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Nursing interventions implemented according to the most prevalent nursing diagnoses in intensive care: cross-sectional study

Intervenções de enfermagem implementadas de acordo com os diagnósticos mais prevalentes em intensivismo: estudo transversal

Intervenciones de enfermería aplicada de acuerdo con el diagnóstico más frecuente em intensivismo: estudio transversal

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Abstract. Context: Evaluating clinical practice based on standard language has become a necessity. **Objective:** This study aims to map nursing interventions according to the Nursing Interventions Classification (NIC), identifying the most prevalent Nursing Diagnoses in an intensive care unit within the first 24 hours of hospital admission. **Method:** Cross-sectional study. A cross-mapping method was used to analyze data collected from 150 medical records. A total of 195 diagnoses were identified, showing 21 different ones; and 1694 prescribed care. **Result:** The most recurrent diagnoses were Impaired Tissue Integrity and Impaired Skin Integrity, and the main intervention, Lesion Care (14.1% and 19.78%) was prescribed for both; Gas Exchange was affected by prevailing intervention Airway Control (29.76%), Ineffective Tissue Perfusion: cerebral and cardiopulmonary with priority intervention Neurologic Monitoring (38.3%) and Acute Cardiac Care (2.8%) respectively, the latter also being priority for Decreased Cardiac Output (1.3%). **Conclusion:** Most care was in line with the standard taxonomy of the Nursing Interventions Classification, though the interventions considered priority were limited.

Keywords: Nursing Diagnosis; Nursing Care; Intensive Care Units.

Resumo. Contexto. A avaliação clínica baseada em linguagem padrão tornou-se uma necessidade. **Objetivo.** Mapear as intervenções implementadas pelos enfermeiros segundo a Nursing Interventions Classification aos diagnósticos de enfermagem mais prevalentes em unidade de terapia intensiva de um hospital universitário, nas primeiras 24 horas de admissão dos pacientes. **Método.** Estudo transversal. O mapeamento cruzado foi utilizado para análise dos dados de 150 prontuários, totalizando 195 diagnósticos e 1694 cuidados prescritos. **Resultados.** Os diagnósticos mais prevalentes foram Integridade Tissular Prejudicada e Integridade da Pele Prejudicada, a intervenção prioritária Cuidado com lesões (14,1% e 19,78%) foi prescrita para ambos; Troca da Gases prejudicada com a intervenção prioritária Controle de Vias aéreas (29,76%), Perfusão Tissular ineficaz: cerebral e cardiopulmonar com a intervenção prioritária Monitorização Neurológica (38,3%) e Cuidados Cardíacos na fase aguda (2,8%) respectivamente, esta última prioritária também para Débito Cardíaco Diminuído (1,3%). **Conclusão.** A maioria dos cuidados estava relacionada com a taxonomia padrão da Nursing Interventions Classification, porém as intervenções consideradas prioritárias foram limitadas.

Palavras-chave: Diagnóstico de Enfermagem; Cuidados de Enfermagem; Unidades de Terapia Intensiva.

Resumen. Contexto. La evaluación de la práctica clinica basada en la lengua estándar ha convertido en una necesidad. **Objetivo.** Trazar intervenciones realizado por enfermeras de acuerdo con Nursing Interventions Classification en los diagnosticos de enfermería más prevalentes en la unidade de cuidados intensivos en hospital universitario, en las primeras 24 horas de la admisión de los pacientes. **Método.** Estudio transversal. Fue utilizado mapeamento cruzado para análisis de datos. Se analizó expedientes médicos de 150 pacientes, total 195 diagnosticos y 1694 cuidados prescritos. Los diagnosticos más

prevalentes fueron Deterioro del tejido Integridad, Alteración integridad cutánea, la intervención prioritaria Cuidado con lesiones (14,1% y 19,78%) fue prescrita para ambos; Cambio de gases intervención prioritaria Control de la vía aérea afectada (29,76%), Perfusión tisular inefectiva: cardiopulmonar y cerebral la intervención del seguimiento prioritario neurológicas (38,3%), Cuidados Cardíacos fase aguda (2,8%), respectivamente, este último una prioridad para la Disminución del gasto cardiaco (1,3 %). **Conclusión**. La mayoria de la atención está relacionada con la taxonomía Nursing Interventions Classification, pero intervenciones prioritarias fueron limitadas.

Palabras-clave: Diagnóstico de Enfermería; Atención de Enfermería; Unidades de Terapia Intensiva.

Introduction

Advances in Nursing Process (NP) research have evolved considerably in the last decade. And more recently, contributions from international classifications have been object of studies by many researchers. Nursing Diagnosis (ND) has been one of the most studied taxonomy standards in the NP. The diagnosis is fundamental in the process of assessing an ill patient and has to be based on intellectual, interpersonal and technical competencies which require development [1]. Accuracy of a ND and selection of the best intervention are directly linked to the assessment and data collection steps. Meanwhile, the development of all steps is related to the competence of the nursing team [2].

Evaluating clinical practice guided by a standard language has become more than a requirement, it has become a necessity[3-4]. The Nursing Intervention Classification (NIC) is considered comprehensive, because it includes physiological and psychosocial aspects, treatment and prevention for individuals, families and community[3,5]. And Nursing Intervention is defined as "*any treatment based on the clinical judgment and knowledge performed by a nurse to improve the patient/client's outcome*" [5].

In such context, the Intensive Care Unit (ICU) is considered a place where the complexity of nursing care requires an evaluation of its effectiveness[6]. The ICUs are destined to provide specialized assistance, requiring strict monitoring, technical knowledge and ability to perform a number of procedures using high-tech equipment[7]. Considering the importance of quality and adequacy of the care prescribed to patients in an ICU, and the concordance with the taxonomy language, this study aimed to map the interventions implemented by nurses, and the most prevalent nursing diagnosis in ICU, within the first 24 hours of the patients' admission, as well as, to verify if the nursing diagnoses (related factors and defining characteristics) were in line with the NANDA Taxonomy II.

Methodology

Cross-sectional study carried out in the ICU of a Public Hospital in the countryside of Rio Grande do Sul, from April to September 2007. Medical records of 150 patients who had a nursing diagnosis register and admission prescriptions within the first 24 hours were included in the present study. Established nursing diagnoses and implemented nursing prescriptions, one per patient, were evaluated during this period.

To collect data from medical records a worksheet, to transcribe nursing prescriptions, was used. All nursing documentation was registered anonymously and encoded for research purposes. The worksheet contained information on the reasons for hospitalization (classified as clinical or chirurgical, accord with the medical diagnosis that lead to hospitalization) and length of stay in the ICU, as well as variables such as gender and age.

The analysis was carried out using a cross-sectional mapping process[8-9]. Firstly, interventions were described on a specific worksheet, and later, the prescribed actions were mapped and the ones related to the diagnosis, according to the Nursing Interventions Classification (NIC)[5].

The existing interventions in NIC, described for the proposed diagnostic, were accounted and divided into three groups: priority, suggested and optional interventions according to the classification[5].

Those ones which didn't have any relation with the proposed diagnostic were classified as other interventions.

The categorical variables were described as having absolute (n) and relative frequency (%) and the continuous variables as mean and standard deviation. The study was approved by the Ethics Committee of the hospital under the number 26/2007. For the use of the medical records a Statement of Responsibility was elaborated and signed by the researchers.

Results

A number of 150 ICU inpatients' medical records were assessed, most male (60.7%), average age was 57±17.34. Fifty-six percent of the admissions were related to clinical problems. For data, see table 1.

Table 1. Characteristics of a sample of ICU inpatients (n=150).

Variables	n(%)
Gender (male)	91 (60.7)
Age (years)*	57±17.34
Reason for admission at Intensive Care Unit	
Clinical	84 (56)
Surgical	66 (44)
Lenght of stay (in days)*	4.3±1.9

*data presented with mean and standard deviation

The 150 medical records analyzed in this study showed 195 ND on admission, there being 21 different ones. The mean established per patient was 1.3±0.55. From the 195 ND, only the 6 most prevalent were identified in the selected medical records. Table 2 shows this diagnosis, as well as the related factors and defining characteristics which were in concordance with the standard taxonomy language.

Table 2: Frequency of the most recurrent Nursing Diagnoses in Intensive Care Unit.

ND: Impaired Tissue Integrity (22,1%)	
Related Factors (n=03)	**%**
Mechanical Factors	6.9
Defining characteristics (n=44)	**%**
Presence of operation wound; tubes/drains	88.6
Impaired tissue	6.8
Pressure ulcers	2.3

Amputation	2.3

ND: Impaired Gas Exchange (22,1%)

Related Factors (n=41)	**%**
Alveolar-capillary membrane changes	86.0
Ventilation-perfusion imbalance	14.0

Defining Characteristics (n=46)	**%**
Adventitious breath sounds	35.0
Vesicular murmur	9.0
Decreased saturation	7.7
Retained secretions	5.1
Tachypnea	2.6
Dyspnea	2.6
Indrawing	1.3
Abnormal arterial blood gases	2.6
Somnolence	1.3

ND: Impaired Tissue Perfusion: cerebral (8,7%)

Related factors (n= 14)	**%**
Hypovolemia	41.2
Mechanical reduction of arterial venous blood flow	17.7
Interruption of arterial venous blood flow	11.8
Impaired transport of oxygen	5.9
Change in brain morphology	5.9
Hypervolemia	5.9

Defining Characteristics (n=35)	**%**
Change in motor response	25.7
Abnormal speech	11.4
Changes in pupillary reactions	11.4
Paresis/hemiparesis	11.4
Decerebration	5.7

Hemiplegia	5.7
Altered mental status	2.9

ND: Impaired Skin Integrity (7,7%)

Related Factors (n= 4)	**%**
Mechanical Factors	11.1
Physical immobilization	11.1

Defining Characteristics (n=20)	**%**
Operation wound/drains/arterial catheter	70.0
Destruction of skin layers	10.0
Wound Dehiscence	5.0
Invasion of body structures	5.0
Lesions/ pressure ulcers	5.0

ND: Decreased cardiac output (6,7%)

Related factors (n= 11)	**%**
Altered heart rate/rhythm	69.2
Altered afterload	15.4
Altered contractility	7.7
Altered stroke volume	7.7

Defining Characteristics (n=25)	**%**
Arrhythmia	28.0
EKG changes	16.0
Edema	8.0
Cyanosis	8.0
Prolonged capillary refill	4.0
Fatigue	4.0
Restlessness	4.0
Cool skin	4.0
Increased central venous pressure (CVP)	

ND: Impaired Tissue Perfusion: cardiopulmonary (6.1%)

Related Factors (n= 11)	**%**
Hypovolemia	23.0
Impaired transport of oxygen	23.0
Interruption of arterial venous blood flow	7.7
Hypoventilation	7.7
Mechanical reduction of arterial venous blood flow	7.7
Defining characteristics (n=28)	**%**
Tachypnea	7.1
Arrhythmia	7.1
Dyspnea	3.6
Prolonged capillary refill	3.6
Chest pain	3.6
Sense of impending death	3.6

Regarding interventions, a number of 150 nursing prescriptions within the first 24 hours admission, were analyzed (Table 3). A cross-sectional mapping was applied. Care prescribed were in concordance with the NIC standardized nursing diagnosis interventions.

Table 3: Frequency of Nursing Interventions identified in the ICU prescriptions related to the ND.

Nursing Diagnosis (n= total NIC)	***Priority Interventions***	***%***	***Suggested Interventions***	***%***	***Optional Interventions***	***%***	***Other Interventions****
Impaired Tissular Integrity (n=234)	Lesion care	**14.1**			Vital signs monitoring	**26.0**	**45.3**
					Care with tubes and drains: chest	**14.5**	
Impaired Gas Changes (n=205)	Airway passage control	**29.8**	Vital signs monitoring	**35.1**	Shock control	**9.3**	**23.9**
					Care with tubes and drains : chest	**0.5**	
					Pain control Positioning	**1.0**	

						0.5	
Impaired Tissular Perfusion: cerebral(n=133)	Neurologic monitoring	**38.3**	Vital Signs monitoring Shock control	**21.0** **14.3**	Pain control	**0.7**	**25.7**
Impaired Tissue Integrity **(n=91)**	Lesion care	**19.8**			Vital signs Care with bed rest	**29.6** **3.3**	**47.2**
Decreased cardiac output **(n=77)**	Cardiac care: acute phase	**1.3**	Vital signs monitoring Shock control Airway control Neurologic monitoring	**24.7** **24.7** **16.9** **5.2**	Pain control	**13.0**	**14.3**
Innefective Tissular Perfusion: cardiopulmonary **(n = 70)**	Cardiac care: acute phase	**2.8**	Shock control Vital signs monitoring	**41.4** **17.1**	Neurologic monitoring	**12.8**	**25.9**

*NIC interventions not related to the ND.

The total number of treatments prescribed was 1694, median 9 (7-12) treatments. For the most prevailing ND, interventions related or not with the NIC were prescribed (Figure 1).

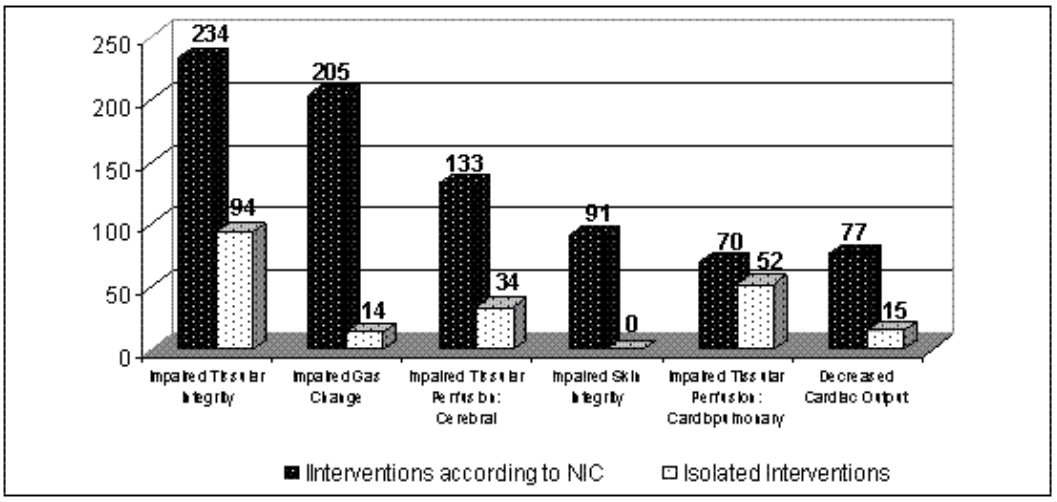

Figure 1 - Relation between prescribed interventions and NIC for the most prevailing Nursing Diagnosis in an Intensive Care Unit.

Discussion

This study aimed to map the nursing interventions implemented according to the most prevailing diagnoses in an ICU within the first 24 hours of patients' admission to hospital, as well as, to verify the ND establishment. It was observed that the most prevailing ND, according to the proposal of a taxonomic

structure (NANDA), were all of the physiological domain[1]: Tissular Integrity and Impaired Skin, Impaired Gas Changes, Decreased Cardiac Output, Ineffective Tissular Perfusion: cardiopulmonary and cerebral.

Data mentioned above differs from another study, also carried out in an ICU, in which the most prevailing diagnoses were: Self-care Deficit: bath and hygiene, Risk of Infection, Impaired Physical Mobility, Inefficient Breathing Pattern/Standard, Inability to Maintain Spontaneous Ventilation, Risk to Impaired Integrity of the Skin[10]. Nevertheless, it is important to highlight that the similarity between findings are on diagnoses with biological emphasis, expected due to the complex scenario of intensive care. An environment which requires previously established criteria on behavior regarding vital parameters and where nurses promptly report their interventions in biological changes.

When analyzing the construction of the diagnostics, in other words, the selection of related factors (RF) and defining characteristics (DC), it was possible to observe a low correspondence between these ones and the ones proposed in NANDA, especially the factors in the diagnoses Impaired Tissular Integrity and Impaired Skin Integrity, and the factors of the Inefficient Tissular Perfusion: cardiopulmonary. Similar results were demonstrated in a systematic review, whose aim was to evaluate the accuracy of nursing diagnoses, the selection of etiology and the signs/symptoms for its construction. Results indicated lack of accuracy in the diagnoses, as well as, the establishment of causes and signs/symptoms[11].

It is noted that problems regarding the construction of a diagnosis, in the present study, may be related either to the recent implementation of NP or to the non-computerization of the steps in the institution. Furthermore, results of a study conducted in the same institution aiming to evaluate the difficulties, in the view of nurses, to establish a nursing diagnosis in an ICU, revealed that the severity of a patients' condition, the number of patients per nurse and administrative tasks, were factors related to this assignment[12]. In addition to the risks factors and DC for the most prevailing nursing diagnoses, the treatments prescribed were listed through cross-mapping. Most care prescribed was related to the interventions proposed for each diagnoses in NIC; however there was little relation with the interventions considered priority.

The most prevailing intervention in this study, according to NIC, was *Vital Signs Monitoring*. This intervention is defined as verification and analysis of cardiovascular and respiratory data, and body temperature, to determine and prevent complications[5]. It is present in all nursing diagnoses and is even more prevalent in the *Impaired Gas Change* diagnosis. For the *Impaired Tissular Integrity* and *Impaired Skin Integrity* diagnoses, the prevalent intervention, in concordance with NIC, was identified as being *Lesion Care*. Yet no suggested interventions were defined and most prescribed care was among the options for both diagnoses. It is believed that due to the fact that 44% of the sample people were chirurgical patients, operation wound, drains and catheter were identified as being the most defining characteristics in the mentioned diagnoses. Another study carried out with post-cardiac surgery patients also showed emphasis on the diagnoses of Skin Integrity and Impaired Tissular, present in 100% and 90.9% of the sample, respectively. The authors also checked the concordance of prescribed care with the NANDA – NIC – NOC taxonomies'. Interventions selected according to NIC were: look after the incision and lesion site; protect against infection, prevent pressure ulcers and monitor skin [3].

The prevailing intervention for Impaired Gas Changes, according to NIC, was *Airway Control*, showing a considerable number of prescribed treatments based on the standard taxonomy. This diagnosis had its DC validated recently in adult patients presenting at the emergency service, through content validation by 27 experts. Most of the DC mentioned in our study were considered the main ones, with scores higher than 0.8[13]. For the Impaired Tissular Perfusion: cerebral, the prevailing intervention was Neurologic Monitoring. On the other hand, for the Inefficient Tissular Perfusion: cardiopulmonary, the prevailing intervention was *Cardiac Care: acute phase*, though with a lower percentage. We emphasize that these diagnoses were excluded from the last edition of NANDA[1], being replaced by risk diagnoses.

For the Decreased Cardiac Output, the prevailing intervention also was Cardiac care: acute phase, but with low prevalence, possibly because this diagnosis requires collaborative care, mainly with the medical team, but we note that 85.71% of the treatments prescribed for this diagnosis were in line with

NIC. A study carried out with cardiac patients receiving home visits showed that the most frequent intervention is *Cardiac Care*, also the basic and complex physiological domain prevailed, however this study does not mention the diagnosis implemented, only the interventions[14]. Studies in search of a relation NANDA-NIC in specialized units contribute to better care for patients, once they allow taxonomic structures to get closer, as well as reinforce the importance of nursing work in different health care scenarios[15, 16].

Conclusion

This study mapped the interventions implemented by nurses in the most prevailing diagnoses in an ICU, within the first 24 hours of patients' admission. The authors found out that there are problems in the elaboration of diagnoses, and even though the prescribed treatments are linked to the NIC interventions, there is little relation of those actions with the priority interventions. However, data shows the commitment of staff in the implementation and development of the NP in the institution. Despite the complexity that links the taxonomies and its applicability in clinical practice, the evaluated records show similarities with other studies. Let us highlight the commitment and determination of nurses who, despite not having a computerized system in their institution, incorporated the NP and its interfaces to their own practices and interfaces. Further studies are needed to contextualize the real scenario of ND and interventions in ICU, aiming the relation NANDA-NOC-NIC in each setting. The search for targets and results will enable patients' better assessment and consequently establish appropriate ND and interventions in a real clinical environment.

Implications for Nursing Practice

Once the taxonomic language to be used is chosen, it must be articulated with all the other steps in the nursing process, aiming at individualizing and prioritizing interventions, and thus, getting better results. The prescription of non-priority actions, according to the taxonomic language, can result in ineffective care actions. From this identification, it is possible to intervene so as to adjust the nursing prescription and achieve the expected results.

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