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Quality of life of chronic kidney patients undergoing hemodialysis in a hospital from the state of Minas Gerais

Qualidade de vida de pacientes renais crônicos em hemodiálise de um hospital de Minas Gerais

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ABSTRACT*:* Introduction: Hemodialysis is the main treatment for patients with chronic kidney disease. This treatment, however, can cause psychological and social harm to the lives of patients, leading to a significant loss in quality of life (QL) of chronic renal patients, which is associated with higher rates of mortality and morbidity. Objective: To analyze the QOL of chronic kidney patients undergoing hemodialysis through the application of the SF-36 scale. Methods: This is a prospective, longitudinal, non-randomized study, with a quantitative approach. Of a total of 88 patients in the hemodialysis unit of the Hospital das Clínicas de Itajubá, 72 were analyzed. Data was collected through an interview with a socio-demographic questionnaire and the SF-36 scale. Results: The results of the study showed impairment of the QOL of patients analyzed. The dimensions with the smallest median values were physical functioning (55) and general health perceptions (46). The dimensions with higher values were social role functioning (100) and emotional role functioning (100). Conclusion: Patients with CKD undergoing hemodialysis presented reduced QOL scores, especially in the physical functioning and general health perceptions domains of the SF-36.

Keywords: Quality of life; Renal dialysis; Renal insufficiency, chronic.

RESUMO*:* Introdução: A hemodiálise é o principal tratamento para portadores da Doença Renal Crônica. O tratamento hemodialítico pode acarretar diversos prejuízos psicológicos e sociais na vida dos pacientes, levando a uma perda significativa na qualidade de vida (QV), que está associada à maiores taxas de mortalidade e morbidade. Objetivo: Analisar a qualidade de vida de pacientes renais crônicos submetidos à hemodiálise através da aplicação da Escala SF-36. Métodos: Trata-se de um estudo longitudinal, prospectivo, não randomizado de abordagem quantitativa. De um total de 88 pacientes da Unidade de Hemodiálise do Hospital de Clínicas de Itajubá, 72 foram estudados. A coleta de dados foi realizada através de uma entrevista com aplicação de um questionário sociodemográfico e do instrumento SF-36. Resultados: Os resultados do estudo mostraram comprometimento da qualidade de vida dos pacientes analisados. As dimensões com os menores valores de mediana foram estado geral de saúde (46) e capacidade funcional (55). As dimensões com maiores valores foram aspectos sociais (100) e aspectos emocionais (100). Conclusão: Os pacientes submetidos à hemodiálise apresentaram valores reduzidos nos escores de qualidade de vida, principalmente nos domínios capacidade funcional e estado geral de saúde do SF-36.

Descritores: Qualidade de vida; Diálise renal; Insuficiência renal crônica.

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INTRODUCTION

Chronic kidney disease (CKD) is currently considered a worldwide public health problem, with an estimated global prevalence of 11 to 13%[1,2]. It has high costs for health systems and is a risk factor for cardiovascular diseases[1,3].

Its most advanced phase, called chronic renal failure (N18 and N19 of ICD-10), is characterized by the slow and irreversible loss of renal function, which includes mild effects that can be managed with medication and diet, but also a stage in which 90% of the normal function of the kidney is lost, when dialysis or kidney transplantation may be indicated. This disease requires several adaptation processes, which directly affect the quality of life (QoL) of the patient, who has to deal with several restrictions related to the disease and the treatment[4,5].

Hemodialysis is the main treatment for patients with CKD, accounting for 92.3% of patients on renal replacement therapy in Brazil[6]. However, this treatment can cause psychological and social harm to the lives of patients, with effects such as social isolation, depression, dementia, drug and alcohol-related disorders, anxiety and coexisting psychiatric disorders[7,8]. The hemodialysis treatment requires a monotonous and restricted daily life, limits patients' activities, and leads to physical inactivity, functional impairment, social isolation and socio-economic alterations[9,10]. In addition, it affects physical and emotional well-being, as it requires the ability to adapt to a new lifestyle: the person starts to depend on a machine and a monthly treatment with a total of approximately 48 hours, and has to live with common symptoms such as sweating, headache, nausea, fever, muscle tension, tachycardia and pain[11,12]. All these factors lead to a significant reduction in the quality of life of chronic kidney patients. Low QOL is associated with higher rates of mortality and morbidity[13,14].

The World Health Organization (WHO) defines quality of life as: "*The individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns*"[7]. According to some studies, QOL is lower among patients with chronic renal failure when compared to other chronic diseases, such as cancer[13].

The SF-36 questionnaire has been widely used to assess QOL in health research. The questionnaire contains 36 questions that analyze eight dimensions: physical functioning, physical role functioning, bodily pain, general health perceptions, vitality, social role functioning, emotional role functioning and mental health[15]. The SF-36 has been widely used in studies related to the quality of life of chronic renal patients on hemodialysis[2,6,13,16,17]. According to a study on QOL carried out in a outpatient hospital clinic in Italy, 49% of the patients had limitations in their physical capability, and 27% had limitations in their emotional capability[16]. In Brazil, a study revealed that pain and impaired vitality were indicated as the factors that most affect QOL[18].

In order to generate further data on the quality of life of chronic kidney patients, this study aims to analyze the quality of life of chronic kidney patients undergoing hemodialysis through the application of the SF-36 scale.

OBJECTIVE

This study aims to analyze the quality of life of chronic kidney patients undergoing hemodialysis through the application of the SF-36 scale.

METHOD

This study was approved by the Research Ethics Committee of the Medical School of Itajubá (FMIt), under opinion 2,354,532.

This was a longitudinal, prospective, non-randomized study with a quantitative approach. Of a total of 88 patients undergoing hemodialysis (HE) at the Hemodialysis Unit of the *Hospital das Clínicas de Itajubá*, 72 were included. Itajubá is a reference center for the treatment of chronic kidney patients in the South of Minas Gerais, meeting the demands of several neighboring cities.

The sample was determined by statistical calculations, using data from the HE/FMIt database. The population is finite, the confidence level is 95%, z-Score: 1.96, p-value: 0.45, q-value (= 1 - p): 0.55, Absolute Margin of Error: 5 [%]. The size of the population is 88. The theoretical framework used was "*Bioestatística: Teórica e Computacional"*, by Arango, Hector G.; Mendes, Samuel T. A minimum of 72 patients was obtained[19]. The inclusion criteria for participation in the study were: Being over 18 years old, having chronic kidney disease and having been on hemodialysis for at least 6 months, being conscious and aware, not having any psychiatric disorder or cognitive impairment. The exclusion criteria were: Being under 18 years old, being on hemodialysis for less than 6 months, not being conscious and aware, having a psychiatric disorder or cognitive impairment.

Data collection was carried out through an interview with the application of a socio-demographic questionnaire and the SF-36. The interviews were conducted by the medical students responsible for the study, lasted about 30 minutes and occurred in the hemodialysis room or in the waiting room.

Quality of life was assessed using the Portuguese version of the SF-36 questionnaire. This is a generic instrument, with utility demonstrated in national and international literature. It is composed of 36 items that assess 8 dimensions: physical functioning, physical role functioning, bodily pain, general health perceptions, vitality, social role functioning, emotional role functioning

and mental health[16]. The physical functioning domain analyzes how the individual performs their daily tasks (walking, bathing, dressing, domestic activities, climbing stairs, etc.). The physical role functioning domain analyzes how physical health interferes with domestic or professional activities. The bodily pain domain analyzes the presence and intensity of pain observed by the individual in the prior month. The general health perceptions domain analyzes the individual's perception of their own health and their expectations in relation to it. The vitality domain analyzes willingness and energy to perform daily tasks. The social role functioning domain analyzes how much the usual social activities are affected by the physical or emotional state. The emotional role functioning domain analyzes how the emotional state interferes with domestic or professional activities. The mental health domain analyzes how feelings (such as nervousness, tiredness, sadness, happiness and tranquility) affect the individual's daily life[17].

The values of the questions were transformed into scores for the 8 domains, ranging from 0 (zero) to 100 (one hundred), where 0 = worst 100 = best for each domain. It is called RawScale, as the final value does not have any unit of measurement[14,20]. The SF36 + application was used to calculate the RawScale. The numerical results of the dimensions were expressed as median and quartiles (Q1, Q3), using the Minitab software.

The demographic and socio-economic characteristics of each patient were analyzed using a questionnaire containing the following information: gender, age, civil status, number of children, education, economic status, monthly income, occupation, liking or disliking the institution and self-perceived health. The characteristics gender, age, civil status, education, income, occupation, and number of children were expressed as percentage values using the Excel 2017 software.

RESULTS

The normality test was calculated for the SF-36 domains. According to the Anderson Darlin test, general health perceptions was the only domain that presented a normal distribution (p> 0.05), with AD: 0.609 and p-value: 0.109. The following values were obtained in the other domains: physical functioning (AD: 1.512, p-value: <0.005), physical role functioning (AD: 12.435, p-value: <0.005), bodily pain (AD: 4.385, p-value: <0.005), vitality (AD: 0.772, p-value: 0.043), social role functioning (AD: 14.837, p-value <0.005), emotional role functioning (AD: 17.464, p-value: <0.005), mental health (AD: 1.577, p-value: <0.005).

As shown in Table 1, 58.3% of the patients are male, 33.3% are between 51 and 60 years old, 69.4% attended school only up to primary school level, 69.4% are retired, 61.1% are married, 48.6% have more than 2 children and 62.5% have a monthly income of 1 to 2 minimum wages.

Table 1 – Socio-demographic variables

	N (%)
Gender	
Male	42 (58.3%)
Female	30 (41.7%)
Age	
<30	1 (1.4%)
30-40	3 (4.2%)
41-50	14 (19.4%)
51-60	24 (33.3%)
61-70	18 (25%)
71-80	5 (6.9%)
>80	7 (9.7%)
Level of education	
Illiterate	4 (5.6%)
Literate	7 (9.7%)
Primary School	50 (69.4%)
Middle School	4 (5.6%)
High School	4 (5.6%)
Higher Education	3 (4.2%)
Occupation	
Unemployed	10 (13.9%)
Employee	6 (8.3%)
Self-employed	1 (1.4%)
Homemaker	5 (6.9%)
Retired	50 (69.4%)
Civil status	
Married	44 (61.1%)
Divorced	12 (16.6%)
Widowed	8 (11.1%)
Single	8 (11.1%)
Number of children	
0	12 (16.7%)
1	13 (18.1%)
2	12 (16.7%)
>2	35 (48.6%)
Income	
0-1 minimum wage	14 (19.4%)
1-2 minimum wages	24 (62.5%)
2-3 minimum wages	6 (8.3%)
3-4 minimum wages	2 (2.8%)
> 4 minimum wages	5 (7%)

The median and quartiles (Q1, Q3) of the dimensions evaluated by the SF-36 are shown in Table 2. The dimensions with the lowest median values were general health perception (46) and physical functioning (55). The dimensions with the highest values were social role functioning (100) and emotional role functioning (100). In relation to Q1, the domains with the highest values were emotional role functioning (100) and social role functioning

(87). The lowest Q1 values were physical functioning (16.2) and physical role functioning (0). In relation to Q3, the domains with the highest values were: social role functioning, emotional role functioning, bodily pain and physical role functioning, all with the same value of 100. The lowest Q3 values were general health perceptions (67) and physical functioning (70).

Table 2- Scores of the dimensions of the SF-36 questionnaire

Dimensions	Q1	Median	Q3
Physical functioning	16.2	55	70
Physical role functioning	0	62.5	100
Bodily pain	34.5	72	100
General health perceptions	32	46	67
Vitality	41.25	57.5	83.75
Social role functioning	87	100	100
Emotional role functioning	100	100	100
Mental health	49	72	95

DISCUSSION

Studies indicate that CKD affects QOL more than other chronic diseases, such as heart failure, chronic obstructive pulmonary disease, rheumatoid arthritis, angina pectoris and even cancer[13,21]. Hemodialysis can cause psychological and social harm to the lives of patients, and requires a monotonous and restricted daily life, limiting their activities[4]. Accordingly, the results of the study showed impairment of the QOL of the patients analyzed, especially in relation to physical functioning and general health perceptions.

The socio-demographic characteristics of the patients in this study are similar to those observed in the literature[4,7,22-26]. There is a small predominance of male patients. A high mean age was observed in the population studied, which is directly associated with physical deterioration, loss of QOL, and high rates of morbidity and mortality. There was also a significant number of patients under the age of 50. This is the most economically active population group, with greater job development demands. This aspect is severely compromised by CKD and hemodialysis, leading to a significant reduction in QOL[22,27].

Most of the subjects in the present study have few years of education, low income and are retired, mostly due to disability related to the CKD. Regarding civil status, most are married and have more than two children. This represents a positive aspect of family support, which contributes positively to QOL[28].

Data on table 2 shows that the perception regarding the items analyzed in each dimension of the SF-36 is heterogeneous. There are several conditions that can interfere in this perception, such as age, length of treatment and presence of comorbidities and recent complications during dialysis treatment, which are frequent conditions in the studied population[29-32].

The present study revealed a significant impairment of general health perceptions, which was the domain with the lowest median. This domain refers to the individual's perception of their own health and their expectations in relation to it[17]. Impairment of general health perceptions is also observed in other countries. Studies carried out in Japan, by Zhou et al.[2], and in Macedonia, by Trajceska et al.[33], indicate general health perception as the domain with the lowest score when analyzing QOL. The multiple comorbidities of patients undergoing hemodialysis, such as diabetes mellitus, hypertension and cardiovascular diseases, contribute to a poor perception of their health[34]. The domain general health perceptions also had the lowest Q3 value in the present study, which demonstrates a significant impairment of the health of the population studied.

There was also a significant impairment of physical functioning, as it was the domain with the lowest Q1 and the second lowest median. Patients undergoing hemodialysis experience changes that affect several body systems, especially the cardiovascular and musculoskeletal systems, interfering with the performance of their daily activities. Studies indicate numerous musculoskeletal abnormalities, especially in long-term treatment, such as muscle cramps, muscle weakness and limb numbness, which contribute to functional limitations[4,35,36].

The domain physical role functioning had the lowest Q1 value in the present study. It assesses how physical health affects domestic or professional activities. Restrictions imposed by the treatment lead to several changes in the lives of patients, limiting their activities. It is necessary to adopt a new diet, there are water restrictions, inclusion of new medications, routine exams, consultations and then hemodialysis itself. The new routine leads to changes in workload and type of work and may require temporary leave or even disability retirement. There are also the complications of treatment, such as nausea, vomiting, headache, hypotension, and cramps. Patients develop physical limitations and can not engage in vigorous activities, weightlifting, sports, domestic activities and even walking[28].

There were positive results in the domains social role functioning and emotional role functioning. Maximum median and Q3 values were obtained in both. These domains are closely associated with each other, as social relationships are paramount to emotional health, and changes at the emotional level can affect socialization. Therefore, patients with greater emotional well-being tend to report less impact on their social activities[22].

In agreement with a study by Fukuhara et al.[37], which analyzed the quality of life of hemodialysis patients

on three continents, in the USA, Japan and European countries, the domain social role functioning had the highest score. This domain demonstrates how physical and emotional conditions affect the individual's social activities[17]. Brazilian studies similar to this one, such as the studies by Barbosa et al.[38] and Oliveira et al.[22], also found that the domain social role functioning had the highest means.

The emotional role functioning domain analyzes how the emotional state interferes with domestic or professional activities[17]. The high score obtained in this domain is in disagreement with international studies, such as the studies by Fukuhara et al.[37], Zhou et al.[2], Trajceska et al.[37] and other national studies. Oliveira et al.[22] analyzed the quality of life of patients with chronic renal failure undergoing hemodialysis in Montes Claros-MG using the SF-36 scale and found that the emotional role functioning domain had the second worst mean. Other Brazilian studies, such as a study by Martins et al.[9], Silveira[27], also demonstrated results similar to Oliveira regarding impaired emotional functioning.

CONCLUSION

Patients with end-stage renal disease undergoing hemodialysis had overall reduced quality of life, especially in the SF-36 domains physical functioning and general health perceptions. The domains with the highest means were social and emotional role functioning. In other words, the mental health aspect of QOL was maintained, while functional aspects were significantly impaired.

It is evident that CKD negatively affects QOL and vital functions and imposes physical and psychological restrictions. Therefore, in the search for quality care, it is essential that health professionals recognize the particularities of the QOL of this population, seeking to provide a humane care in their work.

The limitations of this study are related to the small sample size and the use of a single assessment instrument. Thus, studies similar to this should be carried out with a larger sample and different quality of life screening instruments.

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