Alencar de Pinho, Natália; Burgos de Oliveira, Rita de Cássia; Geraldo Pierin, Angela Maria
Hypertensive patients with and without kidney disease: assessment of risk factors
Revista da Escola de Enfermagem da USP, vol. 49, febrero, 2015, pp. 99-106
Universidade de São Paulo
São Paulo, Brasil

Available in: http://www.redalyc.org/articulo.oa?id=361043283015
Hypertensive patients with and without kidney disease: assessment of risk factors*

Hipertensos com e sem doença renal: avaliação de fatores de risco
Hipertensivos con y sin enfermedad renal: evaluación de factores de riesgo

Natália Alencar de Pinho1, Rita de Cássia Burgos de Oliveira2, Angela Maria Geraldo Pierin2

* Extracted from the dissertation "Fatores associados à doença renal crônica em pacientes internados em um hospital universitário na cidade de São Paulo", Programa de Pós-Graduação em Enfermagem na Saúde do Adulto, Escola de Enfermagem da Universidade de São Paulo, 2013.

1 Universidade de São Paulo, Escola de Enfermagem, Programa de Pós-Graduação em Enfermagem na Saúde do Adulto, São Paulo, SP, Brazil.
2 Universidade de São Paulo, Escola de Enfermagem, Departamento de Enfermagem Médico-Cirúrgica, São Paulo, SP, Brazil.

ABSTRACT

Objective: To compare hypertensive patients with and without chronic kidney disease and identify factors associated with their clinical condition and antihypertensive treatment.

Method: This was a cross-sectional study conducted with patients hospitalized in a general medical ward at a university hospital in the city of São Paulo, Brazil. Data were collected from medical records. Significance was set at p<0.05.

Results: Of the 386 patients studied, 59.3% presented hypertension and, of these, 37.5% presented chronic kidney disease. The data showed an independent association between chronic kidney disease and prior history of diabetes (OR 1.86; CI 1.02-3.41), congestive heart failure (OR 3.42; CI 1.36-9.03) and living with a partner (OR 1.99; CI 1.09-3.69). Regarding antihypertensive treatment, there was a difference (p<0.05) between hypertensive patients with and without chronic kidney disease in terms of administering healthcare treatment (93.2% versus 77.7%); ongoing use of antihypertensive drugs, (79.1% versus 66.4%); higher number of antihypertensive drugs; the use of beta-adrenergic blockers (34.9% versus 19.6%), calcium channel blockers (29.1% versus 11.2%), loop diuretics (30.2% versus 10.5%) and vasodilators (9.3% versus 2.1%).

Conclusion: The hypertensive patients with chronic kidney disease presented a more compromised clinical profile; however, the attitudes of these patients toward antihypertensive treatment were more positive than those without chronic kidney disease.

DESCRIPTORS
Hypertension; Renal Insufficiency, Chronic; Risk Factors; Medication Adherence.
INTRODUCTION

The concept of patient safety in clinical practice is understood as a fundamental principle in preventing hazards involving patients. According to the World Health Organization\(^\text{[1]}\), patient safety is "the reduction of risk of unnecessary harm associated with healthcare to an acceptable minimum." In this sense, managing the risks associated with a disease will directly influence the outcome of a recommended treatment. The present study was based on the consideration of hypertension as an important risk factor for chronic kidney disease, hypertension is among the main risk factors related to this disease.

Chronic kidney disease is a significant global public health problem, with an estimated prevalence between 1.5% and 43.3%\(^\text{[2-3]}\). Moreover, its presence has been associated with greater cardiovascular morbidity and mortality\(^\text{[4-5]}\). The main risk factors attributed to chronic kidney disease are: increased life expectancy, diabetes mellitus and hypertension\(^\text{[6]}\). These factors are intimately associated with the socioeconomic development of a given population: On the one hand, improved living conditions and access to healthcare services reduces the number of deaths due to infections and external causes; on the other, higher quality of life can sometimes lead to a sedentary lifestyle and poorer nutritional habits.

The association between hypertension and chronic kidney disease is well known, considering that chronic kidney disease is the greatest cause of secondary hypertension. Hypertension can also determine the emergence of chronic kidney disease and contribute to its progression to the terminal stage. Associations between blood pressure blood pressure levels and kidney function deterioration have been shown by many research studies\(^\text{[7-8]}\).

While diabetes mellitus represents the leading isolated cause of end stage kidney disease in several countries, hypertension is the most common etiology in Brazil, identified among 34% of dialysis patients\(^\text{[8]}\). Considering that the great relevance of diabetes mellitus in developed countries has been attributed to reduced mortality related with hypertension and other cardiovascular causes, we can argue that greater attention must be given to the health care delivered to hypertensive patients, in order to minimize the risks and profile of moribundity among them.

In light of this, the hypothesis adopted in the present study was that chronic kidney disease in the hypertensive population would be associated with other risk factors, such as cardiovascular and renal ones. The objectives of this study were to compare hypertensive patients with and without kidney disease and identify factors associated with this clinical condition. The study also analyzed antihypertensive treatment among hospitalized patients in a general medical ward of a university hospital in the city of São Paulo, Brazil.

METHOD

This was a cross-sectional, exploratory and quantitative study conducted between December 2010 and June 2013. It was approved by a research ethics committee (no. 1103/11).

Sample size was calculated for an estimated prevalence of kidney disease of 13%, variation of 5%, type I error of 5% and power of 80%. Under these parameters, sample size was estimated at 386 individuals. Inclusion criteria were being 18 years or older and having been hospitalized in the general medical ward of a university hospital in 2009, in the city of São Paulo, Brazil. We excluded expecting mothers, patients that had been hospitalized for less than 24 hours, absence of serum creatinine in at least two instances during the hospitalization period, and patients who evolved to acute kidney injury during their hospital stay according to Acute Kidney Injury Network\(^\text{[9]}\) criteria (an increase in serum creatinine levels equal or greater than 0.3 mg/dL in patients without a medical diagnosis of chronic kidney disease or a medical diagnosis of acute kidney injury).

Data were collected retrospectively from patient charts and recorded on an instrument created for this purpose. We gathered sociodemographic information (age, gender, marital status, occupation, weight and height); patient medical history, including comorbidities; lifestyle habits such as smoking; healthcare treatment received prior to hospitalization; and ongoing medication use. For the purposes of this analysis, we selected patients who presented a personal medical history or medical diagnosis of hypertension (n=229). Chronic kidney disease was defined as the presence of a medical diagnosis recorded at least on one occasion on the patient chart. To assess blood pressure, we considered the first record in the chart, performed in the morning of each day of the hospitalization period. Controlled hypertension was evaluated according to criteria set forth by the VI Brazilian Guidelines on Hypertension\(^\text{[10]}\), with values lower than 140 mmHg for systolic blood pressure and 90 mmHg for diastolic blood pressure.

STATISTICAL ANALYSIS

Associations between the classification variables and the groups with and without chronic kidney disease were assessed using chi-square tests, the likelihood ratio test, and Fisher’s exact test. Regarding the quantitative variables, Student’s t-test was used to compare the means of normally distributed variables. The biosocial and comorbidity variables with a statistical significance lower than 0.2 according to univariate analysis were used in the correction of the multiple logistic regression model, in addition to age in years (continuous variable) and history of diabetes. P-values less than 0.05 (bilateral) were considered statistically significant.

RESULTS

Of the 386 patients assessed, more than half (59.3%) presented hypertension. The data in Table 1 demonstrate that hypertensive patients with and without chronic kidney disease presented similarities regarding: slight predomi-
nance of female patients (51.5%); white ethnicity (65.1%); active workers (40.9%). Body mass index was compatible with overweight [26.8 (23.9–29.9) kg/m²]; and the most predominant age group in both test groups consisted of patients in their sixties [65.1 (14.4 years)]. The hypertensive patients with chronic kidney disease were different, compared to those without chronic kidney disease because they lived with a partner (64.3% versus 50.7%, p=0.047).

Almost all of the hypertensive patients with and without chronic kidney disease (95.3% and 92.3%, respectively) had at least one comorbidity recorded at the time of hospital admission. The data presented in Figure 1 show a significant difference (p<0.05) between patients with and without chronic kidney disease regarding history of diabetes (53.5% versus 36.4%) and congestive heart failure (19.8% versus 7.0%). There was no difference between groups in terms of smoking history, however, considering the current smoking status of hypertensive patients (smokes, stopped, never smoked), there was a significant difference, with a lower percentage of smokers in the chronic kidney disease group (9.9% versus 25.0%, p=0.022).

Multiple logistic regression analysis (Table 2) demonstrated that history of diabetes and congestive heart failure were independently associated with chronic kidney disease. The risk of presenting these comorbidities was approximately two and three times greater, respectively. Living with a partner also was associated with the presence of chronic kidney disease even after correction for other variables, reflecting a two-fold risk. Current or prior smoking was at the threshold of significance (OR 0.54, 95% CI 0.29-1.00).

Regarding hypertension treatment prior to hospitalization (Table 3), most patients had been undergoing treatment, with emphasis on the chronic kidney disease group (93.2% versus 77.7%, p=0.005). Almost a third of the

---

Table 1 - Biosocial characteristics of hypertensive patients hospitalized in a general medical ward, with and without chronic kidney disease - São Paulo, Brazil, 2014.

| Variables          | With chronic kidney disease (N=86) | Without chronic kidney disease (N=143) | Total (N=229) | p-value |
|--------------------|------------------------------------|---------------------------------------|---------------|---------|
|                    | N  | %    | N  | %    | N  | %      |               |
| **Gender**         |    |      |    |      |    |        |               |
| Male               | 45 | 52.3 | 66 | 46.2 | 111| 48.5   | 0.365         |
| Female             | 41 | 47.7 | 77 | 53.8 | 118| 51.5   |               |
| **Ethnicity**      |    |      |    |      |    |        | 0.397         |
| White              | 53 | 61.6 | 96 | 67.1 | 149| 65.1   |               |
| Non-white          | 33 | 38.4 | 47 | 32.9 | 80 | 34.9   |               |
| **Marital status** | (N=226) |    |    |      |    |        | 0.047         |
| Single             | 30 | 35.7 | 70 | 49.3 | 100| 44.2   |               |
| With a partner     | 54 | 64.3 | 72 | 50.7 | 126| 55.8   |               |
| **Occupation**     | (N=220) |    |    |      |    |        | 0.862         |
| Active worker      | 31 | 38.3 | 59 | 42.4 | 90 | 40.9   |               |
| Retired            | 26 | 32.1 | 39 | 28.1 | 65 | 29.5   |               |
| Homemaker          | 21 | 25.9 | 34 | 24.5 | 55 | 25.0   |               |
| Others*            | 3  | 3.7  | 7  | 5.0  | 10 | 4.5    |               |
| **Age (years, mean±sd)** | 65.6±14.3 | 64.8±14.5 | 65.1±14.4 | 0.678 |
| **Body mass index (kg/m²)** | Median (1°.-3°. quartiles) | 27.4 (23.3-30.9) | 26.4 (24.0-29.8) | 26.8 (23.9-29.9) | 0.876 |

* Unemployed (6); Student (4).

Figure 1 - Comorbidities and smoking among hypertensive patients with and without chronic kidney disease hospitalized in a general medical ward, - São Paulo, Brazil, 2014.

Table 2 - Predictors of chronic kidney disease among hypertensive patients at a general medical ward according to multivariate analysis - São Paulo, Brazil, 2014.

| Variables                        | Odds ratio | 95% Confidence interval | P-value |
|----------------------------------|------------|--------------------------|---------|
| **Age (by additional year)**     | 0.99       | 0.97 1.02                | 0.579   |
| **Marital status (with partner)**| 1.99       | 1.09 3.69                | 0.026   |
| **Smoking**                      | 0.54       | 0.29 1.00                | 0.050   |
| **Diabetes mellitus**            | 1.86       | 1.02 3.41                | 0.042   |
| **Congestive heart failure**     | 3.42       | 1.36 9.03                | 0.010   |
| **Acute myocardial infarction**  | 1.66       | 0.66 3.97                | 0.281   |
Hypertensive patients (28.8%) did not take antihypertensive medication continuously, however, among those that did, the percentage was higher among those with chronic kidney disease when compared to those without chronic kidney disease (79.1% versus 66.4%, p=0.041). Hypertensive patients with chronic kidney disease also took a greater number of antihypertensive drugs (p=0.001) than those without chronic kidney disease.

The most commonly used class of antihypertensive drugs was angiotensin-converting enzyme inhibitors (44.5%) and beta-adrenergic blockers (25.3%). There was a significant difference (p<0.05) between hypertensive patients with and without chronic kidney disease regarding the use of beta-adrenergic blockers (34.9% versus 19.6%), calcium channel blockers (29.1% versus 11.2%), loop diuretics (30.2% versus 10.5%) and direct vasodilators (9.3% versus 2.1%).

Blood pressure on the first day of hospitalization was recorded for 191 of the patients in the sample (52.8%). Mean systolic blood pressure of the study population was 135.6 mmHg and no differences were found between patients with and without chronic kidney disease. In turn, diastolic blood pressure was lower among hypertensive patients with chronic kidney disease (75.6 versus 80.6 mmHg, p=0.030). No significant difference was found between groups regarding the frequency of blood pressure control (Figure 2).

**DISCUSSION**

In this study, hypertensive patients with chronic kidney disease chronic kidney disease stood out in comparison with those without chronic kidney disease in terms of presenting higher rates of diabetes mellitus and congestive heart failure. In fact, both comorbidities have been shown to contribute to the onset of chronic kidney disease.

Oxidative stress produced by hyperglycemia and proteinuria, hyperperfusion and kidney hyperfiltration, are factors involved in the pathogenesis of chronic kidney disease. Factors commonly associated with diabetes, such as obesity and cardiovascular diseases, contribute equally to the development of kidney failure[11]. End stage kidney

### Table 3 - Treatment at healthcare services and continuous use of antihypertensive drugs by hypertensive patients hospitalized in a general medical ward, with and without chronic kidney disease - São Paulo, Brazil, 2014.

| Variables                        | With Chronic Kidney Disease (N=86) | Without Chronic Kidney Disease (N=143) | Total (N=229) | p-value |
|----------------------------------|-----------------------------------|---------------------------------------|---------------|---------|
| Treatment at healthcare service  |                                   |                                       |               | 0.005   |
| (N=194)                          |                                   |                                       |               |         |
| Yes                              | 68                                | 93.2                                  | 94            | 77.7    | 162     | 83.5    |         |
| No                               | 5                                 | 6.8                                   | 27            | 22.3    | 32      | 16.5    |         |
| Number of antihypertensive drugs |                                   |                                       |               | 0.001   |
| None                             | 18                                | 20.9                                  | 48            | 33.6    | 66      | 28.8    |         |
| One                              | 13                                | 15.1                                  | 40            | 28.0    | 53      | 23.1    |         |
| Two to three                     | 40                                | 46.5                                  | 45            | 31.5    | 85      | 37.1    |         |
| More than three                  | 15                                | 17.4                                  | 10            | 7.0     | 25      | 10.9    |         |
| Angiotensin-converting enzyme inhibitors |   |                                       |               | 0.849   |
| Yes                              | 39                                | 45.3                                  | 63            | 44.1    | 102     | 44.5    |         |
| No                               | 47                                | 54.7                                  | 80            | 55.9    | 127     | 55.5    |         |
| Beta-adrenergic blockers         |                                   |                                       |               | 0.010   |
| Yes                              | 30                                | 34.9                                  | 28            | 19.6    | 58      | 25.3    |         |
| No                               | 56                                | 65.1                                  | 115           | 80.4    | 171     | 74.7    |         |
| Thiazide diuretics               |                                   |                                       |               | 0.328   |
| Yes                              | 13                                | 15.1                                  | 29            | 20.3    | 42      | 18.3    |         |
| No                               | 73                                | 84.9                                  | 114           | 79.7    | 187     | 81.7    |         |
| Calcium channel blockers         |                                   |                                       |               | 0.001   |
| Yes                              | 25                                | 29.1                                  | 16            | 11.2    | 41      | 17.9    |         |
| No                               | 61                                | 70.9                                  | 127           | 88.8    | 188     | 82.1    |         |
| Loop diuretics                   |                                   |                                       |               | <0.001  |
| Yes                              | 26                                | 30.2                                  | 15            | 10.5    | 41      | 17.9    |         |
| No                               | 60                                | 69.8                                  | 128           | 89.5    | 188     | 82.1    |         |
| Potassium sparing diuretics      |                                   |                                       |               | 0.134   |
| Yes                              | 7                                 | 8.1                                   | 5             | 3.5     | 12      | 5.2     |         |
| No                               | 79                                | 91.9                                  | 138           | 96.5    | 217     | 94.8    |         |
| Angiotensin II receptor blockers  |                                   |                                       |               | 0.764   |
| Yes                              | 5                                 | 5.8                                   | 7             | 4.9     | 12      | 5.2     |         |
| No                               | 81                                | 94.2                                  | 136           | 95.1    | 217     | 94.8    |         |
| Direct vasodilators              |                                   |                                       |               | 0.015   |
| Yes                              | 8                                 | 9.3                                   | 3             | 2.1     | 11      | 4.8     |         |
| No                               | 78                                | 90.7                                  | 140           | 97.9    | 218     | 95.9    |         |
| Alpha-adrenergic blockers        |                                   |                                       |               | 0.530   |
| Yes                              | 3                                 | 3.5                                   | 3             | 2.1     | 6       | 2.6     |         |
| No                               | 83                                | 96.5                                  | 140           | 97.9    | 223     | 97.4    |         |
disease in patients with diabetes mellitus type 2, supposedly associated with diabetic glomerulosclerosis, has taken on great importance over the last few decades in countries with Western lifestyles. Its incidence increased dramatically in the 1980s and 1990s, going from 23.4 pmp (in 1984) to 66 pmp (in 1994) in Japan, and from 29.2 pmp to 107 pmp in the United States in the same period. Even though the United States presented a 3.9% per year reduction in the incidence of end stage kidney disease adjusted for age from 1996 to 2006, diabetes is still the leading cause of kidney failure in the country (44% of new cases treated), similar to Mexico, Malaysia, Taiwan, New Zealand, Japan, Israel, and other countries. Diabetes mellitus ranks as the second baseline diagnosis for patients undergoing kidney replacement therapy (dialysis) in Brazil, with a frequency of 29% in 2012.

Studies have suggested that congestive heart failure can be an important cause of progressive kidney failure, as approximately 50% of individuals with this disorder have chronic kidney disease. In contrast, a study with a sample taken from the NHANES III found that the prevalence of congestive heart failure among patients with chronic kidney disease with and without diabetes, respectively, was 39.9% and 54.1%, significantly (p<0.05) lower than those of patients without these diseases. Even though decreased cardiac debt related to the cardiomyopathy itself or its treatment can contribute to the genesis of progressive kidney failure, the main etiologies of congestive heart failure are hypertensive and ischemic, both closely linked to hypertension.

The study emphasized that the coexistence of hypertension with other factors associated with kidney damage can be very harmful to these patients' prognosis, especially when uncontrolled. A study with hypertensive patients with diabetic nephropathy whose mean duration of follow-up was 3.4 years, identified a hazard ratio of 3.4 years for the progression of chronic kidney disease, kidney failure, or death as being 66% greater (p<0.001) among individuals whose systolic blood pressure was equal or greater to 140 mmHg, than those with lower systolic blood pressure levels.

Regarding lifestyle habits, there was a higher percentage of smokers in the group without chronic kidney disease, which was significant (p<0.05) for currently active smokers and was almost significant with regards to those who were former smokers. This finding differs from those of several other studies that have shown an association between smoking and the development and progression of chronic kidney disease. However, the retrospective nature of the present study and the data gathered from patient charts did not allow for the assessment of data relevant to this habit such as time of abstinence among those who reported being former smokers. Many smokers tend to stop smoking when they reach the more severe phases of the disease, which contributes to a lower percentage of smokers found in cross-sectional studies with chronic kidney disease patients. Furthermore, this observation may be a product of a selection bias inherent to cross-sectional studies: patients with chronic kidney disease and smokers may be underrepresented in the sample due to higher mortality rates.

The association between chronic kidney disease and marital status was also significant (p<0.05), with a predominance of individuals living with partners. Living with a partner has been considered an indication of family support, which would be related to better treatment adherence by patients with chronic diseases and better health outcomes. This positive effect of living with a partner was not observed in the present study. Factors such as time spent and quality of the couple's relationship, in addition to other social support networks may be involved in better levels of chronic disease treatment management and prevention of renal complications.

The present study also found that the rate of controlled blood pressure among patients with and without chronic kidney disease on the first day of their hospital stay was approximately 40%, a percentage that falls within the range of blood pressure control described in Brazil. In recent years, population-based studies in Brazil have shown blood pressure control rates ranging between 30% and 50%. However, the control of blood pressure can be more compromised.
Hypertensive patients with and without kidney disease: assessment of risk factors

in the presence of comorbidities and end organ damage. A study conducted with hypertensive patients with end organ damage receiving ambulatory treatment showed that less than a third of individuals presented controlled blood pressure\(^{[22]}\). In another study, blood pressure control was assessed according to specific targets by stratifying cardiovascular risk and only 32.4% of hypertensive patients with nephropathies and proteinuria greater than 1 g/L were controlled, compare with 61.7% of stage I and II hypertensive patients with low or moderate cardiovascular risk\(^{[25]}\).

Despite the existence of proven effective measures to reduce cardiovascular morbimortality due to raised blood pressure levels, control of this disease is still low. This fact has been attributed to low adherence to antihypertensive treatment. Treatment adherence among these patients represents a real challenge, as it is a result of the interaction of several individual, structural and disease- and treatment-related characteristics. Adherence refers to the behavior of individuals and compliance with a recommended health treatment. Missing appointments and interrupting drug therapy are aspects that have been commonly used to assess treatment adherence among hypertensive patients\(^{[26-27]}\).

A significant portion of the hypertensive patients in the present study presented behavior that could reflect lack of antihypertensive treatment adherence, such as not taking antihypertensive drugs continuously, even with a prior diagnosis of hypertension or comorbidities compatible with end organ damage. The rate of nonadherence to drug therapy (28.8%) was higher than that observed in a representative sample of the Brazilian population in 2008 (17%)\(^{[20]}\). Nonadherence to antihypertensive treatment can contribute to the hospitalization of the studied patients, considering that cardiovascular morbidity was significant both in hypertensive patients with and without chronic kidney disease. Most hypertensive patients (67.2%) presented some comorbidity in addition to hypertension and chronic kidney disease recorded on their charts.

CONCLUSION

Hypertension in chronic kidney disease was associated with other risk factors for the development and progression of renal failure in hypertensive patients admitted to a general medical ward in a university hospital in the city of São Paulo, Brazil. More than half of the hypertensive patients presented uncontrolled hypertension and almost a third presented characteristics compatible with nonadherence. The results point to the need for more wide-reaching actions regarding healthcare of hypertensive patients in Brazil. Safety measures, which assess the characteristics of patients and their outcome, in addition to the control of associated risk, via health education actions, encouraging decision-making and self-care are essential to treatment adherence and to preventing complications and hospital morbidity.

In light of the increasing impact of noncommunicable chronic diseases in Brazil, several public health policies have been adopted to prevent and control these conditions. Such policies range from regulating tobacco use in public environments to offering free drug therapy to prevent cardiovascular events in high-risk patients. Even though standard cardiovascular mortality rates by age have decreased over the last few decades, they are still much higher than those observed in other countries. Cardiovascular causes represent the leading cause of death among Brazilians and high morbimortality rates in the country has been attributed especially to hypertension. Moreover, hypertension constitutes the main cause of kidney failure treated with dialysis in Brazil. For this reason, healthcare professionals, especially nurses, must prioritize care offered to hypertensive individuals, through actions such as hypertension surveillance, comprehensive care and health promotion. Regarding chronic kidney disease, treating hypertension and diabetes mellitus can also be effective in its treatment.

In the context of healthcare delivered to hypertensive patients, the goal of the treatment is to control the disease. The absence of or inadequate control contribute to complications involving end organ damage, such as kidney disease, and can even lead to the need for hospitalization. Therefore, comprehensive care in primary healthcare services, where most hypertensive patients are cared for, together with the support of specialized institutions, compose a structure of commitment and availability that ensures safe and effective care. The fragmentation of health care is not safe for patients. With the goal of caring for patients in their totality and individuality, nursing professionals must promote actions that meet the real needs of hypertensive patients.
DESCRITORES
Hipertensión; Insuficiencia Renal Crónica; Factores de Riesgo; Adhesión a la Medicación.

RESUMEN
Objetivo: Comparar pacientes hipertensivos con y sin enfermedad renal y identificar factores asociados relacionados a la condición clínica y tratamiento anti-hipertensivo. Método: Estudio transversal con pacientes en clínica médica de un hospital universitario de São Paulo. Los datos fueron recolectados mediante análisis de archivo. Valores de p<0,05 fueron considerados significativos. Resultados: De los 386 pacientes evaluados, 59,3% era hipertensivo y, entre estos, 37,5% sufría de enfermedad renal crónica. Fue encontrada asociación independiente de la presencia de enfermedad renal crónica para antecedentes de diabetes (OR 1,86; IC 1,02-3,41) y de insuficiencia cardíaca congestiva (OR 3,42; IC 1,36-9,03); además del hecho de vivir con pareja (OR 1,99; IC 1,09-3,69). Respecto al tratamiento anti-hipertensivo, fue encontrada diferencia (p<0,05) entre los hipertensivos con y sin enfermedad renal respecto a hacer monitorizar de salud (93,2% vs 77,7%); uso continuo de medicamentos anti-hipertensivos, (79,1% vs 66,4%); mayor número de medicamentos anti-hipertensivos; uso de bloqueadores beta-adrenérgicos (34,9% vs 19,6%), bloqueadores de los canales de calcio (29,1% vs 11,2%), diuréticos de asa (30,2% vs 10,5%) y vasodilatadores (9,3% vs 2,1%). Conclusión: Los hipertensivos con enfermedad renal crónica mostraron perfil clínico más comprometido pero, respecto al tratamiento anti-hipertensivo, las actitudes fueron más positivas que entre aquellos sin enfermedad renal.

DESCRIPTORES
Hipertensión; Insuficiencia Renal Crónica; Factores de Riesgo; Cumplimiento de la Medicación.

REFERENCIAS
1. World Health Organization (WHO). The Conceptual Framework for the International Classification for Patient Safety. Version 1.1. Final technical annexes [Internet]. Geneva; 2009. Available from: http://www.who.int/patientsafety/taxonomy/icps_full_report.pdf
2. Zhang QL, Rothenbacher D. Prevalence of chronic kidney disease in population-based studies: systematic review. BMC Public Health. 2008;8:117.
3. Matsushita K, Van der Velde M, Astor BC, Woodward M, Levey AS, Jong PE, et al. Association of estimated glomerular filtration rate and albuminuria with all-cause and cardiovascular mortality in general population cohorts: a collaborative meta-analysis. Lancet. 2010;375(9731):2073-81.
4. Nitsch D, Grams M, Sanga Y, Black C, Cirillo M, Djurdjev O, et al. Associations of estimated glomerular filtration rate and albuminuria with mortality and renal failure by sex: a meta-analysis. BMJ. 2013;346:f324.
5. Salgado Filho N, Brito DJA. Doença renal crônica: a grande epidemia deste milênio. J Bras Nefrol. 2006;28 Supl 2:1-5.
6. Bakris GL, Weir MR, Shaniﬁar S, Zhang Z, Douglas J, van Dijk DJ, et al. Effects of blood pressure level on progression of diabetic nephropathy: results from the RENAAAL study. Arch Intern Med. 2003;163(13):1555-65.
7. Bloomﬁeld GS, Yi SS, Astor BC, Kramer H, Shea S, Shlipak MG, et al. Blood pressure and chronic kidney disease progression in a multi-racial cohort: the Multi-Ethnic Study of Atherosclerosis. J Hum Hypertens. 2013;27(7):421-6.
8. Sesso RCC, Lopes AA, Thomé FS, Lugon JR, Watanabe Y, Santos DR. Report of the Brazilian Chronic Dialysis Census 2012. J Bras Nefrol. 2014;36(1):48-53.
9. Mehta RL, Kellum JA, Shah SV, Molitoris BA, Ronco C, Warnock DG, et al. Acute Kidney Injury Network: report of an initiative to improve outcomes in acute kidney injury. Crit Care. 2007;11(2):R31.
10. Sociedade Brasileira de Cardiologia; Sociedade Brasileira de Hipertensão; Sociedade Brasileira de Nefrologia. VI Diretrizes Brasileiras de Hipertensão. Arq Bras Cardiol. 2010;95(1):I-III.
11. Min TZ, Stephens MW, Kumar P, Chudleigh RA. Renal complications of diabetes. Br Med Bull. 2012;104(1):113-27.
12. Ritz E, Rycklik I, Locatelli F, Halimi S. End-stage renal failure in type 2 diabetes: a medical catastrophe of worldwide dimensions. Am J Kidney Dis. 1999;34(5):795-808.
13. Burrows NR, Li Y, Geiss LS. Incidence of treatment for end-stage renal disease among individuals with diabetes in the U.S. continues to decline. Diabetes Care. 2010;33(1):73-7.
14. Reuten AT. Epidemiology of diabetic kidney disease. Med Clin North Am. 2013;97(1):1-18.
15. Biavo BMM, Martins CTB, Cunha LM, Araujo ML, Ribeiro MMC, Sachs A, et al. Nutritional and epidemiological aspects of patients with chronic renal failure undergoing hemodialysis from Brazil, 2010. J Bras Nefrol. 2012;34(3):206-15.
16. Silverberg D, Wexler D, Blum M, Schwartz D, Iaina A. The association between congestive heart failure and chronic renal disease. Curr Opin Nephrol Hypertens. 2004;13(2):163-70.
17. Foley RN, Murray AM, Li S, Herzog CA, McBean AM, Eggers PW, et al. Chronic kidney disease and the risk for cardiovascular disease, renal replacement, and death in the United States Medicare population, 1998 to 1999. Clin J Am Soc Nephrol. 2005;16(2):489-95.
18. Bocchi EA, Marcondes-Braga FG, Bacal F, Ferraz AS, Albuquerque D, Rodrigues D. Atualização da Diretriz Brasileira de Insuficiência Cardíaca Crônica - 2012. Arq Bras Cardiol. 2012;98(1):1-33.
19. Orth SR, Hallan SL. Smoking: a risk factor for progression of chronic kidney disease and for cardiovascular morbidity and mortality in renal patients—absence of evidence or evidence of absence? Clin J Am Soc Nephrol. 2008;3(1):226-36.
20. Shankar A, Klein R, Klein BEK. The association among smoking, heavy drinking, and chronic kidney disease. Am J Epidemiol. 2006;164(3):263-71.
21. Stengel B, Tarver-Carr ME, Powe NR, Eberhardt MS, Brancati FL. Lifestyle factors, obesity and the risk of chronic kidney disease. Epidemiology. 2003;14(4):479-87.

22. Pierin AMG, Jesus ES, Augusto MAO, Gusmão J, Ortega K, Mion Jr D. Biopsychosocial variables and attitudes towards treatment influence complicated hypertension. Arq Bras Cardiol. 2010;95(5):648-54.

23. Maldaner CR, Beuter M, Brondani CM, Budó MDLD, Pauletto MR. Fatores que influenciam a adesão ao tratamento na doença crônica: o doente em terapia hemodialítica. Rev Gaúcha Enferm. 2008;29(4):647.

24. Pinho NA, Pierin AMG. Hypertension control in Brazilian publications. Arq Bras Cardiol. 2013;101(3):e61-e73.

25. Nobre F, Ribeiro AB, Mion Jr D. Controle da pressão arterial em pacientes sob tratamento anti-hipertensivo no Brasil: controlar Brasil. Arq Bras Cardiol. 2010;94(5):663-70.

26. Jesus ES, Augusto MAO, Gusmão J, Mion Júnior D, Ortega K, Pierin AMG. Profile of hypertensive patients: biosocial characteristics, knowledge, and treatment compliance. Acta Paul Enferm. 2008;21(1):59-65.

27. Santos MVR, Oliveira DC, Arraes LB, Oliveira DAGC, Medeiros L, Novaes MA. Adesão ao tratamento anti-hipertensivo: conceitos, aferição e estratégias inovadoras de abordagem. Rev Bras Clin Med. 2013;11(1):55-61.

28. Ferreira RA, Barreto SM, Giatti L. Hipertensão arterial referida e utilização de medicamentos de uso contínuo no Brasil: um estudo de base populacional. Cad Saúde Pública. 2014;30(4):815-26.