Epidemiological profile of chronic renal...



## ORIGINAL ARTICLE

EPIDEMIOLOGICAL PROFILE OF CHRONIC RENAL PATIENTS IN TREATMENT PERFIL EPIDEMIOLÓGICO DE PACIENTES RENAIS CRÔNICOS EM TRATAMENTO PERFIL EPIDEMIOLÓGICO DE PACIENTES RENALES CRÓNICOS EN TRATAMIENTO HEMODIÁLICO Karlene Kristina dos Santos<sup>1</sup>, Thabata Coaglio Lucas<sup>2</sup>, José Cristiano Ramos Glória<sup>3</sup>, Assis do Carmo Pereira Júnior<sup>4</sup>, Gabriela de Cássia Ribeiro<sup>5</sup>, Maristela Oliveira Lara<sup>6</sup>

Objective: to analyze the epidemiological profile of patients with chronic renal disease from the hemodialysis service of a health macro-region. Method: a quantitative, cross-sectional and descriptive study with patients with chronic kidney disease (CKD). Data were collected by means of a questionnaire and consultation of medical records, with a sample composed by 73 individuals. A database was prepared in the SPSS Program, version 17.0, and analyzes were carried out from descriptive statistics. The chi-square test was used to test the significance of the association between the variables of greater relevance for the study, adopting the level of 5% for significance. Results: male patients predominated (74.0%), mean income of two minimum wages and mean age of 49 years. The predominant baseline diagnosis was of indeterminate cause (35.6%) and 65.8% of the patients in the sample were hypertensive. Conclusion: the data identified for the occurrence of CKD can be prevented, mainly in primary health care. Therefore, the important and constant role of Primary Care in the promotion of health to individuals prone to CKD is highlighted, as early detection of renal failure and correct referral. Descriptors: Chronic Renal Insufficiency; Epidemiology; Health Profile; Dialysis; Chronic Renal Failure; Renal Dialysis.

Objetivo: analisar o perfil epidemiológico dos pacientes com doença renal crônica do serviço de hemodiálise de uma macrorregião de saúde. Método: estudo quantitativo, transversal e descritivo realizado com os usuários portadores de doença renal crônica (DRC). Procedeu-se à coleta de dados por meio de um questionário e consulta aos prontuários, com amostra composta por 73 indivíduos. Elaborou-se um banco de dados no Programa SPSS, versão 17.0, e realizaram-se as análises a partir de estatísticas descritivas. Utilizouse o teste quiquadrado para testar a significância da associação entre as variáveis de maior relevância para o estudo, sendo adotado o nível de 5% para a significância. Resultados: predominaram pacientes homens (74,0%), renda média de dois salários mínimos e média de idade de 49 anos. O diagnóstico de base predominante foi de causa indeterminada (35,6%) e 65,8% dos pacientes da amostra eram hipertensos. Conclusão: os dados identificados para a ocorrência de DRC podem ser prevenidos, principalmente no âmbito da atenção primária em saúde. Portanto, destaca-se o importante e constante papel da Atenção Primária na promoção da saúde a indivíduos propensos ao quadro de DRC ao detectar, precocemente, a insuficiência renal e proceder com o encaminhamento correto. Descritores: Insuficiência Renal Crônica; Epidemiologia; Perfil de Saúde; Diálise; Falência Renal Crônica; Diálise Renal.

Objetivo: analizar el perfil epidemiológico de los pacientes con enfermedad renal crónica del servicio de hemodiálisis de una macroregión de salud. *Método*: estudio cuantitativo, transversal y descriptivo realizado con los usuarios portadores de enfermedad renal crónica (DRC). Se procedió a la recolección de datos por medio de un cuestionario y consulta a los prontuarios, con muestra compuesta por 73 individuos. Se elaboró un banco de datos en el Programa SPSS, versión 17.0, y se realizaron los análisis a partir de estadísticas descriptivas. Se utilizó la prueba chi cuadrada para probar la significancia de la asociación entre las variables de mayor relevancia para el estudio, siendo adoptado el nivel del 5% para la significancia. Resultados: predominaron pacientes varones (74,0%), renta media de dos salarios mínimos y media de edad de 49 años. El diagnóstico de base predominante fue de causa indeterminada (35,6%) y el 65,8% de los pacientes de la muestra eran hipertensos. Conclusión: los datos identificados para la ocurrencia de DRC pueden ser prevenidos, principalmente en el ámbito de la atención primaria en salud. Por lo tanto, se destaca el importante y constante papel de la Atención Primaria en la promoción de la salud a individuos propensos al cuadro de DRC al detectar, precozmente, la insuficiencia renal y proceder con el encaminamiento correcto. Descriptores: Insuficiencia Renal Crónica; Epidemiología; Perfil de Salud; Diálisis; Fallo Renal Crónico; Diálisis Renal.

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#### INTRODUCTION

Changes in the morbidity and mortality rates of the world population have been observed over time, evidencing an increase in chronic degenerative diseases and projecting chronic kidney disease (CKD) in the world scenario as one of the major challenges for public health planning.<sup>1-3</sup> This disease affects more than 10% of the population of many countries in the world.<sup>4</sup>

Estimates of the existence in the year 2006 of about 1.75 million individuals with CKD have been described in Brazil, and in 2009 this estimate surpassed 400 people per million inhabitants in the population.<sup>5</sup> The stage end of CKD is called chronic renal failure and requires renal replacement therapy for patient survival,<sup>3</sup> with hemodialysis being the predominant modality in Brazil.<sup>6</sup> The total estimated number of chronic dialysis patients in the country in 2014 was 112,004.

This number represents an increase of more than 20,000 patients in four years.7 In the last national census of dialysis centers,<sup>7</sup> were identified in Brazil, that the most frequent CKD diagnoses arterial are hipertension (35%),diabetes (29%),glomerulonephritis (11%) and polycystic kidneys, with 4%. It is opportune that individuals with some of these clinical pictures be warned about the control of diseases with regard to the hypersodium diet; hyperproteic diet; arterial hypertension; sedentary lifestyle; obesity; smoke; anemia; elevated serum cholesterol / triglyceride levels; hyperglycemia; elevated serum uric non-administration levels and angiotensin converting enzyme inhibitors.2

It is based on the ideal treatment of CKD, respectively, in the early diagnosis of the disease. the immediate referral for nephrological treatment and the implementation of measures to preserve renal Thus, the onset of common complications of the disease will possibly be delayed with increased survival and improved quality of life. However, in the country, attention focused on renal disease is practically focused at its most advanced patient when the needs stage, replacement therapy.8

It is known that the comorbidities of chronic renal patients undergoing dialysis treatment are related to cardiovascular diseases, systemic arterial hypertension, susceptibility to infection and neoplasias. <sup>4</sup> A study was carried out <sup>9</sup> in 25 municipalities of Paraná in which the cardiovascular cause contributed more than 50% of patient deaths

Epidemiological profile of chronic renal...

in dialysis programs. Other causes described include sepsis, neoplasias and malnutrition, in addition to those without definite cause, called indeterminate. In this sense, a study, 10 that evaluated the clinical trials of risk mortality in chronic renal failure, describes that chronic renal patients directed late to the specific treatment of nephrology have a higher mortality rate. Still, according to the same study mentioned above, mortality is higher during the first three months of dialysis. Subsequently, the annual mortality on dialysis remains around five to 27% of those involved.

It is revealed that both the diseases that cause CKD and those that progress concomitantly can cause important physical, emotional and social disabilities for the patients affected. Furthermore, the presence of comorbidities together with the need for a continuous treatment over a long period and often in old age, directly influences patients' quality of life in renal replacement therapy.<sup>11</sup>

Among hemodialysis, dialysis therapies were the most frequent, 10 corresponding to 90.6% of the cases. Therefore, the knowledge of the epidemiological data of chronic renal patients hemodialysis treatment indispensable, since it directs the promotion of health to individuals prone to CKD and favors the control of comorbidities with consequent reduction of the mortality rate of these patients and improvement in the quality of life. In addition, the care of patients with chronic kidney disease entails high costs to the health system due to the complexity of the therapeutic resources needed. 12

### **OBJECTIVE**

• To analyze the epidemiological profile of patients with chronic renal disease from the hemodialysis service of a health macro-region.

## **METHOD**

This is a quantitative, cross-sectional, descriptive study performed at the only hemodialysis reference service in the Diamantina, Minas Gerais macroregion, for patients with CKD.

As criteria for the research, chronic kidney disease, chronic hemodialysis, and agreeing to participate in the study were included as criteria for exclusion, as well as having a mental disability and physical disability of deafness and / or dumbness.

A questionnaire was prepared for the collection of data, with sociodemographic and disease questions, which served as a script for interviewing and documentary analysis

through the records of this clientele. Sociodemographic variables (age, education, race, marital status, economic status) related to life habits (alcoholism, smoking, physical activity), basic disease for CKD and comorbidities were investigated.

A pilot test was conducted with eight individuals to verify the viability of the variables. The total clientele is comprised of 82 patients, 80 of whom were included in the established criteria. However, three refused and four were unable to participate due to intensive care unit admission. The sample of this research therefore totaled 73 patients with CKD.

The questionnaire was applied, preferably at the beginning of the hemodialysis session, to avoid discomfort to the patient or even to cause disorders in the dynamics of the sector. This was completed in writing by the researcher. The subject was invited to participate in the research after the explanation of the objectives and the signing of the Informed Consent Form by the interviewee.

Epidemiological profile of chronic renal...

A database was developed in the Statiscal Package for Social Sciences Program (SPSS), version 17.0. Analyzes were performed from descriptive statistics and Pearson's chi-square test was used to test the significance of the association between the variables of greatest relevance for the study, and the level of 5% was adopted for statistical significance.

The research project was approved by the Research Ethics Committee of the Federal University of the Jequitinhonha and Mucuri Valleys (UFVJM) under protocol no. 067/12 and this was carried out in accordance with Resolution 466/2012 of the National Health Council for research on human beings.

#### **RESULTS**

It was found that the age ranged from 16 to 84 years, with a mean and median age of 49 years, and the sample was grouped in age groups similar to those used by the Brazilian Dialysis Census, as shown in table 1.

Table 1. Distribution of sociodemographic characteristics of hemodialysis patients in the Diamantina macro-region. Diamantina (MG), Brazil. 2018.

Brazil, 2018.		
Variables	n	%
Sex		
Male	54	74.0
Female	19	26.0
Age group		
Under 18 years	1	1.4
Between 18 and 64 years	59	80.8
Between 65 and 80 years	12	16.4
Greater than 80 years	1	1.4
Color (self-reffered)		
White	11	15.1
Black	21	28.8
Yellow	2	2.7
Brown	39	53.4
Education		
Illiterate	8	11.0
Basic education	29	40.0
Elementary School	21	29.0
High school	14	19.0
Complete Higher Education	1	1.0
Conjugal State		
Never got married	21	28.8
Lives with a partner or spouse	39	53.4
Widowed	8	11.0
Separated	5	6.8
Economic profile		
Retired	14	19.2
Retirement for Disability	34	46.6

It is reported, with respect to naturalness, that almost all (91.9%) were from the State of Minas Gerais and 8.1% from other States, in the case of Bahia, São Paulo and Rio de Janeiro. Regarding the place of residence, 80.8% of the interviewees lived in the urban

It is inferred that the average family income of the patients was two minimum wages, and 67.1% of these families received equal or less than two wages and 37.0% of the patients declared to be the only member of the family to have income.

The patients' continuous hemodialysis time was varied from one month to 152 months (approximately 13 years), with the majority (43.1%) being between two and four years.

Alcoholic beverage use, smoking and physical activity were investigated, and 9.6% of the patients drank, ranging from one to seven times a week, and 54.9% were exdrinkers. It was identified that 21.9% were smokers and 32.9%, former smokers. In addition, 45.2% of the patients said they practiced some type of physical exercise.

It was observed that in medical follow-up before hemodialysis, 60.3% said that they did. Of these, 47.8% stated that they did it on a monthly basis; 18.2%, quarterly; 11.3%, semiannually and 22.7% annually.

Diagnoses of the underlying diseases of the patients of the study were analyzed, and the majority (35.6%), were of indeterminate cause. Diabetes mellitus had the second highest prevalence, with 19.2%, followed by arterial hypertension, with 15.1%, failure or rejection, with 13.7%, graft glomerulonephritis, representing 2.7%, and other causes, with 13.7%. Baseline diseases classified as "other" included lupus, renal tuberculosis, unspecified obstructive uropathy, and botulism.

It is revealed that only 31.5% of patients knew their underlying disease before hemodialysis. Of these, 60.9% considered that they were correctly treated for the underlying disease and 39.0% stated that they did not do it correctly. Still, for these same patients, 56.5% said that it was diagnosed more than five years before the diagnosis of CKD; 13.0%, from one to five years before and 30.5%, less than six months before the hemodialysis treatment.

In view of the identified comorbidities, hypertension was observed in 65.8% of the patients, in addition to diabetes mellitus, diagnosed in 64.4% of the patients analyzed. In addition, 12.3% of the chronic kidney patients studied were diagnosed of one or

Epidemiological profile of chronic renal...

more cardiovascular diseases, among other comorbidities. Still, of the 73 individuals in the study, 19 (26.0%) had diabetes mellitus and associated hypertension.

With the study, 66 (90.4%) evaluated patients used medication to treat anemia (recombinant human erythropoietin). It was also verified that 71.20% of the patients started dialytic treatment per catheter. However, at the time of this study, of the 73 patients interviewed, 70 had vascular access for arteriovenous fistula, two for catheters and one for vascular prosthesis.

Among the associations of baseline diagnosis, sociodemographic data and comorbidities tested, no association tested was statistically significant: level of schooling and baseline disease p=0.634, level of schooling and presence of nutritional risk p=0.427 and age and presence of hypertension as comorbidity p=0.366.

#### DISCUSSION

As for the identification data, this study was similar to other studies<sup>1-3;13-16</sup> in which males represent the largest number in CKD patients on hemodialysis. Resistance to seeking health care is still more common among men, making them more vulnerable to complications and making it difficult to insert into the renal transplant program.<sup>15-7</sup> Most of the interviewees live with a partner and the predominance of the black race, which is a national profile.<sup>14</sup> There are controversies between studies on Afro-descendants being especially vulnerable to diseases.<sup>1,16,18-9</sup>

It is considered, in relation to the age group, that the Brazilian chronic dialysis survey highlights the ages ranging from 13 to 18 years (0.7%), 19 to 64 years (66.4%), 65 to 80 (27, 9%) and over 80 years (4.6%). <sup>7</sup> Most begin treatment at a productive age, <sup>3.17</sup> but the elderly group is the one that has increased the incidence of chronic kidney disease, <sup>12</sup> as evidenced in a study<sup>20</sup> in which 54.3% were in the age group between 60 and 70 years, with a mean age of 70.2 years of age, which proves that the prevalence of the disease increases with age.<sup>4</sup>

The contribution of these two factors to the development of CKD has been pointed out in studies carried out in Brazil regarding the socioeconomic educational and level, emphasizing that socially more favored financial strata seek more for prevention services and routine exams, that in the strata poorer income, there is representativeness for seeking health services due to illness.1 Poverty increases the risk of

diseases that predispose to the development of chronic kidney disease and worsens outcomes in people who already have the disease. The high number of retirees due to disability or receiving sickness benefits in this study is worrisome. In addition, conditions such as illiteracy make it difficult for patients to understand guidelines and adherence to treatment-related care. 13,16-7

It is verified that a great part of the individuals interviewed reported not doing medical follow-up before the hemodialysis treatment. Therefore, it is confirmed that these patients do not perform routine exams prior to the diagnosis of CKD and possible late nephrological targeting. It is known that the latter contributes to the increased morbidity and mortality of patients with CKD who undergo hemodialysis.8 The majority of patients in this study have been undergoing renal replacement therapy for four years. Hemodialysis interferes with daily activities, causes limitations and causes various physical and emotional changes both in the patient and in the family. 17,21

It is possible to perceive, in view of the habits of life found in the patients of this study, that the great majority does not smoke, nor does it consume alcohol, important conditions for the success of the treatment. However, sedentary lifestyle still prevails, however, lack of physical activity is compatible with the low tolerance to exercise generated by the conditions of kidney disease. These habits are related to risks for basic diseases of CKI, such as hypertension and diabetes. These

It is emphasized, as for the basic diagnoses, that those identified in this study, as an indeterminate cause, diabetes mellitus and arterial hypertension, confirm the national profile.3 Epidemiological study, 18 carried out in a reference hospital in Cameroon, highlights the increase in cases of CKD driven by aging populations and by the increased prevalence of diabetes mellitus and hypertension.

It is added that diabetes mellitus is the most frequent cause of chronic kidney disease in the world and is already the second most common etiology among dialysis patients in Brazil.<sup>2</sup> It is worth mentioning that diabetics are at increased risk for cardiovascular events.<sup>2,4-5</sup>

It is noted that the large percentage of undetermined cause for CKD found in this study, in addition to being related to non-medical follow-up prior to hemodialysis, may be due to the presence of several comorbidities in the same patient. An

Epidemiological profile of chronic renal...

indication that corroborates this possibility is the associated presence of comorbid diabetes mellitus and hypertension in 26.0% of the patients. The measurement of proteinuria in hypertensive and / or diabetic patients as a prognostic marker of decreased renal function is very important. Mortality in the population of patients with chronic kidney disease who undergo dialysis is high and the main causes and cerebrovascular cardiovascular<sup>19</sup> diseases, totaling more than 40%.14 Impaired function and albuminuria cardiovascular risk factors regardless of the presence of hypertension and diabetes mellitus.<sup>22</sup>

The results of the questions that indicated if the patient considered that the correct treatment of the underlying disease was done and how long it was diagnosed was analyzed, and it was verified that 68.5% of the patients did not apply in such questions, or because they did not know his underlying disease, or because his underlying disease had no definite cause. This lack of knowledge about the underlying disease of patients shows an important limitation of primary health care. In the early stages of CKD, the absence of symptoms prevails, which requires adequate level of suspicion, especially those patients with clinical or sociodemographic risk factors for the disease.8 Certainly, by regularly monitoring patients in this field of action, the health team has the opportunity to sensitize them about their illness as a way to increase adherence to treatment and prevent possible future complications.23

The use of erythropoietin agents in a study on the use of high-cost drugs in Brazil has shown that the replacement of this hormone was the most used in the treatment of anemia and reinforces its impact on the reduction of mortality in patients with carrier of chronic kidney disease.<sup>6</sup> The prevalence of iron deficiency is very common in patients with CKD, around 50%, and therefore, along with the relative deficiency of erythropoietin, is the main cause of anemia in patients with CKD.<sup>24</sup>

It is highlighted in the literature, regarding the initiation of dialysis by catheter, the benefit for the patient undergoing dialysis treatment for reduced hospital stay after dialysis, better control of blood pressure and less acute pulmonary edema when starting dialysis with permanent vascular access. <sup>21</sup> However, this study presented indices considered high since patients who begin hemodialysis treatment due to arteriovenous fistula have lower morbidity. This shows that

most chronic renal patients are a late reference, since dialysis was started in an emergency scheme, which is an impact factor in their survival.<sup>12</sup>

This study was limited by the small number of the sample, which probably justifies the non-significance of variables considered relevant in the analytical test. However, this service is the only reference for patients requiring hemodialysis of the macro-region corresponding to twenty-two municipalities in the state of Minas Gerais. Thus, through the descriptive analysis, it can be inferred that the described profile of these patients reveals a scenario for several actions of CKD prevention and the need for early diagnosis of the patients.

It was intended, through this study, to seek information for the planning of a prevention directed to CKD and the promotion of health. These initiatives are extremely valuable for Primary Care for the screening of risk groups and for combating the triggering factors, as well as the use of appropriate therapies for slowing the progression of the disease that can reduce patients' suffering and the financial costs of the system with this problem.

## CONCLUSION

It is concluded that the data concerning the percentage of the age range between 18 64 years old, the prevalence of undetermined cause for CKD, the lack of knowledge of the patients in relation to the underlying disease and the high index of the use of catheters as initial vascular access for dialysis treatment identified in patients from the Diamantina-MG macro region. This is because it is a question of preventable problems, which may indicate deficiencies in the Health System of the entire macro-region of health, mainly Primary Health Care. Thus, the contribution of this study is evidenced, since it allows describing the epidemiological profile of renal patient's chronic diseases in a hemosiderin treatment of a macro region composed of twenty-two municipalities.

Finally, the need to encourage the population to seek health services for routine exams is revealed, not only in cases of emergencies. In addition, the important and constant role of Primary Care in the promotion of health to individuals prone to CKD is highlighted, as they detect early renal failure and proceed with correct referral.

Epidemiological profile of chronic renal...

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Epidemiological profile of chronic renal...

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