

## ORIGINAL ARTICLE

# Nursing diagnoses in the care process in Mobile Prehospital Care

*Diagnósticos de enfermagem no processo do cuidar no Atendimento Pré-Hospitalar Móvel*

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## ABSTRACT

The aim of this study was to identify nursing diagnoses in the context of Mobile Prehospital Care (MPHC). Descriptive methodological study based on empirical indicators of the Basic Human Needs (BHN) affected in the prehospital context. Anchored in Horta's theoretical framework, Prehospital Trauma Life Support (PHTLS) and the International Classification for Nursing Practice (ICNP<sup>®</sup>), version 2017. We identified 80 ICNP<sup>®</sup> Nursing Diagnosis statements grouped into eight BHNs. Of these, 54 were pre-coordinated diagnostic concepts, 12 were terms included in the ICNP<sup>®</sup> Focus axis and the development of 14 diagnostic statements is highlighted. We concluded the results contribute to reflections on the way care is provided in Mobile Prehospital Care and the strengthening of scientific care that fosters nurses' clinical reasoning.

**Descriptors:** Nursing Process; Nursing Diagnosis; Prehospital Care; Nursing Care; Standardized Nursing Terminology.

## RESUMO

Teve como objetivo identificar diagnósticos de Enfermagem no contexto do Atendimento Pré-Hospitalar Móvel. Pesquisa descritiva do tipo metodológica, realizada com base em indicadores empíricos das Necessidades Humanas Básicas (NHB) afetadas no contexto pré-hospitalar. Ancorada no referencial teórico de Horta; no *Prehospital Trauma Life Support* e na Classificação Internacional para a Prática de Enfermagem (CIPE<sup>®</sup>), versão 2017. Foram identificados 80 enunciados de Diagnósticos de Enfermagem da CIPE<sup>®</sup>, agrupados em oito NHB. Destes, 54 foram conceitos pré-coordenados de diagnósticos, 12 foram termos que constam no eixo foco da CIPE<sup>®</sup> e destacam-se os 14 enunciados de diagnósticos que foram elaborados. Concluiu-se que os resultados contribuem para reflexões acerca do modo de cuidar no Atendimento Pré-Hospitalar Móvel, fortalecendo um cuidado científico que fomenta o raciocínio clínico do enfermeiro.

**Descritores:** Processo de Enfermagem; Diagnóstico de Enfermagem; Assistência Pré-Hospitalar; Cuidados de Enfermagem; Terminologia Padronizada em Enfermagem.

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## INTRODUCTION

The nursing care process in Mobile Prehospital Care (MPHC) involves several care actions. Direct patient care prevails, which can range from assessing the scene of occurrence to completing various procedures<sup>(1)</sup>. In this scenario, nurses provide care focused on patients' needs with priority nursing interventions and continuous reevaluation during patient transport<sup>(2)</sup>.

Nationwide, the role of nurses in MPHC became more evident from 2003 after implementation of the Mobile Emergency Care Service (Portuguese acronym: SAMU) and its mobile intensive care units called Advanced Support Units (Portuguese acronym: USA)<sup>(3)</sup>. Nurses play an important role in this service and collaborate actively for the provision of quality care by preventing complications, assessing potential risks and offering safe care<sup>(2)</sup>.

Care actions are the main focus of activities developed by SAMU nurses, followed by managerial and educational actions<sup>(1)</sup>. Thus, care is the core of professional nursing practice, and the Nursing Process (NP) is can be a form of scientifically supporting it<sup>(4)</sup>. Care is a scientific act of professional nursing practice that requires diagnosis, intervention and assessment<sup>(5)</sup>.

Scientific knowledge is essential for nurses' assessment of patients and formulation of hypotheses about their needs in order to achieve a Nursing Diagnosis (ND)<sup>(6)</sup>. The identification of a ND requires understanding the conceptual and/or theoretical framework that supports the NP, which facilitates the diagnostic process and implementation of the NP<sup>(6)</sup>.

Thus, the theoretical support of nursing care is essential, for example, through the manifestation of Basic Human Needs (BHN) by Wanda de Aguiar Horta<sup>(7)</sup>. According to authors of a study on health needs and nursing care, considering the results of observations and empirical data related to nursing problems is important for the identification of the needs to be met through nursing actions<sup>(8)</sup>.

Among the important skills for the nursing practice in MPHC, is the implementation of the NP determined in Resolution number 358/2009 of the Federal Nursing Council, which provides for the systematization of nursing care and implementation of the NP in public or private environments where nursing care is provided. Through the NP, nurses can participate in patient assessment, which strengthens their autonomous professional practice<sup>(1)</sup>.

A study was conducted in the city of Salvador<sup>(9)</sup> in which were analyzed the perspectives of nurses in MPHC. The results demonstrated that nurses believe the performance based on technical-scientific knowledge adds excellence to professional practice, supports the care provided, values performance and technical competence and ensures safe care.

Nationwide, there are few studies on nursing diagnosis in MPHC, such as the study<sup>(10)</sup> conducted in Ribeirão Preto

(São Paulo) addressing nursing diagnoses in trauma victims treated at a mobile advanced prehospital service. A recent article<sup>(11)</sup>, "Nursing diagnoses and interventions in trauma victims during prehospital care using the ICNP<sup>®</sup>", was also conducted in Maceió, state of Alagoas.

The ICNP<sup>®</sup> version 2017<sup>(12)</sup> includes 4,326 terms structured in ten organizing concepts, of which three are pre-coordinated concepts (nursing diagnoses/outcomes and interventions) and seven are primitive concepts (focus, judgment, action, location, means, time and client)<sup>(13)</sup>.

There are studies in which the ICNP<sup>®</sup> was applied and/or used in some nursing specialties<sup>(14)</sup>, and the International Council of Nurses (ICN)<sup>(15)</sup> describes terminology subsets of the ICNP<sup>®</sup> published worldwide in various areas, namely: community nursing; in disasters; care of children with AIDS; pediatric pain management; palliative care; adherence to prenatal treatment and care. There are also some catalogs under development in the following areas: hospitalized mental health client; hospitalized pediatric client; postoperative hip care and prevention of pressure injuries.

However, the ICN<sup>(15)</sup> has no subsets in the area of urgency and emergency and specifically in mobile prehospital care. Hence, this gap can be filled with contributions to strengthen the ICNP<sup>®</sup> terms bank for these specialties.

Establishing a nursing diagnosis represents a great challenge for nurses working in MPHC<sup>(16)</sup>. As the reality in this scenario requires priority-based care, nurses must be able to diagnose the relevant problems requiring immediate solution that are amenable to interventions during MPHC. Faced with this challenge, the following question was asked: what are the Nursing Diagnoses in the care process in MPHC?

The aim of this study was to identify Nursing Diagnoses based on the International Classification for Nursing Practice, version 2017 in the context of mobile prehospital care.

## METHOD

This is a descriptive, methodological study that is part of the study titled "Construction of Nursing Record Instrument in Emergency Mobile Care in Curitiba - PR"<sup>(16)</sup> performed in 2015.

For achieving the proposed objectives, this article was based on the empirical indicators of Psychobiological Basic Human Needs affected in the context of MPHC, selected in the study<sup>(16)</sup> and presented in Figure 1; on the Basic Human Needs theoretical framework<sup>(7)</sup> and the latest version of the Prehospital Trauma Life Support (PHTLS) international protocol<sup>(17)</sup>.

Sixty-three empirical indicators grouped into eight priority basic human needs<sup>(16)</sup>, subsidized the process of

diagnostic reasoning. In this article, empirical indicators are the signs and symptoms presented by patients, which show the basic human needs affected in the context of MPHC<sup>(16)</sup>.

For the selection of ND, were analyzed the concepts of the 852 ND statements, 1,418 terms of the Focus axis and 45 terms of the Judgment axis contained in the ICNP<sup>®</sup> version 2017<sup>(12)</sup>. For the development of ND, were used the recommendations of the ICN and the model ISO 18104:2003<sup>(18)</sup> that address the integration of the reference terminology model for nursing; the ICNP<sup>®</sup> Seven-Axis Model, and the ICNP<sup>®</sup> version 2017<sup>(12)</sup>.

In the categorical structure for ND according to the ISO 18104:2014<sup>(19)</sup>, a diagnosis can be expressed as a judgment and focus or as a clinical finding. Clinical finding means altered state, altered function or change in behavior<sup>(19)</sup>.

The diagnostic reasoning process was developed through a concept map in order to present the identification, relationship and grouping of BHN, empirical indicators and NDs. The concept map was developed using the XMind technology tool, version 8 Update 1, a mind mapping software.

Concept maps present a hierarchical organization in diagrams that classify and relate concepts. They can be used to organize and plan nursing care<sup>(20)</sup>.

The literature states there are positive and negative nursing diagnoses that may be associated with potentialities indicating risk (negative ND) or chance (positive ND)<sup>(19)</sup>. Therefore, the inclusion criteria for the MPHC context were negative NDs and potentialities expressed as risk.

When searching for evidence to strengthen the identified NDs, the authors discussed the results by using the following references: the national and international publications relevant to MPHC, scientific productions addressing the structuring and applicability of ND in this scenario, and the ICNP<sup>®</sup><sup>(12)</sup>.

As this is a descriptive study, there was no need for approval by a Research Ethics Committee, according to guidelines of Resolution 466/12.

## RESULTS

Chart 1 shows the list of statements of ND grouped in eight human basic needs in the context of MPHC totaling 80 diagnoses.

In Figure 1, is shown the concept map organized based on eight priority basic human needs and 63 relevant empirical indicators in the context of MPHC as a form of elucidating the diagnostic reasoning process<sup>(16)</sup>.

The ICNP<sup>®</sup> catalog<sup>(12)</sup> includes 852 diagnoses considered as pre-coordinated concepts described as complex concepts (molecular) related to ND<sup>(13)</sup>. For this study, were selected 54 pre-coordinated concepts of ND.

The following 14 ND statements developed based on the ICNP<sup>®</sup>, version 2017 stand out<sup>(12)</sup>: Altered Respiratory Rate; Impaired Airway Clearance; Absent Heart Rate; Suspected Abdomen Trauma; Risk for Seizure; Absent Pupillary Reflex; Altered Pupillary Size; Sign of Pain; Neck trauma; Chest trauma; Cranial trauma; Sign of Trauma; Suspected Fracture and Suspected Abuse.

The following 12 terms in the Focus axis of the ICNP<sup>®</sup>, 2017 version are also noteworthy<sup>(12)</sup>: Hypovolemic shock; Hemorrhaging; Arrhythmia; Amnesia; Paresis; Consciousness; Labor Pain; Fracture; Edema; Sign of Infection; Burn and Perspiration Process.

## DISCUSSION

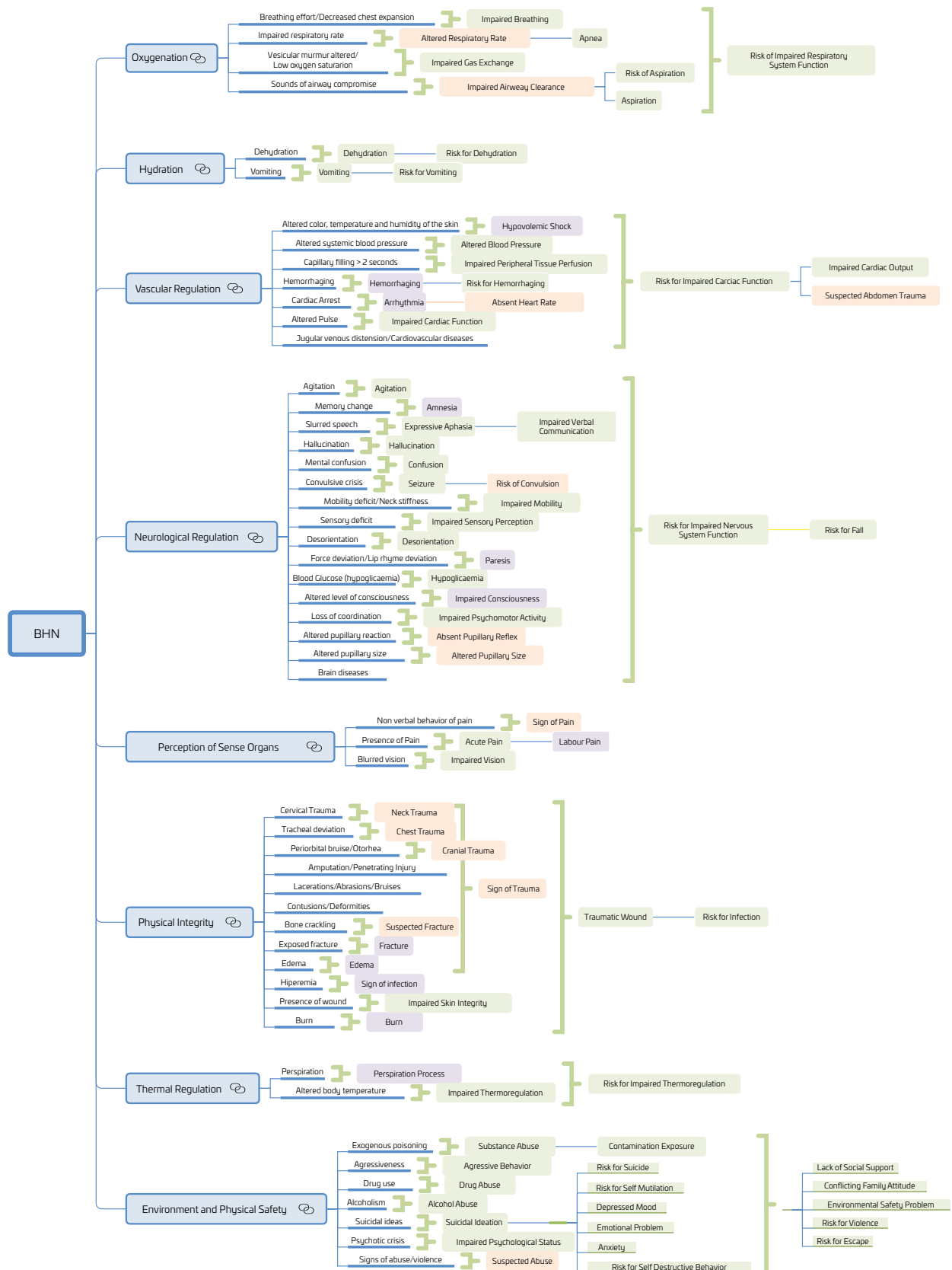
In the context of MPHC, nurses must provide agile care with the choice of priority diagnoses directed to immediate interventions that can be implemented in MPHC.

In this study, some empirical indicators represented NDs or a concept of the Focus axis, because the terms were the same. As already described in the methods section, a ND can be expressed either by judgment made on a particular focus of care or by a clinical finding<sup>(19)</sup>.

For the empirical indicator of “Sounds of Airway Compromise”, was chosen the ND “Aspiration and Risk for Aspiration” that is contained in the ICNP<sup>®</sup>, 2017<sup>(12)</sup>. The term “Aspiration” is defined as the inhalation of gastric or external substances to the trachea or lungs<sup>(12)</sup>. This comprises only part of the cause of airway involvement. However, there are more causes for “Sounds of Airway Compromise”, such as ineffective airway clearance. That is, this indicator should be considered very relevant for immediate identification in MPHC, and it is even part of the first step of the primary approach to patient<sup>(17)</sup>, but it is not included in the ICNP<sup>®</sup>, version 2017<sup>(12)</sup> in Portuguese. Thus, a search was performed in the English version<sup>(21)</sup> and was found the ND Impaired Airway Clearance (Desobstrução da Via Aérea Prejudicada — authors’ free translation), in which Airway Clearance is defined as maintaining the passage of air from the mouth to the pulmonary alveoli. Hence, the suggestion for a revision of the translation of the ICNP<sup>®</sup> into Portuguese.

When comparing data obtained in a study<sup>(16)</sup> conducted in 2015 with data obtained in the current study, there was an advance in the latest version of the ICNP<sup>®</sup>. The diagnoses developed in 2015<sup>(16)</sup> were included in the new version. Furthermore, the 2017 version<sup>(12)</sup> contains 432 concepts and 49 NDs more than the 2013 version, which represents an increase in pre-established diagnostic statements. As observed by Garcia<sup>(13)</sup>, the increase in number of pre-coordinated concepts decreases the percentage participation of primitive concepts inserted in the ICNP<sup>®</sup>.

**Figure 1.** Concept map of the diagnostic reasoning process in Mobile Prehospital Care.



Blue: basic human need; green: pre-coordinated nursing diagnosis concept; lilac: focus axis term; pink: nursing diagnosis developed; underline: empirical indicator.

For the development of NDs, can be chosen more specific or more generalized statements for a certain nursing phenomenon, according to the hierarchical ontological structure of the ICNP®. In the identification of NDs, we searched for diagnoses that specifically addressed the relevant empirical indicators in MPHIC, but we also chose comprehensive NDs that met a group of indicators. For example, the diagnoses listed in the basic human needs of Vascular Regulation may be represented by a single ND of “Risk for Impaired Heart Function”.

More focused and priority NDs were selected in an attempt to meet the aspects recommended by the PHTLS<sup>(17)</sup>. It is noteworthy that critically ill patients treated at the SAMU require NDs through a systematization focused on the main signs and symptoms detected in the primary approach<sup>(16)</sup>.

Our data corroborate the results of a study<sup>(10)</sup> conducted in 2009 on trauma victims treated at the SAMU in the inlands of the state of São Paulo, in which were identified 24 NDs. In this study, the following NDs were the most common in trauma victims: Risk for Infection, Risk for Trauma, Acute

Pain, Impaired Tissue Integrity, Deficient Fluid Volume and Risk for Deficient Fluid Volume.

These results are in line with data obtained in a study<sup>(22)</sup> conducted in a tertiary hospital that is reference to trauma in the city of São Paulo. The aim was to know the frequency of NDs in trauma victims within the first six hours after the traumatic event. The most frequent diagnoses were: Risk for Infection, Impaired Skin Integrity, Acute Pain, and Impaired Comfort.

Another study<sup>(23)</sup> conducted in a university hospital in the state of São Paulo in 2011 identified the main NDs used in the emergency area, as follows: Impaired Gas Exchange, Ineffective Respiratory Pattern, Impaired Spontaneous Ventilation, Risk for Infection, Risk for Impaired Skin Integrity, Impaired Tissue Integrity, and Risk for Falls.

In a study<sup>(11)</sup> conducted in 2010 at a mobile prehospital care service in Maceió, were identified 33 NDs and the highlighted diagnoses were those showing the nature of the injury in trauma victims, such as: “Current Firearm Wound”, whereas in this article, was selected the ND “Traumatic Wound”; and “Compromised Cardiovascular

**Chart 1.** List of ICNP® Nursing Diagnostic Statements, selected and classified according to the Basic Human Needs.

Basic Human Needs	Nursing Diagnoses
Oxygenation (n=8)	Apnea; Aspiration; Impaired Airway Clearance; Altered Respiratory Rate; Impaired Breathing; Risk for aspiration; Risk for Impaired Respiratory System Function; Impaired Gas Exchange.
Hydration (n=4)	Dehydration; Risk for Dehydration; Risk for Vomiting and Vomiting.
Vascular regulation (n=11)	Arrhythmia; Hypovolemic shock; Impaired Cardiac Output; Absent Heart Rate; Impaired Cardiac Function; Hemorrhaging; Impaired Peripheral Tissue Perfusion; Altered Blood Pressure; Risk for Impaired Cardiac Function; Risk for Hemorrhaging and Suspected Abdomen Trauma.
Neurological regulation (n=19)	Expressive Aphasia; Agitation; Hallucination; Amnesia; Impaired Psychomotor Activity; Impaired Verbal Communication; Confusion; Impaired Consciousness; Convulsion; Disorientation; Hypoglycemia; Impaired Mobility; Paresis; Impaired Tactile Perception; Absent Pupillary Reflex; Risk for Seizure; Risk for Impaired Nervous System Function; Risk for Fall and Altered Pupillary Size.
Perception of sense organs (n=4)	Acute pain; Labor Pain; Sign of Impaired Pain and Vision.
Physical integrity (n=12)	Edema; Traumatic wound; Fracture; Impaired Skin Integrity; Burn; Risk for infection; Sign of Infection; Sign of Trauma; Suspected fracture; Cranial Trauma; Neck Trauma and Chest Trauma.
Thermal regulation (n=3)	Perspiration process; Risk for Impaired Thermoregulation; Impaired Thermoregulation.
Environment and physical safety (n=19)	Alcohol abuse; Drug abuse; Substance abuse; Anxiety; Conflicting Family Attitude; Aggressive Behavior; Impaired Psychological Status; Contamination Exposure; Lack of Social Support; Depressed Mood; Suicidal Ideation; Emotional Problem; Environmental Safety Problem; Risk for Self-Mutilation; Risk for Self-Destructive Behavior; Risk for Escape; Risk for Suicide; Risk for Violence; Suspected Abuse.

and Respiratory System”, whereas in this study, were chosen more specific ND.

Scientific productions on this theme address the care of trauma victims, but it is noteworthy that the roles of SAMU are the early care and adequate transportation of victims affected by health problems of traumatic nature and of clinical, surgical, gynecological, traumatic and psychiatric nature<sup>(24)</sup>.

In this sense, in this study was observed a significant number of NDs in the basic human needs of Physical Security that transcend the dimension of physical care, that is, they show the need to look at social and emotional aspects in MPHIC.

Sometimes SAMU responds to occurrences involving social, emotional, and environmental problems, which demonstrates this service has demands that could be met by other levels of the health care system<sup>(25)</sup>. For example, by looking at the Psychosocial BHN of Emotional Safety and thinking of Depression as a possible ND; and looking at the Psychospiritual BHN of Religiosity and Spirituality in a possible ND of Spiritual Anguish.

Some NDs were not included in the ICNP®, especially in the area of Urgency and Emergency and specifically those directed to trauma care, which determined the need to develop new NDs for MPHIC. As researchers, this leads us to the finding that some diagnoses should be reviewed and added to the ICNP® and are reason and basis for further studies.

The terms used in MPHIC were not found in the ICNP®, such as terms not included in the Location axis: Pupils; and on the Judgment axis: Depth, External, Diameter, Symmetry and Exposed. This demonstrates the need to include new terms related to MPHIC in the ICNP®.

### Limitations of the study

There is a lack of knowledge in scientific publications related to NDs in MPHIC hence, in this study, only the NDs based on the scientific literature directed the discussion of results. Nonetheless, the relevance of all identified ND should be considered.

Nursing diagnoses based on Psychobiological BHNs were identified, but the results also pointed to diagnoses representing social and emotional needs, which suggests a broader view that includes Psychosocial and Psychospiritual BHNs. This is relevant given the Brazilian reality of MPHIC services that sometimes attend situations not considered emergencies, such as those of health education, transportation, comfort in terminality, social, emotional, environmental and spiritual problems. Moreover, the service moves in different scenarios that allow care beyond the Psychobiological BHNs, such as: public road, workplace, home, shelters, remote and invasion areas, among others.

This suggests an expanded view of the comprehensiveness of MPHIC situations and locations.

Another limitation is the need to check the accuracy of diagnostic statements and perform a clinical validation of the nursing diagnoses identified.

## CONCLUSION

In this study, were identified 80 statements of Nursing Diagnoses related to priority Basic Human Needs and relevant empirical indicators in Mobile Prehospital Care. The results showed the profile of nursing diagnoses in the care process in MPHIC, which may support the documentation of professional practice.

The results contribute to reflections within the profession regarding the way of care in MPHIC based on the ICNP® thereby strengthening scientific care that fosters nurses' clinical reasoning.

The approximation of the ICNP® to the area of urgency and emergency is a contribution, specifically in the context of MPHIC, given the suggestion of including new NDs and new ICNP® terms in this theme. Another suggestion is the creation of the ICNP® terms bank in the area of urgency and emergency and the development specific terminology subsets for MPHIC.

We recommend further studies for identifying different Nursing Diagnoses because this area is updated constantly and with a view of future versions of PHTLS and the ICNP®.

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