

Functional capacity and quality of life in chronic kidney disease

Capacidade funcional e qualidade de vida na doença renal crônica

Daliane Ferreira Marinho¹ 

Robert Douglas Costa de Melo² 

Karen Evelin Pedroso de Sousa³ 

Fernanda de Araújo Oliveira⁴ 

Jéssica Naiara Silva Vieira⁵ 

Cynthia da Silva Pereira Antunes⁶ 

Eliane Ferreira Marinho⁷ 

¹Corresponding author. Universidade Estadual do Pará (Santarém). Pará, Brazil. daliane.marinho@uepa.br

²⁻⁶Universidade Estadual do Pará (Santarém). Pará, Brazil. rdcstm@hotmail.com, karenevelinpedroso@gmail.com, nanda.o1667@gmail.com, jessica.naiara.v@gmail.com, cynthiasp29@gmail.com

⁷Universidade da Amazônia (Belém). Pará, Brazil. elianefmarinho@yahoo.com.br

ABSTRACT | INTRODUCTION: Chronic kidney disease (CKD) is characterized by heterogeneous changes, which affect both the structure and the renal function, may result in a reduction in the functional capacity and quality of life of this population. **OBJECTIVE:** To evaluate the functional capacity and quality of life of patients with CKD hospitalized. **MATERIALS AND METHODS:** Observational, quantitative, descriptive, cross-sectional study. It used three questionnaires: a clinical one, the SF36 for assessing quality of life, and the Health Assessment Questionnaire (HAQ), for assessing functional capacity. Data were analyzed using descriptive statistics, considering mean, standard deviation and percentage. **RESULTS:** The sample consisted of 11 patients with CKD (63.63% men). The worst scores in SF36, in both genders, were related to the physical (0) and emotional (0) aspects. The HAQ showed a greater functional deficit in females (1.80). Regarding age, in all age groups, the SF-36 pointed to "physical aspects" (0) and "emotional" (0) with the worst indexes. The HAQ found the worst score in the 30-59 age group and in individuals with more than three associated diseases, Chronic Kidney Disease, Arterial Hypertension and Diabetes and (moderate deficiency 1.09 / 1.70 respectively). These individuals also found worse scores in the SF36 for the domains of "functional capacity" (66.20), "general state" (56.50), "vitality" (55.00) and "social aspects" (43.50). **CONCLUSION:** The individuals analyzed with CKD had low scores related to quality of life, and moderate functional capacity in women and mild in men.

KEYWORDS: Renal insufficiency chronic. Renal dialysis. Quality of life.

RESUMO | INTRODUÇÃO: A doença renal crônica (DRC) é caracterizada por alterações heterogêneas, que afetam tanto a estrutura quanto a função renal, poderá decorrer com redução da capacidade funcional e da qualidade de vida dessa população. **OBJETIVO:** avaliar a capacidade funcional e qualidade de vida de pacientes com DRC hospitalizados. **MATERIAIS E MÉTODOS:** Estudo de natureza observacional, quantitativo, descritivo, transversal. Utilizou três questionários: um clínico, o SF36 para a avaliação da qualidade de vida, e o *Health Assessment Questionnaire* (HAQ), para avaliação da capacidade funcional. Os dados foram analisados através de estatística descritiva, considerando média, desvio padrão e porcentagem. **RESULTADOS:** A amostra foi composta por 11 pacientes com DRC (63,63% homens). Os piores scores no SF36, em ambos os gêneros, foram relacionados aos aspectos físicos (0) e emocionais (0). O HAQ evidenciou maior déficit funcional no sexo feminino (1,80). Em relação à idade, em todas as faixas etárias o SF-36 apontou "aspectos físicos" (0) e "emocionais" (0) com piores índices. O HAQ encontrou pior escore na faixa de 30-59 anos e nos indivíduos com mais de três doenças associadas, Doença Renal Crônica, Hipertensão Arterial e Diabetes (deficiência moderada 1,09/1,70, respectivamente). Também foram encontrados nesses indivíduos piores scores no SF36 para os domínios de "capacidade funcional" (66,20), "estado geral" (56,50), "vitalidade" (55,00) e "aspectos sociais" (43,50). **CONCLUSÃO:** Os indivíduos analisados com DRC apresentaram baixos escores relacionados à qualidade de vida, e capacidade funcional moderada nas mulheres e leve nos homens.

PALAVRAS-CHAVE: Insuficiência renal crônica. Diálise renal. Qualidade de vida.

Introduction

Chronic kidney disease (CKD) is characterized by heterogeneous changes, which affect both renal structure and function, there are several etiologies and factors that influence the prognosis of this population¹. The clinical manifestations that stand out in CKD are Diabetes (DM), Arterial Hypertension (SAH), proteinuria, anemia, metabolic complications, obesity, smoking and dyslipidemia. These clinical conditions define the objectives of treatment, early diagnosis and referral to therapies that slow the progression of the disease and the prevention of cardiovascular complications².

It often starts asymptotically, and when it reaches the advanced stage, the patient already has one or more complications of the disease and/or comorbidities². The care of patients with CKD aims at maintaining renal function or delaying the loss of this function¹, with attention to the values of the glomerular filtration rate (GFR), this is a relevant indicator for the diagnosis and classification of CKD, still considered the best overall measure of renal function².

In a systematic review of the literature aimed at identifying the prevalence of this disease in the Brazilian population, it was found that the most recent population estimates reveal about 1.5% of self-reported kidney disease, are associated with patients with low levels of education, and access to dialysis treatment or kidney transplantation in relation to patients with better educational level³.

In this sense, in the Inquérito Brasileiro de Diálise Crônica (Brazilian Chronic Dialysis Survey) for the year 2017, the total number of chronic dialysis patients on July 1st, 2017 was estimated at 126,583. With the most frequent primary causes identified in terminal CKD were SAH 34% and DM 31%. Still in this survey, there was a wide variation between regions and states in Brazil, with emphasis on the increase in incidence, especially in the North and Northeast regions, where the prevalence is lower, however it is gradually increasing⁴.

Thus, observing the multisystemic impairments related to CKD, authors have already highlighted that dialysis or pre-dialysis individuals have reduced functional capacity and quality of life⁵. Other authors added that identifying the characteristics of these patients can help to achieve better clinical approaches and in emotional and physical issues⁶. Thus, these affected individuals must be cared for with a view to integration and humanization, with the development of new researches, health promotions or public policies that prioritize this audience⁷.

Still, other studies have shown that dialysis treatment interferes with functional capacity regardless of the time of initiation of this therapy or stage of the disease⁸ and that dialysis can compromise the time available for physical activities and meals, increasing physical and depressive symptoms and, although it can prolong the life of patients, however it does not seem to restore the functional capacity of this population⁹.

Therefore, understanding that CKD and its comorbidities can significantly compromise the daily routine of patients affected by it, the objective was to assess the functional capacity and quality of life of patients with this pathology admitted to the Hospital Municipal de Santarém (HMS) - Pará, in order to know the functional profile of these patients that can subsidize future therapeutic interventions.

Methodology

Observational research, with a descriptive quantitative approach and transversal development¹⁰. The research targeted at chronic renal patients admitted to the HMS medical clinic, data collection took place in May 2018. The research was approved by the Research Ethics Committee of the Universidade do Estado do Pará, Campus XII, under opinion number 2,434,363 (CAAE 79351817.5.0000.5168), and by the Teaching and Research Center of the hospital.

The target audience was composed of individuals over 18 years old, both genders, diagnosed with CKD and undergoing hemodialysis admitted to the medical clinic of HMS. Adults without clinical conditions to participate at the time of the interview were excluded, for example, with hemodynamic instability, mental confusion, drowsiness, unconscious or who did not verbalize, and those who refused to answer the questionnaires. Thus, the research sample was composed of all patients with CKD admitted to the MC in the period, according to the eligibility criteria.

Initially, an active search was performed in the census of patients admitted to this sector to identify those with CKD. Then, they were invited to participate in the study. Those who accepted were asked for their consent by signing the Free and Informed Consent Form, and then the research instruments were applied.

At the first moment, clinical data were collected from medical records using a form containing the following items: gender, age, comorbidities, the use of hemodialysis and oxygen support. Then two questionnaires were applied: Medical Outcomes Study 36-Item, Short-Form Health Survey (SF-36), to assess quality of life, and then the Health Assessment Questionnaire (HAQ) was used to assess functional capacity.

The SF-36 questionnaire was developed with the objective of assessing quality of life, it consists of 36 items divided into eight components: functional capacity (10 items), physical aspects (4 items), pain (2 items), general condition of health (5 items), vitality (4 items), social aspects (2 items), emotional aspects (3 items) and mental health (5 items), and the comparative question regarding the current health condition and one year ago¹⁰.

The HAQ questionnaire was created to assess the individual's functional capacity. It consists of 20 questions, divided into eight components, and for each question a score ranging from 0 to 3 must be assigned. Then, the highest values of each of the eight components are added up and divided by eight, and thus the final score, which varies between 0 and 3, is reached, with 25 possibilities. According to the result, the person can be classified as having a mild disability (0 to 1), moderate disability (> 1 to 2) and severe disability (> 2 to 3)¹¹.

Data were stored in Microsoft Excel® spreadsheets and then analyzed using descriptive statistics, in relation to the frequency for the SF36 and HAQ questionnaires, and through the average and percentage for the data of the sample description, such as age, gender and clinical data, such as those related to comorbidities associated with CKD.

Results

During the research period, 14 hospitalized patients with CKD were found in the medical clinic sector of the hospital due to the worsening of renal dysfunction or exacerbation of comorbidities. These came from Santarém city, Pará, and neighboring municipalities, since the city serves as a health hub for over 20 neighboring municipalities, covering more than 1 million inhabitants, according to data from the hospital itself (HMS, 2019). The sample comprised 11 patients, as 3 were excluded for not undergoing hemodialysis. Of those who made up the sample: 63.60% were male (Table 1).

Table 1. Characterization data of the sample of patients with Chronic Kidney Disease. 2018

Characterization of the sample N (N=14)	
CKD classification	N
Dialysis CKD	11
Non-dialysis CKD	3
Total	14
Characterization of the sample (n=11)	
Gender	%
Male	63,6% (7)
Female	36,4% (4)
Total	100%
Age	Years
Average	51,6±16,9
Diagnostics	%
CKD	36,36 (4)
CKD+SAH+DM	36,36 (4)
CKD+Others	27,28 (3)
Total	100%

CKD – Chronic Kidney Disease, CKD+SAH+DM - Chronic Kidney Disease + Systemic Arterial Hypertension + Diabetes Mellitus.
Source: Research data (2018).

Table 2 shows the percentage results by gender in relation to HAQ and SF-36 of patients with Chronic Kidney Disease.

Table 2. Scores from the SF-36 and HAQ Questionnaires by gender (n = 11)

Gender		Men	Women
HAQ		0,05	1,80
SF-36	Functional capacity	65,71	21,25
	Physical Aspect	0	0
	Pain	74,42	65,50
	General State of Health	51,14	52,75
	Vitality	52,14	35,00
	Social aspects	42,64	15,50
	Emotional Aspects	0	0
	Mental health	68,00	41,00

HAQ – *Health Assessment Questionnaire*; SF36 – *Medical Outcomes Study 36-Item Short-Form Health Survey*.
 Score HAQ: mild disability (0 a 1), moderate disability (> 1 a 2) and severe disability (> 2 a 3).
Source: Research data (2018).

The worst scores in SF36, for both men and women, were found in the physical and emotional aspects. Regarding functional capacity and social aspects, the female gender was the lowest score. These results were also evidenced by the HAQ, given that women reached the value of 1.80, considered a moderate disability.

With regard to age, an average value of 50 years was found for both genders, with the interval from 30 to 59 years showing the highest frequency (45.45%) in this sample. Table 3 shows the HAQ and SF-36 values according to age.

Table 3. Scores from the SF-36 and HAQ Questionnaires by age group(n=11)

Age group		0-29	30-59	60-89
Percentage of individuals by age group		18,18%	45,45%	36,36%
HAQ		0,56	1,09	0,49
SF-36	Functional capacity	57,50	47,00	48,75
	Physical Aspect	0	0	0
	Pain	100	64,60	65,65
	General State of Health	43,50	54,20	52,75
	Vitality	42,55	47,00	46,25
	Social aspects	31,25	17,40	52,75
	Emotional Aspects	0	0	0
	Mental health	74,00	46,40	65,00

HAQ – Health Assessment Questionnaire; SF36 – Medical Outcomes Study 36-Item Short-Form Health Survey.

Score HAQ: mild disability (0 a 1), moderate disability (> 1 a 2) and severe disability (> 2 a 3).

Source: Research data (2018).

In this division by age group, in SF-36 the physical and emotional aspects also had the worst rates in all age groups. And the social and mental health aspects were found to be inferior in the age group of 30 to 59 years. Value also found when the functional capacities were assessed by HAQ, with the worst score in this age group (1.09).

When we relate the diagnosis to the questionnaires that assess quality of life and functional capacities, we find the values expressed in Table 4.

Table 4. Scores from the SF-36 and HAQ Questionnaires for renal diagnoses and associated diseases (n = 11)

Diagnosis		CKD Only	CKD + SAH + DM	CKD + OTHERS
Sample percentage		36,36%	36,36%	27,27%
HAQ		0,78	0,37	1,70
SF36	Functional capacity	50,00	66,25	26,66
	Physical Aspect	0	0	0
	Pain	87,50	70,75	50,33
	General State of Health	54,00	56,50	42,33
	Vitality	50,00	55,00	28,33
	Social aspects	34,12	43,50	33,00
	Emotional Aspects	0	0	0
	Mental health	71,00	71,00	24,00

Legend: HAQ – Health Assessment Questionnaire; SF36 – Medical Outcomes Study 36-Item Short-Form Health Survey.

Score HAQ: mild disability (0 a 1), moderate disability (> 1 a 2) and severe disability (> 2 a 3).

Source: Research data (2018).

In all items of SF-36, CKD associated with other comorbidities had the lowest rates. And the physical and emotional aspects indicated low quality of life among the three groups of diagnoses: CKD, associated with SAH and DM, and CKD and other comorbidities. Also in the HAQ results, major deficiencies in functional capacities were found in individuals with CKD associated with SAH/DM (1.70), these findings also occurred in SF36, in the indicators "functional capacity" (66.25), "general state" (56.50), "vitality" (55.00) and "social aspects" (43.50).

Discussion

Analyzing the study data, a predominance of the male gender was observed among those patients who have CKD and undergo hemodialysis, these data were found in the study by Zanesco and collaborators⁶ and in the Inquérito Brasileiro de Diálise Crônica de 2017⁴. However, it is in contrast to the results found in other studies, in which most of them are female. This fact is probably due to the characteristic of seeking early health care occurs mainly by the female public, especially in the pre-dialysis phase, which can be explained by the fact that this gender gives more attention to health, a possible justification for the lower values of this sex in more advanced CKD, when hemodialysis is needed¹⁵.

According to the HAQ, the female gender presented moderate deficiency, in relation to the male gender it presented a mild deficiency. In the analysis of SF-36, considering that the closer to the value of 100, the better the quality of life of the evaluated person, it was evidenced that the female sex is also more compromised. Women achieved values on 5 components of the scale lower than those of men, the value of 0 was also found in the components of physical and emotional aspects.. However, in comparison, Costa and collaborators found no difference in the level of quality of life, with regard to gender, using the Kidney Disease and Quality-of-Life Short-Form (KDQOL-SF) in an audience of 49 patients¹⁴.

The social aspects and functional capacity items were worst evaluated for women in this study (15.50 and 21.55, respectively). Similar results were identified in Santos' research, since social aspects were abruptly lower for women and the functional capacity was also lower for women¹⁶. On the other hand, a study carried out with 30 patients with CKD in stage 5 concluded that these individuals had a lower functional capacity, regardless of gender¹⁷.

In the stratification by age group, the worst indexes for the functional capacity item assessed by the SF-36 instrument were between the ranges of 30-59 years and 60-89 years (47.00 and 48.75, respectively). About that, a study located in Recife with 33 chronic renal patients undergoing hemodialysis found a similar situation, with a lower score¹⁶. A bibliographic review pointed out that the age factor in all the articles studied was negatively correlated in most aspects, especially functional capacity, physical aspects, pain and vitality, advancing age considered the causal nexus of greater physical and functional impairments in patients with kidney disease¹⁹.

The physical and emotional aspects were the worst scores listed in the stratifications by age group and diagnosis, with a value of 0 for all these groups. Which can be justified by the fact that dialysis treatment limits the social life of patients, due to the long time that patients remain in hemodialysis treatment. It was also observed that the existence of comorbidities, drastically reduces all aspects related to the quality of life of this population, since this clinical scenario worsens the general health status.

In stratification by comorbidities in CKD, it was noticed that the presence of comorbidities generates greater losses to quality of life and functional capacity. No other studies were found that evaluated these aspects taking into account the presence of other comorbidities associated with CKD.

Despite the study limitation related to the small sample found, we emphasize that it was possible to confirm the data present in other studies. These data may support future multidisciplinary intervention strategies, focusing on the real needs of this population.

Conclusion

Female patients with CKD hospitalized had the lowest scores, especially in relation to the items "Functional capacity" and "Social aspects" assessed by the SF-36, indicating a low quality of life. In relation to functional capacity, assessed through HAQ, women were classified as moderate disability, while males with CKD were classified as mild disability. Thus, although the number of female patients was lower, they were in worse functional health and quality of life conditions.

Author contributions

Marinho DF and Sousa KEP participated in the conception, design, search and statistical analysis of the research data, interpretation of results, writing of the scientific article. Melo RDC participated in the conception, design, statistical analysis of the research data, interpretation of the results, writing and review of the scientific article. Oliveira FA participated in the design, collection and statistical analysis of research data, interpretation of results and writing. Vieira JNS participated in the collection and statistical analysis of research data, interpretation of results and writing. Antunes CSP participated in the collection and statistical analysis of the research data. Marinho EF participated in the statistical analysis of the research data, interpretation of results, writing and review of the scientific article.

Competing interests

No financial, legal or political competing interests with third parties (government, commercial, private foundation, etc.) were disclosed for any aspect of the submitted work (including but not limited to grants, data monitoring board, study design, manuscript preparation, statistical analysis, etc.).

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