



EPIDEMIOLOGICAL PROFILE OF CHRONIC KIDNEY PATIENTS ON DIALYSIS PROGRAM

PERFIL EPIDEMIOLÓGICO DE PACIENTES RENAI CRÔNICOS EM PROGRAMA DIALÍTICO PERFIL EPIDEMIOLÓGICO DE LOS PACIENTES RENALES CRÓNICOS EN PROGRAMA DE DIÁLISIS

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ABSTRACT

Objective: characterizing the clinical and epidemiological profile of chronic renal failure patients on hemodialysis. **Methods:** this is a cross-sectional and epidemiological study in two dialysis centers in Imperatriz/Maranhão/Northeast of Brazil, with a questionnaire to characterize the socioeconomic, clinical and anthropometric data. The data were analyzed according to Bioestat program version 5.0. This study was approved by the Ethics Research Committee, Protocol 004552/2010-70. **Results:** 69% male, 45% aged 41-60, 47% dark skin, 60% married, 75% with 1-2 minimum wages, and 45% illiterate or with incomplete primary education, 96 % were using arteriovenous fistula, 83% were hypertensive. Hematocrit of $31,9 \pm 5,0$, hemoglobin $10,5 \pm 1$, $8,9 \pm 1,0$ calcium, phosphorus $4,5 \pm 1,6$, $9,9 \pm 3,8$ and creatinine. **Conclusion:** socioeconomic, clinical and laboratory factors associated with renal dysfunction contributes to morbidity and mortality of patients showing the need to reduce aggravating the disease in order to improve the quality of life. **Descriptors:** Health Profile; Dialysis; Morbidity; Chronic Renal Failure.

RESUMO

Objetivo: caracterizar o perfil clínico e epidemiológico de pacientes renais crônicos em tratamento hemodialítico. **Método:** estudo transversal, epidemiológico realizado em dois centros de diálise em Imperatriz/MA/Nordeste do Brasil, com um questionário para caracterização de dados socioeconômicos, clínicos e antropométricos. Os dados foram analisados segundo o programa Bioestat versão 5.0. Este estudo foi aprovado pelo Comitê de Ética e Pesquisa, Protocolo 004552/2010-70. **Resultados:** 69% homens, 45% com idade entre 41-60 anos, 47% pardos, 60% casados, 75% ganhando de 1 a 2 salários mínimos; 45% analfabetos ou com ensino básico incompleto, 96% usavam fístula arteriovenosa, 83% eram hipertensos. Hematócrito de $31,9 \pm 5,0$, hemoglobina de $10,5 \pm 1$, cálcio $8,9 \pm 1,0$, fósforo $4,5 \pm 1,6$, e creatinina $9,9 \pm 3,8$. **Conclusão:** fatores socioeconômicos, clínicos e laboratoriais relacionados à disfunção renal contribuem para a morbimortalidade desses pacientes evidenciando a necessidade de reduzir os agravantes da doença visando a melhoria na qualidade de vida. **Descritores:** Perfil de Saúde; Diálise; Morbidade; Insuficiência Renal Crônica.

RESUMEN

Objetivo: caracterizar el perfil clínico y epidemiológico de los pacientes con insuficiencia renal crónica en hemodiálisis. **Métodos:** estudio epidemiológico transversal realizado en dos centros de diálisis en Imperatriz/Maranhão/Noreste de Brasil, con un cuestionario para caracterizar los datos socioeconómicos, clínicos y antropométricos. Los datos se analizaron de acuerdo con el programa BioEstat versión 5.0. Este estudio fue aprobado por el Comité de Ética en Investigación, el Protocolo 004552/2010-70. **Resultados:** 69% hombres, 45% de entre 41 a 60 años, 47% pardos, 60% casados, 75% con 1-2 salarios mínimos, 45% analfabetos o con estudios primarios incompletos, el 96 % utilizaba la fístula arteriovenosa, el 83% eran hipertensos. El hematocrito de $31,9 \pm 5,0$, hemoglobina $10,5 \pm 1$, $8,9 \pm 1,0$ calcio, fósforo $4,5 \pm 1,6$, y creatinina $9,9 \pm 3,8$. **Conclusión:** los factores socioeconómicos, clínicos y de laboratorio asociados con la disfunción renal contribuyen a la morbilidad y mortalidad de pacientes que muestran la necesidad de reducir agravar la enfermedad con el fin de mejorar la calidad de vida. **Descriptores:** Perfil de Salud; Diálisis; Morbilidad; Insuficiencia Renal Crónica.

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INTRODUCTION

The rates of morbidity and mortality worldwide and in the Brazilian population have changed over time, showed increase in chronic degenerative diseases and projected chronic kidney disease (CKD) on the world stage as a major public health challenges of this century, with all its implications economic and social.¹ the aging population and increasing life expectancy, resulting from demographic transition in recent decades in Brazil, contributed to changes in the morbidity profile and increasing prevalence of chronic diseases, including chronic kidney disease (CKD).²

Socioeconomic factors may influence progression of CKD. Low socioeconomic status may be considered a risk factor for chronic diseases and, for CKD; they may be associated with difficulties in access to health care and inadequate control of diseases such as hypertension diabetes. Social inequalities evidenced by the high degree of poverty and low level of education in the Northeast region and the state of Maranhão specifically, may adversely contribute to the development of CKD.³

Its early detection through screening of risk groups and combat triggers, and the use of appropriate therapies to delay its progression can reduce the suffering of patients and the financial costs associated with CKD. Thus, epidemiological knowledge of CKD contributes to prevent their installation or delay its development.^{5,6} Therefore, define the profile of CKD patients is of paramount importance both for the treatment of those already affected and for the prevention and early diagnosis, which makes this relevant research.

OBJECTIVE

- Characterizing the clinical and epidemiological profile of chronic renal failure patients on hemodialysis.

METHOD

This is a cross-sectional study of epidemiologic character conducted in two dialysis centers located in the city of Imperatriz, Maranhão/Northeast of Brazil, serving the Unified Health System (SUS) and private assistance in the period February to April 2011, being interviewed by instruments containing data classification socioeconomic, lifestyle, and clinical prevalence of hypertension and diabetes mellitus associated with CKD, family history, namely, venous

access, professional who diagnosed the disease and duration of hemodialysis therapy.

There were extracted from data records of biochemical and anthropometric measurements. Among the laboratory tests, were rates of hematocrit, hemoglobin, creatinine, phosphorus, calcium, total cholesterol, HDL, LDL and triglycerides. Were considered normal reference values of hematocrit from 40 to 52% (men) and 35-47 % (women), hemoglobin 12-18 g%, creatinine from 0,9 to 1,3 mg/ dL, phosphorus of 2,5 to 4,8 mg/dL calcium 8,6 to 10,0 mg/dL, 200mg/dL to total cholesterol, HDL $\geq$ 60mg/dL, LDL<130mg/dL and 150mg/dL to triglycerides. The values adopted were removed from the Clinical Protocols for Laboratory Tests of the State Department of Health of Minas Gerais; these based on the RDC/ANVISA nº 302, October 13, 2005, which regulates the technique to the operation of laboratories clinicians. It is noteworthy that the values of total and fractionated cholesterol (HDL and LDL) and triglycerides contained in these protocols were based on the IV Brazilian Guidelines on Dyslipidemia of the Brazilian Society of Cardiology, 2007.⁷

In the anthropometric data was harvested weight and height to calculate BMI, which were measured on an electronic anthropometric scale (Welmy w200/5 class III) for adults, calibrated, with the patient standing. The body mass index was classified according to the World Health Organization: underweight (<18,5kg/m²), normal weight (18,5-24,99kg/m²), overweight (>25 kg/m²), obese (>30kg/m²), morbidly obese (>40kg/m²).⁸

About the criteria for inclusion, patients were selected who were at least 3 months on hemodialysis - to be considered according to the Chronic Kidney Disease Kidney Disease Outcomes Quality Initiative, of both sexes, aged $\geq$ 18 years, enrolled in the program both dialysis clinics. Patients who were not in physical condition to participate in the study were excluded, those who refused to participate and patients with Acute Renal Failure.

For statistical analysis and tabulation of the data, the Bioestat program version 5.0 was used. Quantitative variables were expressed as mean (M) and Standard Deviation (SD), and qualitative as absolute and percentage frequency.

The research project was approved by the Research Ethics Committee of the University Hospital of the Federal University of Maranhão, under protocol number 004552/2010-70. Patients who agreed to

participate in the study signed an informed consent, following ethical principles and the Resolution of the National Research Council 196/96.⁹

RESULTS

The results showed that of the 233 patients interviewed, 161 (69%) were male and 72 (31%) females, 106 (45%) were aged 41-60 and

73 (32%) patients were older than 60 years old.

Regarding self-reported color, 109 (47%) claiming to be brown, 66 (28%), white. Most patients interviewed reported being married; receive between one and two minimum wages (60%). On the issue of education, 96 (41%) were illiterate or had incomplete primary education, followed by 58 (25%) with complete primary education (Table 1).

Table 1. Population distribution of participants according to epidemiological variables. Imperatriz-MA, 2011.

Variable	n	%
Gender		
Male	161	69%
Female	72	31%
Age		
18-40	54	23%
41-60	106	45%
Older than 60	73	32%
Color		
White	66	28%
Black	54	23%
Brown	109	47%
Yellow	2	1%
Indian	2	1%
Marital status		
Single	40	17%
Married	139	60%
Widower	15	6%
Separated	19	8%
Other	20	9%

According to the habits of life, 114 (49%) of the participants were non-smokers, 98 (42%) had stopped smoking and 21 (9%) were smokers. Regarding alcohol consumption, 118 (51%) were not alcoholics, 100 (43%) had stopped and 15 (6%) consumed alcohol. In relation to physical, 175 (75%) reported that the activity does not practice any type of exercise.

In relation to clinical findings, 193 (83%) had hypertension and 58 (25%) had diabetes. About family, history 134 (57%), 95 (41%) and 44 (19%) reported a history of Hypertension, Diabetes Mellitus and Chronic Kidney Disease respectively.

Regarding the professional who diagnosed the disease, 135 (58%) of the diagnoses were made by a nephrologist and the other 42% by physicians of other specialties. The predominant type of venous access was arteriovenous fistula (AVF), including 223 (96%) of cases, but 8 (3%) still make use of the double-lumen catheter (DLC) after three months of therapy.

Anthropometric data were represented by BMI calculation which, according to criteria of the World Health Organization observed the dominance of eutrophic in 125 (53%) cases, in 66 overweight (28%), and 25 (11%) were weight below (Table 2).

Table 2. Distribution of participants according to anthropometric and clinical data. Imperatriz, MA, 2011.

Variable	n	%
Arterial Hypertension		
Yes	193	83%
No	40	17%
Diabetes Mellitus		
Yes	58	25%
No	175	75%
Professional who		
diagnosed	135	58%
Nephrologist	98	42%
Endocrinologist	-	-
Clinical and other		
Type of venous access	223	96%
FAV*	8	3%
CDL**	-	-
Permicath	2	1%
Prosthesis		
IMC	25	11%
Underweight	125	53%
Normal weight	66	28%
Overweight	10	5%
Obese	7	3%
Morbidly obese		

Regarding laboratory tests, serum creatinine showed up above the normal parameters, averaging 9,9±3,8 mg/dl and the amounts of calcium and phosphorus showed a mean of 8,9 ± 1.0 and 4,5± 1,6, respectively. The mean and standard deviation of hemodialysis therapy in years was 4,4 ± 4,2 (Table 3).

Table 3. Distribution of participants according to laboratory tests and therapy time. Imperatriz, MA, 2011.

Variable	Average ± Standard Deviation
Hematocrit (%)	31,9±5,0
Hemoglobin (g/dL)	10,5±1,5
HDL (mg/dL)	38,6±20,8
LDL (mg/dL)	72,0±26,9
Triglycerides (mg/dL)	174,2±131,7
Total Cholesterol (mg/dL)	149,5±65,4
Calcium (mg/dL)	8,9±1.0
Phosphorus (mg/dL)	4,5±1.6
Creatinine (mg/dL)	9,9±3,8
Therapy time (years)	4,4±4,2

DISCUSSION

The proportion of respondents was almost two men for every woman, no different from the results found in Brazil and Maranhão, which show the prevalence of the disease in males.⁸ Another fact found correspondence in the United States⁹ and in Latin America, where 40% of incident dialysis patients in the program older than 65.¹⁰

The self-reported color matches with the reality of the Northeast and with Brazilian miscegenation. A similar study showed that 46,7% of individuals were brown.¹¹ It is difficult, therefore, to verify the influence of racial factors in renal disease. There is no conclusive evidence that Afro-descendants and other Brazilian ethnic minorities are particularly vulnerable to kidney disease.¹²

Regarding the classification of goods it was found that much of the population has low socioeconomic index, with monthly income between 1 and 2 minimum wages, with 8% of those are in the E class and have an income below the minimum wage 1 month. Studies in

Maranhão and Brazil also show low socioeconomic index among chronic kidney disease patients. 3.10 The low purchasing power associated with the absence of the minimum necessary instruction entails unfavorable living conditions and contribute to the difficulty of understanding and adherence to treatment of the disease. This may be related to increased morbidity and mortality among these people.¹⁰

On the issue of lifestyle, most patients on hemodialysis do not have the habit of smoking and not drink alcoholic beverages, essential conditions for effective treatment. Physical activity was compatible with the health situation, since hemodialysis patients show little tolerance to exercise and have no physical condition due to debilitating conditions generated by kidney disease.¹³

Hypertension is a leading risk factors for CKD accounting for 40% of its origin for patients in Brazil.⁴ is a modifiable risk factor which appropriate treatment can not only significantly reduce cardiovascular mortality, but also the rate of progression of CKD.¹⁴

The vast majority of respondents reported a history of Hypertension, Diabetes Mellitus and Chronic Kidney Disease in the family environment. Studies in the United States, Mexico, Australia and Japan, showed that the presence of hypertension, diabetes mellitus, or family history of kidney disease are risk factors for developing kidney disease. People who fall into one or more of these features should be tracked and made aware, for the promotion of health and prevention of chronic kidney disease.¹⁵⁻⁸

Regarding the professional who diagnosed the disease, more than half of the diagnoses were made by a nephrologist, which may have occurred later due to the fact that 3% of the participants, having even been diagnosed as chronic, were using venous catheter temporary. These problems were also found in other studies.^{19,20}

It was observed that there is an association between lower socioeconomic and late referral to a nephrologist²¹, which contributes to higher mortality.^{22,23} A study comparing patients monitored with a nephrologist before initiation of dialysis with others without accompaniment and observed that the supervised group showed better metabolic control, shorter hospitalization and a higher percentage of cases with permanent vascular access at the start of dialysis. In addition, patients referred early to a nephrologist had better survival rates in the short and long term.²⁴ Thus, the higher morbidity and mortality appear to be related to worse clinical and metabolic conditions that patients referred late show at the start of hemodialysis.²⁵

Regarding the results of biochemical tests observed reduction in renal function with decreased levels of hematocrit and hemoglobin, and abnormal metabolism of calcium and phosphorus. With this, 89% of participants had become anemic, because their levels of hematocrit and hemoglobin levels were below the reference values for each sex. This condition directly influences the lives of these people, making it difficult to perform tasks of daily living due to the debilitating condition caused by the association of anemia with chronic kidney disease.

The Kidney Disease Outcomes Quality Initiative (KDOQI) recommended that Hemoglobin in CRF patients on erythropoiesis stimulators should be kept between 11 and 12 g/dL, which was not observed in this study, which remained below those values.²⁸ Thus, 89% of participants showed up anemic, starting from the point that your hematocrit

and hemoglobin levels were below the reference values for each gender. This condition directly influences the life of the patient, making it difficult to perform the same tasks of daily living due to the debilitating condition caused by the association of anemia with chronic kidney disease.

The serum creatinine is a test widely used by laboratories to be a simple and inexpensive technique. Same levels are directly affected by factors that are not directly linked to glomerular filtration, these being product of generation, secretion and excretion extra-renal²⁹. Thus, the rise in values may indicate large decrease in renal function. However to obtain a more accurate result of glomerular filtration rate, these levels are analyzed by comparing the results of other laboratory tests. The change in creatinine found along with the results of other tests, showed the terminal of respondents' chronic character.

The mean values of calcium and phosphorus showed that 44% of respondents met with hyperphosphatemia and hypocalcemia with 17%. Individuals with less than 25 ml/min TGF are common alterations in the metabolism of calcium and phosphorus, which can influence the rate of progression of CKD, and thus has an important role in the morbidity and mortality of patients.^{4,26}

The levels of total cholesterol, HDL, LDL and triglycerides were within the reference range, showing no significant changes. However, maintaining controlled cases of hyperlipidemia that appear in association with CKD is of paramount importance, considering that this control contributes to correct or mitigate cardiovascular diseases often associated⁴, since 83% of respondents are hypertensive, as shown above.

The mean and standard deviation of hemodialysis therapy in years performed high, compared to other studies in Maranhão and Brazil.^{10,13} Similar studies report that the impact of the disease has implications for its vitality, which rescues the need investment in the quality of life of individuals through the implementation of adaptation strategies should value their autonomy, encourage their social relationships, promote self-care and their physical and mental health.³⁰

CONCLUSION

The study population was characterized mostly by adult men (aged 41-60 years old), of brown color, married, with low level of education, monthly income 1-2 minimum wages, hypertension and diabetes.

Regarding laboratory tests, hematocrit and hemoglobin were presented changed, averaging below the reference values, calcium and phosphorus were shown to be at normal levels, but the number of patients with hypocalcemia and hyperphosphatemia was significant.

Serum creatinine shows the character of terminal chronic kidney disease, with an average above normal parameters. This study contributed with information about this region for comparison between other Brazilian regions, so that the main problems are singled out and that national level interventions can be developed.

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