

# Changes in Quality of Life after kidney transplantation and related factors

Mudanças na qualidade de vida após transplante renal e fatores relacionados

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## Keywords

Perioperative nursing; Nursing research; Renal transplantation; Quality of life; Socioeconomic factors

## Descritores

Enfermagem perioperatória; Pesquisa em enfermagem; Transplante de rim; Qualidade de vida; Fatores socioeconômicos

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## Abstract

**Objective:** To identify changes on quality of life after the effectiveness of kidney transplantation and verify the influence of sociodemographic factors on quality of life.

**Methods:** This is a descriptive study with study with longitudinal design. Data were collected in a private place, using the World Health Organization Quality of Life (WHOQOL-bref) validated and culturally adapted to Brazilian Portuguese by WHOQOL-Group.

**Results:** aged up to 35 years (50.8%), mean age 38.9 years (SD=12.9), married (60.3%), with children (51.8%). The sociodemographic factors did not influence these patients' perception of quality of life. The QoL improved significantly in all domains. The greatest change was observed in the general QoL, Physical Domain and Social Relationship Domain. The domain that showed less variation after transplantation was the Environment Domain.

**Conclusion:** This study examined the impact of the effectiveness of kidney transplantation on quality of life quality of life of chronic disease patients. The results indicated that transplantation had a positive impact and changed the perception of these patients.

## Resumo

**Objetivo:** Identificar as mudanças na qualidade de vida após a efetivação do transplante renal e verificar a influência dos fatores sociodemográficos na percepção da qualidade de vida.

**Métodos:** Trata-se de estudo descritivo com desenho longitudinal. Os dados foram coletados em local privado utilizando a versão abreviada do instrumento *World Health Organization Quality of Life (WHOQOL-bref)*, adaptado e validado para língua Portuguesa por meio do Grupo WHOQOL.

**Resultados:** Observou-se neste estudo o predomínio de pacientes adultos jovens com idade até 35 anos (50,8%) e idade média de 38,9 anos (DP=12,9). Os fatores sociodemográficos não influenciaram a percepção de qualidade de vida dos pacientes. A qualidade de vida melhorou significativamente em todos os domínios. As maiores mudanças foram observadas na qualidade de vida geral, domínio físico e domínio relações sociais. O domínio que demonstrou a menor variação após o transplante foi o domínio meio ambiente.

**Conclusão:** Este estudo avaliou o impacto da efetivação do transplante renal na qualidade de vida de pacientes com doença renal crônica. Os resultados indicaram que o transplante teve impacto positivo na percepção de

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## Introduction

The technological and scientific advances in transplantation have enabled thousands of procedures that benefit organ and tissue recipients worldwide. Transplantation benefits patients who need solid organs, tissue and cells by means of the development and improvement of surgical techniques, inputs, equipment and immunosuppressive drugs needed to this therapy.<sup>(1)</sup> The number of kidney transplant performed increased significantly, as the number of candidates.<sup>(2)</sup>

In certain situations these procedures are configured as the only resource for sustaining life.<sup>(1)</sup> However, this treatment option is not always available for those who are waiting for an organ transplantation because it requires a donation.<sup>(2-4)</sup> According to the Brazilian National Transplant Registry, in June 2013 there were 22,187 patients registered on the waiting list for solid organ transplantation of these, 19,913 (89.75%) were waiting for a kidney.<sup>(5)</sup>

Kidney transplantation requires compatibility between tissues obtained for the Human Leukocyte Antigen typing (HLA). While waiting for a donor, the chronic renal disease patients have other forms of Renal Replacement Therapy (RRT) allow the maintenance of their life and also justify the increasing number of patients registered on the waiting list for a kidney transplantation.<sup>(3,4)</sup>

Renal Insufficiency (RI) and the complexity of their treatment constitute a serious public health problem worldwide, with social and financial burden resulting from increasing rates of young patients with renal function failure.<sup>(6)</sup> Thus, measurement of patients' Quality of Life (QoL) after kidney transplantation, is a relevant topic for many individuals who are on dialysis in Brazil and receive care in one of the 696 dialysis centers registered in the Nephrology Brazilian Society (NBS).<sup>(7)</sup>

Renal transplantation is the best therapeutic option for patients with chronic kidney disease. The surgical procedure is relatively simple, and after the transplantation important actions are necessary such as the use of immunosuppressive drugs and the outpatient follow-up.<sup>(8)</sup> Therefore, for these patients the clinical management, the evaluation of treatment results, and impacts on QoL are important issues.

The aim of this study was to identify changes on quality of life after effectiveness of kidney transplantation and verify the influence of sociodemographic factors on quality of life.

## Methods

The study population consisted of all chronic renal failure patients receiving outpatient treatment at a referral center for kidney transplant in northeastern of Brazil. A total of 63 patients aged over 18 years were included. Data were collected in two steps in order to assess the perception of kidney recipients before and after transplantation. In the first step transplant candidates enrolled on the waiting list were interviewed, in the second stage, interview kidney transplantation, respecting the minimum interval of three months that was the necessary time for patient recovery and return to his/her daily life activities. All patients were informed about the objectives of the study and those who agreed to participate signed the consent form.

This study was a descriptive study with longitudinal design from May 2010 to May 2013 that included a population of chronic kidney disease patients receiving outpatient treatment. The study was the only public hospital that performs kidney transplantation and provides specialized care for this population.

Data were collected in a private place, using the World Health Organization Quality of Life WHO-QOL-bref, validated and culturally adapted to Brazilian Portuguese by WHOQOL-Group.<sup>(9)</sup> This instrument consists of 26 closed questions to assess perceptions of QoL two general questions about health and QoL related to physical, psychological, social relationships and environment domains.<sup>(10)</sup> Responded items evaluated are distributed on 5-point Likert scale ranging from 1 to 5, with higher scores indicating better QoL. The sum of the scores obtained in each domain varies from 4 to 20. This instrument is easy to understand and its reliability was tested in patients with renal disease and it achieved a Cronbach Alpha index of 0.88, so that confirming its applicability in this group of patients.<sup>(11)</sup>

Data were organized by using an electronic spreadsheet (Microsoft Office Excel®) and then

imported into the SPSS (version 17.0) where they categorized, processed and analyzed using descriptive and univariate statistics. Analysis of variance (ANOVA) one-way, *t*-test and Mann-Whitney test were performed. The level of significance was set at  $p < 0.05$ .

Development of this study followed national and international ethical and legal aspects of research in human.

## Results

In total, 63 patients participated in the study. The sociodemographic profile of respondents revealed a male predominance (61.9%) with mean age of 38.9 years (SD=12.9), married (60.3%), with children (51.8%). Most participants had up to 8 years of formal education and were not (90.4%) at the time of the study period. Hemodialysis was the most used (96.8%) in this group of patients and the average waiting list time for transplantation was 1.9 years (Table 1).

The analysis of sociodemographic factors related to overall QoL before and after transplantation showed that these factors (gender, age, marital status, children, formal education, time on dialysis and on waiting list) did not influence these patients' perception of quality of life.

For data analysis, the mean domain scores and standard deviation (SD), were calculated in the two steps (before and after transplantation) for comparison purposes. The analysis of the scores showed that QoL improved significantly in all domains. The greatest change was observed in the general QoL questions that assessed overall satisfaction with QoL and health satisfaction. The domain that showed less variation after transplantation was the Environment Domain (Table 2).

Although the Student-*t* test showed significant difference comparing the median scores in all domains of QoL, we observed a significant variance in General QoL ( $p=0.038$ ), Physical Domain ( $p=0.032$ ) and Social Relationship Domain ( $p=0.035$ ), which reinforces these aspects of QoL improvement after renal transplantation.

**Table 1.** Associations between sociodemographic variables and quality of life pre- and post- kidney transplantation

Sociodemographic Variables	n(%)	General QoL	
		Pre-transplantation	Pos-transplantation
		p-value Mann Whitney test	
Gender			
Male	39(61.9)	0.920	0.769
Female	24(38.1)		
Age			
< 35 years	32(50.8)	0.692	0.066
> 35 years	31(49.2)		
Marital status			
Single	25(39.7)	0.470	0.446
Married	38(60.3)		
Children			
Yes	32(51.8)	0.195	0.494
No	31(49.2)		
Formal Education			
< 08 years	38(60.3)	0.989	0.257
> 08 years	25(39.7)		
RRT*			
< 05 years	31(49.2)	0.776	0.717
> 05 years	32(50.8)		
Waiting list time			
< 2 years	49(77.8)	0.693	0.264
> 2 years	14(22.2)		

\*Renal Replacement Therapy

**Table 2.** Quality of Life scores before and after kidney transplantation

General Questions and Domains	Before Transplant	WHOQOL-BREF** Median Score (SD)		ANOVA
		After Transplant	p-value t-Test	
General QoL	8.57(2.01)	17.65(1.78)	<0.001*	0.038*
Physical domain	9.94(2.10)	17.41(1.78)	<0.001*	0.032*
Psychological domain	12.71(1.90)	17.70(1.66)	<0.001*	0.064
Social Relation domain	12.70(2.95)	17.27(1.83)	<0.001*	0.035*
Environmental domain	11.98(2.14)	14.39(2.24)	<0.001*	0.694

\* $p < 0.05$ ; \*\*WHOQOL-BREF= World Health Organization Quality of Life Bref

## Discussion

In this study a predominance of young adult patients aged up to 35 years (50.8%) and the mean patient age was 38.9 years (SD=12.9). This result revealed a worrying statistic because of the early development of kidney disease and its rapid progression in economically active young individuals. Differently of our study findings, a research that evaluated 107 chronic renal disease patients reported slightly higher age, the mean patient age 51.1 years.<sup>(12)</sup>

In this study there was predominance of participants married (60.3%), with children (51.8%). Similar results were found in study involving with renal disease patients more than a half of were married or liv in a stable relationship (67.7%) and as well as most of them had children (81.2%).<sup>(13,14)</sup>

The most frequent education level of respondents was less than 8 years of formal education (60.3%). Different results were observed in another study including hemodialysis patients in the southeastern region of Brazil in which great part of respondents (48.6%) had completed high school.<sup>(12)</sup> The difference in education level observed in this study reflects the social inequalities and the levels human development found across Brazil.

Regarding occupational status, 90.4% of participants were not working during the study period. Researches conducted with patients undergoing chronic renal dialysis showed similar results with regard to occupational status (80.0% of patients were retire and only 6.7% were working).<sup>(13,15,16)</sup> In another study, only 9.3% of respondents reported some work activity, being identified as the main reason for not working the difficult to found a balance between the time required for hemodialysis.<sup>(12)</sup> A study that compared the quality of life of kidney patients on dialysis and after transplantation found that approximately 80% of those undergoing kidney transplantation are able to return to their professional activities after three months of transplantation, while the index for patients who remained in dialysis treatment was less than 30%.<sup>(8)</sup>

The arrangements for replacement therapies of renal function are divided into dialysis and renal transplantation. The dialysis can be obtained by filtration of blood in the extracorporeal circuit that is called hemodialysis (HD) or with the lining of the abdominal cavity called peritoneal dialysis. Kidney transplantation is the modality that was recently made available to patients with chronic kidney diseases, the replacement of renal function by implantation of a healthy kidney.<sup>(17)</sup>

In Brazil there are about 100,000 patients on dialysis and HD is the most widely used treatment to replace the renal function.<sup>(7)</sup> The high

prevalence of HD was confirmed in our study, participants (96.8%) was undergoing hemodialysis three times per week, while only 3.2% underwent peritoneal dialysis. Hemodialysis partially replaces renal function and, for this reason patients enrolled in waiting list for kidney transplant can wait many years, since the treatment keeps the nitrogenous compounds at levels compatible with healthy individuals and it removes excess fluid from the bloodstream.<sup>(4,18)</sup>

Most patients remained five years or more in dialysis (50.8%). Divergent results were found in another study that reported a time interval from 1 to 5 years in the most dialysis.<sup>(19)</sup> Given these findings, we highlight the need for early referral of patients who start dialysis to be registered in waiting list for kidney transplantation, especially because long-term dialysis may influence negatively the identification of a suitable donor and survival time of the transplanted organ.<sup>(8)</sup>

The perception of overall QoL of patients before and after transplantation was not influenced by sociodemographic factors, confirming a result that corroborates other study that correlated sociodemographic factors and QoL after renal transplantation.<sup>(20)</sup>

The comparison between the mean scores of QoL domains before and after effectiveness of transplant showed significant improvement in general QoL and in all evaluated domains, positive impact of renal transplantation on patients' perception. This improvement was more significant in general QoL, physical health domain and social relationships domain. Similar results were observed in study that compared kidney transplant recipients and wait listed patients.<sup>(21)</sup>

Study that assessed health-related QoL issues in 262 renal transplant recipients showed that the physical component was influenced by the presence hypertension and diabetes, factors such as levels of creatinine and hematocrit, that improve after transplantation.<sup>(22)</sup>

The Social elation domain assesses the patient' degree of satisfaction relation to the time spend with family and friends and also the support given by them. This domain showed a sig-



nificant increase in the average score after transplantation. A study that evaluated patients on hemodialysis indicated that the domain of social relations was considered very relevant for kidney patients because of needs and dependence of support the course of the disease.<sup>(2,4)</sup> Another study showed that social relationships influence the perception of QoL and it affects health, welfare and susceptibility of the patient to deal with the disease process, for this reason, the social relationship is configured as a space for exchanging experiences, potential development and social protection.<sup>(23)</sup>

The psychological domain reflects the results of transplantation as the fears and emotions of patients, demonstrating perceptions of coping strategies in situations of distress.<sup>(24)</sup> The emotional aspects should be considered as important indicators of health and QoL in chronic kidney diseases patients, since the changes in lifestyle imposed by the disease, treatment and progression of symptoms might limit patients' daily activities and also cause negative effects on their perception of QoL.<sup>(22,24-26)</sup> Other studies found that psychological factors tend to improve after transplantation.<sup>(21,25)</sup>

Although the environment domain has presented the lowest scores compared to other QoL domains, it showed significant difference before and after transplantation indicating improvements in this aspect. This result can be explained in part by the safety and property conditions of participants that usually do not change after transplantation effectiveness. Study that evaluated the QoL of 120 renal patients using the WHOQOL-BREF, obtained similar results in relation to the environment Domain with lower scores when compared with other areas.<sup>(9)</sup>

This results indicated that patients undergone renal transplantation had improvements in all dimensions of quality of life improvement evaluated by WHOQOL-BREF compared to before transplantation as confirmed by other studies.<sup>(3,8,25)</sup>

This study contributes to the research literature on QoL chronic renal diseases patients submitted to kidney transplantation. Recent research that exam-

ined the influence of health-related QoL issues in patients undergoing renal transplantation reported that QoL scores were able to predict mortality and graft failure independently of sociodemographic and clinical risk factors of the patients, therefore, indicating the importance of QoL evaluation in this group of patients.<sup>(27)</sup>

## Conclusion

This study examined the impact of effectiveness of kidney transplantation on QoL chronic renal disease patients. The results indicated that transplantation had a positive impact, changing the perception of QoL in patients. All domains of QoL showed improvement after transplantation, especially those related to the general QoL perception. Sociodemographic factors did not influence our group of patients so that indicating that transplantation was the main reason that explains changes in quality of life.

## Collaborations

Mendonça AEO; Torres GV; Salvetti MG; Alchieri JC and Costa IKF declare that contributed to the project design, analysis and interpretation of data, drafting the article, critical revision of the important intellectual content and final approval of the version to be published.

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