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SUBSTITUTIVE RENAL THERAPY: SOCIODEMOGRAPHIC AND CLINICAL LABORATORY PROFILE OF PATIENTS FROM A HEMODIALYSIS SERVICE

TERAPIA RENAL SUBSTITUTIVA: PERFIL SOCIODEMOGRÁFICO E CLÍNICO LABORATORIAL DE PACIENTES DE UM SERVIÇO DE HEMODIÁLISE

TERAPIA RENAL SUSTITUTIVA: PERFIL SOCIODEMOGRÁFICO Y CLÍNICO LABORATORIAL DE PACIENTES DE UN SERVICIO DE HEMODIÁLISIS

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ABSTRACT

Objective: to describe the sociodemographic and clinical laboratory profile of patients with chronic renal disease on hemodialysis. **Method:** descriptive study with 102 patients undergoing hemodialysis. Data was collected, through an individual interview, in the hemodialysis service. **Results:** the median age was 59 years; the majority were men (65.7%); married (59.8%) and with income up to one salary (53.9%). The most frequent etiology was hypertension (40.6%), followed by DM (14.9%). The UHS answered 94.1%, the median time of hemodialysis was 36 months and the median use of medication was five. Hematocrit, hemoglobin and HDL are decreased. Already the phosphorus, urea and creatinine, increased. **Conclusion:** a high proportion of men with low income and schooling, hypertension and most laboratory tests out of normality, demonstrating the need for prevention and evaluation of hemodialysis by several markers. **Descriptors:** Renal Dialysis; Renal Insufficiency; Hemodialysis Units, Hospital.

RESUMO

Objetivo: descrever o perfil sociodemográfico e clínico laboratorial de pacientes com Doença Renal Crônica em hemodiálise. **Método:** estudo descritivo com 102 pacientes que realizam hemodiálise. Os dados foram coletados, mediante entrevista individual, no serviço de hemodiálise. **Resultados:** a idade mediana foi de 59 anos; a maioria eram homens (65,7%); casados (59,8%) e com renda de até um salário (53,9%). A etiologia mais frequente foi HAS (40,6%), seguido de DM (14,9%). O SUS atendia 94,1%, o tempo mediano de hemodiálise foi 36 meses e o uso mediano de medicamentos foi cinco. Hematócrito, hemoglobina e HDL encontravam-se diminuídos. Já o fósforo, a ureia e a creatinina, aumentados. **Conclusão:** alta proporção de homens de baixa renda e escolaridade, hipertensa e a maioria dos exames laboratoriais fora do padrão de normalidade, demonstrando a necessidade de prevenção e avaliação da hemodiálise por vários marcadores. **Descritores:** Hemodiálise; Insuficiência Renal Crônica; Unidades hospitalares de hemodiálise.

RESUMEN

Objetivo: describir el perfil sociodemográfico y clínico laboratorial de pacientes con enfermedad renal crónica en hemodiálisis. **Método:** estudio descriptivo con 102 pacientes que realizan hemodiálisis. Los datos fueron recolectados, mediante entrevista individual, en el servicio de hemodiálisis. **Resultados:** la edad mediana fue de 59 años, la mayoría eran hombres (65.7%); casados (59.8%) y con ingresos de hasta un salario (53.9%). La etiología más frecuente fue HAS (40.6%), seguido de DM (14.9%). El SUS atendía el 94.1%, el tiempo promedio de hemodiálisis fue 36 meses y el uso mediano de medicamentos fue cinco. Hematocrito, hemoglobina y HDL se encontraban disminuidos. El fósforo, la urea y la creatinina, aumentados. **Conclusión:** alta proporción de hombres de baja renta y escolaridad, hipertensos y la mayoría de los exámenes de laboratorio fuera del patrón de normalidad, demostrando la necesidad de prevención y evaluación de la hemodiálisis por varios marcadores. **Descriptores:** Diálisis Renal; Insuficiencia Renal Crónica; Unidades de Hemodiálisis en Hospital.

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INTRODUCTION

Population aging accounts for a greater proportion of patients with or at risk of developing chronic kidney disease, and is currently one of the major public health challenges. The great clinical heterogeneity of this population indicates the need for careful multiprofessional attention. Chronological age, alone, will not be sufficient as a basis for clinical decisions and approaches, with concern for comorbidities, functional status and quality of life of this portion of the population. It is worth mentioning that so many professionals, as patients and their families can know the severity of the disease, as well as better know the outcomes, signs and symptoms and, then, propose their treatment plan.^{1,2}

In this sense, Chronic Kidney Disease (CKD) can be defined as a progressive and irreversible deterioration, of renal function because the kidneys are unable to maintain the body's hydroelectrolytic and metabolic balance. CKD can be classified into five stages, in which stage five is characterized as renal failure, in which the individual has severe renal dysfunction and requires renal replacement therapy.²

CKD is a public health problem, with significant increases in incidence and prevalence rates in Brazil and worldwide, being an outcome that presents changes in the quality of life of patients and their families, in addition to causing increased costs for the health system. The magnitude of the CKD process and its treatment are not only due to the clinical manifestations of renal failure, but also the comorbidities and emotional repercussions of the patient.³⁻⁵

The patient with CKD, undergoing hemodialysis treatment presents physical and mental changes and restrictions, besides altering their well-being, compromising their independence and autonomy. In this context, changes in behavior, lifestyle, habits and social relationships are likely to occur. There may also be changes in employment and income issues for the patient and his or her family. Health professionals should know better the profile of the renal patient, improving their care, improving treatment assistance and, consequently, improving their quality of life.^{3,4}

The prevention and evolution of CKD depend on the quality of the health service provided. It is important to identify factors and groups of risks for the diagnosis of CKD, and to understand the causes of the disease, the factors involved, the socioeconomic and

family conditions, and verify the preparation of the health teams for the care that is paramount, as well as the reception And creating links with these patients, make the active search and evaluate the comorbidities.⁶

Demographic and socioeconomic aspects are very important in the progression of CKD and in the maintenance of the life of patients on hemodialysis, because, if these conditions are unfavorable, patients may have a less effective treatment of the disease and worsen their clinical condition. Being another important factor, the clinical picture of the patient is fundamental for a better quality in hemodialysis treatment, making it essential to identify and correct the main complications and comorbidities presented by the patients.⁷

CKD is a problem of great clinical relevance, whose evolution depends on the quality of treatment and care offered to patients on hemodialysis. The evaluation of renal function is fundamental in the diagnosis, approach, follow-up and monitoring of patients on hemodialysis, in the adequacy of medications and in the control of food intake. In this sense, laboratory markers are essential components in the care process and in the decision making on therapeutic behaviors to these patients. This permanent and thorough monitoring, of biochemical markers, is a challenge for professionals working on hemodialysis.

In this sense, the purpose of this study is to describe the sociodemographic and clinical-laboratorial profile of patients undergoing hemodialysis treatment in the northern region of Rio Grande do Sul, Brazil, aiming at subsidies for discussions in the elaboration of new strategies and actions for the knowledge of this topic.

METHOD

This is a descriptive, quantitative study that investigates the clinical-laboratorial and sociodemographic profile of patients undergoing hemodialysis at a referral hospital in a city in the interior of RS (Passo Fundo, RS). Data were collected between March and May of 2016, through an individual interview.

The municipality is located in the northern region of Rio Grande do Sul. It has an area of 780 km² and a population of 184,826 inhabitants.⁸ The data were collected in a referral service of a tertiary teaching hospital with macro-regional coverage, reference for care to a population of approximately two million inhabitants of the north of Rio Grande do Sul, the west of Santa Catarina and part of Paraná, besides other States of the federation. It is integrated into the UHS

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system, with 642 beds. It is a reference of municipalities in the region for hemodialysis services.

To collect data, a structured questionnaire was applied individually, after the hemodialysis session, at a time that changed as little as possible the routine of the patients who participated in the study.

As inclusion criteria, were adopted: being an adult patient; over 18 years; with diagnosis of chronic kidney disease and hemodialysis. And the exclusion criteria were: patients who were diagnosed with infectious conditions; cancer; those hospitalized in hospital beds and those with neurological problems that made it impossible to answer the questionnaire applied, as well as people with visual and auditory deficits.

For the sociodemographic analysis, the following variables were used: age; sex; Self-referenced color (white, black, brown or yellow); Marital status (single, married, divorced or widowed); Profession (autonomous, student or operational); Schooling (primary, secondary, technical or higher); Personal income (up to a minimum wage, one to two wages, three wages, four wages or five wages and more) and religion (catholic, evangelical or other), as well as the practical behavioral variable of physical activity (yes / no).

Regarding the clinical variables, the time of hemodialysis, the etiology of the disease and the presence of morbidities were evaluated: Systemic Arterial Hypertension (SAH); Diabetes Mellitus (DM); hepatitis; Stroke sequelae; cardiovascular diseases; Osteoporosis; Gastrointestinal and respiratory disorders; cancer; (Anti-inflammatory, corticoid, antiarrhythmic, hypoglycemic, hormone, gastric protector, diuretic, hypotensive, anxiolytic, sedatives, antineoplastic, antiallergic, antiparasitic, homeopathic, herbal remedies, vitamins and analgesics).

Regarding the laboratory exams, the hemodialysis routine was requested, and there were no additional costs. Therefore, the following tests were analyzed: Ktv; phosphor; Hematocrit; hemoglobin; C-reactive protein

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(CRP); potassium; sodium; urea; Creatinine; HDL and LDL cholesterol. These data were collected from the electronic medical record where all the information, clinical history, laboratory results and the patient's own evolution are stored. The reference values of the laboratory of the hospital were used. The collection of laboratory tests follows the recommendations of the protocols of chronic renal patients terminal.

For the analysis of categorical variables, absolute, relative frequency and 95% confidence intervals were performed. For the numerical variables, the normality test of Kolmogorov-Smirnov was used and, because they did not present normality, were presented by median, minimum and maximum and percentiles.

The study followed the guidelines of Resolution No. 466/12, of the National Health Council⁹ on the participation of people in research, taking into account the ethical aspects of hospital consent, secrecy and anonymity of the participants. All the participants of the research signed the Term of Free and Informed Consent. The project was approved by the Ethics and Research Committee of the University of Passo Fundo under opinion 158,647.

RESULTS

102 patients, on hemodialysis three times a week, were interviewed. Most were men (65.7), 60-69 years (48%), median age 59 years (P25: 41, P75: 68) and white color (93.1%). They received up to one minimum wage 54% of patients. Regarding physical activity, 38% reported rarely, 32% practiced frequently, 25% never developed any type of physical exercise, and 4% stopped doing it for some reason (Table 1).

Table 1. Sociodemographic profile of the elderly in renal replacement therapy. Passo Fundo (RS), Brazil, 2016

Variables	n (%)	IC _{95%}
Sex		
Male	67 (65.7)	57.5 - 74.9
Female	35 (34.3)	25.1 - 42.5
Marital status		
Not married	24 (23.5)	15.4 - 30.8
Married	61 (59.8)	49.5 - 69.6
Divorced / separated	11 (10.8)	5.5 - 16.1
Widower	6 (5.9)	2.0 - 11.8
Profession		
Self Employed	48 (47.1)	37.1 - 55.7
Student	2 (2.0)	.0 - 4.9
Operational	51 (50.0)	41.4 - 60.0
Education		
Basic level	72 (70.6)	62.4 - 78.8
Middle level	23 (22.5)	16.3 - 30.4
Technical level	3 (2.9)	.0 - 6.9
Higher level	4 (3.9)	.6 - 7.8
Personal income		
Up to 1 salary	55 (53.9)	43.1 - 61.7
From 1 to 2 salaries	30 (29.4)	20.6 - 38.6
3 wages	5 (4.9)	1.0 - 8.8
4 wages	7 (6.9)	2.0 - 12.7
5 wages and more	5 (4.9)	1.0 - 9.2
Self-reported color *		
White	95 (93.1)	88.5 - 97.4
Brown	7 (6.9)	2.6 - 11.5
Religion		
Catholic	87 (85.3)	78.7 - 92.5
Evangelical	13 (12.7)	6.5 - 19.6
Others	2 (2.0)	.0 - 4.9
Home		
Own	97 (95.1)	89.9 - 99.0
Leased / assigned	5 (4.9)	1.0 - 10.2

*There was no self-referenced black and yellow color

The median time of hemodialysis was 36 months (P25: 18 - P75: 84), ranging from three to 180 months. The Unified Health System (UHS) financed 94.1% of the patients and 5.9% had an agreement.

Regarding the etiology of the disease, SAH is the main cause of renal failure (40.6%), followed by DM (14.9%). With regard to morbidities, 63.7% have SAH, 40.2%, cardiovascular diseases and 27.5% DM, representing the highest prevalences (Table 2).

Table 2. Clinical characteristics of patients on hemodialysis treatment, regarding the etiology of chronic kidney disease and morbidities. Passo Fundo (RS), Brazil, 2016

Variables	n (%)	IC _{95%}
Etiology of disease		
Hypertension	41 (40.6)	30.9 - 49.9
Diabetes	15 (14.9)	7.5 - 22.9
HAS + Diabetes	11 (10.9)	5.6 - 16.8
Polycystic kidneys	7 (6.9)	2.0 - 11.3
Lupus	6 (5.9)	1.6 - 11.9
Pyelonephritis	1 (1.0)	0.0 - 3.4
Others	20 (19.8)	12.9 - 30.6
Morbidities		
Hypertension	65 (63.7)	54.5 - 74.9
Cardiovascular diseases	41 (40.2)	31.4 - 51.4
Diabetes Mellitus	28 (27.5)	19.2 - 37.3
Gastrointestinal disorders	25 (24.5)	14.9 - 33.1
Osteoporosis	15 (14.7)	8.4 - 22.9
Respiratory tract infections	8 (7.8)	2.6 - 13.1
Hepatitis	5 (5.0)	1.0 - 9.3
Arthrosis	5 (4.9)	1.0 - 8.8
Cancer	4 (3.9)	0.6 - 8.8
Other morbidity	17 (16.7)	8.8 - 24.9

Regarding medication use, patients reported 17 different classes. The use per person ranged from none to ten, with a median of five medications (P25: 4, P75: 6.25). The most consumed by the patients were: vitamins (97.8%); Hormones (87.3%); Hypotensive agents (66.7%); Diuretics (66.7%) and gastric protector (66.7%). Still, 47.1% use analgesic; 23.5%, hypoglycemic; 16.7%, anxiolytic; 12.7%, antiarrhythmic, 9.8%, anti-

1).

inflammatory; 7.8%, antiparasitic; 5.9%, sedative and less than 5% makes use of antiallergic, corticosteroids and antineoplastic. No patient made use of herbal or homeopathic remedies.

It can be observed in Figure 1 that the majority of patients undergoing hemodialysis had altered laboratory tests, ie hematocrit, hemoglobin and HDL decreased; Increased phosphorus (P), urea and creatinine (Figure

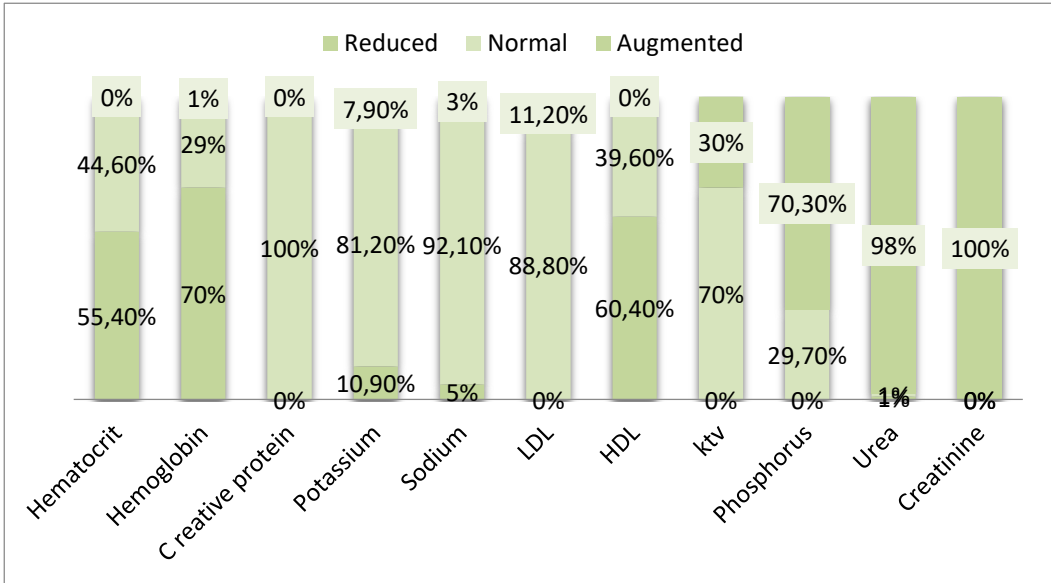


Figure 1. Distribution of laboratory tests investigated, categorized as values decreased, normal and increased. Passo Fundo (RS), Brazil, 2016

DISCUSSION

This study aimed to outline the sociodemographic, clinical and laboratory profile of the patients undergoing hemodialysis in which the highest proportion of male patients, married, with low level of schooling and income, was observed. Still, the median time of hemodialysis was about four years, with the main cause of renal failure being hypertension, which showed the highest prevalence. It is also worth noting, that, the median of continuous medication was five drugs, and more than two-thirds of patients had decreased hemoglobin, increased phosphorus and KTV at normal level.

Regarding sex, this study corroborates with the literature, demonstrating that males have the highest proportion in hemodialysis treatment,^{10,11} this fact, which may occur due to the male characteristic of less preventive health care, seeking services when Morbidities are already at a more advanced level.¹²

In this sense, the Ministry of Health points out that men access health services late, causing an increase in morbidities

and higher costs.¹² as a factor that is accentuated by the greater vulnerability of men to chronic diseases and early death due to resistance, both for disease prevention and regularity in chronic treatment.

Another relevant factor was the higher frequency of patients with lower level of schooling and income, aspects that may represent a greater barrier for the patient and his family in facing the CKD, considering the implications in routine and professional activity of the patients. And this reality is also demonstrated in the literature, which, sometimes, presents even more worrying levels, in which illiterate patients are found and who do not have income.^{10,11} In this sense, it reinforces the need for a high coverage of treatment subsidized by UHS, which in this study, represented about 95% of the patients, a reality similar to other regions of Brazil.⁷

As for the median and amplitude of the hemodialysis time of the patients, these were similar to other studies.^{10,13,14} It is necessary to emphasize that this treatment, although essential,

compromises the quality of life due to the physical and mental changes, which represents alterations in the habits of life, restrictions in the daily activities and decrease of the social participation.¹⁵

Regarding the etiology of renal failure, SAH represents the highest proportion, followed by DM and the association between the two morbidities. This result is contrary to the study developed in Natal-RN, which presents, even greater proportions, in which 71.4% of patients have arterial hypertension.¹⁶ Similarly, DM is another pathology with a high proportion, ranging from 25, 7% 17 and 47.7%¹⁶ of the individuals surveyed.

Therefore, the morbidity with the highest prevalence in this study was SAH, followed by cardiovascular diseases and DM, these diseases represent a greater number of years lived with functional incapacity.¹⁸ Thus confirming the worsening of health from these chronic diseases, which are consensually preventable.

Due to these health compromises, we have in this study the median use of five drugs. However, some patients who developed CKD due to SAH do not use drugs due to the effect of severe hypotension after hemodialysis.

Patients with increased susceptibility to CKD are hypertensive patients; diabetics; elderly people; patients with cardiovascular diseases; relatives of patients with CKD. Hypertension and diabetes are the two main causes of ESRD in Brazil.⁹

In patients with CKD, hematological alterations such as anemia, bone mineral disorder and malnutrition seem to interfere in the patient's quality of life. Anemia is often found in patients with CKD, which increases when creatinine clearance is less than 60 mL / min, with a more severe injury when it reaches 30 mL / min, and drug therapy should be initiated.¹⁹ The main cause of anemia in CKD is the deficiency in erythropoietin production, intensified by iron deficiency, decreased red blood cell half-life due to uremia, insensitive losses in the gastrointestinal tract, hemolysis, and chronic loss caused by dialysis.²⁰

As for the reduction of the GFR occurs enzymatic and changes in the receptors of lipoprotein metabolism, increasing LDL cholesterol and triglycerides. These aspects justify the marked atherogenesis and the high number of cardiovascular deaths among patients with CKD. The decrease in GFR also interferes with the speed of neural condition, resulting in neuropathy with clinical signs such as encephalopathy, peripheral polyneuropathy, visceral autonomic alterations and sleep disorders.²⁰

GFR (below 60mls / min) makes it difficult to excrete phosphorus, which reduces the conversion of vitamin D, in its active form, by the kidney, leads to hypocalcemia, elevating parathyroid hormone and consequently resulting in a parathyroid hyperplasia with decreased calcium receptors and calcitriol, intensified by bone resistance to the action of PTH and metabolic acidosis. Furthermore, bone mineral disorder is associated with cardiovascular diseases (vascular calcifications, left ventricular hypertrophy), fractures, and increased mortality.²¹

The genesis of bone disease in CKD is multifactorial due to hyperphosphatemia, vitamin D deficiency, hypocalcemia, alterations in calcium and vitamin D receptors of the paratiteoides, bone resistance to PTH and other phosphatonins and may be aggravated by the use of corticoids, malnutrition, age, uremic toxins and intoxication by aluminum and other heavy metals.¹⁹

To verify the suitability of hemodialysis, the service where the data were collected uses Kt / V . $O (K)$ is the urea clearance of the dialyser, multiplied by the treatment time (t) and divided by the volume of distribution of urea of the patient (V). The NKF / DOQI guidelines recommend that at least a monthly assessment of adequacy be made. The adequacy of dialysis is important since, if it is insufficient, there is accumulation of uremic toxins in the organism, contributing to anorexia and malnutrition.²² In this study, 70% of the patients evaluated presented this marker within the reference standards.

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In addition, some proinflammatory cytokines, such as Interleukin 1 (IL1); Interleukin 6 (IL6); Tumor Necrosis Factor α (TNF α); C-reactive protein (CRP) were identified as having functions in appetite and nutrient metabolism, contributing to malnutrition and altered body composition.²³

CONCLUSION

Most patients with CKD undergoing hemodialysis treatment are male, married, primary school, and median age 59 years. Of the participants, 94.1% are cared for by the Unified Health System. As personal income, the majority received a minimum wage and resided in their own homes.

The median time of hemodialysis was 36 months. Systemic arterial hypertension is the main etiology responsible for CKD. Regarding the use of drugs, the main ones were vitamins, hormones, hypotensives, diuretics and gastric mucosal protectors, followed by analgesics and oral hypoglycemic agents. As for the laboratory tests, the majority were out of the reference standards, being necessary the control and individual adequacy of the same ones.

This study also suggests that the assessment in hemodialysis should be constant and made up of several markers so that, together, they can provide a complete diagnosis of the patients being treated in renal replacement therapy, avoiding complications and worsening of CKD.

Thus, patients with SRT require monitoring in Primary Health Care by a multiprofessional team, focusing on orientation and education, promoting lifestyle change, self-care, medication follow-up, adherence to treatment, nutritional evaluation, aiming the control of the disease and, in consequence, the improvement of the quality of life.

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