Original Article

ICNP® terminology subset for patients with cancer-associated venous thromboembolism

Subconjunto terminológico CIPE® para pacientes com tromboembolismo venoso associado a câncer

Subconjunto terminológico CIPE® para pacientes con tromboembolismo venoso asociado con el cáncer

Paula Dias Vidigal[1]
Telma Ribeiro Garcia[2]
Mauro Leonardo Salvador Caldeira dos Santos[1]
Alessandra Conceição Leite Funchal Camacho[1]
Marise Dutra Souto[3]
Giselle Gomes Borges[3]
Patrícia dos Santos Claro Fuly[1]

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Descriptores
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Abstract
Objective: To develop and validate an International Classification for Nursing Practice (ICNP®) terminology subset for patients with cancer-associated venous thromboembolism.
Methods: Four-stage methodological study, namely: integrative review of the literature, in which were sought empirical evidence of nursing diagnoses and interventions related to cancer-associated venous thromboembolism in MEDLINE, PUBMED, CINAHL, LILACS, BDENF and COCHRANE databases in the period between 2001 and 2016. In the second stage of the study, was performed the cross-mapping between terms identified in the literature and terms included in the ICNP®, version 2017. The third stage was the construction of the ICNP® terminology subset containing the nursing diagnosis/outcomes and interventions statements that were distributed according to the Basic Human Needs of Wanda Horta's conceptual framework. In the fourth stage, was performed the content validation of declarations by expert nurses.
Results: Thirty-seven nursing diagnosis and intervention statements were developed. Of these, 34 diagnoses and 35 interventions were validated. The inclusion of four nursing diagnoses as pre-coordinated concepts in the ICNP® was proposed, as follows: Unilateral peripheral edema; Chronic peripheral edema; Low Blood oxygen saturation; and Knowledge of treatment regime.
Conclusion: The instrument can be an easy-access reference for nurses by providing evidence-based care and a unified nursing language.

Resumo
Objetivo: Elaborar e validar um subconjunto terminológico da Classificação Internacional para Prática de Enfermagem (CIPE®) para pacientes com tromboembolismo venoso associado ao câncer.
Métodos: Estudo metodológico, desenvolvido em quatro etapas: revisão integrativa da literatura, que buscou evidências empíricas de diagnósticos e intervenções de enfermagem relacionadas ao tromboembolismo venoso associado ao câncer, nas bases de dados *MEDLINE*, PUBMED, *CINAHL*, *LILACS, BDENF* e *COCHRANE*, com recorte temporal de 2001 a 2016; na segunda etapa do estudo foi realizado o mapeamento cruzado entre os termos identificados na literatura e os termos constantes na CIPE® versão 2017; a terceira etapa consistiu na construção do subconjunto terminológico CIPE®, contendo os enunciados de diagnósticos/resultados e intervenções de enfermagem e distribuídos conforme as Necessidades Humanas Básicas postuladas no referencial conceitual de Wanda Horta; na quarta etapa foi realizada a validação de conteúdo das declarações por enfermeiros peritos.
Resultados: No total, 37 afirmativas de diagnósticos e intervenções de enfermagem foram elaboradas. Destas, 34 diagnósticos e 35 intervenções foram validadas. Foi proposta a inclusão de quatro diagnósticos de enfermagem como conceitos pré-coordenados na CIPE®: Edema periférico unilateral; Edema periférico crônico; Saturação de oxigênio no sangue, baixa; e Conhecimento sobre regime terapêutico.
Conclusão: O instrumento poderá constituir-se numa referência de fácil acesso para enfermeiros, propiciando um cuidado baseado em evidências e linguagem de enfermagem unificada.

Resumen
Objetivo: Desarrollar y validar un subconjunto terminológico de la Clasificación Internacional para la Práctica de Enfermería (ICNP®) para los pacientes con tromboembolismo venoso asociado con el cáncer.
Métodos: Estudio metodológico llevado a cabo en cuatro etapas: una revisión integradora de la literatura, la cual buscó evidencias empíricas de diagnósticos e intervenciones de enfermería relacionadas al tromboembolismo venoso asociado con el cáncer, en las bases de datos *MEDLINE*, PUBMED, CINAHL, *LILACS, BDENF* y *COCHRANE*, con un recorte temporal desde 2001 hasta 2016; en la segunda etapa del estudio se realizó el mapeo cruzado entre los términos identificados en la literatura y los términos constantes en la CIPE® versión 2017; la tercera etapa consistió en la construcción del subconjunto terminológico CIPE®, conteniendo los enunciados de diagnósticos / resultados e intervenciones de enfermería, distribuidos conforme a las Necesidades Humanas Básicas postuladas en el referencial conceptual de Wanda Horta; en la cuarta etapa se realizó la validación de contenido de las declaraciones por enfermeros expertos.
Resultados: En total, 37 afirmativas de diagnósticos e intervenciones de enfermería se han preparado. De estas, 34 diagnósticos y 35 intervenciones fueron validadas. Se propuso la inclusión de cuatro diagnósticos de enfermería como conceptos pre coordinados en la CIPE®: Edema periférico unilateral; Edema periférico crónico; Saturación de oxígeno en la sangre, baja; y Conocimiento sobre el régimen terapéutico.

Corresponding author
Paula Dias Vidigal
https://orcid.org/0000-0002-2018-3540
E-mail: pdvidigal@hotmail.com

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[1]Escola de Enfermagem Aurora de Afonso Costa, Universidade Federal Fluminense, Niterói, RJ, Brazil.
[2]Universidade Federal da Paraíba, João Pessoa, PB, Brazil.
[3]Instituto Nacional de Câncer José Alencar Gomes da Silva, Rio de Janeiro, RJ, Brazil.

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Introduction

Venous thromboembolism is an important clinical complication strongly associated with cancer, since it favors the occurrence of blood hypercoagulability, venous stasis and vascular endothelial injury.[1] Its prevalence in cancer patients is about 20%, and it is the second cause of death in these patients.[2,3]

In search of qualified nursing care, some technological instruments can be applied in practice for the systematization of care. Nursing classification systems can be used to this end because they provide their own terminology and a standardized language used by nursing professionals in order to contribute to a more effective, conscious and above all, visible nursing practice in the data set of health.[4,5]

The International Classification for Nursing Practice (ICNP®) is one of the most widely used classification systems and a medium that helps reasoning and clinical decision making by promoting communication among nurses and with other professionals. In addition, it favors documentation of professional practice, and the resulting data and information can be used for planning and management of nursing care and the development of policies.[4,5]

In order to optimize the use of ICNP® and make it an easy-access reference for nursing professionals in their professional context, the International Council of Nurses suggests the development of specific catalogs. Among the possible types of catalogs, there are terminology subsets containing nursing diagnoses, outcomes and interventions statements directed to a particular area of care.[4,5]

In view of the problematic of the study, we tried to answer the following question: What nursing diagnoses/outcomes and interventions are useful in nursing care for patients with cancer- associated venous thromboembolism? Based on this question, the aim of the study was to develop and validate an ICNP® terminology subset for patients with cancer-associated venous thromboembolism.

Methods

This is a methodological study. It was conducted at an institution specialized in the treatment of cancer in Rio de Janeiro. Twelve sectors of the institution were selected, in which there was the highest prevalence of thromboembolic events: emergency, palliative care outpatient clinic, inpatient clinic for palliative care patients, hospitalization for chemotherapy and hematologic cancer patients, breast cancer, gynecological cancer, bone and connective tissue cancer, central nervous system cancer, lung cancer, prostate cancer, gastrointestinal cancer, and head and neck cancer.

The study participants were nurses with experience in the care of cancer and venous thromboembolism patients, and considered experts.[6] The ICNP is used only in some units of the institution, but there is no definition about the standardization of language for the registration of nursing processes. However, it is noteworthy that the institution adopts standardized languages. Inclusion criteria were being an oncology specialist and working in the area for at least five years. Nurses on vacation or on leave during the data collection period were excluded from the study.

The study was developed in four stages. In the first stage, was performed an integrative review of the literature in order to answer the following question: what are the empirical indicators identified in databases for proposing nursing diagnosis, outcomes and interventions statements by using the ICNP? The databases consulted were the US National Library of Medicine (PUBMED via NLM), International Literature on Health Sciences (PUBMED via MEDLINE), Latin American and Caribbean Literature on Health Sciences (LILACS), Nursing Database (BDENF), Cumulative Index to Nursing & Allied Health Literature (CINAHL), and Cochrane Collaboration. The descriptors in Health Sciences (DeCs) and Medical Subject Headings (Mesh) were the following: Oncology nursing, Embolism and thrombosis, Thromboembolism, Venous thromboembolism, Thrombosis, Venous thrombosis, Intracranial thrombosis, Postthrombotic syndrome and Upper extremity deep vein thrombosis. The key-

words used were: Oncology nurse; Cancer nursing, Thromboses, Thrombus, Venous Stasis Syndrome, Deep Vein Thrombosis/Deep-Vein Thrombosis, Deep Vein Thromboses/Deep-Vein Thromboses and Central Venous Catheter Thrombosis.

The search was performed by cross-checking descriptors and keywords related to oncology nursing with those of thromboembolism by using the Boolean operator AND. The search in electronic databases was performed between April and July 2016. All full text articles published between 2001 and 2016 in Portuguese, English, Spanish and French were included. Exclusion criteria were articles in which deep vein thrombosis was not the central theme.

In the second stage of the study, was performed the cross-mapping between terms identified in the literature and terms included in the ICNP®, version 2017. Afterwards, were developed the nursing diagnoses, interventions and outcomes based on terms of the ICNP® Seven Axes Model, which underwent content validation by specialist nurses.

The third stage was the construction of the ICNP® terminology subset containing the nursing diagnosis/outcomes and interventions statements that were distributed according to the Basic Human Needs (BHN) postulated in the conceptual framework of Wanda Horta.[7] These data are in conformity with the recommendation of the International Council of Nurses for the use of a theoretical or conceptual model for constructing the terminology subset.[8]

In the fourth stage, was performed the content validation of the nursing diagnosis/outcomes and interventions statements of the ICNP® through the opinion of expert nurses. Data were collected from August to September 2017. A non-probabilistic convenience sample was used. It included all subjects who met the inclusion criteria for participation in the study. The data collection instrument was given to 49 nurses. Of these, 34 returned with the completed material.

The experts were asked to express their level of agreement with the statements according to the following criteria: adequacy, pertinence, clarity, accuracy and objectivity. The expert's level of agreement in each criterion was evaluated through a Likert scale. Each criterion had a 1-5 score, considering 5 as a maximum agreement, and 1 as no agreement. The score for each level of agreement was numerically transformed according to the Validation Model of Nursing Diagnosis, in which 1=0; 2=0.25; 3=0.50, 4=0.75; and 5=1.[9]

For data analysis, was calculated participants' concordance index (CI) by means of simple statistical analysis with calculation of the average of established criteria. Statements with a CI greater than or equal to 0.8 in the general average were considered valid, since this cut-off score confers reliability to analyzed data.[9]

The study was approved by the Research Ethics Committee in Human Beings under number 2.173.119 by complying with standards of research with human beings (Resolution 466/2012 (12) of the National Research Council).

Results

During the integrative literature review, were found 712 articles in the six databases. When applying the exclusion criteria, 511 were excluded by duplication, 16 because they were out of the temporal cut, 106 after thorough reading of title and abstract, and five because they were not available in full. Seventy-four articles were read in full and seven were excluded because they did not present evidence of nursing diagnoses and interventions. In the end, 67 articles composed the integrative review. For the most part, articles excluded by title or abstract addressed vascular access thrombosis or superior vena cava syndrome.

A total of 151 empirical evidences were identified. From the cross-mapping with terms of the ICNP® version 2017 and by following the Seven Axes Model, these evidences resulted in 37 nursing diagnoses, out of which 27 were pre-coordinated concepts and other ten diagnoses were constructed a posteriori by researchers by using terms from the Focus, Judgment and Location axes.

Thirty-seven articles provided evidence for composing the nursing interventions. Other nursing

interventions were added based on other already validated ICNP® terminology subsets and on the authors' clinical practice.

After the construction of ICNP® statements of diagnosis, outcomes and interventions, the terminology tubset was organized by using the Basic Human Psychobiological, Psychosocial and Psycho-Spiritual Needs of Wanda Horta's Conceptual Model.[7] In total, 18 BHN were included in the diagnoses, of which 11 were psychobiological needs and seven were psychosocial needs. Table 1 shows the nursing diagnoses distributed according to the affected BHN, and containing absolute and percentage values of these diagnoses in each BHN in relation to the total.

Table 1. Affected basic human needs and their respective nursing diagnoses

Psychobiological needs		
Basic human need affected	**Diagnosis**	**n(%)**
Oxygenation	Dyspnea Impaired respiratory system function Low Blood Oxygen Saturation Cough	4(10.8)
Hydration	Unilateral Peripheral Edema Chronic Peripheral Edema	2(5.4)
Skin and mucosal integrity	Impaired Skin Integrity Venous Ulcer Inflammation	3(8.1)
Physical integrity	Risk for medication side effect	1(2.7)
Thermal regulation	Fever	1(2.7)
Neurological regulation	Risk for fall	1(2.7)
Immunological regulation	Risk for infection	1(2.7)
Vascular regulation	Impaired peripheral tissue perfusion Impaired vascular process Tachycardia Impaired cardiovascular system Altered blood pressure Risk for impaired cardiac function Nasal bleeding Risk for hemorrhaging Risk for deep vein thrombosis	9(24.3)
Locomotion	Impaired walking	1(2.7)
Tactile perception	High peripheral sensory perception	1(2.7)
Pain perception	Acute pain Acute chest pain Chronic pain Musculoskeletal pain	4(10.8)
Therapy	Impaired ability to manage medication regime	1(2.7)
Psychosocial needs		
Security	Fear Anxiety	2(5.4)
Apprenticeship (health education)	Lack of knowledge of treatment regime	1(2.7)
Self-image	Impaired adaptation	1(2.7)
Self-achievement	Negative quality of life	1(2.7)
Participation	Non adherence to therapeutic regime Lack of family support Impaired ability of caregiver to perform caretaking	3(8.1)

In the experts' evaluation regarding the applicability of the Nursing Diagnoses, out of the 37 nursing diagnoses constructed, only three (8.1%) did not reach a CI≥0.8, namely Acute chest pain, High peripheral sensory perception, and Inflammation. Table 2 shows the nursing diagnoses and their respective concordance indexes after content validation by the expert nurses.

Table 2. Nursing diagnoses and their respective concordance indexes after content validation by expert nurses

Nursing diagnosis	Concordance index	Adequacy	Pertinence	Clarity	Accuracy	Objectivity
Dyspnea	0.93	0.94	0.93	0.94	0.93	0.92
Impaired respiratory system function	0.89	0.89	0.89	0.87	0.90	0.90
Low blood oxygen saturation	0.86	0.86	0.88	0.84	0.86	0.86
Cough	0.81	0.82	0.80	0.81	0.81	0.82
Unilateral peripheral edema	0.82	0.82	0.82	0.83	0.83	0.82
Chronic peripheral edema	0.82	0.80	0.80	0.88	0.83	0.82
Impaired skin integrity	0.86	0.86	0.87	0.84	0.84	0.86
Venous ulcer	0.88	0.89	0.88	0.89	0.88	0.87
Inflammation	0.74	0.78	0.78	0.67	0.74	0.72
Risk for medication side effect	0.83	0.84	0.83	0.82	0.83	0.82
Fever	0.81	0.83	0.82	0.81	0.78	0.81
Risk for fall	0.91	0.92	0.91	0.92	0.92	0.91
Risk for infection	0.82	0.82	0.84	0.82	0.82	0.80
Impaired peripheral tissue perfusion	0.84	0.83	0.84	0.84	0.85	0.85
Impaired vascular process	0.84	0.85	0.86	0.83	0.84	0.83
Tachycardia	0.84	0.83	0.83	0.84	0.83	0.85
Impaired cardiovascular system	0.89	0.88	0.89	0.90	0.89	0.91
Altered blood pressure	0.86	0.86	0.85	0.88	0.85	0.88
Risk for impaired cardiac function	0.90	0.90	0.91	0.91	0.91	0.88
Nasal bleeding	0.83	0.82	0.83	0.81	0.83	0.84
Risk for hemorrhaging	0.88	0.86	0.87	0.88	0.90	0.88
Risk for deep vein thrombosis	0.89	0.88	0.87	0.90	0.90	0.90
Impaired walking	0.90	0.89	0.89	0.94	0.90	0.90
High peripheral sensory perception	0.79	0.82	0.83	0.78	0.76	0.77
Acute pain	0.83	0.82	0.87	0.84	0.80	0.83
Acute chest pain	0.79	0.76	0.79	0.82	0.78	0.80
Chronic pain	0.84	0.84	0.86	0.82	0.81	0.86
Musculoskeletal pain	0.86	0.85	0.87	0.87	0.85	0.86
Impaired ability to manage medication regime	0.81	0.83	0.83	0.78	0.79	0.80
Fear	0.86	0.88	0.85	0.85	0.87	0.87
Anxiety	0.88	0.88	0.89	0.90	0.87	0.88
Low knowledge of treatment regime	0.90	0.90	0.91	0.91	0.91	0.89
Impaired adaptation	0.86	0.86	0.86	0.86	0.88	0.87
Negative quality of life	0.86	0.87	0.88	0.82	0.86	0.85
Non adherence to therapeutic regime	0.90	0.90	0.91	0.91	0.90	0.88
Lack of Family support	0.83	0.82	0.82	0.85	0.82	0.83
Impaired ability of caregiver to perform caretaking	0.85	0.86	0.86	0.84	0.84	0.85

Regarding the experts' evaluation in relation to the applicability of nursing interventions, only the group of interventions for the diagnoses of High peripheral sensory perception and Inflammation did not reach a CI greater than 0.8. Table 3 presents the concordance indexes of the nursing intervention groups that were validated. The main nursing intervention of each diagnosis was also presented. The complete presentation of interventions is available for consultation online.

Table 3. Nursing diagnosis with groups of interventions validated by expert nurses

Nursing diagnosis with validated group of interventions/Main group intervention	Concordance index	Adequacy	Pertinence	Clarity	Accuracy	Objectivity
Dyspnea/Elevating the chest	0.92	0.94	0.94	0.92	0.91	0.90
Impaired respiratory system function/Assessing respiratory status	0.90	0.90	0.91	0.88	0.91	0.88
Low blood oxygen saturation/Monitoring blood oxygen saturation using pulse oximeter or arterial blood gas, if indicated	0.89	0.89	0.90	0.89	0.90	0.87
Cough/Observing cough: frequency, onset, duration, intensity, associated signs and symptoms, precipitating factors, attenuating factors	0.84	0.84	0.83	0.85	0.82	0.83
Unilateral peripheral edema/Obtaining data on edema: evaluating the Godet sign daily and observing associated signs and symptoms (pain, stuffing, heat, blister)	0.88	0.88	0.88	0.89	0.89	0.88
Chronic peripheral edema/Encourage resting if there is edema or discomfort	0.83	0.80	0.82	0.85	0.84	0.81
Impaired skin integrity/Obtaining data on skin: integrity, hydration, coloring and presence of other changes	0.85	0.85	0.86	0.85	0.84	0.85
Risk for medication side effect/Monitor occurrence of bleeding	0.84	0.84	0.84	0.82	0.84	0.85
Fever/Monitoring signs and symptoms of infection	0.82	0.78	0.83	0.84	0.84	0.83
Risk for fall/Identifying patients at high risk for fall and informing the team according to institutional protocol (bracelet, identification in the medical record)	0.88	0.88	0.88	0.90	0.87	0.88
Risk for infection/Training staff for environmental sanitation and precaution techniques, as needed	0.85	0.86	0.86	0.85	0.83	0.83
Impaired peripheral tissue perfusion/Obtaining data on peripheral tissue perfusion (peripheral capillary perfusion, peripheral pulse, edema, cyanosis)	0.86	0.88	0.88	0.85	0.85	0.86
Impaired vascular process/Monitoring tissue perfusion: assessing daily changes in tissue perfusion or skin; assessing ecodoppler examination result	0.87	0.86	0.87	0.86	0.88	0.88
Tachycardia/Monitoring vital signs	0.86	0.85	0.87	0.90	0.85	0.85
Impaired cardiovascular system/Monitoring cardiac condition during acute phase of venous thromboembolism by checking frequency, rhythm and alterations in the electrocardiographic tracing	0.90	0.90	0.90	0.92	0.90	0.89
Altered blood pressure/Implement cardiorespiratory physical examination by considering signs of low output and respiratory pattern	0.87	0.86	0.86	0.88	0.87	0.88
Risk for impaired cardiac function/Assessing signs of low cardiac output: oliguria, filiform pulse, cold extremities, and hypotension	0.84	0.84	0.84	0.86	0.85	0.80
Nasal bleeding/Evaluating bleeding	0.86	0.86	0.85	0.87	0.84	0.87
Risk for hemorrhaging/Evaluating signs and symptoms of bleeding in integumentary, intestinal, urinary and respiratory systems	0.87	0.88	0.88	0.87	0.88	0.88
Risk for deep vein thrombosis/Teaching about anticoagulant therapy: objective, importance of adherence, duration, side effects, follow-up consultations and situations to seek health care	0.91	0.91	0.90	0.92	0.90	0.90
Acute pain/Obtaining pain data (characteristics of pain, including location, onset, duration, frequency, quality, intensity, precipitating factors, mitigating factors, and use of pain medication)	0.85	0.84	0.87	0.85	0.83	0.86
Chronic pain/Providing guidance for patient and family on pain management (time of pharmacological analgesia, concomitant drugs, use of non-pharmacological techniques for pain relief)	0.85	0.81	0.85	0.87	0.86	0.87
Musculoskeletal pain/Guiding to rest and lift limbs for discomfort relief	0.85	0.85	0.84	0.86	0.84	0.85
Impaired ability to manage medication regime/Obtaining data on ability to perform care: ability of reading, understanding orientations, motor ability	0.91	0.90	0.91	0.90	0.92	0.91
Fear/Offering emotional support: performing active listening, user embracement, touching	0.86	0.85	0.85	0.88	0.87	0.83
Anxiety/Obtaining data on anxiety (onset, associated symptoms, precipitating factors)	0.87	0.88	0.87	0.88	0.86	0.87
Lack of knowledge of treatment regime/Obtaining knowledge data about treatment regime: time of treatment, dose, schedule of administration, side effects, warning signs and outpatient follow-up	0.87	0.88	0.89	0.88	0.86	0.85
Impaired adaptation/Protect patients' autonomy	0.85	0.83	0.84	0.88	0.85	0.84
Negative quality of life/Promoting social support: identifying social support network, calling family and/or caregiver to participate in care; identifying basic health unit of reference, referring to social services	0.85	0.87	0.87	0.85	0.83	0.84
Non adherence to therapeutic regime/Obtaining data on adherence barriers: difficulty with understanding, functional illiteracy, lack of social/family support	0.89	0.89	0.89	0.90	0.90	0.90
Lack of family support/Calling the family and guiding on the importance of participation for therapeutic success	0.80	0.80	0.80	0.80	0.82	0.80
Impaired ability of caregiver to perform caretaking/Facilitating family's ability to participate in the care plan: including them in guidelines on disease and therapeutic regime; invite other family members to participate in orientations; teaching the form of medication administration	0.85	0.84	0.86	0.85	0.86	0.85

Source: Vidigal PD. ICNP® terminology subset for patients with cancer-associated venous thromboembolism [dissertation]. Niterói: Universidade Federal Fluminense; 2018. [cited 2018 Jun 19]. Available at: https://app.uff.br/riuff/bitstream/1/6229/1/Paula%20Dias%20Vidigal.pdf[10]

Discussion

The present study allowed the development and validation of an ICNP® terminology subset for patients with cancer-associated venous thromboembolism that was organized according to Wanda Horta's Theory of Basic Human Needs. Of the 37 diagnoses presented, 91.9% had a CI≥0.8, as well as 94.6% of the nursing interventions group. At the end, was proposed the inclusion of four nursing diagnoses as pre-coordinated concepts in the ICNP®.

The high number of diagnoses considered as valid can be attributed to the wide bibliographical review and pertinent references to the proposed theme. By grouping empirical evidence, unilateral peripheral edema was the most prevalent evidence. Peripheral edema corresponds to a nursing diagnosis validated by the International Classification for Nursing Practice as a pre-coordinated concept. However, using the term 'unilateral', from the Location axis for developing the diagnosis of Unilateral peripheral edema is very important, since edema caused by thrombosis is unilateral and the name 'peripheral edema' alone does not bring specificity to the care of individuals affected by this comorbidity. Bilateral symmetrical edema may be related to any circulatory alteration, such as congestive heart failure, nephrotic syndrome or lymphedema, for example.[11,12]

The diagnosis Chronic peripheral edema was constructed to differentiate patients with post-thrombotic syndrome, who have chronic venous insufficiency, since this sign is one of its manifestations.[13,14] Although validated with CI 0.82, some experts suggested no specification of chronicity, because nursing interventions are similar in acute and chronic phases. Another expert suggested adding the term 'unilateral' as well, just as in the acute phase.

The nursing diagnosis was maintained because of its specificity. The post-thrombotic syndrome affects about 20 to 50% of patients and results in a reduction of individuals' productive capacity, besides high costs to the health system related to its treatment.[15] An attempt to decrease or even eliminate the occurrence of chronic peripheral edema reduces the risk of unfavorable signs and symptoms to the individual, such as the formation of venous ulcers, local dermatitis and severe chronic pain.[13,14,16]

Blood oxygen saturation is a term of the Focus axis. The judgement 'low' was added in order to specify the hypoxemia picture presented by many patients with pulmonary embolism.[17] Such a diagnosis reached CI 0.86 and is important, since it allows that nurses and the entire health team evaluate the aggravation or improvement of the impaired gas exchange picture. It also allows the evaluation of response to the adopted respiratory therapy.

Another case of nursing diagnosis construction by using a term of the Focus axis with a term of the Judgment axis was Impaired vascular process. The diagnosis was constructed based on evidence of circulatory changes originating from the obstruction in veins of affected extremities.[18] Despite reaching CI 0.84, some experts questioned the similarity with the diagnosis Impaired peripheral tissue perfusion. In fact, peripheral circulatory alteration interferes with tissue perfusion. The latter is already a validated diagnosis in the ICNP® 2017, hence the suggestion to maintain only this diagnosis in order to avoid ambiguity and uncertainty for nurses' clinical judgment.

Nasal bleeding was a diagnosis constructed with terms of the Focus axis and the Location axis. Since bleeding is clinical evidence, there was no need to add a term from the Judgment axis.[8] In spite of its validation with CI 0.83, the diagnosis was based on evidence of hemoptysis in cases of pulmonary embolism.[13,19]

One of the experts questioned the fact that nasal bleeding is more appropriate to characterize the epistaxis condition, since hemoptysis is usually identified in cases of cough with bloody discharge. Another expert suggested the diagnosis should not be included and that evidence of hemoptysis should be part of the diagnoses Risk for hemorrhaging or Cough, validated with CI 0.88 and 0.81, respectively.

According to the Virtual Health Library, hemoptysis corresponds to a Health Sciences Descriptor (DeCS). Its definition is "To expectorate or spit blood originating from any part of the respiratory

tract, usually from hemorrhage in pulmonary parenchyma (pulmonary alveoli) and bronchial arteries". Therefore, by considering the data presented, is offered the suggestion to keep only the diagnoses Risk of hemorrhaging and Cough, because of the risk of ambiguity for nurses' judgment, even after validation by the experts.

The diagnosis of Musculoskeletal pain was constructed only with one term of the Focus axis, as it corresponds to clinical evidence. Although validated with CI 0.86, some experts questioned its inclusion in the subset, because this diagnosis is not accurate for deep vein thrombosis - it can be triggered in any painful condition of the calf - as evidenced by a literature review.[18]

Since this diagnosis can also generate confusion or be inserted in a picture of Acute pain or Chronic pain, an expert suggested its exclusion, because reducing the amount of diagnoses facilitates nurses' fast clinical decision making. Nursing interventions are also similar and, furthermore, interventions for diagnoses associated with the condition, such as Impaired walking (Walk) and Risk for fall, have similar empirical evidence. In view of the above, is proposed the exclusion of this diagnosis from the terminology subset.

The Low knowledge of treatment regime was approved with CI 0.90. The experts understand that, from educational interventions, one can optimize adherence to anticoagulant treatment and generate more safety throughout its course. Adherence to treatment will often be low due to lack of knowledge about it. The literature demonstrates that a better understanding of thrombosis and its treatment can reduce anxiety and increase adherence to treatment, and decrease the risk of side effects.[13]

Even though Inflammation is present in cancer patients with deep vein thrombosis, this diagnosis stands out among the non-validated diagnoses. None of its evaluated criteria reached a concordance index higher than 0.8. For validators, the symptoms related to inflammation (pain, erythema and edema) are more perceptible and susceptible to management by nursing interventions. Therefore, they deemed as more appropriate to maintain diagnoses related to symptomatology.

It is noteworthy that not only the experts in this study did not use the ICNP® term 'Inflammation'. In the literature review, only one article cited the word Inflammation as one of the signs observed in cases of deep vein thrombosis in patients with central venous catheter.[12] In the same study, other isolated signs also appear in the characterization of the picture, such as pain and peripheral edema. Other studies presented only isolated terms such as edema, heat, erythema, and pain for describing the clinical picture, without mentioning the word inflammation.[11,13,20,21]

Regarding nursing interventions, the non-validated percentage (5.4%) is below the value found in other validation studies of ICNP® terminology subsets, in which were shown up to 22.6% of non-validated interventions.[4,22,23] This fact may be related to a methodological bias in this study, which refers to the impossibility of the expert performing the evaluation of nursing interventions separately. The expert evaluated a group of interventions for a given nursing diagnosis. In order to minimize this bias, there was a space for registration of comments (free from suggestions) that served for adjusting the interventions.

During the development of nursing diagnosis and intervention statements, there was no need to create any additional term other than those already included in the ICNP® 2017. The suggestions derived from the present study are in accordance with a study in which, throughout the updates of ICNP® versions, was observed an increased number of pre-coordinated concepts (nursing diagnoses/outcomes and interventions) and a decreased percentage participation of primitive concepts inserted in the Seven Axes Model.[24] This demonstrates the ICNP® currently maintains a set of sufficiently broad terms for the development of nursing statements in different scenarios and with a diverse clientele.

After the validated and suggested modifications, was proposed the ICNP® terminology subset for patients with cancer-associated venous thromboembolism. It contained 31 nursing diagnoses, of which 27 were already included as pre-coordinated concepts of the ICNP® and four suggestions of insertion, namely: Unilateral peripheral edema; Chronic

peripheral edema; Low blood oxygen saturation; and Low knowledge of treatment regime.

When organizing the nursing diagnoses by Wanda Horta's BHN theory, it was found that 18 BHN of the psychobiological and psychosocial categories were contemplated. Eleven were psychobiological needs and seven were psychosocial needs. The most affected needs were of psychobiological level (61%), as follows: vascular regulation, pain perception, oxygenation and cutaneous/mucosal integrity/physical integrity, and these data are in line with another study in which were identified the main affected basic human needs.[25]

The contemplated BHNs demonstrate that nursing care for patients with cancer-associated venous thromboembolism must cover individuals in their entirety. The biological repercussions of the pathology should be identified, as well as the family and social repercussions. Given the aforementioned facts, the material is expected to facilitate nurses' clinical reasoning and decision making.

The following limitations were found while conducting this study: the scarce use of studies with high level of scientific evidence and of studies specifically on nursing, and the group validation of nursing interventions for each diagnosis.

Revalidation of the ICNP® terminology subset is suggested after the experts' changes. The clinical validation of nursing diagnoses and interventions is also suggested, as well as submission of the five developed diagnoses to the International Council of Nurses.

Conclusion

The purpose of this study was reached from the development of the subset of nursing diagnosis, outcomes and interventions statements, which can serve as an easy-access reference for nurses at their point of care. They may develop individualized care plans and thus, offer a more reflexive, evidence-based practice to patients with cancer-associated venous thromboembolism. From the use of this subset of nursing diagnosis, outcomes and interventions statements, it is expected that nurses can develop individualized care plans by optimizing the available time to patients during care, offering an evidence-based practice to patients with cancer-associated venous thromboembolism, and increasing the visibility of nurses' work process before the health team.

Collaborations

Vidigal PD, Garcia TR, Santos MLSC, Camacho ACLF, Souto MD, Borges GG and Fuly PS declare that they contributed to the study design, data analysis and interpretation, article writing, critical review of intellectual content and final approval of the version to be published.

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