

# NANDA International Nursing Diagnoses for Children with Kidney Disease on Hemodialysis

Paula Sousa da Silva Rocha<sup>1</sup>, Hannar Angélica de Melo Alverga<sup>2</sup>, Maria Gillyana Souto Pereira Lima<sup>3</sup>, Maria de Nazaré da Silva Cruz<sup>2</sup>, Thalyta Mariany Rego Lopes Ueno<sup>3</sup>, Joici Carvalho Barata<sup>2</sup>, Ewellyn Natalia Assunção Ferreira<sup>4</sup>, Aryelle Christie Gomes Leston<sup>5</sup>, Ingrid Melo de Menezes<sup>5</sup>, Ana Carolina Marinho Pinheiro<sup>6</sup>, Charles Carvalho dos Santos<sup>4</sup>, Sandra Maria Pinheiro Nogueira<sup>4</sup>, Eliane Moura da Silva<sup>7</sup>, Antonia Gomes de Olinda<sup>8</sup>, Susi dos Santos Barreto de Souza<sup>9</sup>, Viviane Ferraz Ferraz de Aguiar<sup>9</sup>, Dayara de Nazaré Rosa de Carvalho<sup>2</sup>

<sup>1</sup>Federal University of Pará and Evandro Chagas Institute (PPGBPA / UEPA / IEC). Belém, Pará – Brazil.

<sup>2</sup>Pará State University. (UEPA). Belém, Pará – Brazil.

<sup>3</sup>Amazonas State University (UEA). Manaus, Amazonas - Brazil.

<sup>4</sup>University of the Amazon (UNAMA). Belém, Pará – Brazil.

<sup>5</sup>University Center FIBRA (FIBRA). Belém, Pará – Brazil.

<sup>6</sup>Metropolitan University Center of the Amazon (UNIFAMAZ). Belém, Pará – Brazil.

<sup>7</sup>Evandro Chagas Institute (IEC). Belém, Pará – Brazil.

<sup>8</sup>Faculty of Patos. Dourados, Mato Grosso do Sul. Brazil

<sup>9</sup>Federal University of Pará (UFPA). Belém, Pará – Brazil.

Corresponding Author: Dayara de Nazaré Rosa de Carvalho

**Abstract—** *Objective: To identify the nursing diagnoses of NANDA international in children with kidney disease undergoing hemodialysis. Methods: Cross-sectional and descriptive study, carried out with 16 patients, at a pediatric renal therapy reference center in a city in northern Brazil. For data collection, the interview form was used together with data collection in the patients' medical records from January to March 2016. Results: 21 nursing diagnoses were identified, the most frequent of which were: risk of infection (100%); risk of vascular trauma (100%) and excessive volume (68.75%). Conclusion: The most frequent diagnoses are included in the domains security / protection and nutrition, referring to specific interventions and strengthening nursing practice in hemodialysis.*

**Keywords—** *Nursing Diagnosis; Pediatrics; Pediatric Renal Dialysis*

## I. INTRODUCTION

The occurrence of a systemic disease implies, for a child, the need to cope with various changes in lifestyle, especially those caused by restrictions resulting from the disease, by the therapeutic and clinical control needs, as well as the possibility of recurrent hospitalizations. Renal Disease (DR) is one of these conditions, and consists of progressive and irreversible damage and loss of kidney functions<sup>[1]</sup>.

Studies<sup>[1,2]</sup> demonstrate that technological innovations have brought significant improvements for the treatment of RD, however, this disease still has great repercussions for its patients, especially due to the limitations and the abrupt change in the child's routine for the effective treatment, which it is supported by diets, medicated drugs and some types of dialysis.

Hemodialysis stands out among the treatment modalities for kidney disease. This modality consists of the extraction of toxic nitrogenous substances from the

blood and the removal of excess fluids accumulated in the body's tissues<sup>[2]</sup>.

The implementation of the Nursing Process (NP) in a pediatric hemodialysis sector is of fundamental importance, since this instrument supports nurses in the development of a specific care plan, covering the identification and monitoring of the adverse effects of treatment, patient care, complications resulting from the disease, in addition to the possibility of developing educational actions for promotion, prevention and treatment<sup>[3]</sup>.

The NP consists of stages that vary according to the established theoretical framework. Among its stages, the Nursing Diagnosis (DE) stage stands out, as it directly interferes with the success of the other stages of the nursing process. NDs are conceptualized as clinical judgments of the individual, family and / or community's responses to real or potential health problems and vital processes. They are scientific interpretations of the data collected, used to guide nursing planning, implementation and evaluation<sup>[4]</sup>.

Thus, with the objective of providing assistance aiming at a better adaptation of the child with kidney disease to the treatment of hemodialysis, and also to strengthen the professional care practice of nurses, this research aimed to identify the nursing diagnoses of NANDA International in children with hemodialysis kidney disease.

## II. METHODOLOGY

A descriptive and cross-sectional research was carried out, with a quantitative approach, interviewing those responsible for the children seen at a referral center for renal therapy in a public hospital in the State of Pará and collecting data from the medical records of these children. The total sample of the research was composed of 16 children diagnosed with kidney disease and submitted to hemodialysis at the renal therapy center during the research period.

The inclusion criteria for data collection in the medical records were: child registered and submitted to hemodialysis in the referred renal therapy unit, being under treatment in the unit for at least 6 months, aged between 0 and 12 years. The exclusion criteria were: patients over 12 years old, children with mental disabilities and diagnosed with HIV and hepatitis B. For

the interview with those responsible for the children, the inclusion criteria were: Being responsible for a child included and having more 18 years old. The exclusion criteria were: caregivers with mental illness, who do not communicate by speech and under 18 years old.

For data collection, an instrument divided into 3 cores was used: the first refers to socioeconomic aspects, the second refers to clinical aspects and the third refers to the adaptive problems proposed by Sister Callista Roy. The collection was carried out in a reserved room at the renal therapy center, before the beginning of the hemodialysis session of the child under the responsibility of the adult, between the months of January to March 2016.

For the structuring of the data, an individual process of clinical judgment of the nursing diagnoses was carried out, carried out in two phases: the analysis, which includes categorization of the data and the identification of gaps; and the synthesis, which is formed by grouping, comparing, identifying and relating the data<sup>[5]</sup>. Then, a database was built in the Microsoft Excel application, in which diagnoses were recorded and statistics were generated for data analysis.

Respecting the rules of Resolution No. 466/2012 of the National Health Council, this research was approved by the Research Ethics Committee of the University of the State of Pará and the Santa Casa de Misericórdia do Pará Foundation, under opinions number 1,384,495 and 1,035,923, respectively. The guardians of the children signed the Free and Informed Consent Form and the head of the Renal Therapy Center signed authorization for access to the medical records. The study was financed with the researchers' own resources.

## III. RESULTS

The identified nursing diagnoses - which are distributed by frequency in Picture 1 - had an average per child of 7.8; median of 8; standard deviation of  $\pm 2.32$ ; maximum value of 12 and minimum of 5 per child.

Chart 1: Distribution of nursing diagnoses according to the international NANDA for children on hemodialysis. Belém / PA, 2016.

Diagnostics	Gift		Absent		Total	
	n	%	n	%	n	%
Risk of infection	16	100	0	0.0	16	100
Vascular trauma risk	16	100	0	0.0	16	100
Excessive liquid volume	11	68.75	5	31.25	16	100
Arrangement for improved self-	7	43.75	9	56.25	16	100
Arrangement for improved methods familiar	7	43.75	9	56.25	16	100
Acute pain	7	43.75	9	56.25	16	100
Improved arrangement for coping	6	37.50	10	62.50	16	100
Activity intolerance	6	37.50	10	62.50	16	100
Low situational self-esteem	6	37.50	10	62.50	16	100
Anxiety	5	31.25	11	68.75	16	100
allergic response risk	5	31.25	11	68.75	16	100
Impaired gas exchange	4	25	12	75	16	100
Electrolyte imbalance risk	3	18.75	13	81.25	16	100
Fatigue	3	18.75	13	81.25	16	100
Arrangement for improved relationships	3	18.75	13	81.25	16	100
Fear	3	18.75	13	81.25	16	100
Volume of poor liquid risk	2	12.50	14	87.50	16	100
Unbalanced nutrition: less than body requirements	2	12.50	14	87.50	16	100
Impaired physical mobility	2	12.50	14	87.50	16	100
Sleep deprivation	2	12.50	14	87.50	16	100
Disturbed sleep pattern	1	6.25	15	93.75	16	100

Source: research authors, 2017.

Due to the number of NDs identified, Fig. 2 exposes all related factors / risks and all the defining characteristics of the nursing diagnoses identified with frequency above 50%.

Chart 2: Nursing diagnoses, related factors / risks and defining characteristics above the relative frequency of 50%, according to NANDA International, for children on hemodialysis. Belém / PA, 2016.

Diagnostics	Related Factors / Risks	defining characteristics
<b>Infection Risk</b>	Invasive procedures Chronic disease	
<b>vascular trauma risk</b>	Insertion time duration	

	Width of the catheter	
	Type catheter	
<b>Excessive liquid volume</b>	Regulatory mechanisms compromised	Edema hemoglobina decreased Change in urine density oliguria

Source: research authors, 2017.

#### IV. DISCUSSION

Present in 100% of the sample, the nursing diagnosis Risk for Infection is defined as an increased risk of invasion by pathogenic microorganisms. This diagnosis is present in domain 11 (safety / protection), class 1 (infection) of the international NANDA<sup>[4]</sup>.

For hemodialysis, vascular access is necessary for the patient. In general, this access occurs through a catheter or arteriovenous fistula. Nursing and patient care are required to maintain access. Thus, although it is not possible to avoid multiple injuries (which increases the risk of infection) the nursing team must monitor the integrity of the vascular access, keeping alert to possible phlogistic signs that indicate infection<sup>[6]</sup>.

The diagnosis Risk of vascular trauma was also present in the entire sample. This diagnosis is found in domain 11 (safety / protection), class 2 (physical injury) of NANDA international. It is defined as risk of damage to the vein and surrounding tissues, related to the presence of catheter and / or infused solutions<sup>[4]</sup>.

It is true that, over the years, intravascular catheters have improved and new products have emerged. However, it is recommended that the team is always attentive, regardless of the type of catheter, to the relationship between its caliber and the vessel caliber, as the external caliber of the catheter close to the vessel caliber reduces the pericatheter blood flow and intensifies friction between both. Therefore, the greater its variation, the better it will be to avoid phlebitis of physical origin triggered by contact. Another risk factor for vascular trauma is the time the catheter remains in the same insertion site. It is common to prolong this time in patients undergoing hemodialysis, which increases the chances of developing phlebitis, thrombophlebitis and infection<sup>[7]</sup>.

The excessive volume of liquids in the nursing diagnosis is defined as greater isotonic fluid retention. It belongs to the international domain 2 of NANDA (nutrition), class 5 (hydration)<sup>[4]</sup>.

The excess of fluids in renal patients undergoing hemodialysis can cause complications such as hypotension and cramps, due to the withdrawal of fluids and electrolytes, in addition to severe and irreversible cardiovascular changes. Therefore, it is essential that the nursing team has a different view for patients with excessive fluid volume<sup>[8]</sup>.

#### V. CONCLUSION

21 NANDA international NDs were identified, namely: Risk of infection, Risk of vascular trauma, Excessive fluid volume, Improved disposition for self-concept, Improved disposition for family processes, Acute pain, Improved coping disposition, Intolerance to activity, Low self-esteem Situational, Anxiety, Risk of allergic response, Impaired gas exchange, Risk of electrolyte imbalance, Fatigue, Improved relationship disposition, Fear, Risk of deficient fluid volume, Imbalanced nutrition: less than bodily needs, Impaired physical mobility, Deprivation of sleep, Impaired sleep pattern.

The identification of NDs in children undergoing hemodialysis makes it possible to strengthen care practice, since the diagnoses lead to specific interventions. It can be highlighted that the identification of nursing diagnoses affirms nursing as a science, since diagnosing human responses to real or potential health problems is an essential practice of the profession.

The limiting factor of this study was the fact that it was carried out considering only the stages of investigation and nursing diagnosis of NP. Thus, the suggestion of carrying out research that covers all stages of the NP is valid, with a view to carrying out specific interventions and achieving results, aiming at a better quality of life for children with kidney disease undergoing hemodialysis.

#### REFERENCES

- [1] Frota, M. A., Machado, J. C., Martins, M. C., Vasconcelos, V. M., Landin, F. L. P. (2010, September). Quality of life

- of children with chronic renal failure. *Anna Nery School of Nursing*, 14 (3), 527-533.
- [2] Smeltzer, S. C, Bare, B. G., (2009). *Brunner & Suddarth: medical and surgical nursing treatise*. Rio de Janeiro, RJ: Guanabara Koogan.
- [3] Oliveira, S. M., Ribeiro, R. C. H. M., Ribeiro, D. F., Lima, L. C. E. Q., Pinto, M. H., & Poletti, N. A. A. (2007, October 24). Development of an instrument for nursing care in the hemodialysis unit. *Minutes 36 Paul Enferm*. Available at: <http://www.scielo.br/pdf/ape/v21nspe/a06v21ns.pdf>.
- [4] NANDA. (2013) *Nursing Diagnosis: definitions and classification 2012 -2014*. (9th ed.). Porto Alegre, Rio Grande do Sul: Artmed.
- [5] Marconi, M.D., Lakatos, E.M (2008). *Research techniques: planning and execution of research, sampling and research techniques, elaboration, analysis and interpretation of data*. (7th ed.). São Paulo, SP: Atlas.
- [6] Holanda, R. S., Silva, V. M. (2009, April 21). Nursing diagnoses for patients undergoing hemodialysis. *RENE Magazine*. Available at: [http://www.revistarene.ufc.br/10.2/html/10\\_2\\_3.html](http://www.revistarene.ufc.br/10.2/html/10_2_3.html).
- [7] Sena, C. A., Carvalho, E. C. (2009, October 31). Risk for vascular trauma: proposal for diagnosis and validation by experts. *Brazilian Journal of Nursing*. Available at: [http://www.scielo.br/scielo.php? Script = sci\\_arttext & pid = S0034-71672009000100011 & lng = pt & tlng = pt](http://www.scielo.br/scielo.php? Script = sci_arttext & pid = S0034-71672009000100011 & lng = pt & tlng = pt).
- [8] Fontenele, R. M., Cavalcante, T. L. B., Albuquerque, J. O. L., & Feitosa, L. G. G. C. (2011, January 15). Nurses' perception of inter-dialysis weight gain of hemodialysis patients. *Collective Health*. Available at <https://www.redalyc.org/pdf/842/84218032006.pdf>.