Original Article

Nursing conducts for the care of children with respiratory infection: validation of a guideline*

Condutas de enfermagem para o cuidado à criança com infecção respiratória: validação de um guia

Conductas de enfermería en el cuidado al niño con infección respiratoria: validación de una guía

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ABSTRACT

Objective: To validate the content of a specific nursing guideline for children with acute respiratory infection that presents the 'Ineffective airway clearance' nursing diagnosis. **Methods:** The study was performed in a pediatric hospital in the city of Fortaleza, with 16 nurses who cared for the children and 5 selected experts. The Fehring Model was used for validation. **Results:** The nurses listed 48 activities, which were revised and compared with the following NIC interventions: airway control and respiratory monitoring. 26 activities were selected and showed to experts. 16 activities were considered valid to compose the guideline. **Conclusion:** The guideline developed presents valid content for the activities listed for assistant nurses, which correspond to NIC interventions.

Keywords: Respiratory tract infections; Nursing care; Validation studies; Child

RESUMO

Objetivo: Validar o conteúdo de um guia de condutas de enfermagem específico para crianças com infecção respiratória aguda que apresentam o diagnóstico de enfermagem "Desobstrução ineficaz de vias aéreas". **Métodos:** Estudo realizado em um hospital pediátrico de Fortaleza-CE, junto a 16 enfermeiras que realizavam o cuidado às crianças e 5 especialistas previamente selecionados. Para validação do conteúdo foi utilizado o Modelo de Fehring. **Resultados**: As enfermeiras listaram 48 atividades, que foram revisadas e comparadas com as intervenções de enfermagem NIC: Controle de vias aéreas e Monitorização respiratória. Do total, foram selecionadas 26 atividades que foram apresentadas aos especialistas. Estes consideraram 16 atividades válidas para compor o guia de conduta. **Conclusão:** O guia de conduta desenvolvido apresenta conteúdo válido para as atividades listadas por enfermeiras assistenciais, que apresentam correspondência às apresentadas na NIC.

Descritores: Infecções respiratórias; Cuidados de enfermagem; Estudos de validação; Criança

RESUMEN

Objetivo: Validar el contenido de una guía de conductas de enfermería específica para niños con infección respiratoria aguda que presentan el diagnóstico de enfermería "Desobstrucción ineficaz de vías aéreas". **Métodos:** Se trata de un estudio realizado en un hospital pediátrico de Fortaleza-CE, con 16 enfermeras que brindaban cuidado a los niños y 5 especialistas previamente seleccionados. Para la validación del contenido fue utilizado el Modelo de Fehring. **Resultados**: Las enfermeras hicieron una lista de 48 actividades, que fueron revisadas y comparadas con las intervenciones de enfermería NIC: Control de vías aéreas y Monitorización respiratoria. Del total, se seleccionaron 26 actividades las cuales fueron presentadas a los especialistas. Éstos consideraron 16 actividades como válidas para componer la guía de conducta. **Conclusión:** La guía de conducta desarrollada presenta contenido válido para actividades listadas por enfermeras asistenciales, que presentan correspondencia con las presentadas en la NIC.

Descriptores: Infecciones respiratorias; Cuidados de enfermería; Estudios de validación; Niño

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INTRODUCTION

Health sectors have been concerned about acute respiratory infections due to a wide range of events which damage the respiratory tract and are the main causes of infant morbimortality throughout the world; pneumonia is responsible for 4 million deaths a year in developing countries[1]. Those data show that health sectors have been under huge pressure, and that respiratory tract conditions contribute to an increased number of hospital admissions in public and private institutions, resulting in high costs for the health system. Besides, children receiving endovenous drug treatment sometimes have traumatic consequences during hospital stays.

Those respiratory problems happen to children up to five years old because of the sensitiveness and immaturity of the respiratory tract. Acute respiratory diseases can be named according to an infectious (common cold and pneumonia, for example) or non-infectious inflammatory process (allergic rhinitis, for example) being influenced by pathogens, allergen factors and traumas[2]. Respiratory diseases can be classified as high or low, depending on how severely they affect the respiratory tract. High respiratory diseases, in general, are benign and self-limited. Low respiratory diseases tend to last longer and if left untreated, and can threaten a child's life[2]. Coughing, fever, dyspnea, oropharyngeal inflammation, earache, anorexia, runny nose, sub and intercostal retractions and cyanosis are symptoms of infant respiratory infection[3]. Some of those symptoms are complications of an inflammatory process caused by the accumulation of secretion in the lower and upper respiratory tract, depending on the region affected and on the etiological agent, which contribute for airway obstruction in children.

When those or other complications occur, the child has difficulty eliminating secretion and the airways remain obstructed. Such characteristics are the clinical indicators of nursing diagnosis "Ineffective airway clearance"[4], whose related factors can be environmental, physiological, or directly related to the obstructed airway. Some signals and symptoms can come up isolated or in groups, and define situations of respiratory discomfort represented by occasional or continuous episodes or dyspnea, expectoration, adeventitious pulmonary sounds, ineffective or absent cough. Those changes require constant nurse monitoring in order to stop such physiological stress in the child's body by using health assistance measures, involving a set of nursing actions contemplating specific care targeting the distinctive features of that age.

Child care should involve organized actions that characterize the nursing process, which is a methodological tool to identify how patients respond to health problems or vital processes, and specify which aspects of those responses require the intervention of a nursing professional[5]. Data collection, diagnosis planning, prescription, nursing implementation and evaluation make nursing an integrated and interconnected process. Diagnosis is the most fundamental component of that process, not only because it represents the link between the first and the other stages, but also because it is the basis for establishing interventions and evaluation of nursing outcomes.

Nursing interventions describe a set of specific activities in nursing treatments and they are planned according to a pre-established nursing diagnosis; they can follow the North American Nursing Diagnosis Association (NANDA) Taxonomy. The Nursing Intervention Classification (NIC) is an international classification of nursing interventions composed by 30 classes, 7 masteries, nearly 500 principal, suggested, and optional interventions for each diagnosis, classified according to their importance and resolution, and 12,000 more activities[6] .Those activities are defined as any action based on scientific knowledge, performed to improve a child's health outcomes. The classification of nursing interventions can serve as a foundation for nursing actions guidelines, which will strengthen the nurse's practice using scientific evidence-based strategies[7].

Nursing decision-making support systems, in other words the evaluation and action guides, are used to increase or extend the professional's capacity to make decisions. They are based on information that can facilitate a nurse's rational process in taking care of patients or approaching effective care monitoring, as well as supporting diagnostic reasoning and nursing care planning, forming an excellent strategy to divulge the use of terminologies in nursing[8]. In order to be used in clinical practice, this guideline must be validated by nursing experts. A method is considered valid when it is well supported in its principles or evidences and is able to resist criticism[9].

Validating interventions is essential for practice, because it proposes the equalization and standardization of nursing actions. Thus, it was necessary to create and validate a guideline for nursing actions, focusing on the diagnosis "Inefficient Airway Clearance", based on the activities described by the NIC, activities suggested for assistant nurses, and evaluation based on a validation chain example by specialized nurses[9].

METHODS

This is an exploratory-descriptive quantitative study, divided in three stages: a survey on nursing activities suggested by assistant nurses who mainly took care of children with an "Inefficient airway clearance" diagnosis; identification, comparison, and selection of activities described in the NIC which corresponded to those pooled in the previous stage; Validating the activities that

corresponded to both previous stages by a group of experts.

The first stage was conducted with nurses from the admission department in a pediatric hospital in the suburbs of Fortaleza – CE in October and November, 2006. Forms with the nurses' personal and professional identification and nursing activities suggested by them, who were responsible for taking care of children with a diagnosis of "Inefficient Airway Clearance", were used to collect data. In this instrument there were different topics about defining characteristics of inefficient airway clearance in order to facilitate the understanding of the health service nurses, because a systematized nursing care model was not employed at the mentioned data collection site.

In the second stage, the activities prescribed by the nurses were compared to the activities recommended by the NIC for nursing diagnosis. A general analysis of all interventions proposed by the NIC for diagnosis was performed. There were 14 possible nursing NIC interventions for "inefficient airway clearance" with activities corresponding to those described by the nurses. One of the mechanisms used in order to analyze correspondence was the identification of different words with similar meanings[10]. Two NIC interventions were selected at the end of this stage: Airway Control and Respiratory Monitoring. They presented a higher number of activities corresponding to the ones identified in the first stage of the study.

In the following stage, all activities, both NIC interventions and activities suggested by field nurses, were submitted to a panel consisting of five experts. They were selected using criteria established by the authors of this study. The group was made up of nurses qualified as Doctors or Masters in Nursing. Nurses with three a point score in the following criteria – the last one being considered fundamental – were considered specialists in this study (Picture 1).

At this stage, a form with the titles and intervention concepts: Airway control and Respiratory Monitoring, with its corresponding activities, was used. The items to be analyzed were presented in three columns: a list of activities of nursing interventions related to children; scores 1 to 5 which indicate: 1- Inappropriate Activity; 2- Mildly Appropriate Activity; 3- Not very appropriate activity; 4- Appropriate Activity and 5- Very appropriate Activity- the chosen score should be checked with an X; and the last column for suggestions for each NIC activity, in case the specialist nurses considered important doing that. Data analysis followed the norms for validation of the model adopted[9]. According to it, activities with an average of 0.80 or higher were considered appropriate; an average between 0.50 and 0.80 were considered partially appropriate, and averages below 0.50 were considered inappropriate.

The proposal for this study was sent to the Ethics in Research Committee, in compliance with the guidelines under resolution n.º 196/96 about research studying human beings by the National Council of Health/Ministry of Health (11), and it was approved according to proceeding No 165/06.

RESULTS

Forty-eight nursing activities conducted by the assisting nurses at the pediatric unit were listed. The highest number of activities the nurses cited involved dyspnea and cyanosis. Ineffective or absent cough presented the lowest number of activities. Assisting nurses based their opinion on actions that had already been conducted in the institution to list those activities.

There was a relation between the activities cited by the nurses and the ones from the NIC; NIC's general actions included specific actions mentioned by the nurses. The

Chart 1 – Criteria for specialist selection

Criteria	Points
1. Graduated or specialized, monograph in child care nursing or nursing terminology	1
2. Master in Nursing	1
3. Doctor in Nursing	2
4. Master Degree dissertation in nursing terminology	1
5. Master Degree dissertation in child care nursing	1
6. Doctor Degree thesis in nursing terminology	2
7. Doctor Degree thesis in child care nursing	2
8. Published work on nursing terminology	1
9. Published work related to child care nursing	1
10. Participation in Group/research projects on nursing terminology	1
11. Participation in Group/ research projects on child care nursing	1
12. Professor of Nursing terminology in Nursing School	2
13. Professor of Evaluation and Child Care in Nursing Course	2
14. At least one year of professional experience as a nurse assisting children with respiratory problems.	Fundamental Criteria

nurses observed some prescribed actions that needed more details and clarification. On the other hand, some activities described by the NIC did not correspond to the activities prescribed by the nurses due to such actions requiring specialized care – resources not available at the health service provider where the first stage of the study was performed – and actions aimed at assisting patients in critical conditions. The fourteen NIC interventions used in the comparison involved 327 activities. After the analysis of the comparison, 63 activities out of them stood out as similar. NIC nursing interventions, airway control, and respiratory monitoring presented a higher number of corresponding activities, which was indicative that they should be evaluated by specialist nurses in relation to the adaptation of the activities for targeting children. Those interventions are classified as priorities for the diagnosis under study and included 26 different activities.

In relation to the specialist nurses' evaluation, 16 appropriate activities and 10 not very appropriate activities were identified.

Airway control presented 7 appropriate and 4 not very appropriate activities while Respiratory Monitoring presented 9 appropriate activities and 6 partially appropriate activities (Table 1)

Therefore, out of 26 activities analyzed by the specialists, 16 were validated according to the parameters of the model adopted and got a higher score, which is considered significant for the criteria used in this study.

DISCUSSION

Nursing intervention "Airway Control" presented 7 appropriate activities during the validation process. The activities were considered the most important ones when taking care of children with inefficient airway clearance. Those activities were: basic nursing, follow-up care and

Table 1 – Distribution of nursing activities involving the interventions: airway control and respiratory monitoring for nursing diagnosis. Inefficient airway clearance, validated by specialist nurses, according to Fehring's Content Validation model:

Intervention/ Activities	Score					
	1 (=0)	2 (=0,25)	3 (=0,5)	4 (=0,75)	5 (=1)	Balanced Average
1. Airway control						
Placing the child in order to maximize ventilation potential	-	-	1	2	2	0,80
Removing secretion, coughing stimulation	-	-	-	2	3	0,90
Stimulating slow and deep breathing, turning, coughing.	1			3	1	0,65
Using playful techniques to stimulate child's deep breathing.	-	1	1	2	1	0,65
Guiding about the way to cough efficiently	-	-	1	3	1	0,75
Decreased or absent ventilation and accidental noise.	-	-	-	-	5	1,00
Controlling bronchodilator appropriately.	-	-	-	3	2	0,85
Controlling aerosol treatments appropriately.	-	-	-	2	3	0,90
Controlling humid air or O_2 appropriately.	-	-	-	3	2	0,85
Regulating liquid ingestion in order to balance liquids.	-	-	-	4	1	0,80
Position to relieve dyspnea.	1	-	1	1	2	0,65
2. Respiratory Monitoring						
Monitoring breathing frequency, pace, deepness and effort.	-	-	-	-	5	1,00
Making note of thorax movements, in relation to symmetry, use of accessory muscles and muscular, supra-clavicular and intercostal retractions.	-	-	-	-	5	1,00
Monitoring breathing noise such as hissing and snoring.	-	-	-	-	5	1,00
Monitoring breathing patterns: bradypnea, tachypnea, hyperventilation, Kussmaul's, Cheyene-Stocks's, apneustic, Biot's breathing and ataxic patterns.	-	1	-	2	2	0,75
Touching lung expansibility.	1		1	2	1	0,60
Percussing anterior and posterior thorax, from tops to bottoms, bilaterally.	-	-	3	2	-	0,60
Listening to breathing noise, observing decreased/missing ventilation areas, and accidental noise.	-	-	-	2	3	0,90
Listening to lung noise after treatments and making note of results.	-	-	-	3	2	0,85
Monitoring the increase of excitement, anxiety, lack of breathing.	-	-		2	3	0,90
Monitoring the child's capacity to effectively cough.	-	-	1	4	-	0,70
Checking cough onset, characteristics, and duration.	-	-	-	4	1	0,80
Monitoring child's breathing secretion.	-	-	-	3	2	0,85
Monitoring dyspnea and events that can increase or worsen it.	-	-	-	5	-	0,75
Monitoring Rx statements.	-	-	-	4	1	0,80
Putting the child laterally in order to prevent aspiration.	-	-	-	1	4	0,95

1. inappropriate activity 2.slightly appropriate activity. 3. Not very appropriate activity .4. Appropriated Activity 5. Very appropriated activity.

improvement of breathing discomfort. They require complete breathing evaluation, depending on the child's medical history and the efficiency of other nursing activities.

One study performed with post-operative patients, with nursing diagnosis of inefficient airway clearance, established a set of actions called Minimal Nursing Patterns: observing breathing pattern, oxygen saturation, evaluation of respiratory rhythm and rate, cyanosis of extremities, maintenance of continuous nebulization and listening to the lungs[12]. Those actions are basic and part of a continuous evaluation of a child's breathing pattern, similar to some actions considered appropriate by the specialists.

Removing secretion, stimulating coughing, and placing the child in order to maximize ventilation potential are considered appropriate nursing activities and help in keeping airways clear. Those activities are considerably important for the recovery of a patient with a nursing diagnosis of inefficient airway clearance[13]. The nurse should be playful, so that the child can participate actively in the care process.

In order to improve airway permeability, removing the secretion is important because the stuck secretion interferes with gaseous exchanges[14]. The nurse should remove the secretion in the patient's respiratory tract in order to make air passage easier and promote air exchange[15].

On the other hand, the right position of the child improves the lung expandability. The child will breathe normally when he/she is in a position that allows maximum lung expansion, that is, the bed head should be positioned at 30 degrees. Besides, the child should receive increased humidity and additional oxygen through helmets (toddlers), oral catheters, or masks (older children)[16].

After content analysis by the specialists, nursing activities of respiratory monitoring appropriate for children under 5 years old who have acute respiratory problems represented continuous actions, involving observation of the child's breathing pattern. Monitoring means constant collection of specific data in order to evaluate whether the child's health conditions have improved, worsened, or are within regular limits. By collecting such data, the professionals will have the information needed to determine interventions[10, 17]. Monitoring activities allow nurses to observe tendencies in the patient's oxygen levels, enabling the use of the right criteria to improve oxygen saturation[16].

CONCLUSION

Designing and validating a guide for nursing actions, according to NIC interventions, was focused on identifying specific activities targeting children with breathing problems in order to have a safer and consistent methodological source for the nursing practice.

The guide can help the nurses' job by providing support for clinical and therapeutical decisions, being a tool to treat children with acute respiratory infections and who have a nursing diagnosis related to respiratory system.

This study can contribute to planning care for children and youths with breathing problems and who have a nursing diagnosis of "Ineffective airway clearance", and also guide nursing assistance to children, giving them a personal and qualified treatment.

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