



## ADMINISTRACIÓN – GESTIÓN - CALIDAD

### Body changes experienced by patients with chronic kidney disease undergoing hemodialysis

Modificações corporais vivenciadas por pacientes com doença renal crônica em hemodiálise  
Modificaciones corporales experimentadas por pacientes con dolencia renal crónica en hemodiálisis

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Palabras clave: Enfermería; Insuficiencia Renal Crónica; Autoimagen

### ABSTRACT

This study **aimed** to identify the body modifications experienced by patients undergoing hemodialysis and associates them with the social and clinical data.

Cross-sectional study, whose collection occurred from October 2011 to February 2012, with a sample of 178 patients during hemodialysis session in a reference clinic in northeastern Brazil.

The **results** were analyzed with the help of IBM SPSS Statistics version 19.0, using the descriptive statistics, as of central tendency and dispersion, in addition to analytical statistics by means of the Mann-Whitney U test, Chi-square and Exact Fisher to verify the association between body changes and the social and clinical data. The results show a statistically significant association between changes in

weight and sex, musculoskeletal disorders and gender, time of kidney disease and hemodialysis, and between the variable other and time of renal disease.

It is **concluded** that chronic renal patients undergoing hemodialysis are subject to changes in your body, related to their disease and treatment, and they can suffer influence of social and clinical data, and relevant promotion of care from the nurses who work in clinics hemodialysis, which must also consider the social and clinical variables, in order to get a careful targeted to the needs of this clientele.

## RESUMO

**Objetivou-se** identificar as modificações corporais vivenciadas por pacientes submetidos à hemodiálise e associa-los aos dados sociais e clínicos.

Estudo transversal, cuja coleta ocorreu no período de outubro de 2011 a fevereiro de 2012, com uma amostra de 178 pacientes, durante a sessão de hemodiálise em uma clínica de referência no nordeste brasileiro.

Os **resultados** foram analisados com o auxílio do *IBM SPSS Statistics* versão 19.0, sendo utilizada a estatística descritiva, a partir das medidas de tendência central e de dispersão, além da estatística analítica, por meio dos testes U Mann-Whitney, Qui-Quadrado e Exato de Fisher para verificar a associação entre as modificações corporais e os dados sociais e clínicos. Os resultados apontam que houve associação estatisticamente significativa entre alterações no peso e sexo, alterações musculoesqueléticas e sexo, tempo de doença renal e de hemodiálise, e entre a variável outros e tempo de doença renal.

**Conclui-se** que os pacientes renais crônicos submetidos à hemodiálise estão sujeitos às modificações no seu corpo, relacionadas à sua doença e tratamento, e estes podem sofrer influencia dos dados sociais e clínicos, sendo relevante a promoção de cuidados por parte do enfermeiro atuante nas clínicas de hemodiálise, os quais devem considerar também as variáveis sociais e clínicas, com vistas a obter um cuidado direcionado às necessidades desta clientela.

## RESUMEN

Se **objetivó** identificar los cambios en la imagen corporal vividos por los pacientes sometidos a hemodiálisis y su asociación a los datos sociales y clínicos.

Estudio transversal, cuya recogida de datos ocurrió entre octubre de 2011 y Febrero de 2012, con una muestra de 178 pacientes, durante la sesión de hemodiálisis en una clínica de referencia en el noreste de Brasil.

Los **resultados** se analizaron con la ayuda de *IBM SPSS Statistics* versión 19.0, se utilizó la estadística descriptiva, a partir de mediciones de tendencia central y dispersión, además de la estadística de análisis, a través de la prueba de Mann-Whitney, Chi-cuadrado y la prueba exacta de Fisher para verificar la asociación entre los cambios en la imagen corporal y los datos sociales y clínicos. Los resultados indican que los cambios en la imagen corporal que presentaron asociación estadística significativa fueron: cambios en el peso y el sexo, cambios musculoesqueléticos y sexo, tiempo de enfermedad renal crónica y de diálisis, y entre la variable otros y tiempo de enfermedad renal crónica.

Se **concluye** que los pacientes renales crónicos sometidos a hemodiálisis están sujetos a los cambios en su cuerpo, relacionados con su enfermedad y tratamiento, y pueden sufrir la influencia de los datos sociales y clínicos, siendo relevante la promoción de atención por parte de las enfermeras que trabajan en las clínicas de hemodiálisis, que también deben tener en cuenta las variables sociales y clínicas, con el fin de obtener un cuidado orientado a las necesidades de esta clientela.

## INTRODUCTION

Patients with chronic kidney disease require specialized and highly qualified care. In this context, the nurse should provide comprehensive care because the diagnosis of

this disease has a strong impact on the daily life of affected patients, especially in social relations and in the personal appearance<sup>(1)</sup>.

Chronic Kidney Disease (CKD) is considered a public health problem with high incidence and prevalence worldwide. In 2012, it was calculated that a total of 3.01 million patients are affected by CKD<sup>(2)</sup>. This change is characterized by slow, progressive and irreversible loss of kidney function, resulting in metabolic and electrolyte imbalance in the body. In the terminal phase of this disease, the kidneys become totally inefficient and lose control of the internal environment, requiring the use of artificial methods of blood purification for patient survival<sup>(3)</sup>.

Among the methods of treatment, hemodialysis (HD) stands out quantitatively, with 70% CKD patients worldwide undergoing this renal replacement therapy<sup>(2)</sup>. The hemodialysis machine acts as an artificial kidney, removing toxins and nitrogenous wastes from blood, which is then returned to the patient. This therapy is performed usually three times a week, each session lasting four hours<sup>(3)</sup>.

Thus, hemodialysis results in the survival of the chronic renal patient. However, this therapy greatly affects the daily lives of these clients, imposing water and food restrictions, an ongoing medication regimen and hemodialysis dependence that imposes a monotonous and restricted daily life to that patient, limiting the activities of daily living due to particularities of the disease. Associated with this, chronic kidney disease causes changes in the body image of these patients, increasing the risk for the development of low self-esteem<sup>(1,4-6)</sup>.

Among the changes imposed by the disease and the treatment is the arteriovenous fistula, which causes a visible deformation in a region of the patient's body. Patients say that this change in the body awakens people's curiosity, and for this reason they prefer to hide it using long clothing to cover the fistula. Faced with this reality, it is clear that the body image of these patients is impaired by the presence of the fistula<sup>(7-8)</sup> and, therefore, they need special attention from the professionals involved in the care.

In this context, the nurse must consider body image disorders and the risk of low self-esteem as major problems in the care of renal patients undergoing hemodialysis. These disorders may change the values, beliefs, ideas of these patients, which, in turn, may interfere with the therapy and negatively influence the quality of life<sup>(9)</sup>. Thus, the nurse, through a comprehensive care, must identify and intervene in these changes imposed by chronic kidney disease and hemodialysis.

Thus, the development of studies addressing the main body changes and the relationship between these and social and clinical aspects is considered important. Such data will help professionals to identify key points of nursing care to be provided to hemodialysis patients, related to the prevention of psychological disorders linked to their image<sup>(10)</sup>.

Based on the foregoing, the following questions emerged in the present study: what are the main physical changes experienced by patients undergoing hemodialysis? Is there a relationship between these changes and social and clinical aspects? Therefore, the objective is to evaluate the association between body changes experienced by patients undergoing hemodialysis and social and clinical data.

## MATERIALS AND METHODS

This is a cross-sectional study carried out in a clinic that is reference for dialysis in a city in northeastern Brazil. The population consisted of 330 patients registered and regularly followed by the clinic. The sample consisted of 178 patients selected by the use of a formula of sample calculation developed for studies of finite populations.

For selection of the sample, the following inclusion criteria were adopted: be a chronic renal patient; be registered and submitted to hemodialysis in the abovementioned clinic; be adult aged between 20 and 65 years; and undergo the treatment for more than three months. Among exclusion criteria are: chronic renal patients with mental disorders that prevented them to answer the survey instrument. Sampling occurred by convenience of consecutive type.

Data collection took place from October 2011 to February 2012 during hemodialysis session of patients in which an instrument of the type of form was used, based on consultations with the literature related to clinical evaluation techniques and publications on chronic kidney disease<sup>(11-12)</sup>. This instrument was composed of sections, namely: social and clinical data; history of current health problem; hemodialysis; and some guiding questions, such as: have you experienced any body modifications related to the disease? Are you comfortable with your appearance? Do you want to be different? It is noteworthy that data related to physical modifications were self-reported by the patients in the study because it was considered that these changes were extrinsic and intrinsic sensations experienced by the person investigated.

The instrument underwent a process of validation of the appearance by two teachers who develop studies on the perspective of systematization of nursing care, and the suggestions were incorporated into the instrument.

The results were tabulated in Microsoft Excel files and analyzed with the aid of *IBM SPSS Statistics* version 19.0. Descriptive statistics were used, namely, measures of central tendency (mean and median) and dispersion (standard deviation), and the Kolmogorov-Smirnov test was applied to check normality of data. In addition, we used analytical statistics to examine the association between the variables: body changes, social and clinical data, and the Mann-Whitney-U test was used for quantitative variables and the chi-square and Fisher exact tests were used for nominal variables. We adopted a level of 5% ( $p < 0.05$ ) to determine statistical significance of the test employed.

This study stems from a dissertation entitled "Nursing diagnoses in patients undergoing hemodialysis: similarities between the Model of Adaptation and the International NANDA"<sup>(13)</sup> and received funding from the universal notice of the National Council for Scientific and Technological Development (Process 483285/2010-2). It was approved by the Research Ethics Committee of the institution under the Protocol nº 115/11 and Certificate of Presentation to Ethic Assessment (nº 0139.0.051.000-111). The patient expressed acceptance to participate in the study by signing the Informed Consent.

## RESULTS

With respect to social data, 52.2% of interviewed patients were male with a mean age of 46.6 years ( $\pm 12.3$ ). Regarding marital status, 62.9% had a partner. Regarding family income, 92.1% earned a minimum wage (the value of R\$ 622.00 was considered as the Brazilian minimum wage at the moment of the survey) and the average time of schooling was 8.5 years ( $\pm 4.8$ ).

Regarding clinical data, respondents showed kinetic evaluation of urea (Kt/V) with a mean of 1.58 ( $\pm 0.5$ ). Regarding months with kidney disease and time on hemodialysis, these variables were not normally distributed ( $p < 0.05$ ), according to the Kolmogorov-Smirnov test. Thus, the median of months with kidney disease and undergoing hemodialysis treatment was equal to 72, ranging from four to 360 months, and 48, varying four to 452 months, respectively.

In relation to physical modifications, the results indicate that 71.9% of interviewed patients perceived changes in the body related to CKD and hemodialysis. However, even with the high percentage of patients reporting body modifications, most patients (84.3%) were comfortable with the appearance and did not want to be different (66.9%).

Based on the body changes reported by patients, these were classified as changes in weight (loss or gain) present in 35.9% of patients, musculoskeletal changes (changes in muscles and muscle strength) present in 28.0% patients, and skin (presence of arteriovenous fistula and change in skin color) reported by 17.9% patients. It was established, yet, the classification "others" by 1.6% of respondents, covering sight and menstrual cycle changes. It is noteworthy that 28.0% of respondents reported no change and that some patients had more than one body modification.

Next, in Table 1 below, the statistical associations found between body changes and social and clinical data of patients undergoing hemodialysis will be presented.

**Table 1** - Association between the body changes experienced by patients undergoing hemodialysis and social and clinical data. Natal, 2013

Body changes	CKD <sup>1</sup>	HD <sup>1</sup>	KT/V <sup>1</sup>	Age <sup>1</sup>	Sex
Weight changes	0.227	0.106	0.710	0.835	0.020 <sup>2*</sup>
Musculoskeletal changes	0.000*	0.000*	0.653	0.199	0.049 <sup>2*</sup>
Skin changes	0.119	0.590	0.243	0.177	0.913 <sup>2</sup>
Others	0.033*	0.103	0.291	0.140	0.534 <sup>3</sup>
No changes	0.941	0.626	0.593	0.765	0.531 <sup>2</sup>

Captions: Mann-Whitney test<sup>1</sup>; Qui-square test<sup>2</sup>; Fisher exact test<sup>3</sup>;  
CDK= Chronic Kidney Disease; HD= Hemodialysis

The realization of crosses between the study variables showed statistically significant association between changes in weight and sex, musculoskeletal disorders and sex, time of kidney disease and hemodialysis, and the variable "others" and time of kidney disease.

## DISCUSSION

Regarding the predominance of males in the investigated patients, this result is similar to the census of 2013 of the Brazilian Society of Nephrology, in which 58% of people undergoing hemodialysis are male<sup>(14)</sup>. This prevalence may be associated with the general lower search for health services by men compared to women, resulting in increased susceptibility to chronic diseases<sup>(15)</sup>.

The sample studied consisted of an adult population, with a mean age of 46.6 years. A study<sup>(16)</sup> corroborates this figure when reports an age range of CKD patients that correspond to the working age, what potentiates the changes caused by the disease and treatment, promoting decreased quality of life of this clientele. In relation to the low-income identified in this study, this may be related to the profile of the research institution, which has an agreement with the Unified Health System (SUS) and covers much of this demand.

Regarding marital status, most of the sample had a mate and this can be linked to the age of patients according to a survey with similar profile, and this is also associated with greater support received to the treatment and the disease. It is noteworthy that the low educational level of the interviewed patients may be related to the slightest understanding of the guidelines provided by the health team, what may be reflected in the worsening of the health condition of these patients<sup>(15)</sup>.

Regarding kinetic evaluation of urea Kt/V, an average of 1.5 was identified. This result indicates that the hemodialysis of patients in the study is being properly conducted and this modifiable factor is considered of major importance for the survival of patients submitted to the process of dialysis<sup>(3)</sup>.

According to the data obtained, the time the patient has had kidney disease and has undergone hemodialysis was equal to 72 and 48 months, respectively. A study states that the length of time is directly related to the worsening of associated morbidities, and therefore related to the survival time of patients undergoing hemodialysis<sup>(17)</sup>. Moreover, the longer the time the patient has developed kidney disease, as well as has undergone dialysis treatment, the greater are the number of signs and symptoms that interfere with activities of daily living<sup>(6)</sup>.

In relation to body modification, weight changes, experienced by 35.9% of patients, were statistically associated with the sex of the individuals investigated. A study<sup>(18)</sup> indicates that the body weight is an inaccurate nutritional marker for this population, since it can reflect water retention, lean body mass, and/or fat mass.

Changes in weight are related also to the failure to follow fundamental water and food restrictions to this clientele, as well as to inadequate completion of hemodialysis<sup>(3)</sup>. In this context, changes in weight may be related to difficulty in following the treatment regimen by these patients, particularly by male patients, predominant sex in this study, because they have a difficulty in properly perform the treatment<sup>(15)</sup>.

Still on the changes in weight, energy-protein waste is a common phenomenon in patients undergoing dialysis and a risk factor for clinical outcomes, including decreased quality of life, increased hospital admissions and mortality<sup>(19,20)</sup>. Nevertheless, a high body mass index (BMI) has been associated with longer survival<sup>(20)</sup>. However, it is not clear in the literature if the increased adiposity in

hemodialysis patients is beneficial or harmful; observational data suggest that higher body mass index is associated with improved survival<sup>(18)</sup>.

On statistical associations between body changes and social and clinical data, it was found that 28.0% of patients perceived musculoskeletal changes and these were associated with the time length through which patient have had CKD, the time undergoing HD experienced by this clientele and sex. In this respect, CKD may influence the physical condition of the patient, more specifically the musculoskeletal system, triggering a significant reduction of tolerance to exercise. This change results in reduced daily physical activities such as leisure, work and social life<sup>(6)</sup>.

A study<sup>(16)</sup> corroborates the findings of the statistical association, since it indicates the presence of muscle changes reported by patients undergoing hemodialysis. Among these are muscle pain, cramps, weakness, decreased ability to perform activities of daily life, which worsen with the time subjected to HD.

A study asserts that the musculoskeletal system is greatly influenced by the CKD. However, possible mechanisms that may affect it are very complex and multifaceted and may be the result of changes in muscle perfusion, catabolic state, mediated by metabolic acidosis, corticosteroids, pro-inflammatory cytokines and even the decrease in physical activity. Thus, one way to minimize the intolerance to activity due to the decrease in musculoskeletal capacity is the imposition of exercise for the CKD patient<sup>(21)</sup>.

Sight changes and alterations in the menstrual cycle, indicated by the the classification "others", were also statistically associated with the time the patient has had chronic kidney disease. A study<sup>(20)</sup> asserts that the ocular alterations present in this clientele may be related to the link between renal impairment and microcirculation of the retina, causing vision changes regardless of the presence of diabetes mellitus. Thus, visual impairment becomes more exaggerated because of the prolonged time with renal disease, accounting for increasing morbidities<sup>(6,17)</sup>.

Regarding the changes in the menstrual cycle, a study<sup>(22)</sup> conducted with patients undergoing hemodialysis observed the presence of alterations in the menstrual cycle in 47% of these and identified the impairment in the hypothalamic-pituitary-ovarian axis as the main etiological factor for this changes, causing increased serum of luteinizing hormone and prolactin.

Regarding skin changes, although significant association with the other study variables was not present, these are noteworthy since they were indicated by 17.9% of study subjects. Among skin changes were the arteriovenous fistula, which is considered a major body change for CKD patients who need to undergo hemodialysis. A study found that the presence of fistula generates feelings of conformism in patients undergoing hemodialysis. However, this causes changes in the patient's self-image, reduced self-esteem, negative feelings and disrupts social relationships because they feel inferior<sup>(23)</sup>.

For patients, the need for creation of the fistula is one of the first body marks coming from the CKD. Moreover, the presence of this change may produce other changes such as aneurysms, edemas, hematomas and tremor, causing the body member to become deformed. Affectations related to leisure and work habits are linked to the discomfort with body image, as patients cannot make effort with the arm with the

fistula. In this sense, we see the importance of the nursing team in face of the feelings reported by these patients caused by living with the presence of fistula<sup>(23)</sup>.

Moreover, it is noteworthy that despite the physical changes identified by 71.9% of hemodialysis clientele, the patients in this study prove to be comfortable with their appearance and 44.9% did not want to be different. This finding reflects the importance of hemodialysis treatment for this clientele, which demonstrate satisfaction despite the bodily changes incurred and the changes in the life inherent to the treatment. A study<sup>(17)</sup> indicates that the patient undergoing hemodialysis has difficulty in adhering to treatment but, notwithstanding, looks for ways to support it, because believes the treatment is essential to life.

In this context, based on the findings of the study, it is understood that the nurse, by knowing the main bodily changes that patients undergoing hemodialysis experience and their associations with social and clinical aspects, must establish a dialogue with affected patients in order to alert them about these possible changes and propose strategies to minimize the consequences of these, so that there might not be severe impact on self-esteem, nor in the daily lives of these individuals.

## **CONCLUSION**

It follows from the statistical associations identified in this study that the body changes experienced by patients undergoing hemodialysis may be influenced by social and clinical data. Hence, body changes that showed statistically significant association were: changes in weight and sex, musculoskeletal changes and months undergoing hemodialysis, months with chronic kidney disease and sex and finally, the variable "others" and the time of kidney disease. It was evident also that the majority of respondents reported changes in the body related to the disease and the treatment. However, they are satisfied with their appearance and do not have the desire to become different.

Thus, regarding the peculiarities of the customer submitted to hemodialysis, one realizes that these are subject to changes in their bodies and in daily lives, related to the illness and the treatment. In this context, the promotion of care for these individuals is relevant, by nurses active in hemodialysis clinics, who should also consider social and clinical variables with a view to achieve a care of high quality and targeted to the needs of this clientele.

Furthermore, we understand the need for interventions targeted to the psychological scope of these patients, requiring multidisciplinary actions involving psychologists, social workers, nutritionists, doctors, in addition to nurses, in order to minimize the perceived change and dispel the destructive feelings about body image.

Limitations of the study were related to the fact that the collection was performed only in patients undergoing hemodialysis, not being extended to patients in substitutive treatment, and this was because the collection site did not provide assistance to this differentiated clientele.

As contributions, it is believed that this study will support the best clinical practice of the nurse nephrologist, helping him to recognize the relationship between the body modifications and chronic renal patient, and thus promote quality of care.

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