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Cross-mapping of nursing diagnoses/ outcomes using ICNP®: a methodological study

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ABSTRACT

Objective: cross mapping the concepts of nursing diagnoses/outcomes for the Medical Clinic of a teaching hospital with the concepts of the ICNP® 2017. **Method:** this is a methodological study developed to cross-map the concepts of nursing diagnoses/outcomes to the Medical Clinic with the concepts of nursing diagnoses/outcomes of the ICNP® 2017. **Result:** the cross- mapping was performed of 101 Medical Clinic Nomenclature concepts with 852 ICNP® 2017 concepts, obtaining 97 concepts of nursing diagnoses/outcomes. **Discussion:** The Medical Clinic Nomenclature consisted of 97 concepts, of which 69 (71.2%) were constant and 28 (28.8%) were not included in the ICNP® 2017. **Conclusion:** cross-mappingshowed that most of the concepts in the Medical Clinic Nomenclature are contained in the ICNP® 2017, corroborating the use of standardized nursing language, bringing relevance and benefits to the practice of the profession.

Keywords: Nursing; Standardized Terminology in Nursing; Nursing Diagnosis.

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INTRODUCTION

Nursing, throughout its history, has systematically and continuously elaborated a specific body of knowledge in search of a new professional identity, starting the construction of its own objective and vocabulary through the standardization of the concepts of its practice which are applicable as a reference for care in different institutional settings[1].

In health care practice, it is known that health institutions develop their own systems for recording their practice, becoming a non-systematic care, not ordered and often incomprehensible to a person outside the area. It is observed that the absence and/or neglect with the standardized language of Nursing leads to inconsistent data within the same institution - in different sectors, as well as between different health institutions, making it impossible to compare nursing records. Thus, the generated documentation is not able to contribute to the visibility and professional recognition of nursing, becoming an obstacle for the evaluation of its practice[2,3].

From this perspective, the Nursing Process (NP) was developed with the purpose of guiding the profession exercise through clinical reasoning, generating individualized care for the person, family or human collectivity and contributing to Nursing to establish their professional autonomy. The NP implementation and use allow for the elaboration of goals based on real evidence, which will require adequate use of concepts and training of human resources focused on new care models that will start from a systematized practice guided by Nursing science[4]. The search for standardization of the professional language has aroused the development and use of classifications in nursing practice. One of these classifications, used as a reference in this study, is the International Classification for Nursing Practice (ICNP®).

The ICNP® was prepared by the International Council of Nurses (ICN) and has been developing for 30 years, solidifying itself worldwide as an instrument to standardize and represent their care practice. The use of the ICNP® facilitates clinical reasoning and professional communication, establishing universal care standards and, consequently, providing improvement in the quality of care through the systematization, registration and quantification of nursing care provided to the person, family or human collectivity[5].

The ICNP® published its first version in 1996, ICNP® Alpha Version: A Unifying Milestone. In continuity, the ICNP® Beta was launched in 1999 and the ICNP® Beta 2 in 2001, noting that ICNP® Beta 2 was established more as an editorial review than as a new version of the ICNP®. In 2005, the ICNP® Version 1.0 was released, which became a milestone of the classification systems for nursing practice, as it brought innovation to the modification of the seven-axis model, leading to further simplification in the use of the ICNP®. After Version 1.0, six more versions were released by 2018: Version 1.1 in 2008; Version 2.0 in 2009; the 2011 version in 2011; the 2013 version in 2013; the 2015 version in 2015; and the 2017 Version, in 2017. The ICNP® 2017 version contains 4,326 terms, distributed among ten organizing concepts; 1,915 pre-coordinated concepts, of which 852 are concepts of nursing diagnoses/outcomes and 1,063 are concepts of nursing interventions; and 2,401 primitive concepts, distributed as

follows: Focus axis 1,418, Trial axis 45, Action axis 232, Location axis 259, Media axis 346, Time axis 69 and Customer axis 32[5].

In addition, the use of a classification system allows for the development of studies that envisage the description and comparison of nursing data at the local, regional, national and international levels. Facilitating all the description of professional practice in the nuances of the representation of the domain of this practice in an international and universal way, based on nursing care, management/administration, education and research[2].

The orientations for the elaboration of the statements of nursing diagnoses/outcomes and interventions guidelines are based on the ICNP® Seven-Axis Model and ISO 18.104:2014[6], which has two categorizations: a) nursing diagnoses and b) nursing actions. For representing the expected nursing outcomes, the standards described in the categorical structure of nursing diagnoses are enough and no specific category is required to represent nursing outcomes. According to ISO 18.104:2014, nursing diagnosis is considered "[...] title attributed to a finding, event, situation, or other health aspect resulting from data collection (assessment), to indicate that they are considered by the nurse and the care subject to be worthy of attention"[6].

It is noteworthy that the expression "nursing diagnosis" is applied when the clinical judgment about the patient's condition, problems and/or needs is made, and the expression "nursing outcome" is a predicted or verifiable response after performing Nursing interventions[5].

Recognizing that the practice in clinical units of a hospital, by itself, already supports a care process performed by nurses, but that this will only be based on technical skills for clinical nursing decision, when in fact evidencing propositions in a nursing plan attention adjusted in the recognition of the real nursing phenomena of that specific situation and in that health sector[1,2]. Therefore, mapping what exists in practical terms and associating the ICNP®, in theoretical terms, through a cross-mapping, will favor the development and optimization of a scientifically proven and elucidated care process by science itself care, which is proposed by modern Nursing.

Cross-mapping is a useful method for analyzing non-standard nursing languages when compared to nursing classifications that use uniform terminology, and allows for studies which demonstrate that existing nursing data in different locations can be mapped with Nursing Classification Systems and thus adapted to standardized language, making it possible to feed large databases and collaborate for the development of nursing practice[7].

Mapping checks whether there is a relationship between the concepts and, if any, the level of meaning expressed by that relationship by comparing by cross-mapping, the elements that apparently have semantic equivalence, in order to identify a similarity and validate these elements in different contexts. From this perspective, cross-mapping is used to analyze non-standardized nursing languages in relation to validated terminologies, such as the ICNP®[8,9,10].

Given the above, this study aimed to cross-map the concepts of nursing diagnoses/outcomes identified in the clinical practice

of the Medical Clinic of the Lauro Wanderley University Hospital (*Hospital Universitário Lauro Wanderley*, HULW)/Federal University of Paraíba (*Universidade Federal da Paraíba*, UFPB), with the concepts of the ICNP® 2017 version.

METHOD

This is a methodological study developed from data contained in the "Nomenclature of Nursing Diagnoses, Outcomes and Interventions for Hospital Patients in HULW/UFPB Clinical Units Using ICNP®"[10] with the purpose of cross-mapping the concepts of nursing diagnoses/outcomes of the HULW/UFPB Medical Clinic, with the concepts of nursing diagnoses/outcomes of the ICNP® 2017 version.

The use of nomenclatures serves as a reference for nursing care provided to patients, without disregarding the clinical judgment of the nurse. At HULW/UFPB, several studies were conducted aimed at the development of Nomenclatures, seeking to contribute to care actions and to the documentation of nursing practice. Among these studies, we highlight the "Nomenclature of Nursing Diagnoses, Outcomes, and Interventions for Hospital Patients in HULW/UFPB Clinical Units Using ICNP®", where 101 statements of nursing diagnoses/outcomes were validated for the Medical Clinic[11].

The cross-mapping was performed in March 2018 and was developed in two stages: in the first, two spreadsheets were built in *Excel for Windows*®, one containing the list of diagnostic concepts nursing outcomes of the HULW/UFPB Medical Clinic Unit and the other the ICNP® 2017 version nursing diagnostic/outcomes concepts. Spreadsheets were then crossed over and a database created in *Access for Windows*®, in order to identify the constant and non-constant concepts in ICNP® 2017 version.

Subsequently, the concepts not contained in the ICNP®, were normalized by analyzing them individually with the concepts of nursing diagnoses/outcomes of the "Nomenclature of Nursing Diagnoses, Outcomes and Interventions for Hospital Patients in Clinical Units, using ICNP®" and with ICNP® 2017 version, aiming to adapt the concepts to an updated Nursing Terminology. Concepts normalization consisted of editorial changes, such as: synonym analysis, verb tense adequacy, gender (female, masculine) and number (singular, plural) uniformity, adjustment in the use of commas, articles and prepositions, so that there is no change in meaning.

In the second stage of the mapping, a new crossing of the concepts of non-constant nursing diagnoses/outcomes contained in the HULW/UFPB Medical Clinic Nomenclature with the concepts of the ICNP® 2017 version was performed. Subsequently, the concepts that continued to be classified as non-ICNP® 2017 version, were subjected to analysis for similarity, comprehensiveness, restriction and non-concordance[12]. After this analysis, the concepts considered similar were included in the list of constants and the others remained non-constants.

RESULTS

A cross-mapping of the 101 nursing diagnosis/outcome concepts of the "Nursing Diagnostics, Outcomes and Interventions Nomen-

clature for Hospitalized Clients in HULW/UFPB Clinical Units Using ICNP®" was performed, with the 852 ICNP® 2017 version nursing diagnosis/outcomes concepts, obtaining 97 concepts, being classified initially as 79 non-constant terms and eighteen constants in this Terminology.

The reduction from 101 to 97 statements of nursing diagnoses/outcomes in the HULW/UFPB Medical Clinic Nomenclature stands out, which occurred by excluding five concepts that became repeated and by separating one to two concepts, namely: "Impaired, Physical Activity" and "Unsatisfactory Response to Medication" were considered similar to the concepts "Intolerance to Physical Activity" and "Lack of Response to Treatment" already existing in the above Nomenclature, being excluded; "Decreased Heart Rate"/"Increased Heart Rate" and "Increased Blood Pressure"/"Decreased Blood Pressure", were normalized to a single concept "Impaired Heart Rate" and "Altered Blood Pressure" according to ICNP 2017 version; "Impaired Body Hygiene" and "Self-care Deficit for Bath and/or Body Hygiene" were normalized to "Impaired Body Hygiene Ability", and the repetition was removed; and "Liquid and Electrolyte Imbalance" was normalized into two concepts "Electrolyte Imbalance" and "Liquid Imbalance" as per ICNP® 2017 version.

The 18 identified terms as contained in the ICNP® 2017 version in the first stage of cross mapping were the following: Hallucination, Confusion, Constipation, Delirium, Hopelessness, Exhaustion Treatment, Fatigue, Lack of Social Support, Lack of Treatment, Urinary Incontinence, Infection, Social Isolation, Nausea, Denial, Urinary Retention, Risk of Constipation, Risk of Infection and Vomiting. The 79 concepts not contained in the ICNP® 2017 version underwent a standardization process and were analyzed for similarity, comprehensiveness, restriction and non-agreement, resulting in the following classification: 32 concepts were considered similar, six more restricted, six broader and 35 non-compliant.

The 32 concepts of non-constant nursing diagnoses / outcomes classified as similar were named because they did not have spelling concordance, but have identical meaning to the ICNP® 2017 version concepts, namely: "Conflicting Family Attitude" was normalized to "Dysfunctional Family Attitude"; "Impaired Ability to Transfer Oneself" was normalized to "Ability for Transferability, Impaired"; "Searching Behavior for Health" was normalized to "Health Search Behavior"; "Conflicting Cultural Beliefs" was normalized to "Cultural Belief, Dysfunctional"; "Impaired Roam" was normalized to "Impaired March (Walking)"; "Personal Identity Disorder" was normalized to "Personal Identity, Disturbed"; "Ineffective, Family Coping" was normalized to "Family Coping, Impaired"; "Sleepiness Condition" was normalized to "Sleepiness"; "Altered Nutritional Status" was normalized to "Nutritional Condition, Impaired"; "Lack of Adherence to the Therapeutic regimen" was normalized to "Non-Adherence to Therapeutic regimen"; "Lack of Medication Response Knowledge" was normalized to "Lack of Medication Knowledge"; "Decreased Food Intake" was normalized to "Food Intake, Insufficient (or Deficient)"; "Impaired Breathing Pattern" was normalized to "Impaired Breathing";

"Ineffective Heart Tissular Perfusion" was normalized to "Tissular Perfusion, Ineffective"; "Increased Body Temperature (Hyperthermia)" was normalized to "Hyperthermia". Some concepts classified as similar were altered only by the inclusion of comma or removal of terms in parentheses, namely: "Anxiety (specify grade)" was normalized to "Anxiety"; "Low Situational Self-Esteem" has been normalized to "Low Self-Esteem, Situational"; "Impaired Cognition" has been normalized to "Cognition, Impaired"; "Impaired Communication" has been standardized to "Communication, Impaired"; "Impaired Swallowing" has been normalized to "Swallowing, Impaired"; "Dyspnea (specify grade)" has been normalized t "Dyspnea"; "Pain (specify intensity and location)" has been normalized to "Pain"; "Impaired Skin Integrity" has been standardized to "Integrity of Skin, Impaired"; "Impaired Health Maintenance" has been standardized to "Health Maintenance, Impaired"; "Fear (specify)" has been normalized to "Fear"; "Impaired Oral Mucous Membrane" was normalized to "Oral Mucous Membrane, Impaired"; "Dry Skin" has been normalized to "Skin, Dry"; "Impaired Family Process" has been standardized to "Family Process, Impaired"; "Itching (specify location)" has been normalized to "Itching"; "Impaired Skin Integrity Risk" has been normalized to "Skin Integrity Risk, Impaired"; "Chronic Sadness" has been normalized to "Sadness, Chronicle"; and "Impaired Gas Exchange" was normalized to "Gas Exchange, Impaired". In this study, similar concepts were weighted as constants in ICNP® 2017 version.

6 concepts of non-constant nursing diagnoses/outcomes classified as broader were named because they have broader meaning than the concepts of ICNP® 2017 version, namely: "Self-esteem, Altered" was considered broader than "Low Self-esteem", because the alteration of self-esteem can be positive in excess or negative; "Self-image, Altered" was considered broader than "Self-image, Negative", because the alteration of self-image can be positive in excess or negative; "Liquid and Electrolyte Imbalance" was considered broader than "Liquid and Imbalance" and "Electrolyte Imbalance", since the first concept brings the terms "liquid and electrolyte" together, while the second and third concepts refer separately to the terms "liquids" and "electrolytes", respectively; "Lack of Knowledge about Disease and Treatment" was considered more comprehensive than "Lack of Knowledge about Disease" as it brings the terms "disease and treatment", while the second concept refers only to "disease"; "Impaired Sleep and Rest" was considered more comprehensive than "Impaired Sleep," because the first concept refers to "sleep and rest," while the second concept refers only to "sleep." In this study, the concepts considered as broader have been replaced by its constant equivalent concept in ICNP® 2017 version, choosing to maintain the concept of the ICNP®.

The 6 concepts of non-constant nursing diagnoses/outcomes classified as more restricted were named because they have a more limited meaning than the concepts of ICNP® 2017 version, namely: "Decreased hearing" was considered narrower than "Impaired hearing" because the first concept considers hearing only decreased, while the second concept considers hearing increased

or decreased; "Increased Cardiac Output" and "Decreased Cardiac Output" were considered more restricted than "Cardiac Output, Altered" because the terms "increased" and "decreased" refer to the increase in cardiac output and the decrease in cardiac output, respectively, while the term "altered" encompasses both increased and decreased; "Decreased Fluid Intake" was considered more restricted than "Impaired Fluid Ingestion" because the term "decreased" refers only to decreased intake, while the term "impaired" considers both increased or decreased; "Early Mourning" was considered more restricted than "Mourning Process" because the first concept refers only to early morning, while the second concept encompasses an actual or anticipated mourning situation; "Elevated Blood Pressure" and "Decreased Blood Pressure" were considered more restricted than "Blood Pressure, Altered", as the terms "elevated" and "decreased" refer to the increase in pressure and the decrease in blood pressure, respectively, while "altered" refers to both; "Impaired vision" was considered more restricted than "Diminished Vision" because the term "diminished" refers only to diminished visual acuity, while the term "impaired" encompasses impaired visual acuity, blurred vision, increased eye pressure, difficulty focusing on objects or any other changes caused to vision. In this study, the concepts considered as more restricted have been replaced by its constant equivalent concept in ICNP® 2017 version, choosing to maintain the concept of the ICNP®.

The 35 concepts of non-constant nursing diagnoses/outcomes classified as non-compliant were named because they were not classified in ICNP® 2017 version. Of these, eight went through concepts standardization in order to adapt to an updated terminology, namely: "Ability to Manage Decreased Therapeutic Regime" has been normalized to "Ability to Manage Therapeutic Regimen, Impaired"; "Family Ability to Manage the Diminished Therapeutic Plan" has been normalized to "Family Ability to Manage the Therapeutic Regimen, Impaired"; "Self-Dressing and Undressing Deficit" has been normalized to "Dressing and Undressing Ability, Impaired"; "Self-Care Deficit for Bath and/or Body Care" and Harmful Body Care" were normalized to "Impaired Ability to Perform Body Care", excluding repetition of the concept; "Weight Loss" was normalized to "Body Weight, Reduced"; "Decreased Consciousness Level" has been normalized to " Consciousness, Impaired"; "Ulcer by Pressure (specify location and stage)" was normalized to "Pressure Injury (specify location and stage); and "Increased Net Volume" was normalized to "Net Volume, Impaired". The remaining 27 non-compliant concepts did not change, namely: Acceptance of Health Status; Adherence to the Physical Activity Regime; Distress (specify degree); Impaired appetite; Arrhythmia; Ascites; Impaired Self-Care Ability; Vaginal Discharge; Self-care Deficit to Feed; Depression; Dysuria; Edema (specify grade and location); Impaired Intestinal Elimination; Ineffective Individual Coping; Lack of Ability to Manage the Physical Activity Regime; Lack of Knowledge about Physical Activities; Congestion Hypoxia; Intolerance to Physical Activity; Ineffective Airway Cleaning; Impaired Physical Mobility; Impaired Ocular Mucosa; Excessive Body Weight; Risk of Helplessness;

Risk of Spiritual Suffering; Spiritual Suffering; Productive Cough; and Dry Cough.

After normalization of the 35 concepts classified as non-compliant, they were mapped with ICNP® 2017 version, identifying seven concepts present in the Focus axis of the referred classification, namely: "Acceptance of Health Status", "Distress", "Arrhythmia", "Ascites", "Consciousness, Impaired", "Edema" and "Fluid Volume, Impaired", being considered in this study as concepts in ICNP® 2017 version.

After the cross-mapping process, the HULW/UFPB Medical Clinic Nomenclature consisted of 97 concepts of nursing diagnoses/outcomes, initially classified into 79 non-constants and 18 constants in ICNP® 2017 version. 79 concepts not contained in this Terminology underwent standardization, analysis regarding similarity, comprehensiveness, restriction and non-agreement and two cross-mapping processes, resulting in the following classification: 28 were considered non-constant and 69 were considered concepts of nursing diagnoses/outcomes in ICNP® 2017 version. Figure 1 shows the result of the cross-mapping process.

DISCUSSION

Nursing diagnosis/outcome concepts cross-mapping from the "Nomenclature of Nursing Diagnoses, Outcomes, and Interventions for Hospital Patients in HULW/UFPB Clinical Units Using ICNP®" with ICNP® 2017 version nursing diagnosis/outcomes concepts, observed that the highest frequency was the concepts considered constant in this classification system, this is considered an important finding because the use of terms representing ICNP® nursing diagnoses/outcomes suggests the use of specialized language by nurses of the medical clinic units of the study. It is emphasized the need for further clarification on the insertion of more concepts by the nursing staff working in the medical clinic, in order to increase the use of this classification system.

ICNP® as a standardized terminology facilitates the use of nursing practice nomenclature, in addition to classifying and linking phenomena that describe the elements of professional practice: nursing diagnoses, interventions and outcomes. As well as from this, there are possibilities of developing a classification system that allows the description and comparison of nursing data at local, regional, national and international levels, as already mentioned in the introduction of this article. Using a classification system such as ICNP® optimizes nursing good practices mainly with universal records, providing information on nursing phenomena in care practices in various health settings, with scientific basis in the database for decision-making in care, teaching, research and management[13].

ICNP® use facilitates communication between nurses and guides the execution of the nursing process, representing a way of improving nursing care documentation, user care and contributing to the professional practice to be recognized and visible[13,14].

Another relevant data in this study is the quantity of considered similar concepts. Similar terms use by nurses demonstrates the lack of approximation with classification systems, making it difficult to retrieve information and, therefore, to evaluate nursing care outcomes. For the registration to be done in a standardized way,

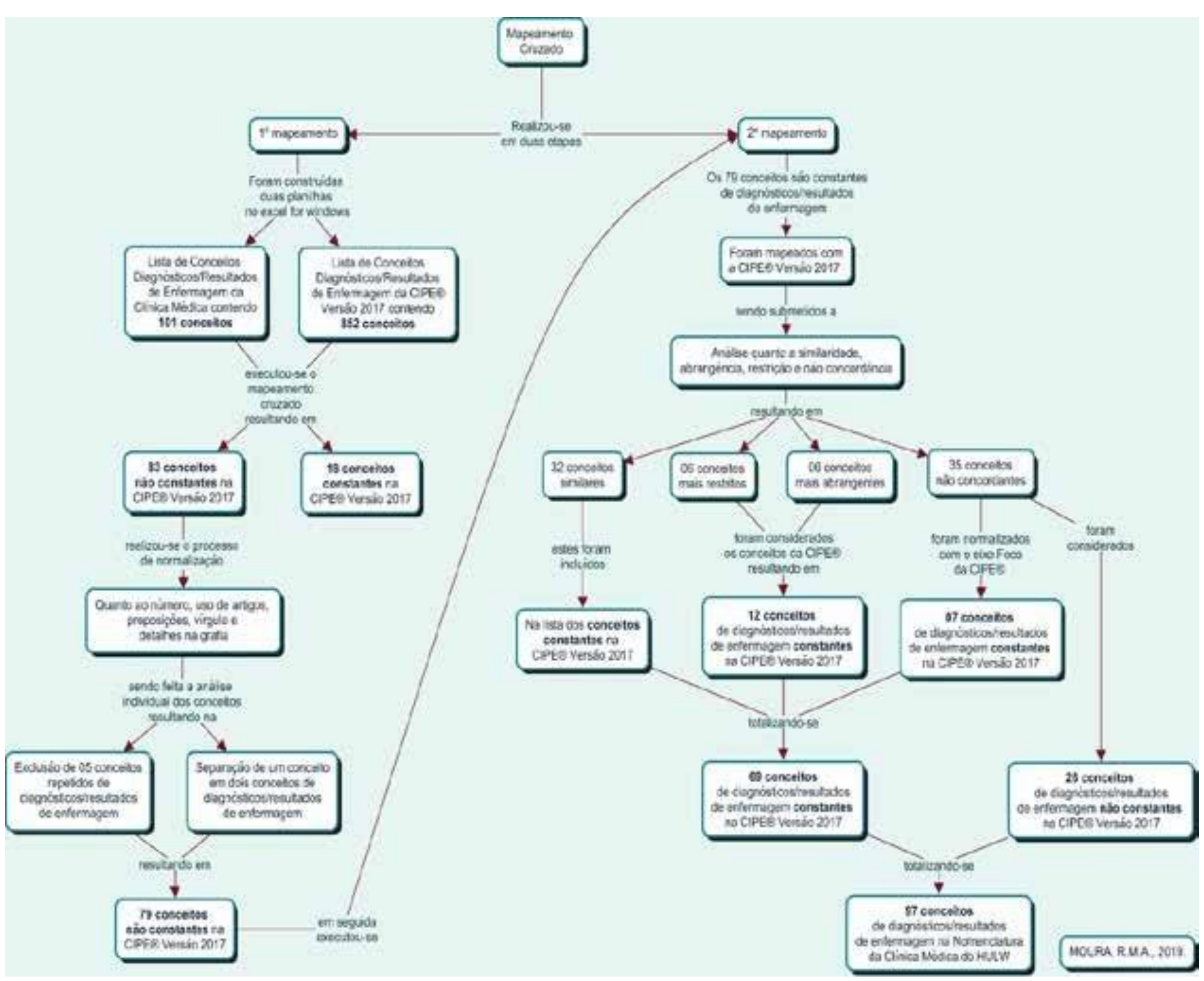

Figure 1 - Result of the cross-mapping process. João Pessoa, PB, Brazil, 2019
Source: Elaborated by the authors, 2019.

nurses need to appropriate the meanings of the concepts used in their care context[15]. Relevant terms identification to nursing practice portrays language and the development of specific knowledge, as well as the uniformity of professional records that will determine the referral of priority orders from a particular health sector, such as in a Clinical Medical ward, where it is necessary to recognize the main nursing phenomena, to assist, administer, teach and research a more effective professional care[13].

By performing a cross-mapping, one realizes the uniqueness of a process of recognition of what is produced by Nursing and compared to ICNP® data which is of universal recognition[16]. This was evidenced by the present study, when it was found that 71.2% of the concepts present in the Medical Clinic Nomenclature are in ICNP® 2017 version. In other words, nurses have been developing actions in their practice that in fact confirms a unique and necessary movement to find what is private to the nurse who is the Nursing Consultation or Nursing Process, and which for greater reasons is directed by the Legislation itself[17,18], but it is not yet seen as reality level in the clinical units of Brazilian hospitals.

Regarding the analysis of terms not included in this research, it indicates the need to include these terms in clinical practice for the

appropriation of the use of ICNP®, as well the use of the nursing process as a systematic method that organizes and directs care, and the standardization of professional language, enabling nurses to integrate practical and scientific knowledge, making possible the existence of nursing information documentation. Noteworthy is the optimization of the nursing process in Brazilian hospitals, by the search for good nursing practices toward evidence-based nursing care that contributes to care and human improvement.

Using the concepts of nursing diagnoses/outcomes in the Medical Clinic Nomenclature saves the professional time and facilitates communication between nurses and other health professionals, and raises individualized, effective and qualified nursing care, without excluding the possibility from the clinical judgment of the nurse to other nursing diagnoses/outcomes that were not included in the above nomenclature.

CONCLUSION

This study cross-mapped the concepts of nursing diagnoses / outcomes identified in the HULW / UFPB Medical Clinic, based on the "Nomenclature of Nursing Diagnoses, Outcomes and Interventions for Hospital Patients in HULW / UFPB Clinical Units Using ICNP®" with the ICNP® 2017 version diagnostic/outcomes nursing concepts. Cross mapping method use was effective in the detailed analysis of what is considered as constant and non-constant concepts in ICNP®, which allowed the comparison of the concepts of nursing diagnoses/outcomes, showing that 71.2% of the terms present in the Medical Clinic Nomenclature are in ICNP® 2017 version, which contributes greatly to the implementation of the classification system in the clinic. ICNP® use as a classification system of the elements of professional Nursing practice contributes to the implementation of the nursing process, bringing relevance and important benefits to the profession. It is noteworthy that the 28.8% of concepts not included in the terminology, prove that there are specific situations that are not yet in ICNP®, which need to be included in the referred Terminology, using the criteria of the International Council of Nurses.

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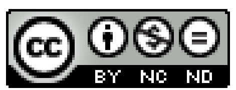

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