

## Assessment of the perceived quality of life of a kidney transplant patient

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### Abstract

**Objective:** to evaluate the quality of life of kidney-transplanted patients who are followed in the outpatient clinic.

**Method:** This is a cross-sectional and correlational study. The sample consisted of 55 patients who underwent a kidney transplant in the Lisbon region, Portugal. Data collection was conducted in May 2017. The WHOQOL-bref questionnaire and sociodemographic and clinical variable were also used.

**Results:** The lowest value is found in the physical domain and the highest values in the environmental and general facets of quality of life. The general facet of quality of life is positively associated with the physical domain, the psychological domain and the environmental domain.

**Conclusions:** The physical domain of quality of life related to kidney-transplanted patients was the most impaired. Clinical practice implications for nursing are discussed.

**KEYWORDS:** renal insufficiency; chronic; quality of life; kidney transplantation; nursing assessment.

### Introduction

Chronic kidney disease (CKD) is characterized by increased levels of urea and creatinine in the blood. Its main causes are hypertension, diabetes mellitus, and glomerulonephritis<sup>1-2</sup>. In the end stage disease, main treatment modalities usually are hemodialysis (HD), peritoneal dialysis and kidney transplant<sup>1</sup>.

Kidney transplantation is the most common option for patients with CKD, both in terms of survival and quality of life (QoL),<sup>3</sup> being a process that leads to a transforming effect of the QoL in both patients and their families<sup>4</sup>.

Nonetheless, this modality leads the person to the condition of chronicity generating great uncertainty. These patients require continuous nursing care, from the pre-transplant to the post-transplant stage in order to maintain the capacity for personal fulfilment.

After kidney transplantation the patient presents early physiological results, reflected in the immediate function of the graft, creating high expectations at a personal, family and social levels. Nevertheless, this may generate some risks, concerns and dependence on pharmacological treatments and a high social and economic impact<sup>5</sup>.

The obligation to use immunosuppressive medication may lead to changes in interpersonal relationships as patients may not have the opportunity to engage in a labour activity. Lastly, patients may fear the durability of the transplanted organ<sup>6</sup>.

The QoL perception of the person who underwent a kidney transplant is related to the experience this person had of their CKD condition during haemodialysis, and the effects that the disease had on their lives, namely the high morbidity rate, requiring continuous specialized

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medical monitoring, and the adverse side effects of immunosuppressive medication<sup>7</sup>.

QoL is usually associated to sociodemographic, clinical and psychological factors, such as age, sex, marital status, educational level, income, immunosuppressive side effects, dialysis time, psychological problems and comorbidities<sup>8</sup>.

The objective of this study is to evaluate the QoL of patients who underwent a kidney transplant and who are now followed in the outpatient clinic.

## Material and Method

A cross-sectional and correlational study<sup>9</sup> was developed at the Centro Hospitalar de Lisboa Central, in the kidney transplant consultation of the nephrology service between April and May 2017.

The target population was patients with CKD who underwent a kidney transplant. Inclusion criteria were: transplanted and/or re-transplanted patients. Those with at least one of the following criteria were excluded: patients who underwent transplant less than 3 months ago, aged less than 18 years, with cognitive deficit and / or active psychiatric disease.

The exclusion criteria information was obtained searching the clinical records. The sample selection method was for convenience and not random. The final sample consisted of 55 patients who met the eligibility criteria.

Data were collected through a sociodemographic and clinical characterization form (including the following indicators: age, gender, education level, professional status, marital status). The WHOQOL-bref questionnaire created by the World Health Organization in 1998 and validated for the Portuguese population in 2006 was also used<sup>10</sup>.

The WHOQOL-BREF instrument is a shorter version of the original instrument and consists of 26 items. 24 items measure the following broad domains: physical health (consisting of 7 items), psychological health (consisting of 6 items), social relationships (consisting of 3 items), and environment (consisting of 8 items). The four domain scores denote an individual's perception of QoL in each particular domain. Domain scores are scaled in a positive direction (i.e. higher scores denote higher quality of life). The mean score

of items within each domain is used to calculate the domain score<sup>10</sup>.

There are two other items that are examined separately: question 1 is regarding the individual's overall perception of QoL and question 2 is regarding the individual's overall perception of their health.

Answer options are given through a 5 point Likert scale, and are stated either positively or negatively. Four type of scales are used to measure intensity, capacity, frequency and assessment<sup>10</sup>.

Raw domain scores for the WHOQOL were transformed to a 4-20 score according to the guidelines. For the calculation of the other two items (Q1, Q2) the following formula was used:  $(Q1 + Q2) - 1/8 \times 100^{10}$ .

After interviews, data were introduced and processed using the Statistical Package for Social Science (SPSS) 20.0 software. The mean score of each of the 26 questions was calculated, followed by the average score of each of the four domains, as well as the general quality of life. We chose to use both the QoL indexes and the means of each domain to facilitate comparison with other studies, since there is no homogeneity in the criteria in the literature.

Descriptive statistics are reported as frequency, percentage, mean, and standard deviations, while inferential procedures included Mann-Whitney U test and Spearman correlation coefficients. A 0.05 level of significance was adopted. Graphs were drawn using the Excel software (Windows - Microsoft®).

Authorization was requested and granted by the authors of the Portuguese version of the WHOQOL-bref<sup>10</sup>.

This study was approved by the Ethics Committee of Centro Hospitalar Lisboa Central (Processo n° 395/2017). All participants signed the Informed Consent Term after being informed about the guaranteed confidentiality of data and the right to withdraw without risk to oneself.

## Results

Majority of the sample are males (61.8%), 61.8% are less than 60 years old, 69.1% are married, 94.5% have a low literacy level, 63.6% are retired due to disability, about a half underwent the kidney transplant less than 5 years ago (50.9%), and 89.1% only underwent one transplant.

**Table 1.** Mean and standard deviation for the different variables with domain of QoL.

	n (%)	Physical domain	Psychological domain	Social Relation domain	Environmental domain	General QoL
<b>Gender</b>						
Male	34 (61.8)	15.7±2.1	15.8±2.4	15.5±2.5	16.1±1.7	15.7±3.2
Female	21(38.2)	15.2±2.7	15.5±2.9	14.5±2.9	15.8±2.2	16.6±3.6
<b>Age</b>						
Under 60 years	34(61.8)	15,5±2.6	15.9±2.7	15.4±3.0	15.9±2.2	16.2±3.4
More than 60 years	21(38.2)	15.5±2.1	15.4±2.3	14.7±2.1	16.2±1.2	15.7±3.4
<b>Marital status</b>						
Single	17 (30.9)	15.8±2.8	16.1±2.9	15.5±2.8	16.1±2.3	16.2±3.5
Married	38(69.1)	15.4±2.2	15.5±2.3	14.9±2.7	15.9±1.7	15.9±3.3
<b>Education</b>						
Can not read or write	3(5.5)	12,8±3.3	11.6±0.8†	12.4±2.8	13.5±2.2*	13.3±4.2
Can read or write	52 (94.5)	15.7±2.3	15.9±2.4	15.3±2.7	16.1±1.8	16.2±3.4
<b>Professional activity</b>						
Retired	35(63.6)	15.4±2.2	15.5±2.3	14.9±2.7	15.9±1.7	14.9±3.3
Active	20(36.4)	15.8±2.8	16.1±2.9	15.5±2.8	16.1±2.3	16.2±3.5
<b>Transplantation time</b>						
Les than five years	28(50.9)	14.8±2.6*	14.9±2.8†	14.5±2.7	15.6±2.4	15.4±3.8
More than five yeas	27(49.1)	16.3±1.9	16.5±1.9	15.8±2.6	16.4±1.2	16.6±2.7
<b>Retransplantation</b>						
No	49(89.1)	15.7±2.2	15.9±2.4	15.5±2.5*	16.0±1.8	16.2±3.2
Yes	6(10.9)	14.5±3.7	14.4±3.4	12.4±3.2	15.8±2.7	14.7±4.3

\*Significance  $p<0.05$ , †Significance  $p<0.01$  for Mann-Whitney U test.

People with lower literacy levels present a significantly lower mean in the psychological ( $p<0.01$ ) and environmental ( $p<0.05$ ) domains. Those who underwent kidney transplant less than 5 years ago have significantly lower means in the physical ( $p<0.05$ ) and psychological ( $p<0.01$ ) domains. People who had to be re-transplanted get significantly lower averages in the social relations domain than those who were not ( $p<0.05$ ).

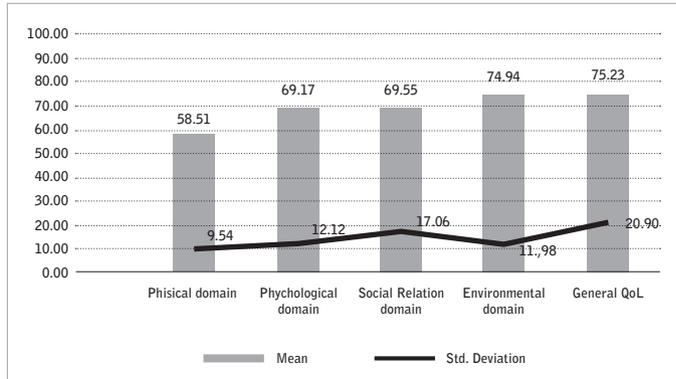
The mean values for QoL domains vary between  $15.1±2.7$  (Social Relation domain) and  $16±3.3$  (General QoL).

The lowest value is found in the physical domain ( $58.51±9.54$ ) and the highest values in the environmental and general facets of QoL ( $74.94±11.98$  and  $75.25±20.90$ , respectively).

The general facet of QoL is positively associated with the physical domain ( $0.411$ ,  $p<0.01$ ), the psychological

**Table 2.** Mean and standard deviation of domains of QoL.

	Range	Minimum	Maximum	Mean	Standard deviation
General QoL	4-20	8.00	20.00	16.0	3.3
Physical domain	4-20	8.00	19.43	15.5	2.4
Phychological domain	4-20	9.33	20.00	15.7	2.5
Social Relation domain	4-20	9.33	20.00	15.1	2.7
Environmental domain	4-20	10.50	19.50	15.9	1.9



**Figure 1.** Average values of each domain related to the generic QoL questionnaire WHOQOL-BREF.

Concerning the transplant time, people with less than five years post-transplant presented lower means in the physical and psychological domains. These results were also found in a literature review on QoL in kidney transplant patients, which showed that the longer the transplantation, the higher the level of quality of life<sup>8</sup>.

In a study carried out in transplanted individuals followed up to 36 months after transplant, the physical domain showed variations associated with loss of muscle, and the psychological domain variations were associated with anxiety.

**Table 3.** Correlations between domains of QoL.

	1	2	3	4
1. General QoL				
2. Physical domain	0.411†			
3. Psychological domain	0.546‡	0.596‡		
4. Social Relation domain	0.210	0.244	0.423†	
5. Environmental domain	0.333*	0.349†	0.544‡	0.503‡

\*Significance  $p < 0.05$ , †Significance  $p < 0.01$ , ‡significance  $p < 0.001$

domain (0.546,  $p < 0.001$ ) and the environmental domain (0.333,  $p < 0.05$ ). That means when the general facet of QoL increases, the scores of the physical, psychological and environmental domains also increase.

The physical domain showed a significant positive correlation with both psychological domain (0.596,  $p < 0.001$ ) and environmental domain (0.349,  $p < 0.01$ ). The psychological domain is positively associated with the social relation domain (0.423,  $p < 0.01$ ) and the environmental domain (0.544,  $p < 0.001$ ).

Finally, the social relation domain is positively associated with the environmental domain (0.503,  $p < 0.001$ ).

## Discussion

This study evaluates the QoL of patients who underwent a kidney transplant.

Educational differences were found in the psychological and environmental domains, that is, in people who are illiterate, the means were lower in the psychological and environmental domains.

In this sense it is recommended the implementation of a rehabilitation program to improve muscle strength. Also, systematic attention must be given to the state of anxiety<sup>11</sup>.

In another study carried out in Colombia, where anxiety and depression were assessed in people who underwent kidney transplant, researchers found that 52.6% of people who had undergone a transplant more than 5 and less than 10 years had anxiety symptoms. Those interviewed in the first year of transplant didn't showed symptoms of anxiety<sup>12</sup>.

People who undergo kidney transplant face intense adaptation processes caused by the need to take immunosuppressive drugs, strict medical controls, risk of opportunistic infections, which can lead to psychological changes with high complexity and emotional variability.

Finally, people who were re-transplanted have lower mean values in the social relations domain. This is likely to be related to the fact of being more debilitated and have difficulty in actively participate in social activities.

In our study no differences related to age were found. However, in a prospective observational study in Norway involving 261 patients, it was found that social function changed in people over 65 years of age<sup>13</sup>.

In a cross-sectional study conducted with 49 kidney-transplanted patients attending outpatient follow-up appointments, the most affected domains of QoL were the physical and the environmental domains<sup>14</sup>. In this study only physical domains are most affected. In a longitudinal study with 49 kidney-transplanted patients

all domains improved post-transplant, however the environmental domain was the one that had the lower final score<sup>15</sup>.

QoL in general is positively and significantly associated with physical, psychological and environmental domains.

An integrative review on QoL after kidney transplantation, showed that the QoL significantly improves, being that improvement related to the physical domain. This may be explained because this domain is related to the improvement of organic functions that occur after kidney transplant. On the other hand, having a well-functioning transplanted kidney leads patients to experience strong emotional and general well-being feelings related to their health. Despite QoL gains in the post-transplant, there are some less positive aspects such as: continuous medication, risk of opportunistic infections due to immunosuppressive status, need for continuous outpatient follow-up, and rejection signs and symptoms that may affect the scores of social relationships, environment, and psychological domain<sup>16</sup>.

On what concerns the physical domain, we can say that it improves considerably after the transplant. All the aspects related to this domain improve: reduction of symptoms (such as pain and tiredness); less dependence on treatments, which facilitates the return to daily activities; improvement of sleep pattern; ease of walking; and improved ability to work and return to social activities<sup>17</sup>.

Finally, people who have been re-transplanted have lower scores in the social relations domain. Such results may be related to the adaptation process previously mentioned, and to the replication of the emotional instability.

A descriptive study with longitudinal design performed on 63 patients who underwent a kidney transplant showed no relation between sociodemographic data and the perception of QoL in these patients. QoL improved significantly in all domains after transplantation, showing the positive impact that a transplant has on the patient's perception. Physical and social relations domains presented the most significant improvements. The environmental domain had less variation, possibly because the housing and safety conditions of these patients did not change after transplant<sup>14</sup>.

In our study both psychological and physical domains are associated, which is also corroborated by other authors<sup>8</sup>.

In a systematic review it was found that a majority of studies reported better rates of life participation among patients with kidney transplants compared to patients receiving dialysis<sup>18</sup>. In a transversal study, with 34 patients on dialysis and of a HD and Renal Transplantation outpatient clinic of a hospital, it was found that the change causes in the lives of kidney transplant patients, demonstrated by high rates of satisfaction in all areas involved, allowing them a normal life<sup>19</sup>.

While it is important to recognise and understand a patient's individual needs and interests, it is also imperative to consider the incremental gains in survival and the long-term costs with healthcare services. Kidney transplantation is not only the treatment of choice for many patients with end-stage renal failure with higher quality of life scores, as it is considered highly cost-effective, particularly in relation to health system spending.

A study carried out in Portugal to determine the incremental cost-utility ratio of renal transplantation compared to HD, showed that, in 2011 the average cost per patient per year, in HD was € 32,567.57. In the first year following transplant the average cost was € 60,210.09, reducing drastically and in the following years to € 12,956.77. The same study also revealed that kidney transplantation generates an additional 7.5 quality adjusted life years, which corresponds to another 7 years and 6 months of perfect life. In a time, span of two years and five months, renal transplantation results in cost savings<sup>20</sup>.

Concerning healthcare politics, the quality and efficiency of health care often relies on cost effectiveness studies with short term impact evaluations. Decision makers must focus on the wider impact of treatment options, and must create programs to identify and monitor their long-term benefits on quality of life.

Our study is the first of its kind using and applying the scale recommend by the WHO to the Portuguese population. The results are similar to international research and our recommendations for decision makers are also in line with the majority of the authors:

- continuous assessment of renal patients' QoL during all stages of disease and treatment.
- greater investment in the organisational structure of health services provided to renal patients to allow the monitoring process.

- special focus on the education of health professionals that provide daily care and support to patients.

### Practical implications for nursing

QoL in people who underwent kidney transplantation is an important indicator for assessing people's health and well-being in order to measure the impact of nursing interventions.

Nurses should be aware of the physical limitations of people submitted to kidney transplantation since it is the most affected domain. Special attention should be given to the less literate since the nurse plays an important role in health education and therapeutic adherence, in order to avoid kidney failure and consequent re-transplants.

Having in mind that general QoL increases when there are fewer physical and psychological limitations, nurses can intervene in the field of mobility and psychological well-being, especially in what concerns anxiety and depression.

### Limitations

There are some limitations in this study. Our results are based on a small sample size and the cross-sectional delineation, which prevents the inference of causality.

### Conclusions

The most impaired QoL domain related to kidney-transplanted patients was the physical domain. Patients who were re-transplanted, transplanted for less than five years and who were illiterate have lower scores in some domains of quality of life.

**No conflicts of interest is declared by the author.**

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