Creating diagnoses and interventions under the auspices of different nursing classification systems

ELABORAÇÃO DE DIAGNÓSTICOS E INTERVENÇÕES À LUZ DE DIFERENTES SISTEMAS DE CLASSIFICAÇÕES DE ENFERMAGEM

ELABORACIÓN DE DIAGNÓSTICOS E INTERVENCIONES SEGÚN DIFERENTES SISTEMAS DE CLASIFICACIONES DE ENFERMERÍA

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ABSTRACT

This study analyzes the use of different nursing classification systems to meet the standards established by the norm ISO 18.104:2003, based on a fictitious clinical situation. Nursing diagnoses and interventions were created using NANDA–I, NIC and ICNP® and an analysis was performed of the terminology agreement of these classification systems with the model proposed by the norm ISO 18.104:2003. For the creation of nursing diagnoses, NANDA-I and ICNP® comply with norm ISO 18.104:2003. As for the creation of nursing interventions, ICNP® meets the terminology reference model proposed by ISO 18104:2003. NIC, on the other hand, does not propose a combinatory terminology reference model. The unification of nursing terminology depends on reviewing, standardizing and testing these classifications in order to establish a common and sound language for the profession.

DESCRIPTORS
Nursing diagnosis
Nursing care
Terminology
Classification

RESUMO

Este estudo faz uma análise sobre o uso de diferentes sistemas de classificação e o atendimento aos padrões estabelecidos pela ISO 18.104:2003 a partir de uma situação clínica fictícia. Foram elaborados diagnósticos e intervenções de enfermagem utilizando a NANDA–I, NIC e CIPE®, e analisou-se a correspondência terminológica destes sistemas de classificação ao modelo proposto pela norma ISO 18.104:2003. Para a construção de diagnósticos de enfermagem, a NANDA-I e a CIPE® adéquam-se à norma ISO 18.104:2003. Para a construção das intervenções de enfermagem, a CIPE® atende ao modelo de referência terminológica proposto pela ISO 18104:2003. Por sua vez, a NIC não propõe um modelo de referência terminológica combinatória. A unificação das terminologias de enfermagem depende da revisão, padronização e teste dessas classificações para o estabelecimento de uma linguagem comum e sólida da profissão.

DESCRITORES
Diagnóstico de enfermagem
Cuidados de enfermagem
Terminologia
Classificação

RESUMEN

El estudio analiza el uso de diferentes sistemas de clasificación y la atención de los patrones establecidos por la ISO 18.104:2003, a partir de una situación clínica ficticia. Fueron elaborados diagnósticos e intervenciones de enfermería utilizando la NANDA-I, NIC y CIPE® y se analizó la correspondencia terminológica de tales sistemas de clasificación al modelo propuesto por la norma ISO 18.104:2003. Para la construcción de diagnósticos de enfermería, la NANDA-I y la CIPE® se adecuan a la construcción de diagnósticos de enfermería. Para la construcción de intervenciones de enfermería, la CIPE® atiende al modelo de referencia terminológica propuesto por la ISO 18.104:2003. A su vez, la NIC no propone un modelo de referencia terminológica combinatoria. La unificación de las terminologías de enfermería depende de la revisión, estandarización y prueba de dichas clasificaciones para el establecimiento de un lenguaje común y sólido propio de la profesión.

DESCRIPTORES
Diagnóstico de enfermaría
Atención de enfermería
Terminología
Clasificación

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INTRODUCTION

Nursing care represents a large proportion of activities in health, which implies the need to integrate the terms nurses use in terminologies[1]. A global challenge exists to universalize the language nurses use to designate what they identify, treat and assess in their patients, with a view to the enhanced visibility to nursing know-how. This challenge has triggered research to construct nursing taxonomies to organize the phenomena we deal with professionally, with a view to a standardized language[2]. Taxonomies or classification systems correspond to structured knowledge, in which the elements of a subject area are organized in groups or classes based on their similarities. The first mention to classification systems in nursing was made in 1860, when Florence Nightingale presented a proposal to standardize hospital statistics at the 4th International Statistics Congress in London[3].

The use of classification systems has significantly contributed to nursing practice, including: improved communication among nurses and among nurses and other nursing team members and other professionals; better data registers, permitting nursing outcomes assessment and choice of the best interventions, and software elaboration to improve nursing practice, which directly implies better care delivery[4-6].

Various nursing classification systems exist. In Brazil, the best-known and used systems are: NANDA-I (North American Nursing Diagnoses Association) diagnostic classification, NIC (Nursing Intervention Classification), NOC (Nursing Outcome Classification) and CIPE® (International Classification for Nursing Practice). In 2003, the ISO (International Organization for Standard), through its Technical Committee ISO/TC215, proposed standard ISO 18104 as a Nursing Reference Terminology Model[7].

CLASSIFICATION SYSTEMS IN NURSING

NANDA-I'S nursing diagnosis classification system is one of the most dissemination and applied systems around the world[8]. Nursing diagnoses are

> clinical judgments about actual or potential individual, family or community responses to health problems or life processes, and provide the basis for selection of nursing interventions to achieve outcomes for which the nurse is accountable[9].

NANDA-I's Taxonomy II is organized in 13 domains, 47 classes and 201 nursing diagnoses. Its multiaxial structure consists of 7 axes to guide the diagnostic process, which

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are: axis 1 – diagnostic focus; axis 2 – subject of diagnosis; axis 3 – judgment; axis 4 – location; axis 5 – age; axis 6 – time; axis 7 – status of diagnosis. Each axis corresponds to a human response dimension that is taken into account in the diagnostic process. A diagnostic concept is constructed through the combination of values from axes 1, 2 and 3 and, when further clarity is needed, values from the other axes are added. It should be highlighted that, in some cases, the axes *diagnostic concept* and *judgment* can be combined in a single diagnostic concept, like anxiety for example[9].

The Nursing Interventions Classification – NIC, constructed by researchers from the University of Iowa, is considered one of the main advances in terms of Nursing interventions classification systems. In the NIC, an intervention is considered a treatment Nursing performs, and comprises several activities. The NIC's taxonomic structure consists of three levels: the first and most abstract includes seven domains (physiological, basic; physiological, complex; behavioral; safety; family; health system and community); the second 30 classes, organized within the domains; and the third level comprises 542 nursing interventions, grouped according to the classes and domains[10].

The NIC nursing interventions consist of a title and definition that cannot be altered, as they represent the standardized language, besides an activity list to describe the professional actions when performing the nursing intervention, which can be modified to individualize care. For the clinical use of NIC interventions, among other means, a chapter is available that makes connections with the NANDA-I diagnoses (connection NANDA-I/NIC), in which, based on the identification of a diagnosis, a list of first-level or priority, second-level or suggested and third-level or additional optional interventions can be identified, classified according to the degree of probability to solve the identified diagnosis[10].

Another classification highlighted is the International Classification for Nursing Practice (CIPE®), which covers nursing phenomena, interventions and outcomes[11]. The CIPE® can be classified as a combinatory terminology system in a multiaxial structure, i.e. one or more simple concepts can be combined into complex concepts[12].

In Version Beta 2, two classification structures were offered: one for nursing phenomena, with eight axes representing the nursing diagnoses and outcomes; and the other for the interventions, also including eight axes. A nursing diagnosis was defined as the title a nurse attributed to indicate the decision on the phenomenon, while nursing interventions referred to actions performed in response to the nursing diagnoses to produce the out-

comes. In 2002, a new set of axes was proposed to unite the 16 axes of the phenomenon and action classification structure in version Beta 2. The new seven-axis model, called CIPE® version 1, made it possible to broaden the representation and solve the redundancy and bias present in version Beta 2[13].

This version of CIPE® is more than a vocabulary, as it can accommodate existing vocabularies and be used to develop new vocabularies based on a compositional terminology. It contains a seven-axis model based on which nurses can elaborate nursing diagnosis concepts, interventions and outcomes. The definitions for each of the seven axes in CIPE® Version 1[11] are displayed in Chart 1.

Chart 1 – Definitions and examples of each axis established in the model proposed in CIPE® – Version 1

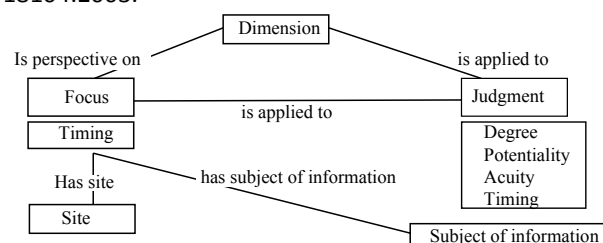| Axis	Definition	Example
Focus	Relevant care area for nursing	Cognitive learning Knowledge
Judgment	Clinical opinion, determination related to the focus of professional nursing practice	Improved Partial
Means	Form or method to put in practice an intervention	Urine pouch Food
Action	Intentional process applied to or performed by a client	Position Aspirate
Time	The point, period, moment, interval or duration of an event	Admission Week
Location	Anatomic or spatial orientation of a diagnosis or intervention	Lung Place of surgery
Client	Subject the diagnosis refers to and who benefits from the intervention	Elderly Community

Thus, to compose a nursing diagnosis with the help of the seven-axis CIPE® model, one term from the focus axis and another from the judgment axis should be included. If necessary, additional terms from the focus and judgment axes or other axes can be included. To compose nursing interventions, one term from the action axis and at least one target term should be included. Target term is considered as any term from one of the axes, except the judgment axis. In this case, additional terms from the action axis or other axes can also be included[13].

As a result of the creation of multiple terminologies, a reference model was needed to support both the representation of nursing concepts and the integration of this model with others in the health area[12].

The unification of different existing nursing vocabularies is necessary to standardize elements of nursing practice in different specialties and regions and compose a single nursing nomenclature[7].

In this context, Standard ISO 18104:2003 is appropriate as it aims to join the different nursing classification systems in order to promote the integration among information systems and the possibility of mapping nursing terms with other health terminologies. This standard sets criteria to assess existing classifications and, after their uses, permits reviews of the standardization itself[14]. The international standardization includes the development of reference terminology models for two key-concepts in nursing: nursing diagnoses and interventions and the relations between these concepts and the attributes of their characteristics[15-16].

Figure 1 graphically represents the reference terminology model for nursing diagnose proposed in ISO 18104:2003.
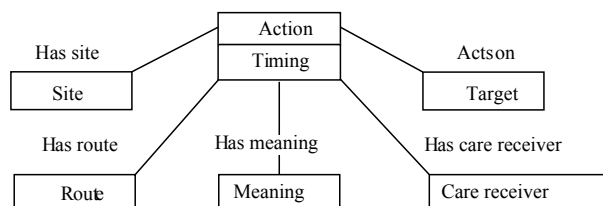

Figure 1 – Reference terminology model for nursing diagnoses
Source: ISO 18104:2003, Geneva, Switzerland, p.3.

It is important to highlight that a descriptor for *focus* and a descriptor for *judgment* are mandatory in the precise definition of the nursing diagnosis and, in some cases, a descriptor can serve as a qualifier for both *focus* and *judgment*[16].

The focus serves as an area of attention (e.g., breathing pattern, pain, activities of daily living, or social skills). One optional attribute for focus is timing. Focus has an optional relationship with site (e.g., leg pain) and a relationship with the subject of information (e.g., the individual, a group, or other). The judgment of the nurse can be *problematic* or *limited* as applied to the focus. In addition, the judgment can be enhanced with detail about degree of severity or actual or potential or acute or chronic nature of the condition. Dimension is useful for further specification (e.g., it can be a perspective on the focus such as the patients' activity of daily living). Dimension can be used to define the detail, such as clothing or toileting[16].

Like for the formulation of nursing diagnoses, ISO 18104:2003 establishes a reference terminology model for nursing actions, displayed in Figure 2.

Figure 2 – Reference terminology model for nursing actions
Source: ISO 18104:2003, Geneva, Switzerland, p.6.

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A nursing action is defined as an intentional act applied to a target. A descriptor for *action* and a descriptor for *target* are mandatory in the precise definition of a nursing action. The expressions of actions frequently start with verbs that express an act or effect of acting on something.

In this context, the aim of this theoretical study is to analyze the use of different classification systems and compliance with the standards established in ISO 18.104:2003, based on the application of these systems to a fictional (illustrative) clinical situation.

CLINICAL SITUATION

A. B. C, 75 years, married, father of 10 children (mostly married). Lives with his wife and stepdaughter. Is functionally illiterate. Retired, family income of approximately three and a half minimum wages.

Arterial hypertension patient for 15 years, daily intake of two pills of Captopril 25 mg. About one year ago, A.B.C. visited the medical service and complained of pain when urinating and difficulty to do so. Five-month use of prostate medication (doxazosin) was prescribed. In the same period, two prostate biopsies were performed and prostate cancer was diagnosed, for which surgical treatment was indicated.

On the first postoperative day, the patient was anxious, agitated, concerned with his sexual performance after the surgery and reported he had not slept well at night. Not pain complaints, pale (2+/4+), blood pressure 135x100 mmHg, cardiac frequency 88 bpm, respiratory frequency 20 irpm and axillary temperature 37oC. Absence of palpable glands in the neck region. Normotensive abdomen without pain when palpated. Longitudinal surgical incision in infra-umbilical region until the pubis, with clean and dry occlusive dressing. Presence of Penrose drain in left flank, average quantity of bloody exudate. Indwelling urinary catheter (ICU) without irrigation, no fixation, with 150-ml hematuria catheter (3+/4+) with presence of clots. Presence of venoclysis in right forearm, no phlogistic signs, 0.9% SS infusion at 30 drops/minute. Lower limbs without edema or pain when palpated.

Concerning care after the surgery, the patient denies knowledge on care for the IUC, surgical incision, diet, fluid intake and intestinal elimination. Avoiding activities like driving, making efforts and carrying weight is indicated. Reported that his wife will help him with home care and is unfamiliar with the care needed after the surgery.

CLINICAL REASONING: PROBLEM GROUPING

Based on the above case, some of the nursing problems were listed, grouped according to similarity in the psychosocial sphere, in order to exemplify the use of the NANDA-I, NIC, CIPE® classification systems and adaptation to ISO 18104:2003 in the identification of nursing diagnoses and interventions:

> Functional illiteracy; denies knowledge on care: IUC, surgical incision, diet, fluid intake and intestinal elimination; avoiding activities like driving, making efforts and carrying weight is indicated; reported that his wife will help him with home care and is unfamiliar with the care needed after the surgery; anxious, agitated, concerned with sexual performance after the surgery; reported that he did not sleep well at night.

NURSING DIAGNOSIS CONSTRUCTION ACCORDING TO NANDA-I CIPE®

In view of the clinical situation and problem groups, two nursing diagnoses were elaborated, following the models established in each classification system.

Based on the hierarchical structure of NANDA-I(9) (domains – classes – nursing diagnoses), the domain was sought to group psychosocial problems related to cognition and anxiety. Thus, domain 5 *perception/ cognition* was identified and, among the five classes, in class 4 *cognition*, the diagnosis *deficient knowledge* was selected, and, in domain 9 *coping/stress tolerance*, among the three classes, in class 2 *coping responses*, the diagnosis *anxiety*. The choice of these diagnoses was confirmed by the defining characteristics and related factors described in the taxonomy. In CIPE® version 1, then, the elaboration of the diagnoses was based on the combinatory construction of terms from the multiaxial axes, using one term from the *focus* axis and another from the *judgment* axis, according to the definition of each term (Chart 2).

NURSING INTERVENTIONS CONSTRUCTION ACCORDING TO NIC AND CIPE®

For the nursing diagnoses *Deficient Knowledge* and *Anxiety*, NIC and CIPE® nursing interventions were established which were considered appropriate for the described situation/diagnoses.

The NIC interventions were selected through the NANDA/NIC[10] link, based on the nursing diagnoses described in Chart 2. One priority intervention was listed for each diagnosis, as the most probable intervention to solve it, as well as some of the activities listed for each intervention.

In CIPE® version 1, the interventions were elaborated through the combinatory construction of terms from the multiaxial axes, using one term from the *action* axis and another called *target*, which can be a term from any of the axes, except from the judgment axis (Chart 3).

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Chart 2 – Nursing diagnoses according to NANDA-I[(9)] and CIPE® version 1 classification systems

NANDA-I	CIPE®
Knowledge *Deficient* ↓ ↓ **Diagnostic concept (Focus)** **Judgment** **Related** to lack of exposure to and lack of familiarity with information resources, **characterized by** verbalization of the problem. **Definition of diagnostic title:** absence or deficiency of cognitive information related to a specific topic.	knowledge status *Low* ↓ ↓ **Focus** **Judgment** **Knowledge:** Specific content of thinking based upon acquired wisdom or learned information or skills, cognisance and recognition of information. **Low:** absolute level with specific characteristics: shortage, deficit; below average or normal amount, intention or intensity.
Anxiety ↓ **Diagnostic concept (Focus)/Judgment** Definition of diagnostic title: vague uneasy feeling of discomfort or dread accompanied by an autonomic response (the source often nonspecific or unknown to the individual); a feeling of apprehension caused by anticipation of danger. It is an alerting signal that warns of impending danger and enables the individual to take measures to deal with threat.	Anxiety ↓ **Focus** **Anxiety:** emotion with the specific characteristics: Feelings of threat, danger or distress without known cause accompanied by panic, decreased self-assurance, increased muscle tension, increased pulse, pale skin, increased perspiration, palm sweat, dilated pupils and quivering voice.

Chart 3 – Nursing interventions according to NANDA-I(9) and CIPE® version 1 classification systems

NIC	CIPE®
Title - TEACHING: Individual **Definition** – Planning, implementation and evaluation of a teaching program elaborated in response to a patient's special needs. **Activities** – Determine the patient's learning needs; • - Select adequate teaching methods/strategies; • - Adapt the contents to the cognitive, psychomotor and affective abilities/disabilities; • - Correct erroneous interpretations of information.	Teaching *the patient* about self care ↓ ↓ ↓ **Action** **Client** **Focus** **Teaching:** Informing act with the specific characteristics: Giving systematic information to somebody about health related subjects. **Patient:** individual. **Self care:** self performing activity with the specific characteristics: Taking care of what is needed to maintain oneself, keep oneself going and handle basic individual and intimate necessities and activities in daily life.
Title - Enhance COPING • **Definition** – Help to the patient to adapt to perceived stressors, changes or threats that interfere in the satisfaction of vital needs and role performance. • **Activities** – Evaluate the impact of the patient's life situation on roles and relationships; • - Evaluate the patient's understanding of the disease process; • - Offer real information on diagnosis, treatment and prognosis; • - Promote situations that stimulate the patient's autonomy.	Decreasing *anxiety* of the patient. ↓ ↓ ↓ **Action** **Client** **Focus** **Decreasing**: altering act with the specific characteristics: adjusting something to get the desired result: lower. **Patient** = individual.

DISCUSSION

Based on the terminology reference model for the construction of nursing diagnosis proposed in ISO 18104:2003, both classification systems, NANDA-I and CIPE®, adapt to the standard, as the diagnostic structure proposed in both classifications consists of descriptors from the *focus* (called *diagnostic concept* in NANDA-I) and *judgment* axes. In the NANDA-I taxonomy, each diagnostic title consists of a definition, a set of related factors (causes) and defining characteristics (signs and symptoms) that collaborate to confirm or exclude the diagnostic impression. In the same sense, the International Council of Nurses (ICN) has proposed the creation of CIPE® catalogues to construct a set of commonly used declarations in specific nursing areas[(13)].

ISO 18104:2003 considers that, in some situations, a diagnostic title can be elaborated based on a sole con-

cept, like the *anxiety* diagnosis for example. Hence, both the CIPE® and NANDA-I adapt to the standard. In the CIPE®, the diagnoses with ICN approval that were included in the catalogues already elaborate names based on concepts from the *focus* axis only.

ISO 18104:2003 defines nursing action as an intentional act applied to a target. In the light of this definition, a distinction is perceived between concepts in the NIC and CIPE® systems. According to the NIC, a nursing action is related to an activity, defined as a specific behavior nurses accomplish to put in practice an intervention[(10)]. Thus, the nurse's order consists of a set of actions related to the interventions that were proposed and put in practice. According to the CIPE®, then, an action is an intentional act applied to a client (e.g.: educate, exchange, administer), which is an essential axis to formulate a nursing intervention. In this context, it can be inferred that, in the nursing care planning phase, a CIPE® intervention is part of the

same practical application sphere as an NIC activity. In the CIPE®, it seems that a nurse's order consists of a set of intentional acts called nursing interventions.

Despite the distinguished concepts, the nursing intervention structure when using the CIPE® attends to the terminology reference model proposed in ISO 18104:2003, as both recommend using one term from the *action* axis and at least one *target* term for the precise definition of a nursing action. There is a difference, however, between the *target* term according to CIPE® and according to ISO 18104:2003. In the CIPE®, *target* can be a term from any of the other structural axes, except for the *judgment* axis. ISO 18104:2003, then, defines *target* as something affected by the nursing action, treating it as a specific axis (Figure 2).

As opposed to the CIPE® and ISO standard, which establish the combination of terms as a rule for the construction of an intervention (CIPE®) or action (ISO), the NIC does not propose a combinatory terminology reference model. The interventions presented in this taxonomy are pre-established and grouped in domains and classes, with an unchangeable title and definition structure, besides a list of activities that can be selected and changed to solve the patient's actual or potential health care problems. These interventions do not result from a multiaxial structure based on a database of terms, but from nursing studies and practice, and were subject to content and clinical validation.

In the present authors' understanding, for research groups that adopt the guidelines of the University of Iowa, the nursing intervention is selected based on the problem (nursing diagnosis) that needs to be solved or minimized and on the goal (nursing outcome) one wants to achieve, using the nursing process as a method. For research groups that follow ICN guidelines, on the other hand, the CIPE® is a reference terminology for phenomena (nursing diagnoses) the nurse identifies in the patient, family or community and in what (s)he does (nursing actions) to solve them.

CONCLUSION

Despite the existence of multiple nursing terminologies, the concern is with difficulties to compare data among services/specialties that use different standardized terminologies. It should not cause surprise that different nursing vocabularies are being used around the world, considering its extensive domain, with different specialties and sub-specialties.

In a context of increasing service computerization needs, ISO 18104:2003 turns into a fundamental tool to reduce terminology equivalence difficulties among classifications, with a view to enhancing the use of a sole language for nursing to describe what it identifies and treats in its patients and to collaborate in the mapping process that is needed to join all languages. Hence, it contributes to the development of computer systems that accommodate the different terminologies and classifications and permit interoperability and information exchange among systems.

The present study permitted relating the classification systems with the ISO standard and revealed that the NANDA-I and CIPE® terminologies attend to the reference model proposed in ISO 18104:2003, which is not the case for the NIC intervention structure.

With a view to the unification of nursing terminologies, a large-scale review, standardization and test process of these classifications is necessary, with a view to establishing a common and solid language for the profession.

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