



Quality of life and duration of hemodialysis in patients with chronic kidney disease (CKD): a cross-sectional study

Qualidade de vida e tempo de hemodiálise em pacientes com doença renal crônica (DRC): um estudo transversal

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Abstract

Introduction: Quality of life (QoL) of hemodialysis patients is a major evaluative marker currently measured, while treatment time is a clinical determinant associated with impaired QOL. **Objective:** To evaluate QOL in individuals undergoing hemodialysis (HD) considering treatment time and the presence of comorbidities. **Methods:** A cross-sectional study conducted in the hemodialysis unit of the Hospital das Clínicas da Universidade Federal de Pernambuco (HC-UFPE). We studied patients with Chronic Kidney Disease (CKD) of both genders over the age of 18 years, at any level of education and undergoing HD for at least 6 months. We evaluated the demographic/socioeconomic and clinical data, followed by application of the quality of life questionnaire (KDQOL-SF). **Results:** Participants were 47 patients with a mean age of 50.94 ± 13.33 years, 55.3% were male and average treatment time of 57.35 ± 61.46 months. Hypertension (59.6%) was the most frequent underlying disease. According to the responses obtained through the KDQOL-SF, the situation at work and physical limitation scored worse. Sexual function (85.83) and encouragement by the team had the best performance. There were no differences in dimensions of questionnaire and treatment time. **Conclusion:** The presence of comorbidities and HD duration were not found to be possible factors for changing QoL in this study. However, we suggest that future studies evaluate other factors such as laboratory, emotional and functional data to check for changes in QoL in these patients related to HD duration.

Keywords: Chronic Renal Insufficiency. Renal Dialysis. Quality of life.

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Resumo

Introdução: A qualidade de vida (QV) dos pacientes hemodialíticos é um dos principais marcadores avaliativos atualmente e o tempo de tratamento é um determinante clínico associado à QV prejudicada. **Objetivo:** Avaliar a QV em indivíduos submetidos à hemodiálise (HD) considerando o tempo de tratamento e a presença de comorbidades. **Métodos:** Estudo transversal desenvolvido no setor de hemodiálise do Hospital das Clínicas da Universidade Federal de Pernambuco (HC-UFPE), realizado em pacientes com Doença Renal Crônica (DRC) de ambos os sexos, maiores de 18 anos, em qualquer nível de escolaridade e em HD a pelo menos seis meses. Foram avaliados os dados demográfico/socioeconômico e clínico, seguidos da aplicação do questionário de QV (KDQOL-SF). **Resultado:** Participaram do estudo 47 pacientes, com média de idade de $50,94 \pm 13,33$ anos, sendo 55,3% do sexo masculino e média do tempo de tratamento de $57,35 \pm 61,46$ meses. A Hipertensão Arterial Sistêmica (HAS) (59,6%) foi a patologia de base mais frequente. De acordo com as respostas obtidas através do KDQOL-SF, a situação no trabalho e a limitação física apresentaram piores resultados. A função sexual (85,83) e o encorajamento da equipe apresentaram o melhor desempenho. Não se observou diferenças no comportamento das dimensões do questionário com o tempo de tratamento. **Conclusão:** A presença de comorbidades e o tempo de HD não se apresentaram como possíveis fatores para alteração da QV em nosso estudo. No entanto, sugerimos que estudos futuros possam avaliar outros fatores como dados laboratoriais, emocionais e funcionais para verificar a existência de alterações na QV nesses pacientes relacionadas ao tempo de HD.

Palavras-chave: Insuficiência Renal Crônica. Diálise Renal. Qualidade de vida.

Introduction

Chronic Kidney Disease (CKD) is a clinical syndrome characterized by slow, progressive and irreversible loss in kidney function (1). With the increase in the aged population and in patients affected by Systemic Arterial Hypertension (SAH) and Diabetes Mellitus (DM), the number of people with CKD has been increasing worldwide (2, 3).

In the terminal phase of CKD, hemodialysis (HD) is the most widely used renal replacement therapy throughout the world, contributing to increased patient survival (4). However, this procedure can cause loss of functional level with a consequent reduction in quality of life (QoL) over time (5). In addition, the absence of regular physical activity in this population may be associated with an appearance of comorbidities related to cardiovascular diseases, anemia, infections, hepatitis, bone diseases, and malnutrition, among others, favoring the risk of hospitalization and death (6).

Quality of life is defined by WHO as “the individual’s perception of their position in life within the context of the culture and values systems in which they are inserted, and in relation to their goals, expectations,

standards and concerns” (7). It is considered important for evaluation and follow-up of chronic patients submitted to intervention programs such as hemodialysis (8). In CKD patients undergoing HD, the main tool used to measure QOL is the *Kidney Disease and Quality of Life Short Form* (KDQOL-SF™) (9, 10).

Treatment time is also a clinical determinant that when associated with factors such as advanced age, female gender, low level of schooling, unemployment and low income can affect QoL (11, 12). Some studies have not identified significant changes in QoL in relation to HD treatment time (13, 14). However, the presence of concomitant comorbidities presented a negative correlation with the QoL domains, justifying the reduced values evidenced by these patients, which improved in some domains one year after starting HD (15). Considering that the occurrence of comorbidities among patients undergoing HD may occur among those who are subjected to treatment for a longer period and that this condition may compromise their quality of life, evaluating the latter provides a way to verify the repercussion of the disease on the emotional, social, physical and labor aspects of these patients, and therefore measure how these dimensions can

be modified after an intervention program. Thus, the objective of this study was to evaluate QoL through KDQOL-SF™ in subjects submitted to HD considering hemodialysis treatment time and the presence of comorbidities among them, and based on the hypothesis that longer hemodialysis duration and the presence of comorbidities lead to worse quality of life.

Methods

This is a cross-sectional study conducted from April to July 2014 in the Nephrology Service hemodialysis sector of the *Hospital das Clínicas* of the Universidade Federal de Pernambuco. The present study was approved by the Institutional Research Ethics Committee (CAAE: 26164913.1.0000.5208), according to Resolution 466/2012 of the National Health Council.

The study included patients with Terminal Chronic Kidney Disease (CKD) of both genders, over 18 years of age, at any education level, undergoing hemodialysis for at least 6 months and who were physically inactive. Those who presented cognitive deficit (assessed through the Mini-Mental State Examination - MMSE) or changes that compromised their understanding and interpretation of the questions and/or hearing impairment were excluded.

Procedures for data collection

An evaluation of the patients' mental state was initially carried out through MMSE. The classification adopted in the present study took into account the education level as: less than 15 points for illiterates; less than 22 points for education level between 1 and 11 years; and below 27 points for over 11 years of education reflecting the presence of cognitive deficit (16).

Next, demographic and socioeconomic data were evaluated (age, gender, marital status, education level, religion, current occupation, residence, family/personal income), in addition to clinical data (weight, height and body mass index), CKD etiology, HD treatment duration (in months) and the number of comorbidities were also verified through medical records.

QoL was subsequently assessed using the KDQOL-SF™. The first part of this instrument was composed of 36 items divided into 8 dimensions: physical

functioning, role-physical, role-emotional, social functioning, mental health, bodily pain, vitality "energy/fatigue" and perceptions on general health. The second part evaluates kidney disease, containing 11 dimensions: symptoms/problems, effects of renal disease, burden of CKD, occupational status, cognitive function, social interactions, sexual functioning, sleep, social support, health care staff support and patient satisfaction. In order to obtain the QoL score, the numerical values of each dimension were transformed into a score ranging from 0 to 100 in the studied dimension, where scores below 50 indicated reduced QoL and scores greater than 50 indicated better QoL (9).

Data analysis

Distribution of normality was initially performed by the Kolmogorov-Smirnov test for quantitative variables. Comparisons for the numerical variables were made using Student's t-test and Mann-Whitney test (age, weight, height, BMI, treatment time). Data were presented as mean \pm standard deviation or percentage. The comparison between hemodialysis treatment duration (in months) and each KDQOL-SF™ domain were performed using the Chi-Square Test and/or Fisher's Exact Test for categorical variables. Significant p-values lower than 0.05 were considered. All tests were applied with 95% confidence. The results were presented in tabular form with their respective absolute and relative frequencies. Median HD duration was used for comparison with all QoL questionnaire dimensions, clinical data, and the presence of comorbidities. The information was tabulated in Excel® 2007 and later transferred to SPSS® version 18.0.

Results

Of the 63 patients with terminal CKD (stage 5) enrolled and treated in the hemodialysis service, 16 were excluded (2 did not agree to participate in the study, 10 were undergoing treatment for less than 6 months, and 4 presented cognitive deficits), resulting in a total of 47 patients (74.6% of the total patients). The mean age was 50.94 ± 13.33 years and mean HD duration was 57.35 ± 61.46 months. (Table 1)

Among the underlying diseases, SAH (59.6%) was the most frequent, with the majority of patients (83.0%) presenting between 0 and 1 comorbidity.

The complete values regarding socio-demographic/economic aspects, causes of renal disease and comorbidities are presented in Table 1.

The dimensions burden of CKD, occupational status, physical functioning, general health, role-physical and role-emotional, as well as physical and mental composition presented reduced QoL (Table 2).

Table 1 - Sociodemographic characteristics, pathologies related to the development of CKD and comorbidities

Variables	Frequency (n = 47)	%	Mean	SD
Age (years)			50.94	13.33
Hemodialysis duration (months)			57.35	61.46
BMI (kg/m²)			24.20	4.78
Gender				
Male	26	55.3		
Female	21	44.7		
Residence				
(Recife)	32	68.1		
(Others)	15	31.9		
Marital status				
Has a partner	27	57.4		
Does not have a partner	20	42.6		
Occupation				
No	33	70.2		
Yes	14	29.8		
Religion				
No	8	17		
Yes	39	83		
Home of your own				
No	12	25.5		
Yes	35	74.5		
Schooling				
Up to 1 year	7	14.9		
Above 1 year	40	85.1		
Family/ Personal Income				
Below 1 MW	1	2.1		
Above 1 MW	46	97.9		
Aetiology of CKD				
DM (Yes)	18	38.3		
(No)	29	61.7		
KD (Yes)	5	10.6		
(No)	42	89.4		
SAH (Yes)	28	59.6		
(No)	19	40.4		

(To be continued)

(Conclusion)

Table 1 - Sociodemographic characteristics, pathologies related to the development of CKD and comorbidities

Variables	Frequency (n = 47)	%	Mean	SD
OC (Yes)	26	56.3		
(No)	21	44.7		
0 or 1 comorbidity	39	83.0		
2 or more comorbidities	8	17.0		

Note: CKD: chronic kidney disease; SD: standard deviation; HD – Hemodialysis; MW – Minimum wage; SAH – Systemic Arterial Hypertension; DM – Diabetes Mellitus; KD – Kidney Disease; OC – Other Comorbidities.

Table 2 - Characteristics of the dimensions of the KDQOL questionnaire of patients submitted to HD

Variables	Mean	SD
Symptoms	68.40	17.19
Effects of kidney disease	69.88	21.19
Burden of kidney disease	41.22	28.12
Work status	17.02	26.12
Cognitive function	80.14	21.56
Quality of social interaction	76.31	22.71
Sexual function	85.83	20.52
Sleep	68.51	27.13
Social support	81.21	28.58
Dialysis staff encouragement	82.45	23.98
Global health	67.23	32.42
Patient satisfaction	76.95	25.19
Physical functioning	47.02	28.85
Role of physical	31.38	33.57
Body pain	66.91	29.97
General health	47.87	24.56
Emotional well-being	69.28	25.02
Role of emotional	45.39	36.40
Social function	69.68	33.25
Energy/fatigue	54.79	27.19
SF-12 Physical composition	38.46	9.11
SF-12 Emotional composition	46.70	11.74

Note: SF - Short form.

No differences in the behavior of the questionnaire dimensions were observed after stratification for HD duration through the median (36 months) (Figure 1).

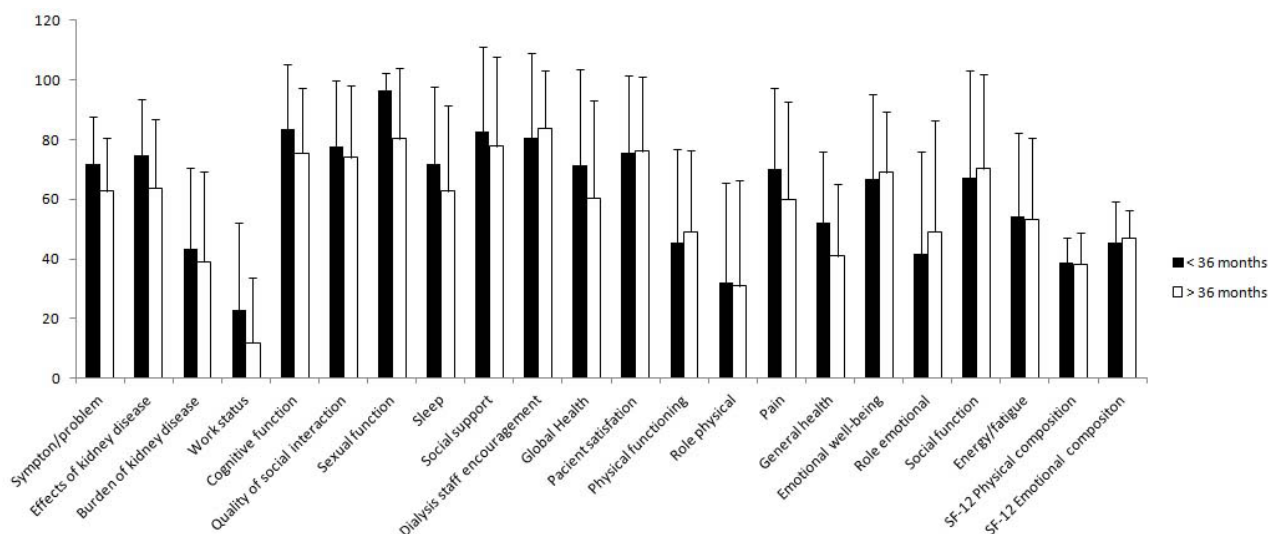


Figure 1 - Comparison of the median time with the dimensions of the KDQOL questionnaire.

Discussion

In this study, the quality of life dimensions affected by treatment time in hemodialysis patients were: burden of CKD, occupational status, physical functioning, general health, role-physical and role-emotional, and physical and mental composition. SAH was the most frequent cause of CKD, and HD treatment time and the presence of comorbidities did not interfere in the QoL dimensions between the groups.

QoL may be altered in patients undergoing HD, especially among different races, social relations, cultural diversity and ethnicities (17). Some studies report that it may also be associated with hemoglobin level, socioeconomic status, literacy, dialysis program, gender, comorbidities, depression and previous unsuccessful kidney transplant, as well as clinical manifestations of the disease, side effects, nutritional status and hospitalization (18, 19).

In analyzing the QoL of patients undergoing HD, physical functioning, physical function and burden of CKD dimensions seem to be related and dependent on physical health (20, 21). These dimensions are related to patient's constant complaints such as a lack of energy, feelings of discouragement and fatigue, which probably decrease the scores in these dimensions, possibly due to changes in their health condition related to the disease and to the treatment (22).

The physical function dimension of the KDQOL-SF™ is composed of ten items that evaluate limitations in performing daily activities due to health condition, in self-care and for activities which demand a

lot of effort (22), as it is one of the compromised dimensions among the patients evaluated in our study.

According to our results, physical limitation and occupational status were the most affected dimensions among the evaluated patients, being similar to other studies (23, 24). The physical limitation imposed by CKD and by the HD treatment duration may be a consequence of systemic alterations caused by the disease, especially those related to musculoskeletal disorders (25), in addition to factors such as dependence on medical support, having a strict treatment regimen, pain and suffering during the sessions, sleep disorders, immobility, machine dependence, specific diet and body image changes (17).

Regarding occupational status, our results are similar to other studies performed in Brazil and abroad (26, 27). One possible explanation would be patients' understanding regarding the activities they should be able to easily perform being in an economically more active population group; however, their activities are interrupted the CKD (28), thus preventing them from earning (29). Therefore, treatment alone or in association with physical symptoms may contribute to perception of disease burden on patients (29).

Our results indicated a low number of comorbidities among patients, unlike other studies (1, 30). The presence of comorbidities is an important predictor of mortality (31). The studies indicate reduced QoL (32) for patients with CKD associated to cardiovascular disease.

Regarding HD duration, there were also no differences observed between those who were below or above 36 months of treatment. Some studies also found no changes (11, 33, 34), which makes us think of the possibility of other factors occurring besides those investigated here, which could be contributing to these results. Thus, the present study recognizes that inclusion of laboratorial factors (urea, creatinine, PTH (ParaThyroid Hormone)), emotional factors (depression and anxiety), functional factors (evaluation of activities of daily living and work) and the analysis of hemodialysis efficiency (Kt/V) are limiting factors that need to be introduced to verify its association with QoL in future studies. Another aspect to be considered concerns the sample consisting only of patients coming from a high complexity hospital. This point needs to be taken into account, considering that patients' characteristics (greater presence of comorbidities and longer treatment time on hemodialysis) may not reflect the reality of other hemodialysis treatment centers. In this sense, an investigation on quality of life needs to be conducted in these places, so that the size of these changes can be evaluated in these patients.

Repercussions of the decline in the quality of life of chronic patients constitute a challenge for health professionals, especially those who deal with the limitations imposed by the disease itself or its evolution. As professionals who are attentive to the physical and functional issues of the chronic renal patient and aware of the importance of evaluating the quality of life of these patients, physiotherapists need to seek therapeutic strategies that optimize functional independence and autonomy, thus minimizing the adverse consequences of the disease on quality of life.

Conclusion

Our results have pointed to a reduction in the following dimensions of burden of CKD, occupational status, physical functioning, general health, role-physical and role-emotional, as well as the physical and mental composition of quality of life. Regarding the presence of comorbidities, SAH was the main comorbidity found. HD treatment duration and the presence of comorbidities were not evidenced as possible factors for QoL changes in our study. Therefore, we suggest that future studies include other factors

such as evaluating kidney function through laboratory data, thus verifying concomitant presence of depressive and/or anxiety symptoms in these patients, and evaluating hemodialysis efficiency in order to verify the existence of association between these and QoL related to hemodialysis duration.

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