Rev. Latino-Am. Enfermagem
2010 Sept-Oct;18(5):873-80
www.eerp.usp.br/rlae

Original Article

Nursing Interventions in the Clinical Practice of an Intensive Care Unit[1]

Amália de Fátima Lucena[2]
Maria Gaby Rivero de Gutiérrez[3]
Isabel Cristina Echer[4]
Alba Lucia Bottura Leite de Barros[5]

This cross-sectional study was carried out at a university hospital to describe the nursing interventions most frequently performed in the clinical practice of an intensive care unit, based on nursing care prescriptions, and to investigate their similarity to the Nursing Interventions Classification (NIC). The sample consisted of 991 hospitalizations of patients. Data were retrospectively collected from the computer database and analyzed through descriptive statistics and cross-mapping. A total of 57 different NIC interventions frequently used in the unit were identified; most of them in the complex (42%) and basic physiological (37%) domains, in the classes 'respiratory management' and 'self-care facilitation'. Similarity between the nursing care prescribed and nursing interventions/NIC was found in 97.2% of the cases. The conclusion is that the interventions/NIC used in the clinical practice of this intensive care unit reflects the level of complexity of nursing care, which is mainly directed at the regulation of the body's physical and homeostatic functioning.

Descriptors: Nursing Process/Classification; Nursing Diagnosis; Intensive Care; Hospital Information Systems.

[1] Paper extracted from Doctoral Dissertation "Mapeamento dos diagnósticos e intervenções de enfermagem de uma unidade de terapia intensiva", presented to Programa de Pós-graduação de Enfermagem, Departamento de Enfermagem, Universidade Federal de São Paulo, Brazil.

[2] RN, Ph.D. in Sciences, Adjunct Professor, Escola de Enfermagem, Universidade Federal do Rio Grande do Sul, Brazil. E-mail: fatimalucena@terra.com.br.

[3] RN, Ph.D. in Nursing, Associate Professor, Departamento de Enfermagem, Universidade Federal de São Paulo, Brazil. E-mail:gaby.gutierrez@unifesp.br.

[4] RN, Ph.D. in Medical Sciences, Adjunct Professor, Escola de Enfermagem, Universidade Federal do Rio Grande do Sul, Brazil. E-mail: isabel.echer@terra.com.br.

[5] RN, Ph.D. in Physiofharmacoly, Full Professor, Departamento de Enfermagem, Universidade Federal de São Paulo, Brazil. E-mail: barros.alba@unifesp.br.

Corresponding Author:
Amália de Fátima Lucena
Universidade Federal do Rio Grande do Sul. Escola de Enfermagem.
Departamento de Enfermagem Médico-Cirúrgica.
Rua São Manoel, 963
Bairro Rio Branco
CEP: 90620-110 Porto Alegre, RS, Brasil
E-mail: alucena@hcpa.ufrgs.br

Intervenções de enfermagem utilizadas na prática clínica de uma unidade de terapia intensiva

Este é estudo descritivo, transversal, realizado em um hospital universitário com os objetivos de descrever as intervenções de enfermagem mais utilizadas na prática clínica de uma unidade de terapia intensiva, com base nas prescrições de enfermagem, e analisar a sua similaridade com a Nursing Interventions Classification (NIC). A amostra constou de 991 internações de pacientes. Os dados foram coletados, retrospectivamente, em base informatizada, e analisados pela estatística descritiva e mapeamento cruzado. Identificaram-se 57 diferentes intervenções/NIC, frequentemente utilizadas na unidade, sendo a maioria no domínio fisiológico complexo (42%) e fisiológico básico (37%), nas classes de controle respiratório e facilitação do autocuidado. Em 97,2% dos casos houve similaridade entre as prescrições de enfermagem da unidade e as intervenções/NIC. Conclui-se que as intervenções/NIC, utilizadas na prática clínica da unidade de terapia intensiva, refletem o nível de complexidade do cuidado de enfermagem nessa unidade, destinando-se, principalmente, à regulação do funcionamento físico e homeostático do organismo.

Descritores: Processos de Enfermagem/Classificação; Diagnóstico de Enfermagem; Cuidados Intensivos; Sistemas de Informação Hospitalar.

Intervenciones de enfermería utilizadas en la práctica clínica de una unidad de terapia intensiva

Se trata de un estudio descriptivo, transversal realizado en un hospital universitario con los objetivos de describir las intervenciones de enfermería más utilizadas en la práctica clínica de una unidad de terapia intensiva, con base en las prescripciones de enfermería y, analizar si son similares a las Nursing Interventions Clasification (NIC). La muestra constó de 991 internaciones de pacientes. Los datos fueron recolectados retrospectivamente, en base informatizada, y analizados por la estadística descriptiva y diseño cruzado. Se identificó 57 diferentes intervenciones/NIC frecuentemente utilizadas en la unidad; siendo la mayoría en el dominio fisiológico complejo (42%) y fisiológico básico (37%), en las clases de control respiratorio y facilitación del autocuidado. En 97,2% de los casos se encontraron similares entre las prescripciones de enfermería de la unidad y las intervenciones/NIC. Se concluye que las intervenciones/NIC utilizadas en la práctica clínica de la unidad de terapia intensiva reflejan el nivel de complejidad del cuidado de enfermería en esta unidad, destinándose, principalmente, a regular el funcionamiento físico y homeostático del organismo.

Descriptores: Procesos de Enfermería/Clasificación; Diagnóstico de Enfermería; Cuidados Intensivos; Sistemas de Información en Hospital.

Introduction

The nursing process (NP) is an instrument for planning, organizing and performing nursing care. It has been used in the *Hospital de Clinicas* in Porto Alegre (HCPA), RS, Brazil for about 30 years based on the basic human needs theory[1]. NP is currently computerized and the nursing diagnosis stage is based on the North American Nursing Diagnosis Association (NANDA-I)[2]. In relation to nursing prescriptions, constant maintenance of the computer system is not totally based on specific classification, rather it is based on scientific literature, the clinical practice of the facility's nurses, and more recently, on interventions proposed by the Nursing Interventions Classification (NIC)[3]. The use of the Nursing Outcomes Classification (NOC) to evaluate

nursing outcomes is in the research phase preparing for implementation[4].

The NIC's main proposal, as well as NANDA-I's and NOC's proposals, is to present a standardized nursing language to contribute to the communication and documentation of clinical practice with the organization of computer systems, which are essential to implementing an electronic medical filing system.

In this context, considering the constant improvement of the care process[5], further questions concerning the NP used in the HCPA emerged, such as what would be the profile of interventions prescribed by nurses and whether these would correspond to interventions proposed by the NIC. Therefore, this study describes the most frequently used nursing interventions in the clinical practice of an adult Intensive Care Unit (ICU) based on nursing prescriptions and analyzes their similarity to interventions proposed by the NIC.

A recent analysis of the scientific literature addressing this classification showed that only seven studies have been carried out by Brazilian authors, hence this study also aims to contribute to knowledge concerning the use and applicability of the NIC in the context of Brazilian nursing and the clinical practice of ICUs[6]. There is also a scarcity of studies carried out in ICUs settings[7-8],which also suggests the need for further investigation in order to deepen understanding of this subject in this nursing field.

Method

This descriptive cross-sectional study is part of a larger study[9], carried out in the ICU of HCPA, a large university hospital. The sample included 991 hospitalizations in the adult ICU, which are all the hospitalizations in a period of six consecutive months. The cutoff point for this period was established according to the methodological framework used[10]. Retrospective data collection was carried out using a computer database at the hospital and information was organized in Excel spreadsheets. Inclusion criteria were: the existence of nursing prescriptions for patients who presented previously identified Nursing Diagnoses (ND) of higher frequency.

Data were descriptively analyzed using the Statistical Package for the Social Sciences 12.0 (SPSS) and through cross-mapping[10] between nursing care prescribed in the most frequent NDs and the NIC nursing interventions seeking similar elements between them. Hence, ten rules were used[9-11], among them the use of the NIC chapter that contains interventions associated with NANDA-I's NDs, described with three levels of linkage: priority, the most likely to solve the diagnosis; suggested, there is some probability of solving the diagnosis; additional optional, the ones that can be applied in some cases to solve the diagnosis[3]. When the cross mapping did not indicate similarities between the nursing prescriptions and interventions, all the remaining interventions in the classification were sought before determining there was no similarity.

The project was approved by the Research Ethics Committees at the involved institutions (03-438 e 1463/03).

Results

A total of 63 diagnostic categories were identified in the ICU in the first phase of the larger study[9,12]. The six most frequent categories occurred more than 40% of the time in the 991 studied hospitalizations with the prescription of 212 different types of nursing care.

The six most frequent NDs identified were "Bathing/Hygiene Self Care Deficit" (98.1%) with the prescription of 34 different nursing actions; "Risk for Infection" (95.9%) with the prescription of 47 different nursing actions; "Impaired Physical Mobility" (59.3%) with the prescription of 37 different nursing actions; "Ineffective breathing pattern" (49.8%) with the prescription of 49 different nursing actions; "Impaired spontaneous ventilation" (43.1%) with the prescription of 24 different nursing actions, and "Risk for impaired skin integrity" (40.7%) with the prescription of 21 different nursing actions[9,11,13]. Some of the nursing care was prescribed for different NDs, thus when repetitions were excluded, 149 different care actions were obtained.

Cross-mapping between the different nursing care prescribed to each of the six NDs and NIC interventions/activities indicated similarity in 97.2% of cases, which permitted identifying the NIC interventions most frequently used in the clinical practice of the ICU.

A total of 119 interventions were identified, of which 18 were for the ND "Bathing/Hygiene self-care deficit"; 28 for the ND "Risk for Infection", 17 for the ND "Impaired Physical Mobility"; 25 for "Ineffective breathing pattern"; 17 for "Impaired spontaneous ventilation" and 14 for the ND "Risk for Impaired skin integrity". Some of these interventions were identified in more than one ND, for example, "Vital Signs Monitoring" and "Positioning" were found in all of them. Excluding these repetitions, 57 different NIC interventions were used.

Most of the 212 prescribed and analyzed nursing care

actions, 84 (39.6%), were similar in activities that belonged to interventions of the priority level; 45 (21.2%) to the suggested level, 41 (19.3%) additional optional, and 36 (17%) to other NIC interventions. Only six (2.8%) nursing care actions were not similar to NIC interventions.

Among the identified interventions, 26 (42%) belonged to the NIC complex physiological domain with a predominance of class K (respiratory management) with 10 interventions. Another 23 (37%) belonged to the basic physiological domain, especially in class self-care facilitation (F) with nine interventions. Six (9.7%) belonged to the behavioral domain in classes designated coping assistance (R), patient education (S) and psychological comfort promotion (T). Another six (9.7%) were in the safety domain, class Risk management (V); one (1.6%) was in the family domain, in class lifespan care (X). No interventions were found in the health systems and community domains.

The sum of the interventions previously described totaled 62 interventions, though five interventions belonged to more than one NIC class[3]. Excluding these repetitions, 57 different interventions were identified in the study (Figures 1,2,3).

Nursing interventions located in the physiological basic domain		Nursing diagnoses for which nursing interventions were prescribed
Class	**Intervention**	
A – Activity and exercise management	Exercise therapy: ambulation	- Impaired Physical Mobility
B – Elimination management	Self-care assistance: toileting	- Bathing/Hygiene self-care deficit
	Urinary elimination management	- Risk for impaired skin integrity
	Ostomy care	- Risk for Infection
	Tube care: urinary	- Risk for Infection
	Urinary incontinence care	- Risk for Infection
	Urinary retention care	- Bathing/Hygiene: self-care deficit - Risk for Infection
C – Immobility management	Bed rest care	- Bathing/Hygiene: self-care deficit - Ineffective breathing pattern - Impaired physical mobility - Risk for impaired skin integrity
	* Positioning	- Bathing/Hygiene: self-care deficit - Ineffective breathing pattern - Impaired spontaneous ventilation - Impaired physical mobility - Risk for impaired skin integrity
	Positioning: wheelchair	- Impaired physical mobility
D – Nutritional support	Total parenteral nutrition (TPN) administration	- Risk for Infection
	Tube care: gastrointestinal	- Risk for Infection - Ineffective breathing pattern - Impaired spontaneous ventilation
E – Physical comfort promotion	Pain management	- Bathing/Hygiene: self-care deficit - Ineffective breathing pattern - Impaired physical mobility
	Environmental management: comfort	- Ineffective breathing pattern - Impaired physical mobility
F – Self-care facilitation	Self-care assistance	- Bathing/Hygiene: self-care deficit - Risk for infection - Bathing/Hygiene: self-care deficit
	* Self-care assistance: bathing/hygiene	
	Self-care assistance: toileting **(B)	- Bathing/Hygiene: self-care deficit
	* Bathing	- Bathing/Hygiene: self-care deficit - Risk for infection - Risk for impaired skin integrity
	Perineal care	- Bathing/Hygiene: self-care deficit - Risk for impaired skin integrity
	Hair care	- Bathing/Hygiene: self-care deficit
	Eye care	- Ineffective breathing pattern
	Tube care	- Risk for infection
	Oral health maintenance	- Bathing/Hygiene: self-care deficit

* Interventions presented by NIC as priority in at least one of the identified nursing diagnoses

**The letter between brackets at the end of statement indicates the other class in which the intervention is also included.

Figure 1 – NIC nursing intervention identified in the clinical practice of the ICU, localization in the physiological basic domain and NDs for which they were prescribed

Nursing interventions located in the physiological complex domain		Nursing diagnoses for which nursing interventions were prescribed
Class	**Intervention**	
G – Electrolyte and acid-base management	Total parenteral nutrition (TPN) administration **(D)	- Risk for infection
	Hyperglycemia management	- Risk for impaired skin integrity
	Fluid/electrolyte management	- Risk for infection
H – Drug management	Medication administration	- Risk for infection - Risk for impaired skin integrity
	Medication administration: subcutaneous	- Risk for impaired skin integrity
I – Neurologic management	Neurologic monitoring	- Ineffective breathing pattern - Impaired physical mobility
K – Respiratory management	Airway suctioning	- Ineffective breathing pattern - Impaired spontaneous ventilation
	* Ventilation assistance	- Ineffective breathing pattern - Impaired spontaneous ventilation
	* Airway management	- Risk for infection - Ineffective breathing pattern - Impaired spontaneous ventilation
	* Artificial airway management	- Ineffective breathing pattern - Impaired spontaneous ventilation
	Tube care: chest	- Risk for infection
	Mechanical ventilation weaning	- Impaired spontaneous ventilation
	Chest physiotherapy	- Ineffective breathing pattern - Impaired spontaneous ventilation
	* Respiratory monitoring	- Ineffective breathing pattern - Impaired spontaneous ventilation
	Oxygen therapy	- Ineffective breathing pattern - Impaired spontaneous ventilation
	* Mechanical ventilation management: invasive	- Ineffective breathing pattern - Impaired spontaneous ventilation
L – Skin/wound management	* Pressure management	- Risk for impaired skin integrity
	Wound care	- Risk for impaired skin integrity
	Incision site care	- Risk for infection
	Ostomy care **(B)	- Risk for infection
	Pressure ulcer care	- Risk for impaired skin integrity
	* Pressure ulcer prevention	- Impaired physical mobility - Risk for impaired skin integrity
	* Skin surveillance	- Risk for infection - Impaired physical mobility - Risk for impaired skin integrity
N – Tissue perfusion management	Fluid/electrolyte management **(G)	- Risk for infection
	Intravenous insertion	- Risk for infection
	Intravenous therapy	- Risk for infection

* Interventions presented by NIC as priority in at least one of the identified nursing diagnoses
**The letter between brackets at the end of statement indicates the other class in which the intervention is also included.

Figure 2 – NIC nursing interventions identified in the clinical practice of the ICU, localization in the physiological complex domain and the NDs for which they were prescribed

Nursing interventions located in the behavior domain		Nursing diagnoses for which nursing interventions were prescribed
Class	**Intervention**	
R – Coping assistance	Security enhancement	- Risk for infection
	Anticipatory guidance	- Bathing/Hygiene: self-care deficit - Risk for infection - Ineffective breathing pattern - Impaired spontaneous ventilation - Impaired physical mobility
	Emotional support	- Bathing/Hygiene: self-care deficit - Risk for infection - Ineffective breathing pattern - Impaired physical mobility
S – Patient education	Teaching: procedure/treatment	- Bathing/Hygiene: self-care deficit - Risk for infection - Ineffective breathing pattern - Impaired spontaneous ventilation - Impaired physical mobility
	Teaching: disease process	- Bathing/Hygiene: self-care deficit - Risk for infection - Ineffective breathing pattern - Impaired spontaneous ventilation - Impaired physical mobility
T – Psychological comfort promotion	Anxiety reduction	- Risk for infection - Ineffective breathing pattern - Impaired physical mobility
Nursing interventions located in the safety domain		**Nursing diagnoses for which nursing interventions were prescribed**
Class	**Intervention**	
V – Risk management	* Infection control	- Risk for infection - Ineffective breathing pattern - Impaired spontaneous ventilation
	Environmental control	- Impaired physical mobility
	Vital signs monitoring	- Bathing/Hygiene: self-care deficit - Risk for infection - Ineffective breathing pattern - Impaired spontaneous ventilation - Impaired physical mobility - Risk for impaired skin integrity
	* Pressure ulcer prevention**(L)	- Impaired physical mobility - Risk for impaired skin integrity
	* Infection protection	- Risk for infection
	Surveillance	- Bathing/Hygiene: self-care deficit - Ineffective breathing pattern
Nursing interventions located in the family domain		**Nursing diagnoses for which nursing interventions were prescribed**
Class	**Intervention**	
X – Lifespan care	Family support	- Bathing/Hygiene: self-care deficit - Risk for infection - Ineffective breathing pattern - Impaired spontaneous ventilation - Impaired physical mobility

* Interventions presented by NIC as priority in at least one of the identified nursing diagnoses
**The letter between brackets at the end of statement indicates the other class in which the intervention is also included.

Figure 3 – NIC nursing intervention identified in the clinical practice of the ICU, localization in the behavior, safety, and family domains and the NDs for which they were prescribed

Discussion

The most frequent NDs identified among ICU patients are also prevalent in other studies[7-8,14]. This information reinforces the relevance of identifying nursing interventions necessary for appropriate care for these patients, since they are common in clinical nursing practice.

The high percentage (97.2%) of nursing care prescribed for these NDs and mapped with similarity to the NIC indicates the importance and use of this classification, a source for the improvement of care and on which to base patient care, as well as aiding the description of nursing practice, since it has a base of evidence that results from consensus, literature review and clinical studies[14-15].

Most of the different NIC/nursing interventions (28) identified in the ICU are prescribed for the ND "Risk for infection" followed by 25 interventions for the ND "Ineffective breathing pattern". These numbers translate the large demand of patients with these NDs in the ICU and the need of specific care with interventions that control the rate of infections resulting from the large range of invasive procedures to which they are exposed.

In relation to the linkage level between NIC/interventions and NANDA-I's NDs, we highlight that a plurality of the analyzed nursing care actions, 84 (39.6%), were similar to activities described in interventions of priority level, corroborating its importance in solving the established ND. It also indicates that the nursing prescriptions in the ICU were appropriate to the needs of priority care for each established ND.

In relation to the location of the interventions identified by the study of the NIC taxonomy, we verified that a plurality of them, 26 (42%), were in the complex physiological domain, which reflects the profile of critical patients hospitalized in intensive care units. Similar results are found in the literature[16-17], confirming the complexity of care delivered in this unit, which is, for the most part, directed to the body's homeostatic regulation.

Class K – respiratory management, with the largest predominance of interventions, is also in the complex physiological domain (Figure 2). It reflects the high percentage of patients in the ICU with nursing diagnoses associated with damage in the respiratory tract[18], which requires several interventions to improve or solve vital problems. Interventions in this class are also frequently used for critical patients in other studies[7-8,17].

Despite the fact that most of the interventions belong to the NIC complex physiological domain, a significant number was also located in the basic physiological domain, which supports the individuals' physical functioning. It comprises the class with the second highest number of interventions, class F – self-care facilitation – with nine interventions, among them, Bathing and Bathing/Hygiene: self-care assistance, which are the most frequently used ones (Figure 1). This fact is possibly related to the high number of patients with the NDs "Bathing/Hygiene: self-care deficit" (98.1%) and "Impaired physical mobility" (59.3%), which show that patients have difficulty performing activities themselves and, therefore, require interventions that enable daily activities and promote their comfort[2-3,19].

Comparatively analyzing the 57 interventions identified in the study with the interventions described in the NIC by the American Association of Critical-Care Nurses, in the chapter of essential interventions by area of specialty, we verified that 17 (29.8%) coincide. Of these, only two (11.8%) were in the basic physiological domain – "Positioning" and "Pain management" (Figure 1) and 11 (64.7%) in the physiological complex domain – Administration of medication, Neurologic monitoring, Respiratory monitoring, Airway suctioning, Airway management, Artificial airway management, Mechanical ventilation weaning, Oxygen therapy, Mechanical ventilation, Fluid/electrolytes management, and intravenous therapy (Figure 2). Three (17.6%) are from the behavioral domain – Emotional support, Teaching: procedure/treatment and Anxiety reduction – and one (5.9%) in the safety domain – Vital signs monitoring[3] (Figure 3).

We note that the predominance of coincident interventions is again in the complex physiological domain, which covers the body's homeostatic balance. However, a significant number of interventions were identified in the basic physiological domain, and which are not mentioned in the list of the American Association of Critical-Care Nurses[3]. Even though it is known that the essential interventions by specialty do not include all the interventions used in this field, only the predominant ones, there is a lack of interventions that important in the clinical practice of ICUs, such as those related to self-care, elimination management, and risk management, as indicated by this study. Therefore, such interventions should be included in this list in order to accommodate the diverse need of critical patients.

The results obtained in this study are focused on interventions used in the clinical practice of ICUs and aggregate knowledge from recent publications of this periodical concerning the nursing process[5,8,20].

Hence, it is expected that this study will help nurses to appropriate increasingly more of the phenomena of their practice such as diagnosing and prescribing actions with the use of a language described by the existent classification systems.

Conclusions

This study indicates there is a relevant similarity (97.2%) between nursing prescriptions of ICUs and interventions proposed by the NIC, which contributes to demonstrating they are the most commonly used in this unit, given a set of nursing diagnoses.

Most of the interventions are in the priority level of established NDs, which confirms their importance to care delivered to patients. These interventions are mainly located in the NIC complex physiological and basic physiological domains, which leads to the conclusion that the nursing practice in this unit is closely linked to the solution of problems that require interventions in the body's homeostatic and physical functioning.

A limiting factor in this study is the fact that nursing prescriptions for patients who presented the six most frequent NDs were analyzed instead of all diagnoses identified in the ICU. This is for two reasons, due to the extensive work and representative nature of the studied NDs (percentage above 40% in hospitalizations). Hence, further studies addressing the remaining NDs are suggested.

Among the implications for nursing practice, the identification of a set of diagnoses and nursing interventions used by intensivist nurses in their daily practice is highlighted, which can help construct an evidence-based body of knowledge concerning care delivered to critical patients, to develop protocols, ground teaching and clinical rationales, manage costs, and plan the allocation of resources to qualify nursing services.

References

1. Horta WA. Processo de enfermagem. São Paulo: EDUSP; 1979. 99 p.

2. North American Nursing Diagnosis Association. Nursing diagnoses: definitions & classification 2009-2011. Philadelphia: Wiley-Blackwell; 2009. 435 p.

3. Dochterman MJ, Bulechek GM. Classificação das intervenções de enfermagem (NIC). 4th.ed. Porto Alegre(RS): Artmed; 2008. 988 p.

4. Moorhead S, Johnson M.M. Classificação dos resultados de enfermagem (NOC). 3th.ed. Porto Alegre (RS): Artes Médicas; 2008. 872 p.

5. Pokorski S, Moraes MA, Chiarelli R, Costanzi AP, Rabelo ER. Nursing process: from literature to practice. What are we actually doing? Rev. Latino-Am. Enfermagem. 2009 June; 17(3):302-7.

6. Napoleão AA, Chianca TCM, Carvalho EC, Dalri MCB. Análise da produção científica sobre a classificação das intervenções de enfermagem (NIC) de 1980 a 2004. Rev. Latino-Am. Enfermagem. 2006 julho-agosto; 14(4):608-13.

7. Oliveira MF, Freitas MC. Diagnósticos e intervenções de enfermagem frequentes em mulheres internadas em uma unidade de terapia intensiva. Rev Bras Enferm. 2009 junho; 62(3):343-8.

8. Carvalho EC, Martins FTM, Dalri MCB, Canini SRMS, Laus AM, Bachion MM, et al. Relations between nursing data collection, diagnoses and prescriptions for adult patients at an intensive care unit. Rev. Latino-Am. Enfermagem. 2008 August; 16(4):700-6.

9. Lucena AF. Mapeamento dos diagnósticos e intervenções de enfermagem de uma unidade de terapia intensiva. [tese de doutorado]. São Paulo (SP): Departamento de Enfermagem/ UNIFESP; 2006. 193 p.

10. Moorhead S, Delaney C. Mapping nursing intervention data into the Nursing Interventions Classification (NIC): process and rules. Nurs Diagn. 1997 October-December; 8(4):137-44.

11. Lucena AF, Barros ALBL. Mapeamento cruzado: uma alternativa para análise de dados em enfermagem. Acta Paul Enferm. março 2005; 18(1):82-8.

12. Lucena AF, Barros ALBL. Nursing diagnoses in a Brazilian intensive care unit. Int J Nurs Terminol Class. 2006 July/ September; 17(3):139-46.

13. Lucena AF, Barros ALBL. Most frequent nursing diagnosis in a Brazilian intensive care unit. Int J Nurs Terminol Class. 2006 January-March; 17(1):70.

14. Almeida MA, Pergher AK, Canto DF. Validação do mapeamento de cuidados prescritos para pacientes ortopédicos à classificação das intervenções de enfermagem. Rev. Latino-Am. Enfermagem. 2010 jan-fev; 18(1):116-23.

15. Almeida MA, Longaray VK, De Cezaro P, Barilli SLS. Correspondência entre cuidados para pacientes com problemas ortopédicos e a classificação das intervenções de enfermagem. Rev Gaúch Enferm. 2007 dezembro; 28(4):480-8.

16. Lee E, Lee M. Comparison of nursing interventions performed by medical-surgical nurses in Korea and the United States. Int J Nurs Terminol Class. 2006 April-June; 17(2):108-17.

17. Wong E, Scott LM, Briseno JR, Crawford CL, Hsu JY. Determining critical incident nursing interventions for the critical care setting. Int J Nurs Terminol Class. 2009 July-September; 20(3):110-21.

18. Lucena AF, Barros ALBL. Mapping nursing prescriptions for ineffective breathing pattern in an intensive care unit and NIC. Int J Nurs Terminol Class. 2006 January-March; 17(1):32.

19. Dochterman J, Titler M, Wang J, Reed D, Pettit D, Mathew-Wilson M, Budreau G, Bulechek G, Kraus V, Kanak M. Describing use of nursing interventions for three groups of patients. J Nurs Scholarsh. 2005; 37(1):57-66.

20. Cruz DALM, Cerullo JASB. Raciocínio clínico e pensamento crítico. Rev. Latino-Am. Enfermagem. 2010 jan-fev; 18(1):124-9.

Received: Dec. 21th 2009
Accepted: Aug. 4th 2010