



ORIGINALES

Heart debit decreased: cross-mapping of nursing interventions and their contribution in clinical practice

Débito cardíaco diminuído: mapeamento cruzado das intervenções de enfermagem e sua contribuição na prática clínica

Débito cardíaco disminuido: mapeo cruzado de las intervenciones de enfermería y su contribución en la práctica clínica

Adriana Maria Mendes de Sousa¹
Alice Bianca Santana Lima¹
Lívia Maia Pascoal²
Emília Soares Chaves Rouberte³
Isaura Letícia Tavares Palmeira Rolim²

¹ Nurse, Master in Nursing. Federal University of Maranhão, São Luís, MA. Brazil. drikinhamendes@hotmail.com

² Nurse, Doctor in Nursing. Federal University of Maranhão, São Luís, MA. Brazil.

³ Nurse, Doctor in Nursing. International Integration University of Lusophony Afro Brazilian, Fortaleza, CE. Brazil.

<http://dx.doi.org/10.6018/eglobal.18.4.346221>

Received: 17/10/2018

Accepted: 21/01/2019

ABSTRACT:

Objective: Analyze the use of the interventions proposed by the Classification of Nursing Interventions indicated for the Diagnosis of Nursing cardiac output decreased in Pediatric Intensive Care Unit.

Methods: A descriptive and exploratory study was carried out with 11 nurses from the Pediatric Intensive Care Unit of a hospital in São Luís - Maranhão, from September 2016 to October 2017. Data collection and analysis were performed in three moments: survey of nursing activities with nurses from the Pediatric Intensive Care Unit; cross-mapping and data analysis and refinement by expert nurses.

Results: Were identified 113 activities described by nurses, mapped to 38 Classification of Nursing Interventions activities, contained in 11 interventions. Cardiac care; Cardiac care: acute phase, and Hemodynamic regulation were the interventions that presented the highest number of reported activities.

Conclusions: The analysis of the data allowed to verify that for all the activities reported by the nurses, equivalent activities were found in the Classification of Nursing Interventions for the diagnosis worked.

Keywords: Nursing Care; Nursing Diagnosis; Classification.

RESUMO:

Objetivo: Analisar o uso das intervenções propostas pela Classificação das Intervenções de Enfermagem indicadas para o Diagnóstico de Enfermagem débito cardíaco diminuído em Unidade de Terapia Intensiva Pediátrica.

Métodos: Estudo descritivo e exploratório realizado com 11 enfermeiros da Unidade de Terapia Intensiva Pediátrica de um hospital em São Luís – Maranhão, de setembro de 2016 a outubro de 2017.

O levantamento e a análise dos dados foram realizados em três momentos: levantamento das atividades de enfermagem junto aos enfermeiros da Unidade de Terapia Intensiva Pediátrica; mapeamento cruzado e análise e refinamento dos dados por enfermeiros *experts*.

Resultados: Identificou-se 113 atividades descritas pelos enfermeiros, mapeadas para 38 atividades da Classificação das Intervenções de Enfermagem, contidas em 11 intervenções. Cuidados cardíacos; Cuidados cardíacos: fase aguda e Regulação hemodinâmica foram as intervenções que apresentaram maior número de atividades relatadas.

Conclusões: A análise dos dados permitiu verificar que para todas as atividades relatadas pelas enfermeiras, foram encontradas atividades equivalentes na Classificação das Intervenções de Enfermagem para o diagnóstico trabalhado.

Palavras-chave: Cuidados de Enfermagem; Diagnóstico de Enfermagem; Taxonomia.

RESUMEN:

Objetivo: Analizar el uso de las intervenciones propuestas por la Clasificación de las Intervenciones de Enfermería indicadas para el Diagnóstico de Enfermería débito cardíaco disminuido em Unidad de Terapia Intensiva Pediátrica.

Métodos: Estudiodescriptivo y exploratorio realizado con 11 enfermeros de la Unidad de Terapia Intensiva Pediátrica de un hospital en São Luís - Maranhão, de septiembre de 2016 a octubre de 2017. El levantamiento y el análisis de los datos se realizaron en tres momentos: levantamiento de las actividades de enfermería junto a los enfermeros de la Unidad de Terapia Intensiva Pediátrica; mapeo cruzado y análisis y refinamiento de los datos por enfermeros expertos.

Resultados: Se identificaron 113 actividades descritas por los enfermeros, asignadas para 38 actividades de la NIC, contenida en 11 intervenciones. Cuidados del corazón; Cuidados cardíacos: fase aguda, y Regulación hemodinámica fueron las intervenciones que presentaron mayor número de actividades relatadas.

Conclusiones: El análisis de los datos permitió verificar que para todas las actividades relatadas por las enfermeras, se encontraron actividades equivalentes en la NIC para el diagnóstico trabajado.

Palabras clave: Cuidados de Enfermería; Diagnóstico de Enfermería. Taxonomía.

INTRODUCTION

In Brazil, the action planning of nursing had established since 1986 by the Professional Assignment Law number 7,498, article 11, which stands out that the nurse exercises all the nursing activities, having as privately mission: planning, organization, coordination and services evaluation in the nursing care. The Nursing Federal District, in its resolution number 358/2009, disposes about Nursing Care Systematization and the implementation of the Nursing Process in public or private ambiances which occur the professional care.⁽¹⁾

The Nursing Process, before was seen as a kind of Nursing Care Systematization; now it is seen as a related phenomenon, but different from Nursing Care Systematization, being defined as methodological instrument, composed by five steps (Nursing History, Nursing Diagnosis, Nursing Planning, Nursing implementation and evaluation); while the Nursing Care Systematization is the way that the professional work is organized⁽¹⁾.

After the diagnosis identification, the nurse will do a planning and the establishment of results to intervene. The Nursing Interventions Classification(NIC) is a nursing taxonomy standardized that can helps the nurse as in the caring planning elaboration as in the clinic documentation, in the nurses communication and from other involved professionals, in the searches, learning and productivity measure⁽²⁾. Studies about nursing interventions have been accomplished, contributing for the implementation of Nursing Care Systematization and to the this taxonomy validation in different contexts. The found results show that the use of standard terminology as the NIC, they provide

scientific and theoretical basing, contributing for a nursing intervention of great quality to children with serious health commitment and promote a better knowledge view of nursing.⁽³⁾

The present study approaches the nursing diagnosis named Decreased Cardiac Output(belonged to the class Cardiovascular/Pulmonaries Answers, used in NANDA International), because it presents in a big number of patients of Pediatric Intensive Therapy Unit, has being also seen in other searches ⁽⁴⁾, as a present diagnosis in hospitalized people with cardiac diseases. With this diagnostic, we can select the nursing interventions which are described by NIC and, depending to the target population, some can be performed in bigger frequency and others can not make part of the care role. Therefore, it is justified analyze the interventions through the cross mapping, to check if the nursing interventions developed in the care practice are the ones proposed by NIC, once that it is very important to Nursing because it can help with the service through the built knowledge about cited taxonomy, because of the great importance given to the Nursing Care Systematization and to opportunize the enhancement conditions, utilization and the NIC knowledge. The utilization of this classification system ensures a uniform method of identification and attendance of the clientes necessities^(4,5).

Against the foregoing, the problematic of this inverstigation it centered to understand the questions: what activities and interventions are described by the nurses in the accomplished care to child with Decreased Cardiac Output? What activities and contemplated interventions at NIC are used by nurses from the Pediatric Intensive Therapy Unit to the patients with Decreased Cardiac Output? The goal of this study constitutes to analyze the interventions use proposed by the Nursing Interventions Classification indicated to the Nursing Diagnostic Decreased Cardiac Output in the Pediatric Intensive Therapy Unit.

METHODS

This study is part of a thesis titled “NURSING INTERVENTIONS PROPOSED BY THE NURSING INTERVENTIONS CLASSIFICATION TO THE NURSING DIAGNOSTIC DECREASED CARDIAC OUTPUT”⁽⁶⁾. It was a study descriptive and exploratory performed in the Pediatric Intensive Therapy Unit from a School Hospital in São Luís – MA, between September 2016 and October 2017.

The school hospital is a reference to children care of high risk in the state of Maranhão. The pediatric ICU provides ten beds, distributed in seven monitored beds and three cribs of radiant heat. The welcomed individuals for assistance are children over 28 days born until 16 years old. The department selected to be implanting the nursing process with the use of the nursing historical, diagnostics and nursing interventions.

The data were collected in three steps: the first one occurred with the nurses from ICU Pediatric; the second one consisted in the cross mapping; and the third one it was done the review and the mapping refinement by expert nurses. When the nurses accepted to participate from the study, the ones from the first step and the expert ones signed the Term of Free and Informed Consent in two copies. The cited study guaranteed the participants anonymity preservation.

In the first step, people selection was done by convenience and from the inclusion criteria it was considered the professional who had, at least, two years care experience and at least six months pediatric nursing care. The established exclusion criteria were: didn't find the search participant in the job local after three appointments and five consecutive visits and the removal/license because of health problems in the period of data collect. The population was composed by thirteen nurses who worked on child/teen assistance in the ICU Pediatric. However, one nurse was in license and another one was found five consecutive visits. This way, the sample of this study was constituted by eleven nurses from the ICU Pediatric.

The instruments application of data collect of the first step occurred on the nurses work shifts, in a hospital room, being kept the privacy. The instruments corresponded two questionnaires: the first one with the participants description, containing identification data, experience time, nursing taxonomy knowledge and other questions. In the second quiz, it was presented to the nurse the Nursing Diagnostic Decreased Cardiac Output with its definition, the defining and the related factors and it was asked what performed activities from ICU Pediatric for the diagnostic studied. After that, the nurses filled a chart where they indicated the types of the performed activities, in other words, if the performed activity was expressly from the nurse, with no necessity of a doctor prescription; if it was performed by another member of the nursing team with no necessity of a doctor prescription or if it was performed by any member of the nurse team only with a doctor prescription. Both quizzes were set up by the searchers for the study.

Moreover, the nurse indicated the activity frequency described by him, using the interval scale type *Likert*, to register the options: no performed, very little performed, in some way performed, performed a lot and very much performed.

This method can be applied to generate scores of Intervention Content Validation, determining critical and support interventions, as proportion scores for each activity. For the quantitative analysis it was considered the scores: no accomplished: 0 weight; very little accomplished: 0,25 weight; in some way accomplished: 0,5 weight; very accomplished: 0,75 weight and very much accomplished: 1 weight.

This scale analysis was accomplished by the Content Validation index by arithmetic measures. For this analysis, it was considered critical activities the ones that got pondered average of 0,8 or more to believe these reply well to the diagnosis. It was considered as support intervention the ones that got pondered average between 0,5 and 0,79 to be also pertinent to the intervention.

Against the obtained information in the first step, it was accomplished the crossed mapping that consists in a developed method to compare nursing data non standardized with the language NIC. In this step, it was accomplished the nursing activities comparison indicated by care nurses in the attendance to child in the Pediatric ICU for the diagnosis Decreased Cardiac Output with proposed interventions by NIC. The crossed mapping was accomplished by the searcher with help of an instrument that had NIC nursing activities.

For the mapping accomplishment, it was followed the following rules⁽⁷⁾:

1. Map using the nursing diagnosis context;
2. Map the "meaning" of the words, not only the words;

3. Use the “key-word” in the intervention to map the NIC intervention;
4. Use the verbs as the “key-words” in the intervention;
5. Map the intervention, departing from the NIC intervention label for activity;
6. Keep the consistence between the intervention being mapped and the NIC intervention definition;
7. Use a more specific NIC intervention label;
8. Map the verb “evaluate” for the activities “monitor” from NIC;
9. Map the verb “trace graphic” for activities of “documentation”;
10. Map the verb “teach” for interventions activity/learning when the main focus is on learning.
11. Map the verb “learn” for the specific NIC intervention label when the learning is less intense or related with another activity in order/general intervention;
12. Map the verb “order” for interventions “supply management”;
13. Map the interventions that have two or more verbs for two or more correspondents NIC interventions.

In the third step, which was accomplished the analysis and mapping refinement by experts, same could do considerations according to its judgment, such as: intervention correction for the mapping activities; adequacy of the mapping activity name for that one more suitable for the use in the clinic practice; addition or exclusion of mapping activities terms or the NIC activities.

The expert nurses were selected by sampling by convenience, after searches in lattes curriculum. Then, there was a previous contact through invitation e-mails for search exposition; after acceptance, they received the TCLE, an explanatory material, the instrument for the expert nurse profile identification and the instrument of Interventions Crossed Mapping Evaluation.

For the specialists selection, it was considered the model criteria Fehring adapted, that has eight items with respective punctuations totalizing 16 points, being necessary at least five points to be considered an expert. The model proposes at least twenty - five and a maximum of fifty experts. However, for this study, after the sending of fifty invitation letters, only ten accepted to participate⁽⁸⁾.

The cited study respected the formal requirements of national and international rules regulatories of searches involving human beings settled in the Resolution CNS/MS number 466/12, being appreciated and approved by the Ethics Committee of University Hospital of Federal University of Maranhão in May 15th of 2015, under seem number 1,047,920 CAAE: 42619815.8.0000.5086.

RESULTS

The results were approached according to the search participant nurses characterization; then, it was presented a crossed mapping of described activities by the nurses and activities in the NIC for the Diagnosis Decreased Cardiac Output. Lastly, it was presented the expert nurse characterization and the crossed mapping evaluation made by them.

Profile of the nurses from the local study

The participant group was composed, in its totality, by women with 30 to 39 years old and more than ten years graduated. All the nurses had a kind of specialization. Most of them related that the nurse assistance in the child health area was the predominant activity. It still checked that the use of nurse diagnosis in the daily clinic practice is accomplished by ten interviewed. In relation to contact variables with the ND in the last two years, it verified that most of them had a theoretic contact in the graduation.

Nurse activities referred by nurses from Pediatric ICU and mapped with the NIC activities for the Nursing Diagnosis Decreased Cardiac Output

The described activities by the nurses who worked in the Pediatric ICU were mapped for all intervention levels proposed by NIC and they are presented according to NANDA – I/NIC for the diagnosis studied, taking the following order: priorities interventions, additional suggested and optional (Picture 1).

Picture 1: NIC interventions used in the search:

Priorities	Suggested	Additional Optionals
<ul style="list-style-type: none"> • Invasive hemodynamic Monitoring • Heart Care • Heart Care: incisive phase • Hemodynamic Regulation 	<ul style="list-style-type: none"> • Vital signal monitoring • Water monitoring • Medicines administration • Hydroelectrolytic Control • Neurological monitoring 	<ul style="list-style-type: none"> • Blood products administration • Pain control

Source: Personal authorship, 2017.

For the diagnosis Decreased Cardiac Output 113 activities were identified referred by nurses from Pediatric UCI and after the crossed mapping 38 proposed activities were selected by NIC which are organized in 11 interventions. For all them, there are 364 activities at NIC that are possible to work with it (Board 1).

Board 1: Comparison of mapped activities number accomplished by nurses with the NIC standardized for the diagnosis Decreased Cardiac Output

Intervention	Quantity of mapped activities accomplished by the nurses	Quantity of activities included in NIC
Invasive hemodynamic monitoring	3	28
Heart Care	10	38
Heart care: incisive phase	6	46
Hemodynamic Regulation	9	35
Vital signal monitoring	4	25
Water monitoring	1	30
Medicines' administration	1	27
Hydroelectrolytic Control	1	40
Neurological monitoring	1	38
Blood products administration	1	27
Pain control	1	30
Total	38	364

Source: Personal authorship, 2017.

The elaborated diagnostic has four priority interventions in the NIC and, for all them activities were mapped. From 42 interventions suggested by NIC, five were related to the nurses; and among the 33 optional additional, the nurses cited activities for "Blood products administration" and "Pain control".

Analysis of the use of activities described by nurses from Pediatric ICU and included in the NIC for the Decreased Cardiac Output

In this study it was considered flak and support activities the ones that had weighted average bigger than 0,5.

The chart 1 presents the flak and support activities, being considered 20 in the first one and two in second one, in a total of 22 relevant activities in the clinic assistance of the nurses from Pediatric ICU.

Chart 1. Weighted average of the flak and support activities of nursing related to the Nursisng Diagnosis Decreased Cardiac Output. São Luís, 2017.

NIC activities	Weighted average
Flak activities	
Keep an accurate record of the ingestion and elimination	1,0
Monitor water balance	1,0
Monitor the respiratory state as the symptoms of heart insufficiency	1,0
Monitor the vital signals with frequency	1,0
Check the prescription or request before give the medicine	1,0
Administer vasodilator and vasoconstrictor medication when it is appropriated	0,9
Make usual physics evaluation in risk population	0,9
Elevate the bed head when it is appropriated	0,9
Monitor ingestion and elimination, urine flow and daily weight, when it is appropriated	0,9
Monitor the cardiovascular state	0,9
Monitor the appropriated laboratory values	0,9
Guide the patient and Family as the treatment modalities, activity restriction and evolution	0,9
Perform na embracing evaluation of the peripheral circulation	0,9
Relieve the patient anxieties, giving precise information and correcting possible mistakes	0,8
Evaluate changes of the blood pressure	0,8
Elevate the bed's foot when it is necessary	0,8
Keep the water balance by intravenous administration of fluids or diuretics when appropriated	0,8
Monitor the consciousness level	0,8
Monitor tendencies of blood pressure and hemodynamic parameters, if they are available	0,8
Clear and calibrate the equipment to each 4 to 12 hours, in na appropriated way with the transducer in the atrium right level	0,8
Support activities	
Help with the insertion and the removal of invasive hemodynamic tubes	0,7
Monitor the renal function when appropriated	0,5

Source: Personal Authorship, 2017.

Profile of the expert nurses

This group of nurses was exclusively female, with about 35,1 years old, predominating the age group of 30 to 39 years old. The graduation time and more embracing professional experience was from 11 to 20 years, with about 12,3 and 11,6 years, respectively. In relation to the experience time in the pediatric nursing area, the average found was of 3,5 years.

There was nurse prevalence (n=7) with doctor title; all them had contact with the theme nursing diagnosis in the university, six of them had only the theoretical content about NANDA-I; five of them had theoretical and practical contact with diagnostics

NANDA-I and three nurses had NIC interventions theoretical and practical formation. The punctuation proposed by the model *Fehring* varied between 6 and 14 points.

Review and refinement of the crossed mapping by the expert nurses

After the review of the crossed mapping, nine activities remained according to the language used by the nurses from the Pediatric ICU, sixteen were kept according to the language of NIC and thirteen were reorganized according to the suggestion done by the expert nurses.

DISCUSSION

Profile of the nurses of the local of study and the experts

A search in Brazil points that 86,2% of the nurses is woman⁽⁹⁾. Another study accomplished in a countryside of São Paulo, observed that 90,5% of the nursing professionals were women⁽¹⁰⁾. In this search, as the nurses from the Pediatric ICU as the expert nurses were exclusively women, resembling to the data search. The act of care in its historic process, began as a task predominantly female and the nursing, as profession, brought these traces.

In the present study, most of the women nurses had between 30 to 39 years old, which shows similar to the national numbers that present 22,3% and 14,5% of men nurses between 31 to 35 years old and 36 to 40 years old, respectively⁽⁹⁾. Most of the professional women has between 11 to 20 years of graduated time, while search in Brazil, done in 2013, showed that 33,3% of the men nurses had from 2 to 5 years graduated⁽⁹⁾. Another search elaborated in the Adults ICU in four cities of São Paulo, demonstrated that 56,95% of the nurses had more than 10 years graduated⁽¹¹⁾. Even they were in another part of Brazil, in northeast, the profile is the same in this study.

Corroborating with the founds, a study accomplished in three neonatal units from Fortaleza-CE⁽¹²⁾ and another one, done with nurses of ICUs from São Paul, demonstrated that big part of theses professionals had as a big title in the courses *Lato Sensu*, in the modality of specialization. The training of the team work in specific areas awakes to the necessity of a continuing education implantation, aiming to the team improvement as a way to improve the care.

The systematization of the Nursing Assistance and the Nursing Process are methods that evidence the nurse contribution in the attention to the population health which increases the visibility and the professional recognition⁽¹⁾. The data of this search call attention to the fact that a bigger number of nurses had only the theoretical formation about NANDA-I in the graduation. The department that took part of the study was in implantation phase of the SAE, being, however, indispensable that the human resources of the nursing area are trained in the cited themes.

A transversal study, of a quantitative approach accomplished in a hospital of infectious diseases in the Northeast Brazil, it also used the *Fehring* model to select the expert nurses (n=27) of which 18 (64,28%) had more than 16 years of professional experience, and all them had some titration⁽¹⁴⁾,

As seen in this search, other analyzed studies show that most of the expert nurses had master title with the search in the content thematic and publications in newspaper, besides that, most of the experts worked in the learning and search area, justifying a bigger search of these professionals by post graduation courses in the modality *Stricto Sensu*^(12,15-16).

Crossed mapping

The decreased cardiac output appears in other studies among the nursing diagnosis more prevalent in interned patients in ICU, corroborating with the profile of the interned patients in the Pediatric ICU from the hospital of this study^(2,17). The interventions that had nursing activities pointed by the nurses were: invasive hemodynamic monitoring; heart care: acute phase; hemodynamic regulation; vital signals monitoring; water monitoring; medicine administration; neurological monitoring; administration of blood products; pain control.

In relation to the intervention “heart care”, seven nurses said monitor the vital signals, two related to evaluate changes of the blood pressure and six cited monitor water balance. Another search mentioned vital signals monitoring, recognition in the change of the blood pressure and monitoring of the water balance as being the main nursing interventions offered to patients with heart complications which were submitted to the myocardium revascularization surgery in a big hospital in the countryside of Minas Gerais⁽¹⁰⁾. In the present search, these activities are considered flak, once responds well to the studied diagnosis.

Besides that, monitor the appropriated lab values (such as heart enzymes, level of electrolytes); accomplish an embracing evaluation of the periferal circulation; monitor the cardiovascular state and monitor ECG as the changes of ST, according activities were presented in a search of patients retrospective with aortic stenosis, similar to what happens in this study. The intervention “Heart Care”: acute phase” is composed by activities monitor ingestion and elimination, urine output and daily weight (considered a critical activity), and monitoring of the renal function – urea and creatine, that were also cited as activities in the nursing assistance to people who had heart complications⁽¹⁸⁾.

The decreased cardiac output takes a raise of the intravascular volume and consequently to the pulmonary edema, characterized by dyspnoea and cough. The evaluation of the dyspnoea presence was cited in this study as activity. A narrative of clinic case that identifies diagnosis and nursing interventions to patients with decompensated heart insufficiency in ICU of a learning hospital located in João Pessoa/PB, pointed out the dyspnoea as nursing diagnosis and as intervention to it, promote a comfort position in the bed and keep it to 30°⁽¹⁷⁾. In this study it agrees that the activity of elevate the headboard that appears in the intervention “hemodynamic regulation”, it also has a good result because it was had as criticism activity by the nurses from the pediatric ICU participants of this search.

Corresponding with the found, a case report accomplished in Paraíba⁽¹⁷⁾, brings other interventions equivalent to the NIC activities presents in this study: keep the water balance by intravenous administration of fluids or diuretics, as appropriated (considered critical activity for this study), and monitor the signals and symptoms of problems in the infusion state.

Descriptive search accomplished in Fortaleza-CE that brings the same studied diagnostic, verified the intervention "Vital signals monitoring" it was also present, demonstrating that monitor the blood pressure, wrist and respiratory state, activity which was referred by the nurses in this study, can help to detect the defining characteristics of the diagnosis decreased cardiac output, being important that the nurse attempt for the suitable size of the cuff when checks the blood pressure, count the pulsation and respiratory frequency in one minute, besides be in a calm environment, with no noise⁽¹⁹⁾.

Select and implemented a variety of actions to make easier the pain relief, when appropriated, it is an activity that was contemplated by nurses in the intervention "Pain control". In a study accomplished in the countryside of the state of Goiás, with patients in post-operative of heart surgery, the pain was approached as nursing diagnosis; in another one, it appears as intervention, in consonance with data of this search^(18,20). The pain is the fifth vital signal and it is an important fount of stress in serious patients. The nurse represents an important paper on the pain control, once, daily, evaluates and registers the patient pain.

The expert nurses' suggestions orientated the activities of the nurses from Pediatric ICU to a bigger specificity of their actions. There wasn't change in the cited verbs, only adaptation to the intended clientele, favoring a bigger comprehension and activity application. The activities of an intervention can be modified according to the reality of the accomplished practice for the best reflect the necessities of each situation, allowing the individual attendance, and should keep standardized the title and the intervention definition, as long the modifications don't be so much marked, to point of becoming an original list of the activities of unrecognizable NIC⁽²⁾. It analyzed the experts could accomplish settings which individualized and directed the to the child with heart complications, therefore it considered relevants the observations of theses expert nurses.

CONCLUSION

The nurses from Pediatric ICU described 113 activities, which were mapped to 38 activities of NIC, included in 11 interventions: invasive hemodynamic monitoring; heart care: acute phase; hemodynamic regulation; vital signal monitoring; water monitoring; medicines administration; hydroelectrolytic control; neurological monitoring; blood products administration ; pain control.

Thereby, it notes the nurses cited a big number of activities for the studied diagnostic. The interventions Heart Care: acute phase and hemodynamic regulation were the one that represented a bigger number of activities related and all them belongs to the priority level.

The study made it possible identify that the use of NIC in the pediatric ICU is adequate, with settings to the local reality. The data analysis allowed check that for all the related activities by the nurses, these activities were found similar in the Classification of Nursing Interventions for the decreased cardiac output.

In this context, the study implies in some suggestions to enlarge the knowledge about the taxonomies: continued education in NAS, demonstration of success cases of health institutions that work with taxonomies, development of theoretic and practice

training about the Nursing Process and about application of taxonomies for all the group, besides the dissemination of searches about the subject. It is necessary achievement of new studies using clinic validation or accuracy of interventions, in order to show the impact of the use of Nursing Assistance Systematization, as the Nursing Process.

The mapped data are useful to confirm the involved actions by nurses and to allow a comparison of the practices with patient who has decreased cardiac output. For the learning and search, the crossed mappings are the first line of study to validate classifications, since they allow a review of the elements and enlargement of its structure. Lastly, a study of crossed mapping allows the language used by nurses, facilitating the Exchange of information and communication among the nursing group.

As study limitations, it is highlighted the little clinic experience of the participant nurses about the Nursing Interventions Classification (NIC), so that some relations among the mapped activities can not be properly identified. Another present point was the number of population of the study, though it was used cut points usually used in search of crossed mapping.

REFERENCES

1. Conselho Federal de Enfermagem. Resolução COFEN nº 358. 2009.
2. Bulechek GM, Butcher HK, Dochterman JM, Wagner CM. NIC Classificação das intervenções de enfermagem. Tradução: Denise Costa Rodrigues. 6. ed. Rio de Janeiro: Elsevier, 2016.
3. Cavalcante AMRZ, Brunori EHFR, Lopes CT, Silva ABV, Herdamm TH. Nursing diagnoses and interventions for a child after cardiac surgery in an intensive care unit. *Rev Bras Enferm.* 2015;(68)1:155-60.
4. Pereira JMV, Cavalcanti ACD, Lopes MVO, Silva VG, Souza RO, Gonçalves LC. Acurácia na inferência de diagnósticos de enfermagem de pacientes com insuficiência cardíaca. *Rev Bras Enferm.* 2015;68(4):690-96.
5. Pereira JMV, Flores PVP, Figueiredo LS, Arruda CS, Cassiano KM, Vieira GCA, et al. Diagnósticos de enfermagem em pacientes com insuficiência cardíaca hospitalizados: estudo longitudinal. *Rev Esc Enferm USP.* 2016;50(6):929-36.
6. Sousa AMM. Intervenções de enfermagem propostas pela *Nursing Interventions Classification* para o diagnóstico de enfermagem débito cardíaco diminuído [dissertação]. São Luís (MA): Universidade Federal do Maranhão; 2018.
7. Delaney, C, Moorhead, S. Synthesis of methods, rules and issues of standardizing nursing intervention language mapping. *Nurs Diagn.* 1997;(8)4: 152-6.
8. Fehring R. Methods to validate nursing diagnosis. *Heart & Lung.* 1987;16(6):625-29.
9. Fiocruz; Conselho Federal de Enfermagem. Pesquisa Perfil da Enfermagem. 2013. [citado 2018 mar 21]. Disponível em: http://www.cofen.gov.br/perfilenfermagem/blocoBr/Blocos/Bloco1/bl_ident-socio-economica-enfermeiros.pdf.
10. Silva LLT, Mata LRF, Silva AF, Daniel JC, Andrade AFL, Santos ETM. Cuidados de enfermagem nas complicações no pós-operatório de cirurgia de revascularização do miocárdio. *Rev Baiana Enferm.* 2017;31(3):1-9.
11. Moraes BF. Perfil dos profissionais de enfermagem de terapia intensiva de acordo com seu turno de trabalho, sono, cronotipo e qualidade de vida [dissertação]. Campinas (SP): Faculdade de Enfermagem da Universidade Estadual de Campinas; 2016.

12. Fontenele FC. Intervenções de enfermagem propostas pela *Nursing Intervention Classification* (NIC) para o diagnóstico de enfermagem integridade da pele prejudicada em recém-nascidos [doutorado]. Fortaleza (CE): Departamento de Enfermagem, Faculdade de Farmácia, Odontologia e Enfermagem, Universidade Federal do Ceará; 2013.
13. Nascimento RAM, Assunção MSC, Junior JMS, Amendola CP, Carvalho TM, Lima EQ, et al. Conhecimento do enfermeiro para identificação precoce da Injúria Renal Aguda. *Rev Esc de Enferm USP*. 2016;50(3):399-404.
14. Neto VLS, Silva RAR, Silva CC, Negreiros RV, Rocha CCT, Nóbrega MML. Proposal of nursing care plan in people hospitalized with AIDS. *Ver Esc de Enferm USP*. 2017; 51: e03204. doi: <http://dx.doi.org/10.1590/S1980-220X2016027203204>
15. Oliveira JS. Risco de quedas: aplicabilidade de intervenções de enfermagem da NIC em adultos e idosos hospitalizados [doutorado]. Ribeirão Preto (SP): Escola de Enfermagem de Ribeirão Preto; 2013.
16. Machado RC, Gironés P, Souza AR, Moreira RSL, Jakitsch CB, Branco JNR. Protocolo de cuidados de enfermagem a pacientes com dispositivo de assistência ventricular. *Rev Bras Enferm*. 2017;70 (2):353-59. doi: <http://dx.doi.org/10.1590/0034-7167-2016-0363>.
17. Sousa MM, Araújo AA, Freire MEM, Oliveira JS, Oliveira SHS. Diagnósticos e intervenções de enfermagem para a pessoa com insuficiência cardíaca descompensada. *Rev Pesqui Cuid Fundam*. [Internet] 2016 [citado 2018 mar 21];8(4):5025-31. Disponível em: <http://www.seer.unirio.br/index.php/cuidadofundamental/article/view/4952/pdf>.
18. Almeida AG, Grassia RCF, Nascimento TCDC. Pós-operatório de implante de bioprótese aórtica por cateter: intervenções de enfermagem. *Rev SOBECC*. 2015;20(3):134-142.
19. Moreira RAN. Diagnósticos, intervenções e resultados de enfermagem no pós-operatório de cirurgia bariátrica. *Rev RENE*. 2013;14(5):960-70.
20. Filho GSF, Caixeta LR, Stival MM, Lima RL. Dor aguda: julgamento clínico de enfermagem no pós-operatório de cirurgia cardíaca. *REME*. 2012;16(3):400-9.

ISSN 1695-6141

© COPYRIGHT Servicio de Publicaciones - Universidad de Murcia