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NURSING DIAGNOSES IN HEMODIALYSIS BASED ON HORTA'S THEORY DIAGNÓSTICOS DE ENFERMAGEM EM HEMODIÁLISE FUNDAMENTADOS NA TEORIA DE HORTA

DIAGNÓSTICOS DE ENFERMERÍA EN HEMODIÁLISIS BASADOS EN LA TEORÍA DE HORTA

Gilberto de Lima Guimarães¹, Isabel Yovana Quispe Mendoza², Vania Regina Goveia³, Fabiola Carvalho Almeida Baroni⁴, Solange Cervinho Bicalho Godoy⁵, Selme Silqueira Matos⁶

ABSTRACT

Objective: to identify the nursing diagnosis from the referential of Horta's theory and the Taxonomy II endorsed by the North American Nursing Diagnosis Association. **Method:** descriptive retrospective study conducted in a dialysis unit of a university hospital of Belo Horizonte, State of Minas Gerais, Brazil. The sample consisted of 42 patients of both sexes aged ≥ 18 and < 60 years who had been undergoing hemodialysis for at least 90 days. The research project was approved by the Research Ethics Committee, Protocol No. 0292.0.203.000-10. **Results:** real diagnoses: anxiety; excessive fluid volume; insomnia; and acute pain. Potential diagnoses: risk of infection; electrolyte imbalance; vascular trauma; impaired liver function; and glycemic instability. **Conclusion:** the diagnoses were related to psychobiological and psychosocial needs. There was no diagnoses of psychospiritual need. **Descriptors:** Nursing Theory; Kidney Dialysis; Nursing Care; Nursing Diagnosis; Kidney Insufficiency.

RESUMO

Objetivo: identificar o diagnóstico de enfermagem a partir do referencial da teoria de Horta e a Taxonomia II da *North American Nursing Diagnosis Association*. **Método:** estudo descritivo-retrospectivo, realizado na unidade de diálise de um hospital universitário em Belo Horizonte, MG. A amostra foi de 42 pessoas de ambos os sexos, idade ≥ 18 anos e < 60 anos, em hemodiálise havia, no mínimo, 90 dias. O projeto de pesquisa foi aprovado pelo Comitê de Ética em Pesquisa, Protocolo n° 0292.0.203.000-10. **Resultados:** diagnósticos reais: ansiedade; volume de líquidos excessivo; insônia; e dor aguda. Diagnósticos potenciais: risco de infecção; desequilíbrio eletrolítico; trauma vascular; função hepática prejudicada; e glicemia instável. **Conclusão:** os diagnósticos pertenciam às necessidades psicobiológicas e psicossociais. Não houve diagnóstico para a necessidade psicoespiritual. **Descritores:** Teoria de Enfermagem; Diálise Renal; Cuidados de Enfermagem; Diagnóstico de Enfermagem; Insuficiência Renal.

RESUMEN

Objetivo: identificar el diagnóstico de enfermería desde el referencial de la teoría de Horta y la Taxonomía II de la *North American Nursing Diagnosis Association*. **Método:** estudio descriptivo retrospectivo llevado a cabo en la unidad de diálisis de un hospital universitario en Belo Horizonte, Estado de Minas Gerais, Brasil. La muestra la integraron 42 personas de ambos sexos, con edad de ≥ 18 años y < 60 años sometidos a hemodiálisis al menos por 90 días. El proyecto de investigación fue aprobado por el Comité de Ética en Investigación, Protocolo N° 0292.0.203.000-10. **Resultados:** diagnósticos reales: ansiedad; volumen excesivo de líquidos; insomnio; y dolor agudo. Diagnósticos potenciales: riesgo de infección; desequilibrio de electrolitos; trauma vascular; función hepática deteriorada; y glucemia inestable. **Conclusión:** los diagnósticos pertenecieron a las necesidades psicobiológicas y psicossociales. No hubo ningún diagnóstico para la necesidad psicoespiritual. **Descriptor:** Teoría de Enfermería; Diálisis Renal; Atención de Enfermería; Diagnóstico de Enfermería; Insuficiencia Renal.

¹Nurse, PhD. in Nursing, School of Nursing, Federal University of Minas Gerais/UFMG. Belo Horizonte (MG), Brazil. E-mail: drgilberto.guimaraes@hotmail.com; ²Nurse, PhD. in Nursing, School of Nursing, Federal University of Minas Gerais/UFMG. Belo Horizonte (MG), Brazil. E-mail: isabelyovana@ufmg.br; ³Nurse, PhD. in Nursing, School of Nursing, Federal University of Minas Gerais/UFMG. Belo Horizonte (MG), Brazil. E-mail: vaniagoveia@ufmg.br; ⁴Nurse, PhD. in Nursing, School of Nursing, Federal University of Minas Gerais/UFMG. Belo Horizonte (MG), Brazil. E-mail: fabiolabaroni@gmail.com; ⁵Nurse, PhD. in Nursing, School of Nursing, Federal University of Minas Gerais/UFMG. Belo Horizonte (MG), Brazil. E-mail: solange_godoy@yahoo.com.br; ⁶Nurse, PhD. in Nursing, School of Nursing, Federal University of Minas Gerais/UFMG. Belo Horizonte (MG), Brazil. E-mail: selmesilqueira@gmail.com



INTRODUCTION

Chronic kidney disease (CKD) has a multifactorial cause and manifests itself as a syndrome resulting from slow and progressive loss of the capability of kidney function to maintain bodily homeostasis. It is considered a global public health problem, with increased incidence and prevalence in both the pre-dialytic and dialytic stages.¹

In Brazil, there are 87,000 patients undergoing dialysis and this treatment represents a life expectancy because the disease is irreversible. Therefore, every effort must be undertaken in order to avoid the complications of the disease. This way, nurses are required to coordinate the care provided by identifying the needs expressed by the patients, offering care procedures aimed at ensuring the best adequacy of the treatment, quality of life, and taking advantage of every moment to promote changes.²⁻³

Such care coordination occurs through the incorporation of the Systematization of Nursing Care (SNC) in professional practice, because it organizes the work regarding the method, personnel, and instruments, making the operation of the nursing process (NP) possible. The NP is a set of actions that must be performed by means of a particular way of doing and thinking, in the face of patients, family or human collectivity's needs—at any given moment of the health and disease process—that require professional nursing care. Thus, it is a methodological tool that guides the nursing care and is subject to a theoretical conception. The present study used Wanda de Aguiar Horta's theory of basic human needs (Horta's theory) as the foundation.⁴⁻⁶

The NP constitutes the element capable of providing the means to ensure the adequacy of treatment, besides facilitating research and teaching, delimiting the functions independent of nursing, encouraging patients' participation in their treatment, and contributing to the enhancement of a body of knowledge for nursing. Its base is nursing diagnosis (ND), which provides measurable criteria that guide the interventions aimed at achieving the best outcomes.⁴⁻⁶

♦ Horta's theory

In Brazil, the SNC began with Wanda de Aguiar Horta's studies and, in recent decades, nursing has obtained not just a model, but a language and legislation, in addition to the establishment of commitments. As a conceptual model, Horta's theory is grounded in Maslow's theory of human motivation and

based on the concept of hierarchy of basic human needs (BHN).⁵

The BHN are organized into a hierarchy of five levels of priority and the most basic level includes the physiological needs; the second level regards the needs of safety and protection; the third level considers the needs of love and belonging; the fourth level includes the needs of self-esteem; and the fifth level is related to the need of self-actualization.⁵

Nursing uses the designation proposed by John Mohana, which ranks the BHN into three levels, namely: psychobiological; psychosocial; and psychospiritual. The psychobiological need is based on the aspects necessary for life from the biological point of view; the psychosocial need concerns life in social relationships and interactions; and the psychospiritual need is understood through religious or theological life, ethics or philosophy of life taken by the individuals. Thus, it is noted that the first two levels are common to living beings, but the third is unique feature of man.⁵

Furthermore, in addition to be based on Maslow's theory and adopting João Mohana's classification of BHN, the theory encompasses three general laws that govern the universal phenomena, namely: the law of equilibrium (the whole universe is maintained by processes of dynamic equilibrium between its beings); the law of adaptation (all beings in the universe interact with their external environment, always seeking adjustment forms to keep in equilibrium); and the law of holism (the universe is a whole, the human being is a whole, the cell is a whole and that whole is not the mere sum of the constituent parts of every being).⁵ The interrelation between these laws establishes the amalgam that constitutes the theory.

In light of the foregoing and considering that the scenario of the study implemented the SNC in the first half of 2010, the identification of the diagnostic profile of patients with CKD undergoing hemodialysis treatment was considered of highest importance.

OBJECTIVE

- To identify the nursing diagnosis from the referential of Horta's theory and the Taxonomy II endorsed by the North American Nursing Diagnosis Association.

METHOD

This is a descriptive retrospective study with a quantitative approach, since it



represents a time period, when the variables of interest are measured simultaneously and there is no concern with new measurement.

The scenario was the dialysis unit located at the university hospital of a public institution in Belo Horizonte, State of Minas Gerais, Brazil. This unit had 16 hemodialysis machines, three peritoneal dialysis cyclers, and there were 120 patients undergoing treatment during the period of study. Of these patients, 78 were undergoing hemodialysis in three weekly sessions, with an average duration of four hours. The inclusion criteria were: adults of both sexes; aged ≥ 18 and < 60 years; and having been undergoing hemodialysis for at least 90 days. The sample of the study was composed of 42 patients.

The instrument for data collection included: sociodemographic data; underlying disease; diagnoses titles; and related/defining characteristic factor. The diagnoses attributed were classified into real and potential. Real diagnosis describes the human responses to health conditions existing in an individual and that are supported by defining characteristics (manifestations, signs, and symptoms) grouped into patterns of evidence or related inferences. Potential or risk diagnosis describes human responses to health conditions that can develop in an individual and are supported by risk factors that contribute to increased vulnerability.⁶

Data collection was carried out using the medical records from 3rd September to 3rd October, 2010. Data analysis was performed by means of descriptive statistics and discussed in the light of the scientific literature, corroborated by Horta's theory.

The study was approved by the Ethics Research Committee of the Federal University of Minas Gerais/UFMG, under Opinion No. 0292.0.203.000-10 of 2nd September, 2010. The research was in compliance with the Resolution 196/96 of the National Health Council, safeguarding the anonymity of patients under treatment and the professionals who made the nursing diagnoses.

RESULTS

According to the 42 medical records assessed, 61.9% of patients were male and their age ranged from 20 to 59 years. As for marital status, 54.5% were single. As regards the level of education, 54.6% had complete elementary education and 2.9% complete higher education. As for religion, 57.4% were Catholics and 9.53% had no religion. With respect to underlying diseases, 37.71% were diagnosed with hypertensive nephropathy and 33.33% with glomerulopathy. These results are presented in Table 1.

Table 1. Distribution of sociodemographic and clinical variables in patients with chronic kidney disease who were undergoing hemodialysis treatment. Belo Horizonte, 2014.

Variables	n	%
Sex		
Male	26	61.9
Female	16	38.1
Age		
20-29	16	38.0
30-39	8	19.0
40-49	5	12.0
50-59	13	31.0
Marital status		
Single	22	54.5
Married	15	45.5
Education		
Elementary education	23	54.6
Secondary education	18	42.9
Higher education	1	2.5
Religion		
Catholic	24	57.4
Evangelical	12	28.6
Without religion	4	9.5
Spiritist	1	2.4
Jehovah's Witness	1	2.4
Underlying disease		
Hypertensive nephropathy	15	35.7
Glomerulopathy	14	33.3
Diabetic nephropathy	4	9.53
Vesicoureteral reflux nephropathy	4	9.53
Kidney lithiasis	3	7.14
Polycystic kidney	2	4.76

Real and potential diagnoses were attributed to the 42 patients undergoing hemodialysis. The real diagnoses were: anxiety (10); excessive fluid volume (10);

insomnia (10) in 24% of the medical records; and acute pain (3) in 7%. The potential diagnoses were: risk of infection (42); risk of electrolyte imbalance (42); risk of vascular



trauma (42) in 100% of the medical records; risk of impaired liver function (14) in 33%; and risk of glycemic instability (4) in 9%. Nursing

diagnoses and their related factors and defining characteristics or risk factors are presented in the Figure 1.

Nursing diagnosis	Related factors or risk factors	Defining characteristic	Human need
Risk of infection	Invasive procedure: venous puncture Chronic disease Inadequate secondary defenses	-	Psychobiological
Risk of electrolyte imbalance	Kidney dysfunction	-	Psychobiological
Risk of vascular trauma	Infusion speed	-	Psychobiological
Risk of impaired liver function	Viral infection	-	Psychobiological
Risk of glycemic instability	Inadequate glycemic control	-	Psychobiological
Anxiety	Food intake Situational crisis (weight gain in a short time)	Feeling of inadequacy Irritability	Psychosocial
Excessive fluid volume	Excessive intake of liquids	Jugular vein distention	Psychobiological
Insomnia	Anxiety Fear	Reports non-restorative sleep Reports difficulty in falling asleep	Psychosocial
Acute pain	Verbal report	Harmful agents (biological and psychological)	Psychobiological

Figure 1. Distribution of nursing diagnoses according to related factors, risk factors, defining characteristics, and affected basic human need.

DISCUSSION

This study identified male prevalence in hemodialysis treatment. Studies on survival of patients under this condition also indicate this predominance, pointing cardiovascular disease as the leading cause of mortality.⁷⁻⁸

On the world stage, a little more than a million individuals undergo hemodialysis and more than a half are aged over 65 years.⁷ In Brazil, this population represents 26% of patients undergoing hemodialysis, and 31% of the patients assessed in the present study were aged between 50 and 59 years. The Brazilian population is aging and, as a consequence, there will be an increase in the number of patients aged above the 5th decade of life undergoing dialysis. This variable has been regarded as a risk factor for mortality and decline in quality of life.⁸⁻⁹ In this way, the incorporation of regular physical activity has been proposed as a means of prevention of musculoskeletal problems in patients with CKD.⁷

Most participants of the present study had complete elementary education. Low educational level has been identified as a factor that favors social vulnerability and compromises the adherence to the therapeutic plan.¹⁰

Regarding the etiology of the CKD, in the United States of America (USA), the main cause is diabetic nephropathy, followed by hypertension and glomerulopathies.⁹ Data from Brazil point out hypertensive nephropathy (35.1%) as the leading cause, followed by diabetic nephropathy (28.4%),

chronic glomerulonephritis (11.4%), and polycystic kidneys (3.4%).²

In the present study, hypertensive nephropathy was the leading cause of CKD (35.71%). Hypertension and renal function are closely related and hypertension can be both the cause and the result of kidney disease. In the malignant or accelerated forms, it can determine a serious kidney injury of microvascular nature, characterized by myointimal proliferation or fibrinoid necrosis, i.e., malignant nephrosclerosis. If left untreated, this situation may frequently and in a short time cause terminal CKD.¹⁰

Chronic non-malignant hypertension can determine kidney injury of microvascular nature, characterized by less aggressive and slow developing hyaline arteriosclerosis—known as benign nephrosclerosis—which can lead to terminal CKD. Malignant and benign forms of nephrosclerosis—which together are called hypertensive nephrosclerosis—determine an important contingent of patients with renal dysfunction in absolute figures, given the high prevalence of hypertension in the general population.¹⁰

The main mechanism of hypertension in CKD is related to the progressive loss of kidney ability to excrete sodium, resulting in saline and volume overload. Other mechanisms may be involved, they are: higher output of vasoconstrictors, such as angiotensin II; decrease of vasodilators, such as prostaglandins; and changes in the endothelial function with impaired synthesis of nitric oxide.¹⁰



In the USA, the glomerulopathies are the third cause of CKD and, in Brazil, the fourth.²⁻⁹ Among other factors, such a situation is attributed to the non-performance of the renal biopsy on the occasion of the staging CKD.² In the present study, glomerulopathy was the second cause. Since the study was conducted in a teaching and research institution, access to propaedeutic diagnostic was wider.

It should be noted that the glomerulopathies often have insidious and asymptomatic course and entails a delay in diagnosis, which contributes to worse renal and clinical survival of the patients. The histopathological diagnosis is obtained through renal biopsy. It is indicated when there is nephrotic syndrome in adult patients, renal failure from non-clarified cause, and rapidly progressive glomerulonephritis.¹¹

A study on the prevalence of CKD in the Federal District showed that in 80% of the suspected cases biopsied the glomerular disease had been confirmed. In this way, the clinical suspicion must foster the histopathological diagnosis and treatment quickly, in order to prevent or slow the progression of kidney disease.¹²

In the USA, diabetic nephropathy (DN) is the leading cause of admission in dialysis programs and it is the second (28.4%) in Brazil.² However, it was the third cause in the present study (9.53%). The DN or kidney disease, secondary to diabetes mellitus (DM), has been named "diabetic kidney disease". This is a clinical syndrome characterized by the presence of proteinuria and changes in the renal function, determined at least in two separate occasions, with an interval of three to six months. Studies have shown that the prevalence of CKD in DM can range from 5 to 40%.¹³⁻¹⁷

As for reflux nephropathy (RN), there is no national data available in the literature concerning this disease and its impact on adult individuals with CKD undergoing dialysis.² In the present study, the RN equaled the occurrence of DN. This is due to the fact that the institution under study was specialized in nephropediatrics. Thus, many of the children who reach adulthood and that require dialysis treatment are kept in the program of the unit.

RN is characterized by the presence of focal or diffuse renal scarring, secondary to irreversible lesions of the renal parenchyma, which are identified as areas of hypo-uptake through renal scintigraphy. Two types of scars should be distinguished in this pathology, the primaries and the congenital. The primary

scars are associated with abnormal metanephric development and they emerge in the absence of urinary tract infection; the congenital scars are a sequel from one or multiple episodes of acute pyelonephritis, in the presence of vesicoureteral reflux, with infected urine entering the collector channels through the so-called refluxing papillae.¹²

RN is a significant cause of hypertension and CKD in pediatric age. For this reason, patients should be monitored in order to provide early detection of proteinuria, with or without elevated blood pressure and, thus, prevent or slow the progression to CKD.¹²

In Brazil, data concerning kidney lithiasis have not been found in the last census promoted by the Brazilian Society of Nephrology.² In the present study, it was the fifth cause of CKD in patients undergoing dialysis. Polycystic kidney disease was the sixth leading cause, a result also found in another study.²

The nursing diagnosis expresses the need of a human being requiring care and the extent of dependency on this service in nature and extent. The diagnoses found in this study could be distributed in two hierarchical levels proposed by Horta, i.e., psychobiological and psychosocial needs. The psychobiological need is essential for assurance and maintenance of life. In this sense, it constitutes the most elemental level, because it is the foundation of the other hierarchical levels. The psychosocial need is characteristic of all animal species that have gregarious sense to life. The third level, i.e., the psychospiritual, is unique feature of human beings and distinguishes them from other animals.⁵

In the present study, there were no diagnoses of the psychospiritual need. It can be inferred that the absence of diagnoses of the psychospiritual need made by the nurses is the fruit of their worldview centered on the biologicist model, under strong biomedical influence. From this model, human beings are perceived according to their functionality and all their component faces are ignored. By proceeding in this way, the nurses express their concept of man through which they are led.¹⁸ In this sense, the human beings are greater than the sum of their parts and, from Horta's theory, a new concept of the human being is assumed. Understanding that the needs are interrelated, man is seen as an indivisible whole.⁵ Despite the scarcity of research in this field, a study conducted in a dialysis unit with features similar to those found in the unit studied identified the concern toward increased spiritual well-being.¹⁹



Nursing diagnoses were discussed relating the risk/related factors and the defining characteristics.⁶ Thus, the diagnosis of risk of infection was confirmed from the listed factors of venous puncture, chronic disease, and inadequate secondary defenses, which are in line with the results of other studies.¹⁻³ Venous puncture is performed in the arteriovenous fistula (AVF), which is the main access for hemodialysis. The fact of being subject to multiple punctures increases the risk of infection due to loss of skin integrity. This fact makes it necessary to adopt technical measures on the part of nursing as well as the provision of information to patients under treatment. With regard to inadequate secondary defenses, anemia is a common complication associated with adverse development. Its cause is the deficiency of erythropoietin production by renal peritubular fibroblasts. However, it is influenced by iron deficiency and blood loss in the extracorporeal circuit.¹

The diagnosis of risk of electrolyte imbalance was established from the risk factor "renal dysfunction". The kidneys are vital organs for the maintenance of the homeostasis of the human body, because they promote acid-base regulation of electrolytes and water, among others.¹ Nurses should give closer attention to the acquisition of competence through the identification of symptoms and signs involving this clinical manifestation, aiming to provide care that guarantees quality and safety.⁷

The diagnosis of risk of vascular trauma was established on the basis of the risk factor "infusion speed". Through a mechanical pump, the blood volume of 200 to 350 mL/min is extracted through pipes connected to the device implanted in the AVF. After traversing the extracorporeal circuit, this volume will return and it may cause hematoma in the AVF.³ The nurses should guide their teams regarding the inspection of the venous puncture site in the AVF and the right decision-making for venous pressure elevation in the extracorporeal circulating set.

The diagnosis of risk of impaired liver function was established from the risk factor "viral infection". Studies indicate that HCV infection remains prevalent in the hemodialysis units and the HCV is considered the leading cause of liver disease among patients with CKD undergoing dialysis treatment. Patients with CKD are exposed to infection with hepatitis B and C viruses, and blood transfusion and non-compliance with these biosafety measures are the main causes of contamination. Hepatitis B and C

compromise the quality of life and the inclusion or maintenance in the kidney transplant waiting list.⁷ Corrective actions of anemia by use of human recombinant erythropoietin, combined with immunization against hepatitis B in susceptible individuals, have decreased the rates of infection by hepatitis B. However, the prevalence of hepatitis C is still of concern.² Since there is no immunization against hepatitis C, the adoption of biosafety measures is the only way for prevention and control. In this sense, nurses are responsible for providing their teams with permanent education regarding the norms of universal precautions necessary to reduce the spread of infection.²

The diagnosis of risk of glycemic instability was associated with two factors, namely: "inadequate glycemic control" and "food intake". Hemodialysis may cause glycemic instability due to the passage of blood glucose to the dialysate.¹ Thus, it becomes crucial to monitor blood glucose in order to prevent the occurrence of changes of hypo-or hyperglycemia during treatment.⁷⁻¹⁶

The diagnosis of anxiety, insomnia, and excessive fluid volume are interrelated and they arise from the psychological changes occurring in patients under hemodialysis. At the beginning of treatment, patients are generally hopeful; however, after some time, they have conflicting feelings. Fear is one of them, since it is present in the situations experienced. The patients experience extreme fear of complications arising from the disease and treatment. This feeling produces changes in the emotional state, causing extreme fear of the future.¹⁷

It should be noted that the attitude of the patient denying the CKD, allied to the high intake of liquids and malnutrition, develops a synergy for the change of the emotional state. Also, the dependency on family members and medical services, as well as the physical limitations, make the social conviviality become restricted, which affects their affectivity, sexuality, and self-esteem.¹⁴⁻¹⁷ These factors build the complex scenario that founds the emotional state and thus contribute to the changes of the psychological state, allowing the appearance of this diagnostic triad.

The diagnosis of acute pain had the verbal report as its defining characteristic. A previous study assessed the quality of life and found significant associations between: physical and emotional aspects; pain and mental health; vitality and mental health; and social and emotional aspects.¹⁴ These results point to the need of a service that seeks to



simultaneously satisfy the biological, social, and physical aspects.¹³ This way, in the face of diagnosis of acute pain, the nurses need technical competence to deal with the objective characters that surround them, without neglecting, however, the human subjectivity, recognizing their influence on the expression of that diagnosis.

CONCLUSION

Nine nursing diagnoses, classified into real and potential, were identified among patients with CKD undergoing hemodialysis treatment. These diagnoses were related to the psychobiological and psychosocial needs. There was no diagnosis of the psychospiritual need.

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Corresponding Address

Isabel Yovana Quispe Mendoza
Av do Contorno, 2250 / Ap. 304
Bairro Floresta
CEP 30110-012 – Belo Horizonte (MG), Brazil