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Clinical and Pharmacological Characteristics of Patients with Chronic Kidney Failure on Dialysis: A Study at the Dialysis Center of the Municipality of Ariquemes, Brazilian Amazon

Carlos Alberto Paraguassú-Chaves[1], Geovana Cruz dos Santos[2], Nelson Pereira da Silva Junior[3], Carla Dolezel Trindade[4], Simão Aznar Filho[5], Ruy Drummont Smith[6], Simão Dolezel Aznar[7], Lenita Rodrigues Moreira Dantas[8], Fabrício Moraes de Almeida[9]

[1]PhD in Health Sciences - University of Brasília - UnB, Brazil; PhD in Science - University of Havana (CU); Post-Doctor in Health Sciences - UnB and Degli Studi D'Aquila University - IT. Full Professor at the University Institute of Rio de Janeiro - IURJ, Brazil.
[2]Graduated in Pharmacy from the Faculty of Education and Environment - FAEMA, Brazil.
[3]Master in Pharmaceutical Sciences by the Faculty of Pharmaceutical Sciences - UNESP-Araraquara. Professor at the Associated Faculties of Ariquemes FAAr, Brazil.
[4]PhD in Law - Universidad Nacional de Lomas de Zamora (Argentina). Post-doctorate - Universita deli Studi di Messina (Italy). Full Professor at the University Institute of Rio de Janeiro - IURJ, Brazil.
[5]PdD in Law - Universidad Nacional de Lomas de Zamora (Argentina). Post-doctorate - Universita deli Studi di Messina (Italy). Full Professor at the University Institute of Rio de Janeiro - IURJ, Brazil.
[6]Master in Legal Sciences from the Autonomous University of Lisbon. Adjunct Professor at the Faculty Instituto Rio de Janeiro, Brazil.
[7]Graduated in Law. Master of Law Student, Specialist in Law. Professor at the University Institute of Rio de Janeiro, Brazil.
[8]Geographer expert and lawyer. Researcher of the Institute of Health Sciences and the Amazon environment - AICSA.
[9]PhD in Physics (UFC), with post-doctorate in Scientific Regional Development (DCR/CNPq). Researcher of the Doctoral and Master Program in Regional Development and Environment (PGDRA/UNIR).

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Abstract— The patient with CRF presents, in addition to kidney damage, other pathologies covered that injure the condition, making treatment difficult. The general objective of the study is to analyze the clinical and pharmacological characteristics of patients with Chronic Renal Failure (CRF) on hemodialysis treated at a dialysis unit in the municipality of Ariquemes, state of Rondônia, Brazilian Amazon. Data were collected through two sources: in medical records and in interviews with patients. The research had a random sampling of 30 patients of both sexes. Systolic arterial hypertension (SAH) is the main cause of CRF with 50% of cases, followed by polycystic kidney disease (PRD) 13.3% and diabetes mellitus (DM) 6.7%, systemic lupus erythematosus (SLE) 3, 3% and other diseases with 25.7%. The relative frequency of SAH as the underlying disease (50%), SAH comorbidity (70%), hematocrit alteration (96.7%), anemic corrective P.M. (96.7%), access condition = fistula (93.3%), report of another pathology (73.3%), phosphorus alteration (46.6%) and P.M with phosphorus correction (46.6%) are the main clinical characteristics found. One hundred percent of patients use medications, 80% know what the drugs they use are for, 80% of patients know how to describe medications, 76.6 follow the prescriptions, 50% receive pharmaceutical guidance and

80% say they understand the guidance. The use of 4 to 6 medications a day prevailed (53.3%), 20% practice self-medication, 23.3% use teas and medicinal plants and 96.6 seek medical help when necessary. The results presented show several aspects of the population of patients with chronic renal failure in the Amazon scenario, which will serve to support decisions to improve care for these patients, including the creation and long-term maintenance of a comprehensive data and information recording system with the socioeconomic, clinical and pharmacological characteristics, in addition to the follow-up of patients outside the treatment unit, the analysis and dissemination of epidemiological data on patients with CRF undergoing renal treatment in a Dialysis Center.

I. INTRODUCTION

The kidneys are reddish-brown, bean-like double organs situated just above the waist. Regulates from 11 cm to 13 cm in length, from 5 cm to 7.5 cm in width and from 2.5 cm to 3 cm in thickness in the adult; weighing between 125 g and 170 g in men and between 115 g and 155 g in women. In newborns, this weight varies from 13 g to 44 g. [1]. For Thomé et al., [2] the kidneys are organs that perform vital functions, such as blood filtration, hydroelectrolytic balance and elimination of toxic substances through the urine, and Cabral et al., [3] describe that the kidneys participate in the excretion of water, mineral salts and the control of blood pH, in addition to controlling systemic blood pressure and synthesizing important hormones. According to Guyton and Hall [4] each kidney contains about 1 million nephrons, each one capable of forming urine; there is a gradual decline in the number of nephrons with renal injury, disease or aging, without regeneration of new nephrons.

The kidney plays the most important role in filtering the plasma and removing substances from the filtrate in varying counts, depending on the body's needs. It purifies undesirable substances from the filtrate by excreting them in the urine together with its main functions which are classified as excretory and hormonal [4]. In the excretory function, the kidneys filter the blood and remove the waste resulting from metabolism, and in the hormonal function, blood pressure is controlled by the regulation of water and sodium levels [5]. The breakdown products excreted by the kidney include the metabolism of amino acids such as urea, creatinine from the muscles, uric acid from the metabolism of nucleic acids, fruits of degradation of red blood cells such as bilirubin, metabolism of various hormones and substances ingested as drugs [4].

When a person is affected by a certain chronic disease that leads to damage to kidney functions, it is said that there is CRF [2]. Chronic Kidney Failure (CRF) is a morbid condition that modifies the normal cellular performance of the kidneys, altering body homeostasis. The progressive loss of renal function leads to life-threatening abnormalities [6]. In CRF, a large number of nephrons are destroyed or damaged, to the point that those that remain cannot perform the normal performance of the kidney. Normally, only one third of the nephrons are able to eliminate all the degradation products of the organism, without their accumulation. Thus, severe CRF symptoms are not often seen until the number of functional nephrons has decreased, at least to 70% below normal. With this decrease occurs the retention of products, including urea and creatinine [4]. Riella [1] refers to CRF as a syndromic diagnosis of progressive and irreversible loss of renal function, characterized by the deterioration of the biochemical and physiological functions of all the body's systems, secondary to the accumulation of catabolites, uremic toxins, alterations in the hydroelectrolytic balance and acid-base, hypervolemia, hyperkalemia, hyperphosphatemia, anemia, hyperparathyroidism, among others.

Lima [7] reports CRF as one of the conditions that affects many people, which is a state of irreversible deterioration of renal function. In a large number of patients in the advanced stage of the disease, it is complex to give the etiology, being able to identify the presence of diseases such as glomerulonephritis, renal vascular disease, chronic infections, embolization of the glomeruli by cholesterol crystals and others.

For some authors, among the main causes of CRF are systemic arterial hypertension (SAH), diabetes mellitus (DM), kidney diseases and uropathies, such as recurrent urinary infections, obstructions and urinary stones [8]; [9] and [10].

To identify the patient with CRF, the glomerular filtration rate (GFR), the urinalysis (EAS) and an imaging exam are used as diagnostic resources, with ultrasound of the kidneys and urinary tract being preferred [11]. In the diagnosis of CRF, the following parameters are used: altered GFR; Normal or close to normal GFR but with evidence of parenchymal kidney damage or abnormal

imaging. Thus, any individual who, regardless of the cause, has a GFR < 60 ml/min/1.73 m² for at least three consecutive months has CRF. In cases of patients with GFR ≥ 60 ml/min/1.73m², consider CRF if associated with at least one marker of parenchymal renal damage or alteration in the imaging test [11]. The markers of parenchymal kidney injury are: a) Albuminuria > 30 mg/24 hours or Albuminuria Creatininuria Ratio (RAC) > 30 mg/g. b) Hematuria of glomerular origin, defined by the presence of erythrocyte casts or erythrocyte dimorphism on urinalysis (EAS) and c) Electrolyte alterations or other tubular abnormalities. These changes and abnormalities result from alterations in the reabsorption and secretion of the renal tubules, usually secondary to unusual syndromes. These diseases are usually identified in patients with metabolic acidosis of tubular origin (renal tubular acidosis), persistent changes in serum potassium levels, changes in urinary electrolyte dosage, usually performed by nephrologists, and renal function abnormalities of unclear etiology, in cases of proteinuria or suspected glomerular diseases. Renal biopsy is usually indicated by the nephrologist. The following are considered alterations in the imaging exams: polycystic kidneys; hydronephrosis; cortical scarring or changes in cortical texture; signs of infiltrative kidney disease; renal artery stenosis. After the diagnosis of Chronic Kidney Disease, patients are classified into stages according to the glomerular filtration rate, which facilitates the treatment of patients with CKD, as well as the assessment of medical judgment. The classification consists of: Stage 1 when TGF ≥ 90 mL/min; Stage 2 if TGF is 60 – 89 mL/min; Stage 3a with TGF 45 – 59 mL/min; Stage 3b with TGF at 30 – 44 mL/min; Stage 4 if TGF is 15 – 29 mL/min; Stage 5 when TGF is < 15 mL/min.

The Brazilian Ministry of Health's clinical guideline on the management of chronic kidney patients determines that, for a better structuring of patients with Chronic Kidney Disease, it is necessary that, after diagnosis, all patients are classified [11]. It should be closely related to prognosis taking into account the outcome of CRF: cardiovascular disease, progression to Renal Replacement Therapy (RRT) and mortality [11]. For a provision of comprehensive care for the patient with CRF, treatment should be classified as: "Conservative when in stages 1 to 3, pre-dialysis when 4 and 5-ND (non-dialysis) and RRT when 5-D (dialytic). Conservative treatment consists of: controlling risk factors for CRF progression, as well as cardiovascular events and mortality, with the aim of conserving GFR for as long as possible. Pre-dialysis, for the purposes of this guideline, consists of maintaining conservative treatment, as well as adequate preparation for the initiation of RRT in patients with CRF in more advanced stages[11]. The means of treatment used in patients with CKD are renal replacement therapy (RRT) through continuous ambulatory peritoneal dialysis (CAPD), cyclic peritoneal and intermittent peritoneal dialysis, hemodialysis (HD) and kidney transplantation [2]. Lately, CRF has become an epidemic, as thousands of people receive RRT, with approximately 150,000 people in Latin America on dialysis, of which 60,000 are in Brazil alone [12].

Sesso et al., [13] in the dialysis census report published by the Brazilian Society of Nephrology (SBN) pointed out that males had a predominance of 57.3% in relation to females with 42.7% of people who were in Renal Replacement Therapy (RRT) in Brazil. According to the Brazilian chronic dialysis survey, the most common type of RRT is hemodialysis [14]. Cavalcante et al., [15] presented hemodialysis as a process that consists of the filtration of extra-corporeal fluids from the blood performed by a machine and a dialyzer, which replaces renal functions. At the beginning of the hemodialysis session, an arteriovenous fistula must be surgically performed, or the placement of a specific catheter in the vein, in order to gain access to the patient's circulation [16] and [17]. During hemodialysis, part of the patient's body blood is withdrawn through the fistula or specific catheter, being transported through the arterial line of the dialyzer, where it is filtered, returning to the patient through the venous line [18]. The hemodialysis process occurs through an artificial kidney, in the hemodialysis machine through the dialyzer that has a system containing a semipermeable membrane, in which there is a counter-parallel flow of the patient's blood and dialysis fluid (dialysate), where migration of substances between the two systems [19].

According to Hoenich, Ronco and Levin [19] hemodialysis treatment promotes the restoration of electrolytes and acid-base balance, in addition to the removal of toxic substances and excess fluid accumulated in the blood and body tissues as a result of renal failure, by the diffusion process. According to Brasil [18] the main objective of hemolytic treatment is to minimize the symptoms caused by the malfunction of the kidneys and to benefit the patient with a better life condition, admitting to know himself well, always evaluating the monitoring of plasma levels of potassium, urea, sodium and chlorides. To ensure the effect of hemodialysis, it is essential that patients show adherence to dialysis treatment, with hemodialysis being the treatment used, which must be performed by patients with CRF for life or until they have a successful kidney transplant [20]. Brunner and Suddarth [21] say that hemodialysis must be concomitant with water restriction, diet therapy, pharmacological treatment, among others. For Rodrigues [22] the pharmacological treatment has a real importance, when the medication has been used mainly as

a form of relief or cure of a certain disease or syndrome.

The number of drugs for each patient on hemodialysis is on average 7 to 11 drugs, and the drugs are prescribed with the hope that they can bring benefits and practical factors to the health of patients [23]. According to this author, high drug consumption influences adherence to pharmacological treatment. Patients with CRF must have an efficient adherence to treatment, especially dietary and pharmacological treatment, which consists of several medications for daily use, with the aim of stabilizing the disease and preventing the emergence of complications [24]. The main drugs of daily use, commonly prescribed to patients with chronic nephropathy include: hypotensive, coronary vasodilator, gastric protector, antianemic, calcium carbonate, ferrous sulfate, B complex, vitamin C, sodium bicarbonate and recombinant human erythropoietin [25] and [26]. Factors such as the amount of drugs, adverse reactions, incompatibility between drugs, the difficulty in understanding the goals of therapy and the implication of their inappropriate use contribute to make it difficult to adhere to the pharmacological treatment of patients with chronic kidney disease undergoing hemodialysis [27]. Munger, Van Tassell, Lafleur in their studies reported the negative effect of polypharmacy on adherence is already known, the fact that many patients do not understand the complicated treatment regimen and have difficulties organizing their schedules. In the same study, they suggest the simplification of the therapeutic regimen as a factor to favor adherence and facilitate the understanding of treatment details. Maldaner et al., [29] say that a complex treatment requires greater attention from the subject, adequate follow-up of guidelines and perception of the importance of treatment for the maintenance of their life.

Therefore, chronic renal failure (CRF) is a progressive and irreversible deterioration of kidney function, in which the body's ability to maintain metabolic and electrolyte balance fails, resulting in uremia or retention of urea and other nitrogenous waste in the blood. Brunner and Suddarth [21] report that the signs and symptoms common to renal failure (RI) are: cardiovascular manifestations, dermatological symptoms and other systemic manifestations, observing in diagnostic findings there is a decreased glomerular filtration rate, sodium and water retention , acidosis, anemia, and calcium and phosphorus imbalance that lead to potential serious complications of kidney failure. The treatment of patients with renal failure tends to delay the onset of end-stage renal disease, which, exceptionally, turns out to be fatal. Treatment consists of hemodialysis, chronic outpatient peritoneal dialysis and kidney transplantation [30]. The patient with CRF presents, in addition to kidney damage, other pathologies covered that injure the condition, making treatment difficult. It is noted that patients with CRF undergoing dialysis often need a large amount of medication [31]; [6] and [32]. Even in this context, the presence of the Clinical Pharmacist becomes evident, since the concomitant use of several drugs, especially drugs not prescribed by the doctor and those considered innocuous by the patient, such as teas and medicinal plants, determines the accuracy of a detailed analysis of the patient's pharmacotherapeutic history [31]; [6] and [32]. Given the perception that patients with chronic kidney disease (CKD) use many drugs and often do not know their indication and others do not follow medical guidelines, and for a better response to the pharmacotherapy of chronic renal patients on hemodialysis.

Faced with the need to understand an Amazonian reality, the objective of this study is to analyze the clinical and pharmacological characteristics of patients with chronic renal failure (CRF) on hemodialysis undergoing treatment at the Ariquemes Dialysis Center (CDA) in the Municipality of Ariquemes, Rondônia, Amazon Brazilian.

II. METHODOLOGY

2.1 Search Location

The research was carried out at the Ariquemes Dialysis Center (CDA) in the Municipality of Ariquemes, state of Rondônia, Western Amazon, Brazil. The CDA serves a little more than 100 chronic renal patients on hemodialysis in the Vale do Jamari region, and in some cities neighboring Ariquemes, so it was considered this place as a study area.

2.2 Sample and Inclusion Criteria

The research subject and sample were the 30 (thirty) patients on hemodialysis, following the inclusion criteria: having been on hemodialysis for more than 5 months, being over 18 years of age, having cognitive and verbal capacity, signing the Free Consent Form and Enlightened (ICF). Exclusion criteria was the inverse of inclusion.

2.3 Data Collection

Data collection took place through two sources: data from medical records and data from patients, being carried out on the days when patients went to the clinic for Renal Replacement Therapy (RRT), while they were still in the reception hall waiting for treatment. In the data from the medical records, the directors of the dialysis clinics were first exposed to a prior explanation of the objectives and benefits that the research brings both to patients and to the health system and to science. After authorization from the technician in charge, data relevant to patients undergoing hemodialysis were collected in the medical records, such as: treatment time, age, sex, city of origin, schooling,

underlying disease and medications used according to the results of laboratory tests in the last 6 months, among others. socioeconomic aspects. In laboratory tests, only the results with biochemical alterations were analyzed, such as: hematocrit, hemoglobin, pre- and post-hemodialysis urea, sodium, potassium, calcium, phosphorus, blood glucose, alkaline phosphatase, total proteins and fractions, vitamin D, total cholesterol and fractions, triglycerides, among others.

Thirty patients of both sexes were interviewed, 11 female and 19 male. The collected data were processed and tabulated using the Statistical Package for the Social Science (SPSS) version 17.

2.4 Type of Search

The type of research is applied, descriptive, transversal with a quantitative approach, since the objectives generate knowledge for practical application, where the number of patients with CRF who undergo hemodialysis in the CDA was raised.

2.5 Ethical and Legal Aspects

As for the legal aspects of the research, it was in accordance with what was required by the Ministry of Health to carry out research with human beings, according to resolution 466/12, of the National Health Council. The research was submitted to the Ethics and Research Council (CEP) of the Faculty of Education and Environment (FAEMA). The Free and Informed Consent Term was delivered to each patient, with clarifying information necessary for their participation, demonstrating the relevance of the research and its importance in the academic learning process, giving freedom to the patient to participate or not, guaranteeing the confidentiality of the information, as well as anonymity. The procedures performed ensured reliability, privacy and protection of the participant's image and personal identification.

III. RESULTS AND DISCUSSION

3.1 Socioeconomic Characteristics

Of the 104 patients enrolled on hemodialysis, 100 (96.1%) met the inclusion criteria and 4 (3.9%) were eliminated because they had less than 6 months of hemodialysis RRT. The population to be studied was totaled in 100 chronic renal patients on hemodialysis. Of these, 30 study subjects were selected by random sampling. According to the analogy of the information collected in medical records and in the questionnaire applied to patients, the data were classified into: socioeconomic characteristics; clinical characteristics and pharmacological characteristics with emphasis on the most prevalent variables. The sample consisted of 19 men interviewed representing 63.3% of the male gender while 11 women 36.7% represent the female gender. Studies by Cherchiglia et al., [33] confirm that patients who start RRT on hemodialysis are mostly male. In the study by Sesso et al., [13] the distribution of dialysis patients by sex/gender showed 57.7% in men and 42.3% in women. Ribeiro et al., [34] in a study carried out in a state capital in the Northeast region of Brazil, found that most patients are male (67.2%).

The distribution by age group revealed that 63.6% of the patients are between 19 and 64 years old. These data corroborate the age groups noted in this study, which had a prevalence in the age range of 39-58 years, 43.4%; followed by 18-38 years 30%; 59-78 years 20% and over 78 years 6.6%. Studies have shown that the mean age of patients undergoing renal therapy in Brazil varies from 49.3 to 53.9 years [35]; [36] and [37]. Ribeiro et al., [34] found a predominance of patients with CRF aged between 40 and 59 years (40.6%). Sesso et al., [13]; [14] revealed in their study that 63.6% of patients are between 19 and 64 years old. According to Simonetti; Ferreira [38] after 40 years of age, there is a physiological functional decline that increases throughout life and can be influenced by several factors such as physical, organic, genetic, lifestyle, environment, education and socioeconomic conditions. As for marital status, 70% are married; singles 23.4% and 3.3% widowed and separated 3.3%. The presence of males in renal therapy was similar to those found in other studies, as well as the marital status of married was similar to the others surveyed. This indicates that most people with chronic renal failure in Brazil are married, followed by single people [39]; [40] and [36]. This picture is confirmed by Ribeiro et al., [34], who found 60.9% of married patients undergoing treatment in a nephrology unit.

There was also evidence in the mean age of patients undergoing renal therapy in Brazil, which ranges from 49.3 to 53.9 years [35]; [36] and [37]. Of the patients with Chronic Renal Failure assisted in Ariquemes, 66.7% live in other cities, while 33.3% live in Ariquemes. Unlike the present study, Ribeiro et al.,[34] found 64% of hemodialysis patients in a capital of a state in Northeastern Brazil residing in the city where the Dialysis Center is located. As for the source of income and occupation, 50% receive sick pay; retirees 26.7%; the unemployed 13.3%; self-employed 6.7 and employed 3.3%. The family composition is around 4 to 5 people in the family and the salary is 1 to 2 minimum wages. CRF causes important limitations to patients and this often leads to withdrawal and early retirements resulting from therapy. Patients with CRF on hemodialysis need to undergo RRT three times a week with a duration of 3 to 4 hours, thus making it difficult for these patients to work regularly. Some studies show that the vast majority of Brazilian patients

undergoing renal replacement therapy have low purchasing power, which should influence their quality of life, in terms of obtaining medication and food [36] and [37]. The assessment of the level of education quantified 36.7% with incomplete primary education; 23.3% had completed elementary school; 16.7% with complete secondary education and 13.3% with incomplete secondary education. In the study by Ribeiro et al., [34] also found a low level of education among patients with CRF. According to this author, the schooling of the individuals surveyed was 53.1% with incomplete or complete elementary education and a rate of 32.8% of illiterates and semi-illiterates. Thus, it was possible to observe, through the patients' reports, greater difficulty in understanding the recommended guidelines, given by the health team and the extension of the hemodialysis procedure, which can further compromise the health status of the patient undergoing treatment. Lara's study; Sarquis [41], developed in Curitiba, capital of the state of Paraná, showed that approximately 67% of the sample had access only to elementary education.

Table 1. Socioeconomic characteristics

Gender	**Fr%**	**Resident with how many people**	**Fr%**	**Place of residence**	**Fr%**
Men	63.3	With up to 5 people	70.0	Ariquemes	33.3
Women	36.7	+ of 5 people	30.0	Does not reside in Ariquemes	66.7
Age Range	**Fr%**	**Marital Status**	**Fr%**	**Income**	**Fr%**
18-38	30.0	Married	70.0	1 to 2 minimum wages	48.8
39-58	43.4	Not married	23.4	2 to 5 minimum wages	36.2
59-78	20.0	Separated/ Divorced	3.3	+ 5 minimum wages	15.0
+ que 78	6.6	Widower	3.3		
Education	**Fr%**	**Occupation**	**Fr%**		
Incomplete elementary school	36.7	Receives sickness AID	50.0		
Complete primary education	23.3	Retirees	26.7		
High school	16.7	Unemployed	13.3		
Incomplete high school		Freelancers	6.7		
Graduated	13.3	Employees working	3.3		

Fr% Relative frequency

3.2 Clinical Features

Systolic arterial hypertension (SAH) is the main cause of CRF in the population studied, representing a frequency of 50% of cases, followed by polycystic kidney disease (PRD) 13.3% and diabetes mellitus (DM) 6.7%, lupus systemic erythematosus (SLE) 3.3% and other diseases with 25.7%. In the study by Santos[42] situations very similar to those of this research were found. The main underlying diseases for CRF are arterial hypertension (38%), followed by the association of two pathologies - hypertension and diabetes - which corresponds to 23%, with diabetes alone accounting for a total of 8%. In addition to these, other diseases are related to the loss of renal function, such as glomerulonephritis (6%), polycystic kidneys and lupus with 5% each [34]. In relation to other causes, which account for 15%, the following stand out: kidney stones, pyelonephritis, drug abuse, renal agenesis, bilateral renal hypoplasia and accidents that led to the loss of one of the kidneys.

Sesso (2016) points out a proportion of 35% of arterial hypertension followed by diabetes with 29% as a diagnosis of CRF. The main changes in the exams were: decreased hematocrit values as well as elevated hemoglobin and ferrentin; phosphorus elevation; the prescriptions found in the medical records were in accordance with the changes in the exams. There were no prescriptions for medications for daily use by patients in the medical records. The quantification of these drugs was based on what was

described by the patients in the questionnaire applied. In analyzing the changes, it was noted that the correction of anemia was more frequent than the decrease in phosphorus in these patients. This is due to the fact that drugs used as anemic helpers or correctors such as erythropoietin alfa and iron hydroxide are administered to patients after or at the end of the hemodialysis session; while the Sevelamer phosphorus corrector is delivered to the patient for use at home, thus not being able to say if they really make correct use of the drug.

The study of the profile of chronic kidney disease prepared by the associations of chronic kidney patients in Brazil, shows an approximation with results already obtained in other publications, which point out as the main causes of CRF arterial hypertension, diabetes mellitus, family history of CRF, advanced age, glomerulopathies, polycystic kidney disease, autoimmune diseases, systemic infections, recurrent urinary infections, uropathies and neoplasms [43]. Diabetes-related hypertension is closely linked to insulin-mediated water and sodium reabsorption and sympathetic hyperactivity, as well as increased intracellular calcium availability. Insulin has a direct vasodilator effect and resistance to this effect also contributes to arterial hypertension, causing overload on the kidneys, which leads to the loss of their functions [43] and [44].

The main causes of chronic kidney diseases are systemic arterial hypertension (SAH), diabetes mellitus (DM), kidney diseases and uropathies, such as recurrent urinary infections, obstructions and urinary stones [8]; [9] and [10]. Diabetes is an underlying disease in 25.7% of CRF cases in Brazil, ranking second after Systemic Arterial Hypertension (SAH) [18].

Attention to diabetes and its complications is a priority for global public health. In this sense, the prevention of diabetes mellitus must be carried out at different levels of health care, detecting individuals at risk - primary prevention, identifying undiagnosed cases - secondary prevention, and treating individuals already affected by the disease, in order to prevent acute diseases and chronic complications - tertiary prevention [45]. A factor to be considered is that the long-term progression of diabetes mellitus leads to complications involving several organs, called micro and macrovascular complications, that is, nephropathies, retinopathies, neuropathies and cardiovascular complications, which require a well-founded care approach [46]. As for SAH, Bortolotto [47] states that SAH and renal function are related, and hypertension can be both the cause and the consequence of kidney disease. SAH is present in most kidney diseases, especially in glomerulopathies and diabetic nephropathy. According to Paraguassú-Chaves et al [48] the prevalence of SAH, determined when renal disease is detected, progressively increases as renal function deteriorates, so that in the terminal or dialysis phase of CRF almost all renal patients are hypertensive. According to the same author, the main mechanism of SAH in CRF is related to the progressive loss of renal capacity to excrete sodium, resulting in salt and volume overload. There are other pathologies that make up a group of diseases that, together, represent a higher percentage in relation to the underlying diagnostic diseases of CRF [34]. According to the Brazilian Society of Nephrology, other causes of CRF that can be cited are urinary tract diseases, vascular diseases, medications, toxic agents, environmental and occupational agents (lead, cadmium, mercury and chromium), but diabetic nephropathy and hypertension are the most common causes, representing 23.2% of the total, the highest percentage in relation to these pathologies. Glomerular diseases represent 15.7% of the total as a basic diagnosis of CRF [18].

The main clinical characteristics presented by the patients in this research are: SAH as underlying disease (50%), SAH comorbidity (70%), change in hematocrit (96.7%), Anemic corrective M.P (96.7%), access condition = fistula (93.3%), report of another pathology (73.3%), phosphorus alteration (46.6%) and M.P with phosphorus correction (46.6%).

The main characteristics of patient access are: SAH as underlying disease (62%), SAH comorbidity (78%), change in hematocrit (98%), Anemic corrective M.P (98%), access condition = fistula (95%), report of another pathology (73%), phosphorus alteration (48%) and M.P with phosphorus correction (48%) according to Santos [42]. The authors Dias; Camargo [49] observed that SAH represents the highest percentage as the underlying disease of CRF in relation to DM, GN and other pathologies, being represented by 35.8% of the total. The correction of anemia was more frequent than the decrease in phosphorus in these patients. This is due to the fact that drugs used as adjuncts or correctors of anemia, such as alpha-erythropoietin and iron hydroxide, are administered to patients after or at the end of hemodialysis; while the Sevelamer phosphorus corrector is delivered to the patient for use at home, it is not possible to say if he really makes the correct use of the medication [42] and [48]. Dialysis time prevails from 6 months to 2 years (44.3%), more than 2 years to 5 years (36.7%) and more than 5 years to 8 years (10%), from 8 to 11 years (4%) and more than 11 years of treatment (5%). Patients with hemodialysis treatment time of up to 1 year corresponds to 38%, between 3 and 4 years of treatment there was a drop to 17% and only 3% remain using the hemodialysis machine for more than 10 years

[34]. With an unspecified cause, deaths related to complications inherent to the treatment, kidney transplants and transfers to other hemodialysis services may be involved. In addition, there are factors that make the treatment of CRF difficult.

Among the factors that complicate the treatment are the effects caused by the treatment, which represented 25% of the complaints, by the patients who presented symptoms after the session, such as weakness, asthenia and fatigue. This situation is directly related to the fact that a large part of the population studied had less than 2 years of hemodialysis treatment, where the greatest effects are found due to the adaptation of the organism to the therapy. Then, patients complained about transportation, being represented by 23%. The time spent in each session and its frequency of 3 times a week, are reasons for complaint by 11% of patients, who report not having time or desire to perform activities of daily living that they performed previously [4]. Patients (8%) reported other causes, such as financial difficulties and absence of companions. CRF produces physiological and functional changes, resulting from decreased physical activity, muscle weakness, anemia, metabolic changes, in addition to impairing quality of life [34]. The study carried out in Anápoles, in the state of Goiás, shows that, among the difficulties encountered, the availability of medication (51%) is the main reason for patients' complaints, followed by transportation (20.5%) and time spent to each session (14.5%). Those who reported treatment dependence and had no complaints corresponded to 3% each [50]. Predisposing factors such as stress, inadequate diet, smoking, use of estrogenic hormones, obesity, sedentary lifestyle and lack of health control make an increase in blood pressure inevitable [51].

According to the Chronic Kidney Associations, Brazilian statistics on chronic kidney disease are compatible with those of other Latin American countries and lower than those of the United States, which point to diabetes and arterial hypertension as causes of CRF in three quarters of dialysis patients. This difference can be explained by the large number of elderly people in developed countries, since life expectancy is higher, and also by the dietary and cultural habits of these countries that favor the emergence of these diseases [43].

Table 2. Clinical features of CRF

Main causes	Fr%	Dialysis time	Fr%
Systolic Arterial Hypertension (SAH)	50.0	6 months to 2 years	44.3
Polycystic Kidney Disease (DRPA)	13.3	+ 2 years to 5 years	36.7
Diabetes Millitus (DM)	6.7	+ from 5 to 8 years	10.0
Systemic Lupus Erythematosus (SLE)	3.3	+ from 8 to 11 years	4.0
Others	25.7	+ 11 years	5.0
Clinical features	Fr%		
SAH as the underlying disease	50.0		
SAH comorbidity	70.0		
Alteration of Hematocrit	96.7		
M.P Anemic Corrector	96.7		
Access Condition = Fistula	93.3		
Reports Another Pathology	73.3		
Phosphorus Alteration	46.6		
M.P Phosphorus Broker	46.6		

Fr% Relative frequency

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3.3 Pharmacological characteristics

Among the male and female patients participating in this study, 100% use medication. Eighty percent know what the drugs they use are for and how to describe them. When asked if they follow the prescriptions, 76.4% say yes. When asked if they receive pharmaceutical guidance, 50% say they receive adequate guidance at the dialysis center itself and 80% say they understand the guidance. When asked about the amount of daily medication, 4 to 6 daily medications prevailed with 53.3%. Only 20% of patients claim to practice self-medication and 23.3% claim to make use of teas and medicinal plants. Almost 100% (96.6%) of patients report that they seek medical help when needed.

By analogy, one can differentiate the pharmacological characteristics between male and female patients. Approximately 85% of men reported knowing the drug's indications while approximately 75% of women reported knowing the indications. Women strictly follow medication prescriptions with 90% while men approach 70%. Male patients were the ones who most reported receiving pharmaceutical guidance (58%), while women were less frequent with 37%. Similar to the frequencies of the guidelines, male patients who understand the guidelines have a frequency of 58% and 37% females. Male patients consume more medications daily than women, in a proportion of 58% for the consumption of 3 to 4 medications a day against 45% for women.

Santos [42] found similar findings. In the study by Santos [42] 80% say they know what the drugs are for, 80% know how to describe the drugs and 76.6% take the drugs correctly. Eighty percent reported not self-medicating and 20% assumed the use of over-the-counter medications, with 33.3% using teas and herbal medicines. Although 80% of respondents reported not using over-the-counter medications, there is disagreement when compared to the use of teas and herbal medicines, believing that 13.3% of those who reported not self-medicating make use of these substances.

Several studies point to evidence that patients with chronic renal failure make concomitant use of several medications, including teas and medicinal plants [31]; [6] and [32]. Patients with kidney disease in large proportion use many drugs and often do not know their indication and others do not follow medical guidelines. Low education is associated with the current outcome of these people, having little knowledge, they are unable to assess that the use of teas together with some medications can alter plasma flow, increase adverse reactions and reduce the effectiveness of the medication. These patients do not consider the use of teas as self-medication. By associating the results, it is clear that men in their entirety pay less attention to preventive health, justifying the large number of men who enter RRT, but when diagnosed with a chronic disease, they adhere more to treatment.

Patients with CRF are absorbed when they refer to their health, when they feel some discomfort in their health or when they use medication. The class of drugs reported was checked with: antihypertensives, phosphorus correctors, anemic correctors, vitamin supplements and antihypoglycemic agents. The large number of medications favors non-compliance with the therapy or forgetting of some medications, resulting in low adherence. The presence of other pathologies in patients undergoing hemodialysis is associated with a high number of drugs prescribed to these patients and according to the drugs reported. It was observed that most patients who have CRF have a low level of education, reaching a maximum of 8 years of studies, and this factor may interfere with treatment adherence, as there may be some difficulty in understanding them about the disease and its complications.

Table 3. Pharmacological characteristics

Use medicines	**Fr%**	**Understand the Guidelines**	**Fr%**	**Receive Pharmaceutical Guidance**	**Fr%**
Yea	100.0	Yea	80.0	Yea	50.0
No	0.0	No	20.0	No	50.0
They know how to describe medicines	**Fr%**	**Know Indications**	**Fr%**	**Fulfill what is in the recipe**	**Fr%**
Yea	80.0	Yea	80.0	Yea	76.4
No	20.0	No	20.0	No	23.6
Seek Medical Assistance	**Fr%**	Makes use of self-medication	**Fr%**	**Makes use of Teas / Medicinal Plants**	**Fr%**
Yea	96.6	Yea	20.0	Yea	23.3
No	3.4	No	80.0	No	76.7
Daily medication quantity	**Fr%**				
4 to 6 daily	53.3				
Other quantities	46.6				

Fr% Relative frequency

IV. CONCLUSION

The socioeconomic, clinical and pharmacological characteristics of patients with CRF on hemodialysis at the Ariquemes Dialysis Center are well defined and reflect the same situations found in previous studies in this same CRF treatment center. Depending on the severity of renal impairment, many nephropathies can progress to severe states of morbidity and death.

The reality of patients with chronic renal failure in this study does not differ much from other Brazilian realities. The role of the pharmacist is essential, which with its attributes can influence the understanding of the importance of treating underlying diseases, early diagnosis and the practice of self-care. The multidisciplinary health team, including the family, must also play an essential role in this process. The results presented show several aspects of the population of patients with chronic renal failure in the Amazon scenario, which will serve to support decisions to improve care for these patients, including the creation and long-term maintenance of a comprehensive data and information recording system with the socioeconomic, clinical and pharmacological characteristics, in addition to the follow-up of patients outside the treatment unit, the analysis and dissemination of epidemiological data on patients with chronic renal failure undergoing renal treatment at a Dialysis Center.

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