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ORIGINAL ARTICLE

CLINICAL EVIDENCE OF MEDICINAL ADHESION OF CHRONIC DIALYSIS PATIENTS

EVIDÊNCIAS CLÍNICAS DA ADESÃO MEDICAMENTOSA DE PACIENTES DIALÍTICOS CRÔNICOS EVIDENCIAS CLÍNICAS DE LA ADHESIÓN MEDICAMENTOSA DE PACIENTES DIALÍTICOS CRÓNICOS

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ABSTRACT

Objective: to evaluate the adherence to pharmacological treatment of drugs listed by the specialized component of pharmaceutical care, using clinical evidence, in hemodialytic patients with chronic renal disease. **Method:** this is a quantitative, cross-sectional study with a population of 275 patients on hemodialysis, aged over 18 years and undergoing hemodialysis for more than one year. Participants were asked to validate questionnaires during their hemodialysis session. The data in the software Epidata 3.1 and SPSS 21.0 were tabulated and analyzed in tabular form. **Results:** it is revealed that approximately 41.7% of the patients adhered to the treatment, being the predominance of adherence among the patients who considered themselves to be in good health status. Significantly higher phosphoric levels (5.1 mg / dL) were observed in patients not adherent to pharmacological treatment, and there was a statistically significant correlation between the greater complexity of sevelamer hydrochloride therapy and the lower adherence. **Conclusion:** clinical evidences were generated in the work that support the managers and professionals in the health promotion of this population. **Descriptors:** Renal Insufficiency Chronic; Medication Adherence; Quality of life; Drug Therapy; Renal Dialysis; Laboratory Research.

RESUMO

Objetivo: avaliar a adesão ao tratamento farmacológico dos medicamentos elencados pelo componente especializado da assistência farmacêutica, utilizando evidências clínicas, em pacientes hemodialíticos com doença renal crônica. **Método:** trata-se de um estudo quantitativo, transversal, com população de 275 pacientes em hemodiálise, idade superior a 18 anos e em tratamento hemodialítico há mais de um ano. Respondeu-se, pelos participantes, a questionários validados durante a sua sessão de hemodiálise. Tabularam-se e analisaram-se dos dados nos *softwares* Epidata 3.1 e SPSS 21.0, e se apresentam em forma de tabela. **Resultados:** revela-se que cerca de 41,7% dos pacientes aderiram ao tratamento, sendo o predomínio de adesão entre os pacientes que consideraram possuir bom estado de saúde. Apresentaram-se, por pacientes não aderentes ao tratamento farmacológico, níveis fosfóricos significativamente maiores (5,1mg/dL) e houve correlação estatisticamente significativa entre a maior complexidade da terapia do cloridrato de sevelâmer com a menor adesão. **Conclusão:** geraram-se evidências clínicas no trabalho que servem de suporte a gestores e a profissionais na promoção da saúde desta população. **Descritores:** Insuficiência Renal Crônica; Adesão à Medicação; Qualidade de Vida; Tratamento farmacológico; Diálise renal; Investigação laboratorial.

RESUMEN

Objetivo: evaluar la adhesión al tratamiento farmacológico de los medicamentos enumerados por el componente especializado de la asistencia farmacéutica, utilizando evidencias clínicas, en pacientes hemodialíticos con enfermedad renal crónica. **Método:** se trata de un estudio cuantitativo, transversal, con población de 275 pacientes en hemodiálisis, edad superior a 18 años y en tratamiento hemodialítico desde hace más de un año. Los participantes respondieron a cuestionarios validados durante su sesión de hemodiálisis. Se tabularon y analizaron los datos en los programas Epidata 3.1 y SPSS 21.0, y se presentan en forma de tabla. **Resultados:** se revela que cerca del 41,7% de los pacientes se adhirieron al tratamiento, siendo el predominio de adhesión entre los pacientes que consideraron poseer buen estado de salud. Se presentaron, por pacientes no adherentes al tratamiento farmacológico, niveles fosfóricos significativamente mayores (5,1mg / dl) y hubo correlación estadísticamente significativa entre la mayor complejidad de la terapia del hidrócloruro de sevelâmer con la menor adhesión. **Conclusión:** se generaron evidencias clínicas en el trabajo que sirven de apoyo a gestores y profesionales en la promoción de la salud de esta población. **Descriptores:** Insuficiencia Renal Crónica; Cumplimiento de la Medicación; Calidad de Vida; Tratamiento farmacológico; Diálisis renal; Investigación de laboratorio.

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INTRODUCTION

It is known that Chronic Kidney Disease (CKD) is a syndrome linked to the progressive and irreversible loss of renal functions that encompasses glomerular, tubular and endocrine functions, and that, in recent years, there has been a significant increase in the incidence and prevalence of CKD, making it a serious public health problem.¹

CKD is a major cause of mortality, with more than one million people dying worldwide each year, with a global incidence estimated at 7% annually.² The number of dialysis patients in Brazil in 2010 was 92,091 (42,629 in 2000), while in 2014 the number was 112,004. It was also estimated that 36,548 patients started the dialysis treatment in the year 2014.^{1,3}

The CKD imposes a complex therapeutic regimen, consisting of renal replacement therapy (RRT), dietary restriction, liquid and administration of medications.⁴ Among the medicines used, those for the treatment of anemia, secondary hyperparathyroidism (SHPT) and hyperphosphataemia are used. These drugs are listed in the Specialized Component of Pharmaceutical Assistance (SCPA) program, distributed free of charge by the Unified Health System (UHS).⁵ It is based on prescription of medications and doses in the interpretation of laboratory tests, being a responsibility of the medical team.

It interferes negatively with non-adherence to drug treatment in the quality of life (QoL) of the patient, generating costs related to health.⁴ In studies evaluating adherence to pharmacotherapy in hemodialysis patients, the proportion of individuals who did not adhere to treatment ranged from 21% to 65.7%.⁶⁻⁸

It can be explained, through some external factors, among others, the low adherence to drug treatment such as barriers to access to health services, medicines, health professionals, low health literacy and the complexity of pharmacotherapy. In a systematic review of non-compliance with hemodialysis patients, some of the cited sociodemographic factors associated with non-adherence were: younger, single, widowed or divorced patients, non-Caucasian ethnicity, and smokers.²

Adherence to drug treatment is multidimensional, being determined socioculturally. It is presented in different population groups in a unique way, according to daily habits, geographical location, state of health, organization of care services, among other characteristics.⁹

OBJECTIVE

- To evaluate the adherence to pharmacological treatment of drugs listed by the specialized component of pharmaceutical care using clinical evidence in hemodialytic patients with chronic renal disease.

METHOD

This is a cross-sectional, quantitative study conducted in a private hemodialysis clinic located in the southwestern region of Bahia between January and June 2017.

This health institution was accredited to the UHS and to private health plans, and it serves about 275 patients in RRT, from Monday to Saturday, on a scale of Monday, Wednesday and Friday, and in the scale of Tuesday Thursday, Thursday and Saturday, divided into three shifts.

The study population was composed of patients undergoing hemodialysis, according to the following inclusion criteria: patients with hemodialysis time > 1 year and aged ≥ 18 years. Individuals who had some intellectual deficit or difficulties in answering the questions were excluded, according to the orientation of the professionals of the unit.

The data were collected by a trained researcher on the subject of the research, approach of patients, flow of care in the clinic and filling in the questionnaires.

In the first stage of the collection, a search of the patients eligible for the inclusion criteria was performed and, in a second moment, the information was collected through acceptance of the Free Informed Consent Term and by the participant. electronic medical record containing: sociodemographic data such as age, sex, marital status, race, schooling, comorbidities; prescriptions of the medicines listed by SCPA with concentration and dosage; information on administration of medicines; (transferrin saturation index, calcium, alkaline phosphatase, intact HPT, aluminum dosage, phosphorus dosage, ferritin, iron dosage, hemoglobin and hematocrit) of the eligible individuals who agreed to participate in the study.

The validated questionnaire¹⁰ was used as a tool for the study of adherence, composed of four questions about the behavior of individuals related to pharmacotherapy. The score of zero was attributed, for each answer denoted as not, and, for each answer scored as yes, the score of one. The sum of the score is classified as high (score of zero), moderate (score of one to two) and low (score of three

to four). Patients adhering to the treatment were considered as well as those who responded negatively to the four questions of the validated questionnaire (zero score).⁶ Also used were questions adapted from the National Survey on Access, Use and Promotion of Rational Use of Medications in Brazil (NSAUM), on access and behavior in the use of medicines.¹¹ Adherence was considered as the authentic and patient's constant medical.⁴

In order to evaluate the complexity of pharmacotherapy, the Portuguese translation and validation of the Medication Regimen Complexity Index.¹² This version was adapted, known as the Index of Complexity of Pharmacotherapy (ICP). The instrument was divided into three sections: A) describes information on each dosage form; B) frequency information of doses; C) corresponds to the additional information. Each section was scored from the analysis of the pharmacotherapy present in the patient's chart, and the index was obtained by the sum of the punctuation of the three sections.

In this study, only the drugs offered by SCPA were evaluated: injectable iron hydroxide III saccharate, injectable alfaepoetine, oral sevelamer hydrochloride, oral and injectable calcitriol and deferoxamine.

The laboratory parameters collected for the months of December 2016 and January 2017 were used to evaluate the therapeutic effectiveness of the described drugs, including: transferrin saturation index (automated colorimetric method with a reference value of 20 to 55%); calcium (Gindler and King method with reference value of 8.8 to 11.0 mg / dL); alkaline phosphatase (4-nitrophenylphosphate method with reference value of 38 to 126 U / L); intact parathyroid hormone (PTH) (electrochemiluminescence method with a reference value of 15 to 65 pg / mL); aluminum dosage (spectrophotometry method with reference value <30 µg / L); phosphorus dosage (ultraviolet method with a reference value of 2.5 to 4.5 mg / dL); ferritin (electrochemiluminescence method with reference values of 10 to 100 ng / mL for women under 50 years, 10 to 280 ng / mL for women over 50 years and 29 to 300 ng / mL for men); iron dosage (colorimetric method with a reference value of 35 to 150 µg / dL); hemoglobin (automated method with a reference value of 13 to 17 g / dL) and hematocrit (automated method with a reference value of 32 to 52%). The reference values were assigned by the laboratory

accredited for the accomplishment of the laboratory tests of the patients of the referred hemodialysis clinic.

Data was tabulated in Epidata, version 3.1, 2008 and IBM Statistical Package for the Social Sciences (SPSS), version 21.0 (IBM Corp., Armonk, USA) for statistical analysis. Absolute (AF), relative (RF) and prevalence (PR) were calculated for the studied variables. Quantitative variables were described with measures of central tendency, mean and deviation (SD). Pearson's Chi-square test, Pearson's correlation, and Student's T test were applied in the statistical analysis of the association between the variables. The level of significance was set at 5% ($\alpha = 0.05$).

Obtained the authorization of the Ethics Committee in Research of the State University of Southwest of Bahia according to the CAAE: 38716814.8.0000.0055.

RESULTS

Of the 275 patients undergoing hemodialysis, 171 (62.2%) met the inclusion criteria, 65 (23.6%) underwent hemodialysis for less than one year, 38 patients (13.8%) had disorientation or weakness that made communication difficult and one (0.4%) were under 18 years of age, therefore, of those who met the inclusion criteria, 132 (77.2%) agreed to participate in the study, 33 (19.3%) refused and six (3.5%) died during the period of data collection.

The mean age of the participants was 49.65 years (SD $\pm$ 15) and, among the patients, 60.6% were male and 39.4% declared themselves to be brown, 64.4% underwent the procedure more than five years ago and all patients had three sessions per week and, according to the e-chart, hypertensive nephropathy was the most common cause of CKD in 46.21% of patients (Table 1).

Table 1. Association between adherence, sociodemographic and clinical characteristics of the population of chronic hemodialytic renal patients. Jequié (BA), Brazil, 2017. (N = 132)

Characteristics	Adherente (N=55) (%)	Non adheent (N=77) (%)	p- value*
Sex			
Male	61.8	59.7	0.810
Female	38.2	40.3	
Town of origin			
Jequié	27.3	45.5	0.034
Others**	72.7	54.5	
Race			
Self-declared			
Black	87.3	87.0	0.965
White	12.7	13.0	
Marital Status			
Married	50.9	44.2	0.443
Not married	49.1	55.8	
Education			
Illiterate	36.4	5.2	<0.001
Literate	63.6	94.8	
Time in HD (years)			
One to five	36.4	35.1	0.878
Five or more	63.6	64.9	
Comorbidities			
Hipertension	38.2	48.1	0.339
Others***	61.8	51.9	
Cause of CRF			
Hypertensive	52.7	41.6	0.204
Nephropathy			
Others****	47.3	58.4	
Self-perception of health			
Good or very good	50.9	27.3	0.021
Bad or very bad	3.6	6.5	
Regular	45.5	66.2	

*Pearson's chi-square (p <0.05). ** Other: Other municipalities that are part of the Regional Health South Base micro-region *** Others: Diabetes, hypertension + diabetes. **** Other: Diabetic nephropathy, lupus nephropathy, chronic glomerulonephritis, polycystic kidney disease and indeterminate. CRF: chronic renal failure. HD: hemodialysis

According to a classification,¹⁰ that 77 respondents (58.3%) answered affirmatively to one or more questions, presenting medium or low adherence behavior and, in relation to

self-report, 87.1% of the patients declare adherent to the questionnaire. treatment (Table 2).

Table 2. Responses to the Morisky scale and degree of adherence to pharmacotherapy of chronic hemodialytic renal patients. Jequié (BA), Brazil, 2017. (N = 132)

Variables	Yes (%)
Validated questionnaire questions ¹⁰	
Have you ever forgotten to take your medicine?	53,8
Even remembering, you have stopped taking your medicine?	16,7
Have you ever stopped taking your medicine when you felt well?	9,8
Have you ever stopped taking your medicine when you did not feel well?	12,1
Self-referenced adhesion	87,1

It should be noted that the patients' overall hemoglobin mean was 11.75 SD ± 1.95 g / dL, 72.2% lower than the reference value, and the mean transferrin saturation index was 37.9 SD ± 19.5%.

It is reported for intact HPT that the mean was 916.6 SD ± 797.9 pg / mL, about 90%

above the reference value, and the mean calcium was 8.5 DP ± 0 , 8 mg / dL, 54.06% lower than the reference value, and the mean of the phosphorus dosage was 4.8 SD ± 1.3 mg / dL, with 49.41 % of dosages higher than reference value (Table 3).

able 3. Association between adherence and laboratory tests of chronic hemodialytic renal patients. Jequié (BA), Brazil, 2017.

Laboratory tests **	Adherent	Not adherent	p-value*	CI95%
	Average ± SD	Average ± SD		
Transferrin saturation index (%) (n=82)	36.3 ± 16.3	39.5 ± 21.8	0.468	-12.0 - 5.5
Calcium (mg/dL) (n=132)	8.4 ± 0.8	8.6 ± 0.73	0.103	-0.5 - 0.04
Alkaline phosphatase (U/L) (n=78)	121.4 ± 68.2	248.8 ± 264.2	0.008	-221.1 - 33.6
Intact HPT (pg/mL) (n=51)	846 ± 672.4	987.3 ± 923.5	0.547	-610.1 - 327.5
Aluminum dosage (µg/L) (n=8)	5.1 ± 1.6	10.6 ± 2.7	0.054	-11.1 - 0.1
Dosage of phosphorus (mg/dL) (n=132)	4.5 ± 1.2	5.1 ± 1.4	0.013	-1.0 - -0.1
Ferritin (ng/mL) (n=83)	671.8 ± 364.1	725.3 ± 514.4	0.699	-241.5 - 162.6
Dosage of iron (µg/dL) (n=83)	75.8 ± 32.6	80.9 ± 43.4	0.566	-22.5 - 12.4
Hemoglobin (g/dL) (n=132)	11.9 ± 1.8	11.6 ± 2.1	0.435	-0.4 - 1.0
Hematocrit (%) (n=131)	39.3 ± 7.3	37.1 ± 8.1	0.108	-0.5 - 4.9

* Tukey test (p <0.05). ** Months of December 2016 and January 2017. PTH: Parathormone.

The mean number of medications used was 3.4 (SD ± 0.96), and sevelamer hydrochloride (80.30%) was among the drugs used by chronic hemodialytic renal patients that are part of SCPA. and Alfaepoetin (84.09%) were the most used, whereas deferoxamine was the least used (6.1%). It was found, in the ICP assessment, that 40.2% of the population used four drugs (ICP = 28.83).

The complexity of the pharmacotherapy of the population measured by the ICP reached 25.37 points (SD ± 6.33), and the maximum

score obtained was 45 points in a treatment with five drugs, with a minimum of nine points in a single drug treatment (Table 4). It should be noted that there was no significant correlation between the general ICP and the adherence, however, in an isolated analysis for each drug, a significant correlation between the ICP of sevelamer hydrochloride and the adhesion was observed (p = 0.030).

Table 4. Correlation between the number of medications with adherence and ICP in chronic hemodialytic renal patients. Jequié, Bahia, Brazil, 2017.

Variables	Adherent (N=55)	Non adherent (N=77)	ICP (Average)	Pearson's R	CI95%	p-value*
Number of medications (N=132)	%	%				
One	1.5	2.3	9			
Two	7.6	3.8	16.2			
Three	11.4	22.7	23	0.953	0.905-0.977	<0.001
Four	15.9	24.2	28.8			
Five	5.3	5.3	35.7			

ICP: Index of complexity of pharmacotherapy. * Pearson's chi-square (p <0.05).

DISCUSSION

In this study, it was verified that non-adherence to pharmacotherapy in chronic renal hemodialytic patients is a reality, and this prevalence is consistent with studies that used similar methods of evaluation.^{6,9} In developed countries, patients with chronic diseases have, on average, 50 percent adherence to drug therapy, resulting in a negative impact on reducing disease control, increased hospitalizations, and mortality. It is justified by the authors that the reduced proportion of adherent patients can be

explained by the interference of factors such as endemic diseases, age and health status, which are different in each region of the world.¹³⁻⁴

The lack of adherence to the drug treatment was associated with patients of origin of the municipality of Jequié, who are literate and those who consider themselves to be in poor health. The highest index of lack of adherence associated with the individuals of the study municipality can be linked to several factors. It is assumed that patients residing in the municipality of Jequié have an inadequate health education level, which

impairs adherence to pharmacotherapy and, moreover, the Regional South Health Base (RSHB) was set as distant by about half of the patients, considering the fact that they have a certain degree of physical and financial impairment and that there may be the unavailability of a means of transportation that appears as an unfavorable factor to access.

The literacy patients presented lower percentage of adherence compared to illiterates, and in one study¹⁴ using the same method of assessment, they obtained the same conclusion. The difference in adherence observed in the groups may be influenced by the acceptance of the disease and the confidence of effectiveness of the pharmacotherapy proposed by the medical team.¹⁵ It is suggested that individuals with a higher level of education may consider themselves self-sufficient in decision-making of pharmacotherapy and opt for self-medication, even without the approval of qualified professionals.

It has been shown that patients who considered their poor or regular health self-perception were the ones who adhered least to the therapy, and the lack of adherence aggravates the disease and worsens the health of the individual. A similar finding was found in another study in which poor self-rated health self-perception was associated with low adherence,¹⁶ however, the authors suggest that poor health reporting is associated with patients with reduced self-care or uncommitted patients.¹⁷⁻⁸ Obtained by the individual who does not assume autonomy in the management of chronic disease, unsatisfactory results in disease control and health status.¹⁷⁻⁸ Accession is therefore an essential element for the control of diseases and, thus, the reduction of self-care can compromise adherence to medication.

It is evidenced that the major cause of CKD involvement was hypertensive nephropathy, a percentage higher than the average of Brazilians with CKD.³ It is possible to explain the difference observed by the deficiency in the supply of antihypertensive drugs through UHS, in the city of study, and the absence or non-follow-up of health education. It is believed that access to drugs is fundamental for adherence to pharmacotherapy,¹⁹ most of the patients included in this study obtain their medicines through UHS and episodes of shortages have a negative impact on adherence.²⁰ It is warned that hypertensive patients who do not control blood pressure tend to have worsening of the condition, with increased morbidity and mortality, being the

drug treatment essential for the control of the disease,²¹ and the lack of access to medication or non-follow-up avoids the control of the disease generating, as a consequence, damages in CKD.

It can be seen that, for self-referenced adherence by patients, a value greater than double that found with the application of the Morisky questionnaire,¹⁰ and this shows that the use of self-report may overestimate adherence to pharmacotherapy.²² This overestimation can be reduced by the use of the Morisky scale, with the application of a questionnaire that reports the characteristics on the behavior of the individual, being possible to explore these data in the evaluation of the adherence.

It is indicated for each question on the Morisky scale that the factor most associated with non-adherence was forgetfulness, a number smaller than that of the study carried out in Saudi Arabia and higher than that found in other studies that used a similar population and the same method of evaluation.^{6,9,23} It should be noted that because CKD is frequently accompanied by other comorbidities, polypharmacy is a frequent finding in these patients, being able to contribute to oblivion in the use of medications and conferring negative impact on adherence. It is necessary, on the basis of this, to provide support for daily activities for adult patients and, especially, the elderly. It is inferred that approximately 18.2% of the sample has a caregiver who assists them in compliance with the medication treatment, a percentage lower than the number of elderly in this study (results not shown), and the presence of a caregiver may help the patient to remember and what medications should be taken.¹⁷

As a contemporary measure to improve adherence, the technology as an aid tool in this process is reported and, in a study on adherence in renal graft recipients, text messages, electronic forums and tablet dispensing software favor the success of pharmacotherapeutic adherence.¹⁵ Polypharmacy can also lead to the occurrence of drug interactions that intensify patient discomfort, leading to non-adherence.² Adverse reactions (AR) are another factor involved in adhesion, which cause unpleasant effects, impairing pharmacotherapeutic compliance.

It should be emphasized that the presence of a qualified health professional is important to optimize health care processes. In a systematic review on the effectiveness of clinical pharmaceutical services, the presence

of the pharmacist is important in obtaining favorable clinical results in several diseases, and the professional intervention in management, pharmacotherapeutic monitoring and health education has an impact positive in the patient's QOL.²⁴

Research into the evaluation of adherence to pharmacotherapy has become the most relevant for health management and care when the clinical / laboratory evidence resulting from changes in the patient's health status is also evaluated. In this study, the means of the calcium levels were kept discreetly reduced and there was no significant association between the values observed and the adherence to the therapy. The mean of high HPT dosage in adherent and non-adherent patients was shown, with no significant correlation between pharmacotherapeutic adherence and HPT levels. It is promoted, by the accumulation of phosphorus, a greater secretion of HPT to favor phosphaturia, as well as the lower production of calcitriol by the kidneys stimulates the production of HPT to combat hypocalcemia.²⁵ In addition to pharmacotherapeutic adherence to the control of dysfunctions, HPT control is influenced by food intake and adherence to dialysis²⁶⁻²⁷ and, if the patient fails to follow one of these pillars, treatment is impaired and HPT levels become elevated.

The mean adherent patients of the phosphorus levels were within the reference values, and the non adherent patients presented significantly higher phosphorus levels. It is believed that hyperphosphatemia is an element of risk for cardiovascular problems (CV) and is associated with increased mortality, so it is important to keep phosphorus levels closer to normal.¹⁴ It is clear that the drug targeted to this dysfunction is sevelamer hydrochloride, which has a complex daily dosing schedule, as the drug has adverse reactions that in many patients cause constipation and gastrointestinal discomfort. It is possible, through these associated components, to offer discomfort to the patient, generating losses in adherence to pharmacotherapy, expressed clinically at higher phosphoric levels.

The patient's health status was analyzed using laboratory parameters, when there was a significant association between adhesion and alkaline phosphatase levels. Adherent individuals are reported to have lower alkaline phosphatase mean than non-adherent ones, and this reveals the importance of adherence to pharmacotherapy as high levels of alkaline

phosphatase have been associated with mortality in patients with CKD.²⁸⁻⁹

It is understood that the assumption about the complexity of pharmacotherapy was that the higher the result obtained through the index, the greater the degree of nonadherence of the patients; however, there was no significant correlation between adherence and pharmacotherapeutic complexity, which may be justified by the fact that all the drugs evaluated, except for sevelamer hydrochloride, are used in the hemodialysis clinic, which promotes greater adherence to treatment, these data being compatible with those of another study.³⁰

The adherence and pharmacotherapeutic complexity of sevelamer hydrochloride were significantly correlated, and data demonstrate that the more complex the therapy with this drug, the lower the level of adherence, which may be hampered by the fact that this drug is used at home, to have large size (making it difficult to swallow) and complex dosage. It is suggested a more precise comparison by means of the isolated analysis of the complexity linked to sevelamer hydrochloride, and in other studies the results were compatible, and the correlation of the complexity of the therapy with adhesion.^{2,9}

There was also a correlation with a high degree of significance between the ICP and the number of drugs used. Due to the complexity of the therapy, factors that impair adherence, such as dosage forms and administration devices, dosage schedules, multiple doses, drug to food ratio, and additional instructions.¹²

In relation to the limitations of this study, those common to cross-sectional studies conducted through questionnaires, ie, the impossibility of establishing a clear temporal perspective between the variables and the possible biases of interpretation of the subjects of the research, and the limitation spatial study of research performed in only one hemodialytic treatment institution were highlighted. However, for the first case, the use of a well-accepted international questionnaire, translated and validated for the Brazilian cultural environment; in the second, although the data can not be extrapolated to other health facilities in the country, the results are very relevant for health care managers and professionals, since they can be compared to other realities.

The study shows the association of biochemical measures with the use of validated questionnaires, offering a better basis in the analyzes and, moreover, due to the complexity in the handling of doses of the

drugs used by dialysis patients, this work can be a component in the aid of medical team decision making. The study can also serve as a tool to inform and call the attention of dialytic patients regarding the behavior they must present in relation to pharmacotherapy, favoring the adequate treatment and the improvement in QoL.

Adherence to pharmacotherapy should exist for adequate control of CKD, therefore, estimating the level of adherence is an accessory to health care, and the evaluation of adherence with clinical evidence can serve as a tool for health promotion professionals.

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