

*EVALUATION OF THE QUALITY OF LIFE OF PATIENTS UNDERGOING  
HEMODIALYSIS AND POST RENAL TRANSPLANTATION*

*AVALIAÇÃO DA QUALIDADE DE VIDA DE PACIENTES EM TRATAMENTO  
HEMODIALÍTICO E PÓS TRANSPLANTE RENAL*

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**ABSTRACT**

**Objective:** Evaluating and comparing the quality of life of patients undergoing hemodialysis and post-transplant treatment. **Method:** This is a cross-sectional, descriptive and exploratory study conducted in the city of Campina Grande-PB, Brazil, with 103 patients. Two instruments were used, one sociodemographic that also values the characteristics of education and another that has already been validated through the assessment of quality of life. The analysis was descriptive (relative, absolute, average, median, mode, maximum and minimum standard deviation) and inferential (Fisher's Chi-square). **Results:** The results indicate the total quality of life score of two transplanted patients in relation to patients on hemodialysis, this square reflects in all facets of the instrument, in addition to the general health status, which means that two patients undergoing hemodialysis seems to be better than transplant patients. **Conclusion:** Confirm the study hypothesis that kidney transplantation occurs according to the patient's quality of life, when compared to hemodialysis treatment, minimizing the effects of teaching and care costs.

**Keywords:** Chronic Kidney Failure; Quality of life; Renal Dialysis; Chronic Kidney Failure; Kidney Transplantation.

**RESUMO**

**Objetivo:** Avaliar e comparar a qualidade de vida de pacientes em tratamento hemodialítico e pós transplantados. **Método:** Trata-se de uma pesquisa transversal, descritiva e exploratória, realizada no município de Campina Grande-PB, Brasil, constituída por 103 pacientes. Foram utilizados dois instrumentos, um sociodemográfico que também avaliava as características gerais da doença, e um já validado avaliando a qualidade de vida. A análise foi descritiva (frequências relativas, absolutas, média, mediana, moda, desvio padrão máximo e mínimo) e inferencial (Chi-quadrado de Fisher). **Resultados:** Os resultados indicam melhora do escore total de qualidade de vida dos pacientes transplantados em comparação aos pacientes em hemodiálise, esse quadro reflete-se em todas as facetas do instrumento, com exceção ao estado geral de saúde, qual a média dos pacientes em tratamento hemodialítico apresentou-se maior do que os pacientes transplantados. **Conclusão:** Confirma-se a hipótese do estudo na qual, o transplante renal melhora a qualidade de vida do paciente, quando comparado ao tratamento hemodialítico, minimizando os efeitos da doença e os custos com os cuidados.

**Palavras-chave:** Insuficiência Renal Crônica; Qualidade de Vida; Diálise Renal; Falência Renal Crônica; Transplante Renal.

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## INTRODUCTION

Chronic kidney disease (CKD) is defined by progressive, gradual and irreversible loss of renal function. A public health problem is characterized by high morbidity and mortality, metabolic disorders and interfering in the individual's quality of life<sup>1</sup>. The stage of the disease can be characterized by an initial lesion, up to a more advanced stage in which glomerular filtration is below 15 ml/min/1.73m<sup>2</sup>, and Replacement Renal Therapy (RRT)<sup>2</sup> is necessary.

The Brazilian Chronic Dialysis Survey shows that the estimated total number of dialysis patients in 2016 was 122,825. Of the prevalent patients nationwide, 92% were on hemodialysis and 8% were on peritoneal dialysis, 29,268 (24%) were on a waiting list for transplantation. In the state of Paraíba, 1,227 patients undergo chronic dialysis treatment<sup>3</sup>. According to the Brazilian Registry of Transplants (BRT), in 2017, 5,929 kidney transplants were performed in Brazil and 356 performed in the state of Paraíba, of which 315 (88.5%) were performed in the municipality of Campina Grande<sup>4</sup>.

The patient living with CKD and is on hemodialysis faces an incurable disease. Moreover, the progress of the disease and its complications, bring numerous limitations in the spectrum of daily and/or routine activities, and therefore a decrease in quality of life (QoL)<sup>5</sup>. Another option to overcome this phenomenon is kidney transplantation (renal

TX), which improves quality of life, but there are difficulties in access either due to the increasing demand, or incompatibility between donor and patient<sup>6</sup>.

The changes in the routine of patients with CKD show some disorders in daily life that remain throughout their life, such as: the need to have their life linked to a hemodialysis center, as well as the dependence on immunosuppression drugs in the case of post-transplant drugs, among other factors that can interfere with the user's QoL<sup>7</sup>.

Although QoL is interpreted individually, there are parameters that provide knowledge about health needs, through the analysis of indicators, it is possible to identify and explore the population's need in certain areas with better QoL indicators. In this context, QoL is understood as social, environmental and personal balance, encompassing the totality of the human being, including aspects of self-care, habits of life, spirituality, values and convictions, among others<sup>1</sup>.

The present study is based on the hypothesis that kidney transplantation improves the quality of life of individuals with chronic kidney disease, when related to those undergoing hemodialysis treatment, the question is: What aspects are affected in the quality of life of hemodialysis patients and post-kidney transplantation? Is there a difference in the quality of life of patients

undergoing hemodialysis when compared to kidney transplantation?

Thus, the present study has as general objective to evaluate the quality of life of patients undergoing hemodialysis and post-renal transplantation.

## METHODOLOGY

This is a cross-sectional, descriptive and exploratory research, guided Strengthening the Reporting of Observational Studies in Epidemiology (STROBE). The research was conducted in Campina Grande, Paraiba, Brazil, from January to March 2019.

The study population was all transplant patients receiving outpatient treatment at the Social Institute of Health Care (SIHC), totaling an average of 125 monthly visits, both from transplanted patients and on hemodialysis.

The sample was calculated following the finite population formula for epidemiological studies, and a sampling error of 0.05 and confidence level of 95% were applied. After the calculation, the sample resulted in 103 patients, 23 under hemodialysis treatment, and 80 transplanted patients. The sampling procedure adopted was for convenience.

For a sample of HD patients, patients older than 18, who had been undergoing hemodialysis treatment for more than 6 months, were included; And excluded those who: are undergoing hemodialysis treatment

by transplant rejection previously, patients who do hemodialysis and are followed up in other services. In relation to transplanted patients, the sample was included: Transplanted more than 1 year ago, and patients with cognitive capacity to answer the proposed questions, and excluded those transplanted who need urgent hemodialysis, transplanted from other centers, patients who did not go through consultation during the period of data collection and those who presented some complication at the time of collection.

To perform the research, two instruments were applied, one to characterize the sample developed by the researchers, and an already validated scale for quality-of-life assessment, the Medical Outcomes Short-Form Health Survey (SF-36) and adapted to the Brazilian reality<sup>8</sup>.

The SF-36 is derived from the Medical Outcomes Study – MOS a questionnaire with 149 questions developed and tested in more than 22,000 participants in 1990<sup>9</sup>. In Brazil, its validation and translation occurred, Pearson's correlation coefficient was used, with statistically significant results, highly satisfactory and good internal consistency<sup>9</sup>.

The data collection site was the patient treatment unit, in a research support room, after explaining the study objectives, risks, benefits and data confidentiality. From this, the person who had availability and interest in

participating signed the Free and Informed Consent Form (FICF).

The data were tabulated and analyzed in a statistical software, in which the data received descriptive treatment through relative and absolute frequencies. The inferential analysis was between the sample characterization data and the domains of the scales by means of the chi-square and/or exact fisher test, and a p-value was adopted  $> 0.05$ , to obtain statistical significance among the variables.

This research was submitted to the Ethics and Research Committee of the Center for Higher Education and Development for consideration and was approved under opinion n. 3,073,387. All recommendations and ethical principles provided for in research involving human beings were respected and followed in accordance with Resolution 466/12<sup>10</sup>, instituted by the National Health Council.

## RESULTS

The minimum age of hemodialysis patients was 18, while the maximum of 51, among transplanted patients was 25 and 66, respectively, the average age of 45 was adopted to dichotomize the variable, and patients up to 45 were more prevalent on hemodialysis (52.2%) and among transplant recipients (78.6%).

Females prevailed among patients undergoing hemodialysis (69.6%) and males among transplant recipients (56.4%), for both groups, the majority had incomplete elementary education (34.8% and 35.3%), considered brown (91,3% and 68,0%),, are married (73.9% and 51.5%), do not reside in large Campina Grande (78.3% and 70.9%), reside in their home for more than 5 years (91.3% and 64.1%), with 1 to 5 people (100% and 100%).

The number of hemodialysis and transplant patients with some other chronic pathology (100% and 98.1%) prevailed and all used some medication continuously, most of them claimed to receive some sickness aid (100% and 71.8%), with income between 1 and 2 minimum wages (100% and 78.6%) and receive some aid or retirement (95.7% and 93.2%).

The descriptive analysis of quality of life and its respective facets for both groups is possible to observe through table 1 improvement in the average total QoL score of transplanted patients (67.92) compared to hemodialysis patients (59.83), this picture is reflected in all facets of the instrument, except for the general state of health, where the average number of patients undergoing hemodialysis was higher (79.39) than transplant patients (75.87), but with little difference.

**Table 1** - Descriptive analysis of the facets of quality of life according to SF - 36. Campina Grande, PB. 2019.

Quality of Life	Hemodialysis			Transplanted		
	Average	Minimum Maximum	- SD	Average	Minimum Maximum	- SD
Functional Capacity	47.61	10 – 100	18.51	59.56	10 – 100	23.63
Limitations by physical aspect	40.22	0 – 100	30.84	58.25	0 – 100	33.83
Pain	67.30	31 – 100	15.20	75.03	31 – 100	21.51
General State of Health	79.39	72 – 87	6.33	75.87	37 – 100	14.71
Vitality	63.48	35 – 80	14.72	68.69	45 – 85	12.62
Social Aspects	74.39	37 – 100	21.03	77.33	37 – 100	19.53
Limitations by emotional aspects	46.00	0 – 100	28.34	56.83	0 – 100	33.00
Mental health	59.74	21 – 100	25.89	73.92	24 – 100	19.54
<b>Total quality of life score</b>	<b>59.83</b>	<b>45 – 86</b>	<b>10.11</b>	<b>67.92</b>	<b>45 – 86</b>	<b>13.29</b>

Source: The authors

To evaluate the correlation between the overall quality of life score and its respective facets, it is possible to observe among patients on hemodialysis a very high positive correlation with mental health ( $p < 0.00$ ;  $r = 0.864$ ), high between limitations by physical aspects ( $p < 0.00$ ;  $r = 0.689$ ) and pain ( $p < 0.00$ ;  $r = 0.651$ ) and moderate with general health status ( $p < 0.00$ ;  $r = 0.529$ ). Among transplanted patients, there was a very

high positive correlation between limitations due to physical aspects ( $p < 0.00$ ;  $r = 0.864$ ), high between limitations due to emotional aspects ( $p < 0.00$ ;  $r = 0.794$ ), functional capacity ( $p < 0.00$ ;  $r = 0.688$ ), moderate between pain ( $p < 0.00$ ;  $r = 0.557$ ) and mental health ( $p < 0.00$ ;  $r = 0.534$ ). Indicating that as the respective facets increase in quality of life, these findings are more expressive among transplanted patients

**Table 2.** Spearman's correlation between the averages of the Scores of the SF-36 scale and the total quality of life score. Campina Grande, PB. 2019

Facet of quality of life	Total Quality of Life Score			
	Hemodialysis		Transplanted	
	Correlation*	p-value	Correlation*	p-value

Functional Capacity	0.294	0.17	0.688	0.00
Limitations by physical aspect	0.689	0.00	0.864	0.00
Pain	0.651	0.00	0.557	0.00
General State of Health	0.529	0.00	0.221	0.02
Vitality	-0.149	0.49	0.252	0.01
Social Aspects	0.270	0.21	0.066	0.50
Limitations by emotional aspects	0.864	0.00	0.794	0.00
Mental health	0.310	0.14	0.534	0.00

\* Sperman correlation coefficient.

Source: The authors

The differences between the hemodialysis and transplanted groups showed a statistically significant improvement between the overall score of quality of life and the vitality facets ( $p < 0.00$ ), limitations by emotional aspects ( $p < 0.00$ ), pain ( $p <$

$0.00$ ) and mental health ( $p < 0.00$ ). However, transplanted patients presented statistically significant worsening in general health status compared to patients undergoing hemodialysis ( $p = 0.02$ ).

**Table 3** - Comparison between quality of life between patients undergoing hemodialysis and transplant patients. Campina Grande, PB. 2019

Facet of quality of life	Total Quality of Life Score			
	Hemodialysis		Transplanted	
	Medium (Interquartile)	p-value*	Medium (Interquartile)	p-value*
Functional Capacity	50 (45 – 55)	0.83	55 (50 – 75)	0.00
Limitations by physical aspect	25 (25 – 75)	0.33	75 (25-100)	0.08
Pain	74 (61 – 74)	0.00	62 (61 – 100)	0.00
General State of Health	80 (72 – 87)	0.02	77 (72 – 80)	0.04
Vitality	60 (55 – 75)	0.01	75 (60 – 75)	0.00
Social Aspects	75 (62 – 88)	0.76	75 (62 – 100)	0.08
Limitations by emotional aspects	33 (33 – 67)	0.02	67 (33 – 100)	0.00
Mental health	56 (52 – 88)	0.08	84 (56 – 88)	0.00

\* Body of U de Mann-Whitney

Source: Survey data, 2019.

## DISCUSSION

The sociodemographic characterization of patients undergoing hemodialysis and post-renal transplantation presents a predominance of participants living in cities surrounding the treatment city. This result portrays the lack of assistance to individuals with CKD in the interior of the state, to concentrate specialized care in large centers, which can hinder the integrality of care.

In the present study, a higher number of women with chronic renal disease was observed, corroborating another study conducted in the northeast of the country<sup>11</sup>. However, it differs from successful studies in the south of the country<sup>12,13, 5</sup>. This data demonstrates a demographic behavior which the sex factor may vary by location.

One of the most frequent comorbidities among patients was Systemic Arterial Hypertension (SAH), which is considered one of the main risk factors for CKD. This is one of the most difficult causes to be detected, as it is a disease in which, most of the time, individuals do not know that they have it or do not properly adhere to treatment. This causes slow and progressive renal impairment<sup>14</sup>. Thus, it is worth considering the importance of sociodemographic characteristics to better understand the quality of life of patients

undergoing hemodialysis and post-kidney transplantation.

The results obtained by the SF-36 provided in the evaluation of the domains: functional capacity, limitations by physical aspect, pain, general health status, vitality, social aspects, limitations by emotional aspects and mental health. Considering the lack of a parameter to measure whether QoL is good or bad, the intermediate point is attributed to the value of 50<sup>13</sup> which three domains linked to hemodialysis patients did not reach this value, while the patient after renal transplantation obtained only one. In view of the overall scores of each group, it can be considered that patients who underwent transplantation have higher QoL.

Patients with CKD may experience a sudden change in their daily lives and the way of facing this situation becomes particular for everyone. The return-to-work activities after renal transplantation can occur at a slow pace, with advances and setbacks, in addition to the possibility of presenting obstacles such as clinical complications. However, the restoration of functional capacity and the reduction of restrictions are possibilities offered by kidney transplantation that, when successful, allows the subjects to reduce such limitations and allows greater independence, thus recovering the capacities existing before CKD<sup>15</sup>.

Dialysis treatment is a source of permanent stress for the individual, which may lead to loss of work activity, impossibility of locomotion and leisure, decreased physical activity, and loss of autonomy<sup>11</sup>. A study conducted in a Nephrology Unit of a Porte IV Hospital in the Northwest region of the State of Rio Grande do Sul corroborates the data found, highlighting that 64.4% of patients had improved functional capacity after kidney transplantation<sup>16</sup>.

The comparison of limitations by physical aspects before and after renal transplantation indicated a significant increase in the quality of life of this facet after the transplantation. This finding can be explained by the improvement in all aspects that encompass the physical domain. The reduction of symptoms, such as pain and fatigue, and the lower dependence on treatment facilitate the resumption of daily activities after transplantation. The improvement of sleep pattern, ease of locomotion and improvement in work ability and day-to-day activities also contribute to the better perception of general QoL observed after the implementation of renal transplantation<sup>17</sup>.

The present study shows that hemodialysis patients may experience more pain when compared to transplant patients. This data corroborates the data of another study conducted in a reference hospital in the

municipality of João Pessoa, Paraíba, Brazil, which aimed to evaluate the quality of life of hemodialysis patients<sup>14</sup>.

The pain dimension is evaluated through its presence in the last four weeks, in addition to its interference at work. People with CKD usually show signs and symptoms of musculoskeletal deterioration that can be a triggering factor for pain. Pain symptomatology can cause functional limitations, making the execution of daily activities increasingly complicated<sup>18</sup>.

Among the painful sensations common to patients undergoing hemodialysis, bone pain is often reported and results in physical limitations with impairment in daily activities, with negative repercussions on QoL. Another frequent complication in hemodialysis patients are cramps, usually preceded by hypotension, which cause severe pain due to involuntary muscle contractures, predominantly in the lower limbs<sup>18</sup>.

Hemodialysis treatment cannot be seen only as a factor that negatively affects life, since, as observed in this study, the facet of the general state of health had a difference of 3.52% when compared to renal transplant recipients. Dialysis treatments can adapt the kidneys extremely efficiently, keeping homeostasis practically up to the terminal stages of the CKD process. This result can be justified by the fact, of the improvement of the general clinical picture, and then its



general state of health, with the addition to dialysis<sup>19</sup>.

The data of the present study agree with another study developed in a hemodialysis center in the North of the country, stating that the change in the daily life of hemodialysis patients can cause fear, insecurity, doubt, anxiety. Therefore, there is a probability of a reduction in self-esteem and endurance to proceed with appropriate treatment.

IRC causes many changes that may reflect in a disturbing way in mental health, because hemodialysis promotes the improvement of some clinical symptoms, but at the same time causes some emotional disorders. Regarding the facets social, emotional aspects and mental health, the diagnosis of IRC can provoke a feeling of insecurity and fear that accompany patients, because they feel that the condition has repercussions, mainly because it is a prolonged treatment and when they cannot maintain control of the situation<sup>20</sup>.

The overall assessment of QoL after kidney transplantation is undoubtedly one of the main methods for evaluating the efficacy of treatment in chronic renal patients. The main objective of transplantation is to provide maximum quality and lifetime to the patient, minimizing the effects of the disease and care costs. The improvement in the QoL of patients submitted to kidney transplantation presented in the study should be related to the

reduction of stressor factors, such as the interruption of dialysis treatment and its interference in daily life, the facilitation of professional life due to the wider possibility of jobs and improvement of social support<sup>16</sup>.

This data is equivalent to the findings of a study conducted in a reference center for kidney transplantation in northeastern Brazil, which aimed to identify changes in quality of life after the implementation of kidney transplantation. The results indicated that transplantation had a positive impact on the perception of quality of life of these patients.

Given the objective of relating QoL with the facets of the scale between hemodialysis patients and among those who underwent kidney transplantation, it was possible to observe, that there was statistical significance between the variable vitality ( $p < 0.00$ ) and general health aspect ( $p < 0.00$ ) among hemodialysis patients. Among transplant patients between functional capacity ( $p < 0.00$ ), low limitations by physical aspect ( $p < 0.00$ ), vitality ( $p < 0.00$ ) and limitations by emotional aspects ( $p < 0.00$ ).

Although the Mental Health facet did not present significance among any of the groups of patients, it is possible to observe a high quality of life among patients with a high mental health score, as well as for the social aspect facet, in which patients with low social limitation have a high quality of life and the

pain facet, in which patients with high pain score have low quality of life for both groups.

The return to social and physical activities after transplantation was described as the main gain perceived by patients in a study developed with transplant recipients followed up in a Brazilian university medical center, which corroborates the present study that indicates that post-transplant patients had a high quality of life associated with high functional capacity, low physical limitation and high vitality<sup>21</sup>.

Functional capacity is evaluated through ten items that analyze the limitations in performing activities resulting from the health condition to perform from activities that require a lot of effort to self-care<sup>22</sup>. It is an important predictor in QoL, can be characterized by actions performed with the purpose of self-care for the maintenance of survival, instrumental activities of daily living, interaction of the individual with the environment and with society.

It is important to analyze this facet, for health promotion with the objective of preserving functional capacity that can contribute to autonomy ensuring an improvement in QoL<sup>23</sup>; it can be observed that the better the functional capacity of the patient in both hemodialysis and renal TX, the better his QoL.

The data show that the improvement in health in general enables the feeling of greater well-being, directly influencing the

performance of other activities and social roles. Renal TX because it is more like the normal functioning of the kidneys contributes to a more favorable health condition and greater vitality favoring improvement in the QoL of patients.

Patients recognize hemodialysis as a treatment that, despite being restrictive and limiting activities, promotes the guarantee of well-being<sup>19</sup>. Although dialysis treatment has a limiting component in patients' QoL in daily activities, it also acts as a potentiator, since some patients assess the impact of treatment on improving their overall health status when compared to IRC problems.

The present study showed that hemodialysis patients have high scores in the general health and vitality facets, these data can be justified by the fact that patients find hemodialysis therapy, a way to prolong their survival. The feeling of well-being provided by hemodialysis can become a form of aid in coping with restrictions. The appreciation of treatment and awareness of its new health condition provide a gradual improvement in QoL<sup>19</sup>.

The pain facet assesses the intensity of pain and its interferences. It can also induce physical limitations that compromise the execution of daily activities and negatively affect quality of life<sup>18</sup>. The study shows that patients in both groups have low pain scores associated with high QoL.

Renal TX contributes to the return of a more active routine, bringing greater perception of freedom and autonomy, but as evidenced in the study transplant patients have high social limitation<sup>18,19</sup>.

Among transplanted patients, there was significance for low social limitation and high quality of life, indicating that the return of their daily activities of life and social involvement brought improvement in their QoL, since, in hemodialysis patients, the obligation to attend three times at the dialysis center becomes a monotonous and restricted treatment causing limitations in the context of social life<sup>21</sup>.

The changes in QoL, caused by CKD, favor the appearance of emotional changes and subjective difficulties, such as hopelessness, anxiety, decreased self-esteem, among others, which require a reorganization of personal, family and social dynamics, requiring understanding and support of those who deal directly with the patient<sup>21</sup>.

Nevertheless, it is important to consider that transplant patients may also suffer anxiety due to concern about the side effects of immunosuppressive treatment, difficulties in adapting to post-transplant conditions and fear of organ rejection. Rejection is an important cause of concern for patients and a challenge to be faced by the team assisting transplanted patients<sup>22</sup>.

Thus, an increase in the QoL scores of transplanted patients is observed, in reference

to those undergoing hemodialysis treatment. However, it is worth noting that the conception about QoL is unique and individual for each person, not necessarily occurring in a constant way, as it is related to psychic and physical support resources<sup>19-22</sup>. In this perspective, we highlight the need for investment in policies that favor the improvement of the care of transplanted patients, with a view to the optimization and integrality of care.

The limitation of the study is the collection of data from only one outpatient institution, which may restrict the generalization of the results obtained. In addition, limitations related to the type of cross-sectional study are also pointed out, in which the collection of data from exposure and outcome occurs in a single moment, making it difficult to accurately determine the cause/effect ratio.

## CONCLUSION

The study made it possible to analyze the QoL of patients on hemodialysis and after renal transplantation who attend SIHC, as well as describe aspects that differentiate QoL between the two groups studied. It was possible to observe an improvement in the QoL of patients transplanted in the domains functional capacity, limitations by physical aspects, pain, vitality, social aspects, limitations by emotional aspects and mental health, when compared with patients on

hemodialysis, which presents the facet general health state with better QoL of this group, when compared to transplant patients. These results show that kidney transplantation has achieved its objective of improving QoL in the physical, mental and social aspects of patients.

Thus, it is seen that encouraging discussion on quality of life, CKD, hemodialysis and kidney transplantation, allows health services and professionals to identify the real needs of patients and family members, to provide more objective and individualized care with the objective of improving the QoL of patients with chronic renal failure and renal transplants.

It is expected that the present study will trigger new investigations and research that analyzes the QoL of patients with CKD through a construct in which subjective and objective QoL are allied, to clarify the particularities of the domains, specifically, afflicts QoL.

### THANKS

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