspects; married had better scores in the vitality dimension; non-white patients obtained higher scores in the patient satisfaction dimension.

Table 4 presents the dimensions of QOL that correlated with the aspects of religiosity and transplant. Non-Catholic participants had higher scores on the quality of social interactions, and those who prayed once a day or more had higher scores on vitality and physical aspects. Participants who reported having an acute graft rejection episode had lower scores on cognitive function, physical aspects, emotional well-being, and total physical component. Those who reported having had infectious episodes had lower scores on physical aspects and total physical component. Those who reported having sufficient pre-transplant guidance scored higher on list of symptoms and problems, vitality, physical aspects, and total physical component.

Table 1 - Sociodemographic data of patients with chronic kidney disease who underwent kidney transplant, São Paulo, Brazil, 2019

Variables (n)	n (%)
Number of patients	27 (100)
Average age (years)	55.1
Feminine gender	17 (63)
Male gender	10 (37)
White skin color	18 (66.7)
Family income (wages)	
from 3 to 7	12 (44.4)
from 1.5 to 3	7 (25.9)
Up tp 1.5	5 (18.6)
from 7 to 14	2 (7.4)
14 and older	1 (3.7)
Schooling	
Elementary School	12 (44.4)
High school	10 (37)
Higher education	3 (11.2)
Illiterate	2 (7.4)
Occupation*	
Retired	13 (48.10)
Employee/Self Employed	8 (29.6)
Pension/Paid Sick Leave	5 (18.6)
From home	1 (3.7)
Religion	
Catholic	19 (70.4)
Evangelical	6 (22.2)
Spiritist	1 (3.7)
Umbanda[1]*/Camdomblé*[2]	1 (3.7)
Marital status	
Married /Stable union	15 (55.6)
Not married	9 (33.3)
Separated/Divorced	2 (7.4)
Widower	1 (3.7)

*Note: * The sum of occupancy items before transplant exceeds 100%, as they are non-excluding items. 1 - Umbanda is a Brazilian religion that blends African religions with Catholicism, Spiritism, and considerable indigenous lore; 2- Candomblé ("dance in honour of the gods") is an African-originated or Afro-Brazilian religion, practiced mainly in Brazil by the "povo de santo" ("people of the saint"). It is a mixture of traditional Yoruba, Fon, and Bantu beliefs which originated from different regions in Africa.*

Table 2 - Comparison of QoL according to KDQOL-SF questionnaire of chronic kidney disease patients before and after kidney transplant, distributed by dialysis modality (HD and PD), São Paulo, São Paulo, Brazil, 2019

	Dialytic Modality		*p* value
	Dialysis	Peritoneal Dialysis	
Total physical component			0.0479
Pre	47.7(8.6)	49.7(10.8)	
Post	44.2(9.2)	44.3(9.9)	
Total mental component			**<0.0001**
Pre	38.4(6.2)	40.6(6.7)	
Post	50.4(9.9)	53.1(9.9)	
Kidney disease effects			**<0.0001**
Pre	66.7(19.4)	71.7(21.5)	
Post	93.1(1.9)	93(10.6)	
Kidney disease burden			0.0004
Pre	37.5(30.6)	55.7(34.2)	
Post	74.7(23)	80.7(14.2)	

Note: Analysis of Variance (ANOVA) for repeated measurements with transformation by stations.

Correlations between QoL dimensions and R/S dimensions showed significant associations (Table 5). Vitality correlated with spiritual connection; kidney disease burden, with admiration;

wholeness and integration correlated with the kidney disease effects, cognitive function, and functional capacity. Inner peace correlated with cognitive function, patient satisfaction, and emotional well-being.

Table 3 - Correlation of scores of some dimensions of KDQOL-SF with sociodemographic variables, São Paulo, São Paulo, Brazil, 2019

Variables (n)	Sleep	Social Support	Social Aspects	Patient Satisfaction	Work Situation	Vitality
Gender	*	∞	*			
Female (17)	70	79	62	NS	NS	NS
Male (10)	84	100	84	NS	NS	NS
Marital status						*
Married (15)	NS	NS	NS	NS	NS	71
Single, separated or widower (12)	NS	NS	NS	NS	NS	56
Skin color				*		
White (18)	NS	NS	NS	61	NS	NS
Non-white (9)	NS	NS	NS	76	NS	NS
Occupation					°	
Employed (4)	NS	NS	NS	NS	75	NS
Self Employed (4)	NS	NS	NS	NS	100	NS
Retired/From home (14)	NS	NS	NS	NS	39	NS
Paid Sick Leave (5)	NS	NS	NS	NS	10	NS

*Note: Correlation test: ANOVA followed by t-test, Mann-Whitney for 2 categories or Kruskal-Wallis for 3 or more categories * = p≤0.05; ∞ = p≤0.005; ° = p≤0.007; NS = not significant.*

Table 4 - Correlation of scores of some dimensions of the KDQOL-SF with religiosity profile according to WHOQOL-SRPB and aspects related to transplant, São Paulo, São Paulo, Brazil, 2017

Variables (n)	QSI	CF	SP	V	PA	WELL	TPC
Religion	α						
Others (8)	94	NS	NS	NS	NS	NS	NS
Catholic (19)	79	NS	NS	NS	NS	NS	NS
Pray once a day or more				α	*		
Yes (21)	NS	NS	NS	69	78	NS	NS
No (6)	NS	NS	NS	48	57	NS	NS
Acute rejection		*			*	**	*
Yes (4)	NS	55	NS	NS	50	48	35
No (23)	NS	84	NS	NS	77	81	46
Infection episode					*		**
Yes (15)	NS	NS	NS	NS	65	NS	40
No (12)	NS	NS	NS	NS	83	NS	49
Pre-transplant guidance			*	β	*		β
Yes (23)	NS	NS	87	69	78	NS	46
No (4)	NS	NS	75	39	47	NS	31

*Note: QSI - Quality of Social Interactions; CF - Cognitive Function; SP - Symptoms and Problems; V - Vitality; PA - Physical Aspects; WELL - Emotional Wellbeing; TPC - Total Physical Component. Correlation test: ANOVA followed by t-test and Mann-Whitney test for 2 categories or Kruskal-Wallis for 3 or more categories *= p≤0.05; ∞ = p≤0.005; α = p≤0.01; **= p≤0.009; β = p≤0.002; ° = p≤0.007, NS - Not Significant.*

Table 5 - Correlations between QoL dimensions by KDQOL-SF and R/S dimensions assessed by WHOQOL-SRPB, São Paulo, São Paulo, Brazil, 2017

	Spiritual Connection		Admiration		Wholeness and Integration		Inner Peace	
	R	p	R	p	R	p	R	p
Kidney disease effects	-0.08	NS	0.15	NS	0.42	0.0296	0.20	NS
Overload imposed by kidney disease	0.36	NS	0.42	0.0286	0.36	NS	0.33	NS
Function	0.21	NS	0.24	NS	0.38	0.0480	0.44	0.0221
Cognitive	0.34	NS	0.08	NS	0.51	0.0064	0.26	NS
Capacity	0.31	NS	0.20	NS	0.37	NS	0.41	0.0346
functional	-0.003	NS	0.08	NS	0.38	NS	0.49	0.0099
Patient Satisfaction	0.42	0.0281	0.14	NS	0.29	NS	0.35	NS

Note: R - Spearman correlation coefficient; P - p value with 5% significance level (p value <0.05); NS - Not significant.

DISCUSSION

QoL is an important aspect in the health-disease process of individuals with CKD. This research revealed that kidney transplant provided a positive perception in various aspects of life. The association of spirituality with QOL showed favoritism to cope with this clinical condition. According to the 2017 Brazilian dialysis census, the estimated total number of dialysis patients was 126,583, with 93.1% on dialysis and 6.9% on peritoneal dialysis, with 31,226 (24%) waiting for transplant[17]. However, only 18.98% (5,929) were transplanted[18].

Thus, the choice of renal replacement method should result from clinical and QoL aspects. However, dialysis is the most widely adopted dialysis treatment, which compromises QOL in several dimensions[19].

Regarding sociodemographic data, the present study demonstrated that most of the recipients evaluated were women (63%), with self-reported white skin color (66.7%), complete elementary school (9 years) and married marital status. Catholic and evangelical religions represented over 90% of respondents. Study reported that QOL of patients with CKD presented similar data regarding female prevalence[20]. However, other research has shown that most renal graft recipients were male, predominantly white[21]. Regarding education, although the group had a low level, they studied on average from 2 to 5 years more, when compared to 1,621 patients in a Brazilian study conducted in 81 dialysis centers[22]. Stable union was prevalent as in other studies with the same population type[20,22-23]. The catholic and evangelical religions represented a slightly higher percentage than those found in the last Brazilian Census (86.8%) and in a study that assessed QOL and spirituality in CKD patients under dialysis (83.6%)[23-24].

The QoL scores that showed significant improvement after kidney transplant, both in the dialysis group and in the peritoneal dialysis group were: total mental component, kidney disease effects and overload imposed by CKD. However, the total physical component showed worsening, in contrast to another study that showed significant improvement in physical function after kidney transplant[25]. Other research comparing dialysis and transplant patients showed that transplant recipients had improved physical dimensions, overall health, vitality and emotional well-being, symptoms and problems, kidney disease effects, kidney disease burden and sleep[26]. Data referring to the pre-transplant period of patients we studied showed that the scores of the total mental and physical components were higher in the group undergoing peritoneal

dialysis when compared to the dialysis group. A recent research reinforced these findings and highlighted that the total mental component was significantly higher (eleven points) among patients undergoing peritoneal dialysis when compared to those undergoing dialysis[19].

The results of the present study also allowed to find significant correlations between KDQOL-SF dimensions and sociodemographic variables. Male patients had higher scores in the sleep, social support and social aspects domains, while another investigation showed that men had higher scores in the physical and mental dimensions when compared to women[27]. Despite maintaining equivalent total mental and physical components, they were lower than those of the general population and mortality predictors of chronic kidney patients[19]. Regarding the possible influence of skin color on QoL aspects, in the current study, non-white kidney transplant recipients obtained a higher score in the patient satisfaction dimension. Another study found that black CKD patients had significantly lower CKD scores in the dimension than white participants[28]. Patients who performed autonomous activities obtained higher scores in the work situation dimension. Other kidney transplant patients showed a strong impact on the work situation in the physical domain and the environment, according to their higher level of education and their marital status. There were better scores in the social relations domain when the patient's work situation was being employed[29].

Patients who reported praying or meditating at least once a day had a positive impact on their functional capacity and vitality dimensions. Research on dialysis patients revealed the importance of religiosity in patients' QoL and recommended the integration of religiosity into health care as a positive support[30]. Evangelicals showed a significant improvement in the quality of social interactions compared to Catholics. In general, people who practice some religion are often involved in active communities and typically report greater social support than nonreligious people[8].

In elderly with CKD who underwent dialysis treatment, spiritual, religious and existential well-being was positively associated with the physical, psychological and social relationships domains of QoL[31]. However, they also demonstrated that episodes of acute rejection after kidney transplant and episodes of infection significantly compromised some dimensions of QoL.

In this study, the highest R/S dimension scores had positive and significant correlations with some QoL dimensions according to the KDQOL-SF, as shown below: wholeness and integration dimension (WHOQOL-SRPB) with kidney disease effects; cognitive function and functional capacity (KDQOL-SF); inner peace (WHOQOL-SRPB) with cognitive function, patient satisfaction and emotional well-being (KDQOL-SF); spiritual connection (WHOQOL-SRPB) with vitality (KDQOL-SF); and admiration (WHOQOL-SRPB) for kidney disease burden (KDQOL-SF). These data corroborate other findings that revealed high QoL scores when associated with aspects related to spirituality, religion and personal beliefs, giving greater emphasis to the domains faith and admiration[23]. Spirituality, which goes beyond participating in religious activities, has been shown to be a differential and positive aspect of the lives of people with kidney disease[32].

Study limitations

As a limitation of this study, we point out that data on spirituality were not evaluated in the pre-transplant period, so it did not allow us to compare the current study with the multicenter study that evaluated patients on dialysis and peritoneal dialysis.

Contributions to nursing, health or public policy

The results of this investigation may support health professionals to understand QOL and aspects of religiosity, and spirituality favoring individualized and holistic care.

CONCLUSION

The present study demonstrated that kidney transplant has significantly improved QoL in three dimensions: total mental component, kidney disease effects, kidney disease burden. There was a worsening in the total physical component dimension for both patients undergoing dialysis and those undergoing peritoneal dialysis. Characteristics such as male gender, married marital status, non-white skin color, paid work and evangelical religion positively influenced these rates. Spirituality showed a positive impact on the QoL of kidney transplant patients.

Further studies should be conducted to assess the impact of spirituality-related interventions on CKD patients.

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