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Nursing interventions in pediatric care: a contribution to measuring workload*

Intervenções de enfermagem em pediatria: contribuição para a mensuração da carga de trabalho

Intervenciones de enfermería en pediatría: una contribución a la medición de la carga de trabajo

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ABSTRACT

Objective: To identify and validate interventions/activities developed by a nursing team in a Brazilian pediatric unit. **Method:** A descriptive, cross-sectional, and observational study was developed in the pediatric clinic of the university hospital of University of São Paulo, São Paulo, Brazil. It was organized in the following stages: identifying activities carried out by the team (from records in patient charts and from direct observation); mapping out and validating activities identified in interventions according to the Nursing Intervention Classification (NIC). **Results:** The 275 identified activities were mapped out into 63 interventions, 22 NIC classes and 7 NIC domains, and 25 associated and 13 personal activities. After validation, the number of activities decreased to 244, corresponding to 53 interventions, 20 NIC classes and 6 NIC domains, and 30 associated activities and 9 personal activities. **Conclusion:** Identifying the interventions/activities performed by the nursing team can help measure workload and is an important contribution to overcoming difficulties when it comes to operationalizing the process of sizing professional teams in the field of pediatrics.

DESCRIPTORS

Nursing staff; Pediatric nursing; Nursing; Workload; Pediatrics.

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INTRODUCTION

The precariousness of healthcare human resources coupled with budget restrictions in the sector negatively influence investments made in infrastructure and workforce, conditions that impact the delivery and performance of health services.

In light of this, insufficient care delivery by nursing professionals has been indicated as one of the main factors that directly interfere in patient care outcomes. Such a situation makes it difficult to implement any measure that favors and supports the enhancement of the care process in accordance with safety and quality practices.

Considering the above, determining size of nursing staff is an especially relevant issue and object of study. Research in this area has produced technical and scientific evidence drawing attention to the importance of staff establishment that meets not only the needs of patients and health institutions, but also guarantees the safety of nursing team professionals[1].

However, despite the availability of methodologies and parameters for establishing staff size for professionals from different areas of nursing, there are gaps regarding workload in pediatric units, defined as the average time required for caring for pediatric patients. Such a gap makes it difficult to operationalize the staff establishment process in this area.

Recent studies[2-5] have demonstrated that workload can be measured by identifying interventions and activities performed by nursing teams and by the average time needed to perform such activities.

In order to communicate the common meanings of terms used in professional practice, reduce imprecision due to semantic ambiguity, and allow for comparison between activities conducted by nursing professionals in different scenarios, Brazilian studies[3-9] have used the Nursing Interventions Classifications (NIC)[10]. The terms in this classification system have been used to express nursing interventions/activities performed in care practice and to measure the time of care given to patients in units that do not possess validated parameters for estimating nursing workload.

NIC consists of a comprehensive and standardized classification of interventions/activities performed by nurses and that are related to the nursing diagnoses of the North American Nursing Diagnosis Association International (NANDA-I), to the problems listed in the OMAHA system and the outcomes of the Nursing Outcomes Classification (NOC)[10].

NIC taxonomy has three levels, the first of which is represented by seven domains: Physiological Basic, Physiological Complex, Behavioral, Safety, Family, Health System, and Community.

The second level consists of 30 classes, organized according to domain. The third comprises 542 nursing interventions, grouped according to classes and domain[10].

Nursing interventions listed in NIC consist of a label, a definition and a set of activities that describe the actions taken by professionals when implementing a nursing intervention. Each intervention has a code, classifying it by its main class[10].

Interventions are defined as "any treatment, based upon clinical judgment and knowledge, that a nurse performs to enhance patient/client outcomes." Activities are defined as "specific behaviors or actions that nurses do to implement an intervention and that assist patients/clients to move toward a desired outcome"[10].

Given the scarcity of studies on the topic in the field of pediatrics, the present research sought to contribute to filling this significant gap in the current existing knowledge in the scope of staff management in pediatrics. Thus, the objective of this study was to identify and validate interventions/activities developed by the nursing team of a pediatric unit, as the basis for measuring workload of these professionals.

METHOD

The present quantitative study was descriptive, cross-sectional and observational, developed at the pediatric clinic of the university hospital of University of São Paulo (HU-USP), located in the city of São Paulo in southeastern Brazil. It was approved by the research ethics committee of the University of São Paulo School of Nursing - EEUSP (Resolution no. 5954/CEP-EEUSP- CAAE: 00677012.9.0000.5392) and that of HU-USP (Registration CEP-HU/USP:1190/12).

The unit has 36 beds and provides care for patients between the ages of 29 days and 15 years.

The nursing teams from the morning and the afternoon shift were composed of four nurses and seven to eight nursing technicians/aides; the night shift team was made up of two nurses and six to seven nursing technicians/aides.

The study was conducted in three stages: 1) identifying nursing activities performed in pediatric patient care through records kept in charts and direct observations of professionals in the field; 2) mapping out the activities into interventions according to NIC; and 3) validating the nursing interventions activities through workshops[11].

Data on pediatric patient care activities performed by nursing professionals were gathered between the period of hospital admission and discharge. This information was accessed through printed versions of Medical prescriptions, Nursing diagnoses, Nursing progress notes, Nursing prescriptions, Nursing records, and Control of ingested and eliminated liquids.

The number of analyzed charts was based on the unit's average annual occupancy rate between July 2011 and June 2012. The authors chose to assess 30% to 40% of the total number of charts for patients admitted in a typical month, i.e., a month in which the bed occupancy rate corresponded to the unit's average annual occupancy rate. Patient charts were chosen in an equivalent and randomized fashion, within the age group cared for by the unit. Thus, 60 (38%) charts were analyzed belonging to patients admitted in September 2011, considered a typical month in comparison

with the unit's annual occupancy rate (70%). Of these, 20 patients were infants, 20 were preschoolers and 20 were school-aged children.

Three undergraduate nursing students and two EEUSP graduate students were responsible for the direct observation of nursing patient care, gathering data on the activities performed. Data collection took place only after participants signed an informed consent form.

In order to consider different possible activities and different professionals in action, 25% of professionals from each category present in the unit were observed continuously throughout their work shift. Professionals were randomly and equally selected from each shift (morning, afternoon, and odd and even numbered nights). Thus, a total of 12 professionals participated in the study: four nurses (one from each work shift) and eight nursing technicians/aides (two from each shift). Direct observation of the activities performed by nursing professionals was carried out between October and November 2012, according to the availability of the field observers.

The activities identified in the charts and from direct observation were grouped into a single list that was then discussed and revised. The purpose of this process was to eliminate possible doubts on the actual meaning of any activity, as well as to avoid duplicate actions that might have been described differently.

To standardize the language used and allow for its comprehension in different scenarios, the list of activities conducted by nursing professionals was categorized according to NIC nursing interventions. To this end, the cross-mapping technique was used, in accordance with the literature[12].

Activities that did not correspond to NIC taxonomy were classified as associated and personal activities.

Associated activities were defined as those not specific to nursing and that therefore can be performed by other professionals. Personal activities were defined as those performed during breaks throughout work shifts, when professionals tend to their personal needs[13].

This stage resulted in the construction of an instrument with descriptions of nursing interventions/activities performed by professionals. The instrument was then assessed with respect to its face validity, an intuitive form of validation in which experts in the field are asked to evaluate the content and analyze whether or not it reflects what the researcher intended to measure[14].

The workshop technique was used to carry out this stage of the research[11]. Inclusion criteria for the nurses who participated in the workshops were having at least three years of knowledge and experience in pediatrics and/or use of NIC and agreeing to participate in the study.

The group consisted of seven expert judges, two of which were specialized pediatric nurses, two NIC experts and three who were knowledgeable and experienced in both areas. Each member was asked to assess each item according to four criteria: 1) the clarity and objectiveness of the description given for each intervention and activity; 2) the representativeness of the actions developed in pediatric clinics; 3) adequacy of how the activity was mapped out into a NIC intervention; and 4) the need for including or excluding any activity.

The experts received a file containing information on the study, an informed consent form, a letter with instructions on how to assess the instrument, and the instrument with the items to be assessed. The material was delivered prior to the workshops, so that it could be assessed beforehand.

The workshops took place in two four-hour meetings on June 18 and 19, 2012. In the first meeting, the researchers presented the study and its objectives. In both meetings, participants were shown the content of the instrument sequentially, with a detailed reading of each mapped domain, class and activity. After each item was read, a group discussion was initiated. The following item was only read when the group reached a consensus, either agreeing with the description or with the need for it to be changed.

RESULTS

Data collected from patient charts resulted in 156 activities and those gathered from direct observation of professionals, 307. Following the exclusion of repeated activities or of those that represented the same action, the preliminary list consisted of 277 activities performed by the HU-USP pediatric nursing team.

Of the 275 (100%) identified activities, 238 (86.54%) were mapped out into NIC interventions, resulting in 7 domains, 22 classes and 63 interventions. The 37 (13.46%) that did not correspond to any NIC intervention were classified either as associated activities (8.73%) or personal activities (4.73%).

The resulting list of activities performed by nursing professionals mapped out into interventions according to NIC domains and classes, as well as into associated and personal activities, was then submitted to content validity by experts in the fields of pediatrics and NIC. As a result of this process, the number of interventions fell to 205, representing 53 interventions, 20 NIC classes and 6 NIC domains, and 30 associated and 9 personal activities.

During the workshops, the experts suggested inclusions, exclusions or replacements of the initially mapped activities and interventions in order to better represent the work of the nursing teams in the pediatric units.

Thus, the list suffered the following alterations: Hydric Management was replaced by Urinary Elimination Management and Bowel Management. Tube Care: Gastrointestinal was replaced with Gastrointestinal Intubation. The items Plaster Cast Care: Maintenance, Lesion Care and Pressure Ulcer Prevention were replaced with Skin Surveillance. Airway Aspiration and Oxygen Therapy were substituted by Airway Management. Distraction, Sleep Enhancement, Neurologic Monitoring, Respiratory Monitoring, Infant Care, Transcribing Prescriptions,

Communicable Disease Management, Physical Restraint, Fall Prevention, Aspiration Precautions were excluded and related activities were reassigned to other interventions. The group also decided to include Staff Development in order to include the items Performance Assessment and Conduct/Participation in Educational Programs, which integrate the field of study contemplated by the nursing practice of the pediatric clinic.

The mapping of activities into NIC interventions, associated activities and personal activities conducted by the nursing team and validated by the board of experts, are displayed in tables 1 and 2.

Chart 1 - Demonstration of activities mapped out into interventions, according to NIC domains, classes and interventions, validated in the workshop. São Paulo, 2014

Nursing Interventions in Pediatrics		
Domain	Class	Intervention
1. Physiological: Basic	A Activity and Exercise Management	0221 Exercise Therapy: Ambulation
	B Elimination Management	0430 Bowel Management 0470 Flatulence Reduction 0580 Urinary Catheterization 0590 Urinary Elimination Management
	C Immobility Management	0840 Positioning 0970 Transfer
	D Nutrition Support	1100 Nutrition Management 1052 Bottle Feeding 1056 Enteral Tube Feeding 1080 Gastrointestinal Intubation 1160 Nutritional Monitoring
	E Physical Comfort Promotion	1380 Heat/Cold Application
	F Self-Care Facilitation	1630 Dressing 1610 Bathing 1650 Eye Care 1720 Oral Health Promotion 1804 Self-Care Assistance: Toileting 1870 Tube Care
2.Physiological: Complex	H Drug Management	2300 Medication administration 2440 Venous Access Device Maintenance
	I Neurologic Management	2680 Seizure Management
	K Respiratory Management	3140 Airway Management
	L Skin/Wound Management	3584 Skin Care: Topical Treatments 3590 Skin Surveillance
	N Tissue Perfusion Management	4190 Intravenous insertion 4220 Peripherally Inserted Central Catheter (PICC) Care
3.Behavioral	Q Communication Enhancement S Patient Education T Psychological Comfort Promotion	4430 Therapeutic Play 5602 Teaching: Disease Process 5880 Calming Technique
4.Safety	V Risk Management	6480 Environmental Management 6540 Infection Control 6650 Surveillance 6654 Surveillance: Safety 6680 Vital Signs Monitoring

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Nursing Interventions in Pediatrics		
Domain	Class	Intervention
5. Family	W Childbearing Care	1054 Breastfeeding Assistance
	X Lifespan Care	7110 Family Involvement Promotion
6.Health System	Y Health System Mediation	7310 Admission Care 7320 Case Management 7370 Discharge Planning
	Ya Health System Management	7620 Controlled Substance Checking 7650 Delegation 7660 Emergency Cart Checking 7830 Staff Supervision 7680 Examination Assistance 7726 Preceptor: Student 7850 Staff Development 7840 Supply Management 7880 Technology Management 7892 Transport: Interfacility
	Yb Information Management	7920 Documentation 7960 Health Care Information Exchange 8140 Shift Report

Chart 2 - List of associated and personal activities validated at the workshop. São Paulo, 2014

Personal Activities	
Computer Use	Reading
Nourishment (drinking water or coffee)	Analyzing preliminary version of shift distribution
Resting	Using the toilet
Socializing	Taking medication
Personal phone calls	
Associated Activities	
Arranging chairs	Registering child's chaperone in the patient system
Organizing the Kardex	Registering delivery of storeroom material into the hospital materials management system
Putting together admission kits (identification wristband, bed nameplates, vital signs form)	Searching for medication in the Intensive Care Unit
Organizing desk	Organizing patient identification labels
Organizing clipboards	Organizing computer table
Searching for earlier nursing notes/progress reports that are no longer on the clipboard	Delivering confirmation of medical reason for absence to the doctor for stamping
Removing documents from clipboard to file in patient chart	Sorting labels
Putting away materials and equipment	Changing clock battery
Reporting change in restricted diet to nutritionist	Sorting the Kardex

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Associated Activities	
Searching for patient charts	Printing discharge summary
Searching the Kardex	Processing patient discharge through the system
Delivering child's belongings to the family	Requesting X-ray
Searching for examination requests	Filling out computer forms
Transferring patients in the system	Putting together identification wristbands
Receive documents	Looking for shift supervisor's telephone number

DISCUSSION

The existing gaps in the literature in terms of other studies specifically developed with pediatric patients, both in Brazil and internationally, are a challenge for conducting a comparative analysis of the results obtained, limiting the discussion of the current study. Another methodological limitation was the fact that the research was conducted in only one pediatric clinic.

The present study allowed to identify, validate and communicate interventions and activities performed by pediatric nursing professionals by using standardized languages as proposed by NIC. Thus, it contributed to enhancing the knowledge on the main activities developed by a pediatric nursing team in the Brazilian scenario. Based on the activities described, the workload of these nursing professionals can be measured, indicating the average time required for caring for pediatric patients.

The method adopted in this study, used in other studies in different areas of nursing, such as Rooming-in[3], Emergency[6], Basic Health Unit[15], Radiology Unit[14], Chemotherapy Center[18], and Post-Anesthesia Recovery Room[9], was adequate and allowed for a better understanding of the pediatric patient care practice.

The cross-mapping validation process of the activities into NIC nursing interventions conducted with the participation of expert nurses in the field of pediatrics and NIC allowed to analyze and discuss activities and interventions specific to pediatric patients, helping to achieve the objectives of the present study.

CONCLUSION

The current research allowed for the identification and validation of the interventions and activities conducted by nursing professionals in a Brazilian pediatric unit. By using standardized language to describe the team's clinical practice, common meaning can be communicated in different contexts.

The resulting list of interventions and activities is a tool that can help measure workload, thus representing an important contribution to overcoming the difficulties involved in operationalizing the process of sizing nursing staff in the field of pediatrics.

RESUMO

Objetivo: Identificar e validar as intervenções/atividades desenvolvidas pela equipe de enfermagem em unidade pediátrica. **Método:** Pesquisa descritiva, transversal, observacional, desenvolvida na Clínica Pediátrica do Hospital Universitário da Universidade de São Paulo, São Paulo, Brasil, organizada nas etapas: identificação das atividades realizadas pela equipe (registros em prontuários e observação direta); mapeamento e validação das atividades identificadas em intervenções, segundo a *Nursing Intervention Classification* (NIC). **Resultados:** As 275 atividades identificadas foram mapeadas em 63 intervenções, 22 classes e sete domínios da NIC, 25 atividades associadas e 13 pessoais. Após validação, o número de atividades passou para 244, correspondendo a 53 intervenções, 20 classes e seis domínios da NIC, 30 atividades associadas e nove pessoais. **Conclusão:** A identificação das intervenções/atividades executadas pela equipe de enfermagem favorece a mensuração da carga de trabalho, constituindo importante contribuição para a superação das dificuldades relacionadas à operacionalização do processo de dimensionamento de profissionais na área de pediatria.

DESCRITORES

Recursos Humanos de Enfermagem; Enfermagem Pediátrica; Cuidados de Enfermagem; Carga de Trabalho.

RESUMEN

Objetivo: Identificar y validar intervenciones/actividades desarrolladas por el equipo de enfermería en una unidad pediátrica. **Método:** Estudio descriptivo, transversal, observacional desarrollado en la Clínica Pediátrica del Hospital Universitario de la Universidad de São Paulo, São Paulo, Brasil, organizado en las siguientes etapas: identificación de las actividades realizadas por el equipo (registros en archivos y observación directa); mapeo y validación de las actividades identificadas en las intervenciones, de acuerdo con la Clasificación de Intervenciones de Enfermería (CIE). **Resultados:** las 275 actividades identificadas fueron mapeadas en 63 intervenciones, 22 clases y siete dominios de la CIE, 25 actividades asociadas y 13 personales. Después de la validación, el número de actividades pasó para 244, lo que corresponde a 53 intervenciones, 20 clases y seis dominios de la CIE, 30 actividades asociadas y nueve personales. **Conclusión:** la identificación de las intervenciones/actividades realizadas por el equipo de enfermería favorece la medición de la carga de trabajo siendo una importante contribución a la superación de las dificultades relacionadas con la aplicación del proceso de dimensionamiento de profesionales en el área de pediatría.

DESCRIPTORES

Recursos Humanos de Enfermería; Enfermería Pediátrica; Atención de Enfermería; Carga de Trabajo.

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