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NURSING INTERVENTIONS FOR THE DIAGNOSIS INEFFECTIVE BREATHING PATTERN: CROSS-MAPPING

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ABSTRACT

To perform the cross-mapping of interventions indicated by nurses with those proposed by the Nursing Interventions Classification for the nursing diagnosis Ineffective Breathing Pattern. **Methods:** this is a descriptive and exploratory study that used the cross-mapping method to map the interventions performed by nurses in a pediatric intensive care unit with those described in the Nursing Interventions Classification for the nursing diagnosis Ineffective Breathing Pattern. **Results:** nine nurses participated in the study and among the interventions described, two were classified as priorities and seven as suggested. The most frequent activities performed by nurses were: monitoring frequency, rhythm, depth and effort in breathing; removing secretions by stimulating coughing or vacuuming and monitoring the effectiveness of oxygen therapy. **Conclusion:** the study identifieda use of standardized language in the sector, with implications for care management and the possibility to implement the taxonomy in the unit.

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INTRODUCTION

Nursing is the science and art of assisting human beings in their basic needs. Currently, nurses use the Systematization of Nursing Care, scientific methodology and a theoretical structure that organizes the nursing work with respect to methods, personnel and instruments and is able to offer subsidies for the development of interdisciplinary and humanized methodologies of care, giving greater autonomy and security to nurses in the provision of care (Pires, 2013;Soares *et al.,* 2015). The Nursing Process is organizes and systematizes the work in five stages, namely: nursing history, nursing diagnosis, nursing planning, implementation and nursing evaluation (Alfaro-Lefévre, 2014; Soares *et al.,* 2015; Marinelli *et al.,* 2015). The identification of the nursing diagnosis is based on the clinical references of the patient. One of the classification systems most used in Brazil is the NANDA International, Inc. (NANDA-I), that defines the nursing diagnoses and its determining characteristics and related factors. One of the nursing diagnoses present in NANDA-I is Ineffective Breathing Pattern, which is defined as inspiration and/or expiration that does not provide adequate ventilation (Herdman, 2014). Children are more susceptible to severe respiratory problems and it is observed that in these cases, Ineffective Breathing Pattern is of tenpresent. Furthermore, respiratory diseases are represent the first cause of hospitalizations in the Unified Health System and contribute to a high morbidity and mortality rate in under-five children, becoming a public health problem (Prato *et al.,* 2014; Melo *et al.,* 2014; Oliveira *et al.,* 2013). Based on the characteristics found for this diagnosis, nurses should analyze and choose the most appropriate intervention for each patient. In this opportunity, the taxonomy of interventions that subsidize the elaboration of nursing care plans is used. The *Nursing Interventions Classification* (NIC) defines intervention as any treatment based on clinical judgment and knowledge that nurses perform to improve patient/client outcomes Identifying the condition of children assisted in intensive care units and selecting the interventions to be adopted is a constant concern of nursing professionals. In this context, knowing the nursing

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interventions within a standardized language contributes to subsidize care actions and management actions. The prerogative to analyze the interventions indicated by the NIC came from the experience as a nursing student at the Federal University of Maranhão, observing the difficulties and limitations met in the use of the Systematization of Nursing Care in the assistance context and, mainly, the dissociation between the chosen and the standardized interventions. This study is justified by the scarcity of studies carried out in Brazil addressing the NIC taxonomy associated to the nursing diagnosis Ineffective Breathing Pattern and its use in children in Pediatric Intensive Care Units, and by the importance of research on nursing interventions to provide basis for the nursing work and a decisive action in care. The objective of this study was to cross-map the interventions indicated by nurses with those proposed by the *Nursing Interventions Classification* for the nursing diagnosis Ineffective Breathing Pattern.

MATERIALS AND METHODS

This is a descriptive and exploratory study that used the cross-mapping method to compare the interventions performed by nurses of a Pediatric Intensive Care Unit with the activities described in the NIC for the nursing diagnosis Ineffective Breathing Pattern. The study site was the Pediatric Intensive Care Unit of the University Hospital of the Federal University of Maranhão, a school hospital of high complexity and reference to the assistance of high risk children in the State. Currently, the hospital has ten beds where care is provided to children aged over 28 days and up to the age of 14 years. The research was carried out from June 2015 to February 2016. The inclusion criteria for selection of participants were: to have at least two years of experience in provision of care, and at least six months of experience in the study area. The exclusion criteria were: absence in the workplace after three schedules and five consecutive visits and removal from work/ sick leave during the period of data collection. During the research, 13 nurses worked in the unit, however, three were excluded by the first criterion and one by the last one, respectively, being the sample composed of nine participants. Data collection was performed from July to September 2015.

The instruments were a questionnaire for characterization of the participants containing identification and professionals data; and a second questionnaire that included the definition of the nursing diagnosis Ineffective Breathing Pattern followed by spaces for nurses to describe the activities performed by them in the case of this diagnosis. The questionnaire also included the frequency of each activity, based on a Likert-type scale, using the following evaluative scores: 0 – not performed; 0.25 - very rarely performed; 0.5 - somehow performed; 0.75 – often performed; and 1.0 – very often performed. After data collection, a cross-mapping was carried out by the researcher, where the nursing activities described by the nurses in the care of the children admitted to the Pediatric Intensive Care Unit in the case of the nursing diagnosis Ineffective Respiratory Standard were contrasted with the interventions proposed by the NIC (Pereira *et al.,* 2014). After the completion of the previous stage, the cross-mapping was reviewed and refined by nursing experts, who acted as judges in the data analysis. Nursing experts were selected after searching their curriculum in the Lattes Platform. An invitation was sent to 15 nurses, requesting their participation in the research as a nursing expert; however, only eight replied (Lopes *et al.,* 2013). After acceptance, they received a second e-mail containing an invitation letter, an instrument for characterization of the profile of the nursing expert and an instrument containing the cross-mapping of the activities. Data were refined in January and February 2016 by a group of nurses with an average of 10.5 years of training and professional experience. Five nurses had a doctorate degree, and all had had contact with nursing diagnosis during graduation, specifically theoretical and practical training on NANDA and NIC diagnoses and interventions, and had published articles, and participated in events and courses related to the subject. Data analysis included the calculation of the content validity index on the arithmetic mean of the frequency of performance of the activity. For this analysis, we considered the activities deemed as critical those that presented an average of 0.8 or higher, believing that these respond well to the diagnosis and those that presented a mean between 0.5 and 0.7 as support interventions because they are pertinent to the intervention. The study respected the formal requirements contained in the national and international norms regulating research involving human beings.

RESULTS

Among the nine participating nurses, females predominated, totaling eight women and only one man. Ages varied between 27 and 55 years. It was found that most of the professionals, six of them, had graduated more than 10 years ago, more than half had between 11 and 20 years of experience in the nursing area; and only two nurses had more than six years of experience in Pediatric Intensive Care Unit. In relation to degrees, there was a predominance of specialists, which was the case of eight nurses; during the academic training, six participants had had contact with nursing diagnosis and three had no training on nursing diagnosis in any moment. The use of the nursing diagnosis in the daily practice was performed by eight of the interviewees, one of the nurses claimed not to use the nursing diagnosis because of the deficient and non-consolidated Systematization of Nursing Care in the institution.

Regarding the variables of contact with nursing diagnosis in the last two years, all nurses had read about the theme; more than half, five of the interviewees, had participated in events/courses, and all of them had had contact with nursing diagnosis in clinical practice. However, seven did not have the opportunity to share on the subject in the teaching aspect and none of them had participated in research. Nurses described 34 activities carried out in patients with the nursing diagnosis Ineffective Breathing Pattern, belonging to the NIC. Sixteen activities listed among the priority interventions and 18 activities listed in the interventions suggested by the NIC were considered in this study. Tables 1 and 2 present the distribution of activities reported by nurses, mapped by the researchers and refined by the nursing experts according to the priority interventions and suggested by the NIC; in the first and second columns are the NIC interventions and activities as shown by the Table 1, nine activities were mapped for the intervention "Respiratory monitoring"; and seven activities for the intervention "Airway control". As shown in Table 2, six activities were mapped for the intervention "Oxygen Therapy", while only four activities related to "Drug Administration" and "Control of Mechanical Ventilation: Invasive" were duly identified in the study. Table 1 shows critical and support activities. Four critical activities and eight support activities

Table 1. Distribution of activities reported by nurses, mapped and refined in accordance with the priority interventions listed by the NIC

Intervention (NIC)	Activities proposed by the NIC
Respiratory Monitoring	To listen to respiratory sounds, observe areas of diminished/absent ventilation and adventitious noise
	To monitor respiratory patterns: bradypnea, tachypnea, hyperventilation, Kussmaul respiration, Cheyne-Stokes respiration
	To monitor frequency, rhythm, depth and effort in breathing.
	To listen to the anterior and posterior thorax, from apex to base, bilaterally
	Palpation in search of equal pulmonary expansion
	To record thoracic movements observing the existence of symmetry, use of accessory muscles and retractions of supraclavicular and intercostal muscles
	To clear airways using the chin lift or mandibular maneuver technique, as appropriate
	To record changes in SO2, SvO2, CO2 terminal current and change in arterial blood gas values, as appropriate
	To monitor the occurrence of increased restlessness, anxiety, and shortness of breath
Airway Control	To perform endotracheal or nasotracheal aspiration as appropriate
	To insert artificial nasopharyngeal or oral airway device, as appropriate
	To remove secretions by stimulating coughing or vacuuming
	To put the patient in a position to relieve dyspnea
	To administer treatment with ultrasonic nebulizer, as appropriate
	To monitor the respiratory condition and oxygenation, as appropriate
	To identify if the patient has a real/potential need for artificial airway device

Table 2 2. Distribution of activities reported by nurses, mapped and refined according to the interventions suggested by the NIC

Intervention (NIC)	Activities proposed by the NIC
Oxygen Therapy	To provide the oxygen equipment and use it by means of a heated and humidified system
	To monitor the effectiveness of oxygen therapy (e.g., pulse oximetry, arterial blood gas analysis), as appropriate
	To observe signs of oxygen induced hypoperfusion
	Periodically check the oxygen delivery device to ensure that the prescribed concentration is being administered
	To monitor the flow of liters of oxygen
	To monitor the position of the oxygen delivery device
Drug Administration	To give the medicines using appropriate technique and route
	To prepare the medicines using techniques and equipment suitable for the route of administration
	To observe patient allergies before offering each drug and suspend it as appropriate
Drug Administration: inhalation	Helping the patient to use the inhaler, according to the prescription
Ventilation Control	To remove condensed water from water collector
Mechanics: invasive	To check regularly all fan connections
	To ensure fan circuit replacement every 24 hours
	To monitor ventilatory parameters routinely, including temperature and humidification of inspired air
Monitoring of Vital Signs	To monitor blood pressure, pulse, temperature, and respiratory pattern, as appropriate
	To monitor the occurrence of central and peripheral cyanosis
Surveillance	To monitor neurological status
Reduction of Anxiety	To identify changes in anxiety level

Table 3. Distribution of nursing activities with mean results for critical and support activities related to Ineffective Breathing Pattern

NIC Activity	Mean
Critical Activities	
To monitor the breathing frequency, rhythm, depth and effort	0.9
To remove secretions by stimulating coughing and aspiration	0.9
To perform endotracheal or nasotracheal aspiration,as appropriate	0.8
To monitor the effectiveness of oxygen therapy (e.g., oximetry pulse, arterial blood gas analysis), as appropriate Support activities	0.8
To listen to respiratory sounds by observing decreased/absent ventilation and the presence of adventitious noise	0.7
To record changes in SO2, Svo2, CO2 and terminal current changes in blood gas values	0.6
To change the fixation of the endotracheal tube every 24 hours, examining the skin and mucosa and moving the endotracheal tube to the other side of the mouth0.6	0.6
To elevate the bed head, as appropriate	
To monitor respiratory patterns: bradypnea, tachypnea, hyperventilation, Kussmaul respiration, respiration of	0.6
Cheyne-Stokes, apnea breath pattern, Blot respiration and ataxic patterns	0.6
To assemble the oxygen equipment and administer it by means of of a heated and humidified system	0.5
To check periodically the device used for distribution of oxygen to make sure that the prescribed concentration is being administered To monitor respiratory condition and oxygenation, as appropriate	0.5

were found in a total of twelve relevant activities in the clinical practice of the nurses of the Pediatric Intensive Care Unit.

DISCUSSION

The most reported activities in the care of children with the nursing diagnosis Ineffective Breathing Pattern are related to activities of direct care to patients as well as the semiological data. The most relevant activities belonging to the semiological data are included in the priority interventions, namely: Monitoring the breathing frequency, rhythm, depth and effort; to listen to respiratory sounds by observing areas of

diminished/absent ventilation and the presence of adventitious sounds and to monitor respiratory patterns: bradypnea, tachypnea, hyperventilation, Kussmaul respiration, Cheyne-Stokes respiration, apnea breath pattern, Blot respiration and ataxic patterns. Priority interventions are deemed as the most obvious for the resolution of the diagnosis, because they fit well with the etiology and/or the characteristics that define it. However, the activities suggested by the NIC as priority are those that are at the secondary level for the diagnosis studied; they have a good probability of responding well to the diagnosis, but are less sensitive than the priority interventions (Bulechek *et al.,* 2016). In the three priority interventions of the NIC for Ineffective Breathing Pattern are described as: "Respiratory Monitoring", "Airway Control" and "Asthma Control"; in the present study, the participants did not report any activity related to "Asthma Control", which emphasizes the deficiency of assistance in this intervention.

The study demonstrated that interventions/activities developed by nurses working in the pediatric unit include the main actions to reverse the Ineffective Breathing Pattern, but do not include several other actions described in the NIC that may be effective in promoting better clinical outcomes. Thus, these gaps can be used by professionals to guide training processes for the health team and effective management actions with reduction of time, effort and cost. The interventions used by nurses in the Intensive Care Units show the importance of performing activities related to "Airway Control", "Artificial Airway Control ", "Respiratory Monitoring", "Oxygen Therapy" and "Airway Aspiration". In addition, there was a use of activities that were considered critical and supportive in the study; in this context, this reinforces the relevance of activities and interventions listed for the adequate care of these patients in nursing care (Melo *et al.,* 2014). In addition to the aforementioned care measures, the use of the interventions "Drug Administration" and "Inhaled Drug Administration", essential for the treatment of respiratory diseases, were observed. One of the duties of the nursing team is to prepare and administrate medications.

In fact, this is one of the most frequent activities and highly relevant in the therapy and, consequently, in improving the prognosis of patients. The intervention "Monitoring of Vital Signs" provides parameters for rapid and effective actions in Pediatric Intensive Care Units. These parameters are important indicators of the organic response to the therapy offered. Pulse, body temperature, blood pressure and respiratory rate are evaluated; respiratory rate is particularly one of the primordial aspects in the characterization of the respiratory alteration .In addition, verification of central and peripheral cyanosis was included as one of the activities. We observed that among the activities prescribed by nurses in the care of children,the verification of vital signs was present, confirming the importance of these aspects in health monitoring and evaluation (Jarvis, 2016; Guedes *et al.,* 2017; Assis *et al.,* 2015; Tavares *et al.,* 2013). The limitations of the study include the reduced number of nurses with clinical experience in the theme studied and concomitant knowledge of the structures of standardized nursing languages, in particular, the Nursing Interventions Classification. The limited experience of the participants characterizes our sample as predominantly made up of professionals with levels that vary from beginner to advanced and proficient. Despite the limitations identified, the data on the cross-mapping found in the present study are useful to confirm the actions developed by nurses and they allow a comparison of nursing practices in pediatric care. In addition, cross-mapping is the first line of studies to validate classifications, as it allows for a review of the elements and a broadening of their structure. Finally, a cross-mapping study allows refining the languages used by nurses, facilitating the communication between professionals in the various levels of health care, so that a more efficient care can be established. Specifically, care provided in pediatric care units can directly influence infant mortality rates and consequently reduce health costs.

Conclusion

Although the Systematization of Nursing Care is still in the implantation stage in the place where the research was carried out and despite having for comparison a system of international classification molded in different countries and different approaches and influences, we identified that a great part of the activities was contemplated in the taxonomy and the reality of the Pediatric Intensive Care Unit was adequate. The study made it possible to identify the use of the standardized language in this environment and the possibility of this taxonomy being used and proving adequate to the local reality. The realization of this research facilitates the reflection among nurses on the application of the nursing process and, especially, regarding the prescription of activities with patients in the case of Ineffective Breathing Pattern. In view of all the activities described, professionals will be able to visualize the gaps that exist in the assistance provided, the needs of including other activities, seeking strategies based on daily practice, critical thinking and existing literature.

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Collaborations

Lima ABS contributed to the conception and design, analysis, interpretation of data, writing of the article and final approval of the version to be published. Goiabeira YNLA, Rocha Neta AP Lopes MV, Aguiar MIF, Rolim ILTP contributed in the relevant critical revision of the intellectual content, writing of the article and final approval of the version to be published.

REFERENCES

Alfaro-Lefévre R. 2014. Aplicação do processo de enfermagem: promoção do cuidado colaborativo. Porto Alegre: Artmed.

Assis, MN., Andrade, ACR., Rogenski, KE., Castilho, V. and Fugulin, FMT. 2015. Nursing intervention in pediatric care: a contribution to measuring workload. Rev Esc Enferm USP., 49(Esp2): 83-89.

Bulechek, GM., Butcher, HK., Dochterman, JM. and Wagner CM.2016. Nursing Intervention Classification (NIC).Rio de Janeiro: *Elsevier*,

Guedes, DMB., Santos, LC. and Oliveira, EA. 2017. Nursing interventions in a pediatric intensive care unit. Rev Enferm UFPE on line.; 11(1):102-11.

Herdman, TH. 2014. NANDA International nursing diagnoses: definitions and classification, 2015-2017.Oxford: Wiley Blackell;

Jarvis, C. 2016. Guia de exame físico para Enfermagem. São Paulo:Elsevier.

Lopes, MV. De, O, Silva, VM. da Araújo, TL de. 2013. Validação de diagnósticos de enfermagem: desafios e alternativas. RevBrasEnferm.,66(5):649-55.

Marinelli, NP, Silva, ARA. and Silva, DNO. 2015. Sistematização da Assistência de Enfermagem: desafios para implantação. RevEnferm Contemp.,4(2):254-263.

Melo, LL., Santos, MS. and Duran, ECM. 2014. Pediatric intensive care unit: diagnostic and nursing interventions most frequent. Rev Enferm UFPE On line.; 8(1):2342-9.

Oliveira, JBS. and Soares MESM. 2013. Perfil epidemiológico da insuficiência respiratória aguda em crianças internadas na unidade de terapia intensiva de um hospital público da Paraíba. InterScientia. 1(3):115-26.

Pereira, AGS., Santosm, CT., Menegon, DB., Mello, B., Azambuja, F. and Lucena, AF. 2014. Mapping the nursing care with the NIC for patients in risk for pressure ulcer. *RevEscEnferm,* USP., 48(3):454-61.

Pires DEP. 2013. Transformations necessary for the advancement of Nursing as a care science. *Rev Bras Enferm.,* 66(esp):39-44.

Prato, MIC, Silveira, A, Neves, ET. and Buboltz, FL. 2014. Doenças respiratórias na infância: uma revisão integrativa. RevSocBrasEnfermPed.,14(1):33-9.

Soares MI, Resck ZMR, Terra FS. and Camelo SHH. 2015. Systematization of nursing care: challenges and features to nurses in the care management. *Esc Anna Nery*, 19(1):47-53.

Tavares, TS., Castro, AS., Figueiredo, ARFF., Reis, DC. dos. 2013. Evaluation of the implementation of the systematic organization of nursing care in a pediatric Ward. *Rev Min Enferm*; 17(2): 287-295.

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