Specialized nursing terminology for people with diabetic foot ulcers

Terminologia especializada de enfermagem para a pessoa com úlcera do pé diabético

Terminología especializada en enfermería para personas con úlcera de pie diabético

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Abstract

Objective: To build a specialized nursing terminology for people with diabetic foot ulcers in Primary Health Care.

Methods: This is methodological research with quantitative approach, guided by guidelines for elaborating the International Classification for Nursing Practice terminology subsets. A terminology was elaborated from the terms collected in 62 scientific articles and five official documents, by means of a computational tool, normalized and mapped with the proposed international classification.

Results: After collecting 12,696 terms, 308 were considered relevant for people with diabetic foot ulcers. Of these, 182 were listed and 126 were unlisted in the classification used. The terms listed showed prevalence in axis Focus (46%), followed by Action (19%), Location (12%), Means (11%), Judgment (5%), Time (5%) and Client (2%). Among the unlisted terms, 48% were classified as more restricted, 46% were considered more comprehensive and 6% did not agree with any primitive term of the International Classification for Nursing Practice 2019/2020.

Conclusion: Specialized nursing terms constituted in this study will contribute to building the International Classification for Nursing Practice terminology subsets for people with diabetic foot ulcers in Primary Health Care. Achieving the objective provides an advance in knowledge about classification, with the potential to foster information systems in Primary Health Care with a view to qualifying care for people with the chosen priority.

Resumo

Objetivo: Construir uma terminologia especializada de enfermagem para a pessoa com úlcera do pé diabético na Atenção Primária à Saúde.

Métodos: Pesquisa metodológica, abordagem quantitativa, orientada pelas diretrizes de elaboração de subconjuntos terminológicos da Classificação Internacional para a Prática de Enfermagem. A terminologia foi elaborada a partir dos termos coletados em 62 artigos científicos e cinco documentos oficiais, por meio de ferramenta computacional, normalizados e mapeados com a classificação internacional proposta.

Resultados: Após a coleta de 12.696 termos, 308 foram considerados relevantes para a pessoa com úlcera do pé diabético. Destes, 182 eram constantes e 126 não constantes na classificação utilizada. Os termos constantes apresentaram prevalência no eixo Foco (46%), seguido pelos eixos Ação (19%), Localização (12%), Meio (11%), Julgamento (5%), Tempo (5%) e Cliente (2%). Dentre os termos não constantes, 48% foram

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classificados como mais restritos, 46% considerados mais abrangentes e 6% não apresentaram concordância com nenhum termo primitivo da Classificação Internacional para a Prática de Enfermagem versão 2019/2020.

Conclusão: Os termos especializados de enfermagem constituídos neste estudo contribuirão na construção do subconjunto terminológico da Classificação Internacional para a Prática de Enfermagem para a pessoa com úlcera do pé diabético na atenção primária à saúde. O alcance do objetivo proporciona o avanço no conhecimento sobre a classificação, com potencial para fomentar sistemas de informação na Atenção Primária à Saúde com vistas à qualificação do cuidado a pessoas com a prioridade eleita.

Resumen

Objetivo: Construir una terminología especializada en enfermería para personas con úlcera de pie diabético.

Métodos: Investigación metodológica, enfoque cuantitativo, orientada por las directivas de elaboración de subconjuntos terminológicos de la Clasificación Internacional para la Práctica de Enfermería. La terminología se ha elaborado a partir de los términos recopilados en 62 artículos científicos y en cinco documentos oficiales, por medio de herramienta informática, normalizados y mapeados con la clasificación internacional propuesta.

Resultados: Después de la recopilación de 12.696 términos, 308 fueron considerados relevantes para personas con úlcera de pie diabético. De ellos, 182 eran constantes y 126 no constantes en la clasificación utilizada. Los términos constantes presentaron prevalencia en el eje Enfoque (46 %), seguido por los ejes Acción (19 %), Ubicación (12 %), Medio (11 %), Juicio (5 %), Tiempo (5 %) y Cliente (2 %). Entre los términos no constantes, el 48 % fue clasificado como más restringido, el 46 % considerado más abarcador y el 6 % no presentó concordancia con ningún término primitivo de la Clasificación Internacional para la Práctica de Enfermería versión 2019/2020.

Conclusión: Los términos especializados en enfermería constituidos en este estudio contribuirán para la construcción del subconjunto terminológico de la Clasificación Internacional para la Práctica de Enfermería para personas con úlcera de pie diabético en la atención primaria de salud. El alcance del objetivo proporciona el avance para el conocimiento sobre la clasificación, con potencial para fomentar sistemas de información en la Atención Primaria de la Salud con el objetivo de cualificar el cuidado de las personas con la prioridad seleccionada.

Introduction

Diabetes mellitus (DM) is a growing metabolic disease worldwide. Currently, the number of people with diabetes is projected to exceed 628.6 million in 2045.[1] Chronic complications such as ulcerations and amputations of the extremities, resulting from the worsening of a diabetic foot (DF), have seriousness and socioeconomic impact,[2,3] requiring adequate screening, stratification and treatment,[4] as they affect people's quality of life, their emotions, the social environment and other aspects of health.[5]

In Primary Health Care (PHC), monitoring of ulcer occurrence time, information on blood glucose test results and lack of guidance on foot care were associated with the occurrence of lower limb amputations.[6] In this scenario, nurses need to put into practice Resolution 358/2009,[7] which provides for the Systematization of Nursing Care (SNC) and utilization of the nursing process in environments where nursing care takes place. Therefore, the use of a standardized language for people with diabetic foot ulcer (DFU) in PHC is necessary to identify and document standards of care with a view to qualifying care.[8]

In several countries, there is a possible knowledge gap, portrayed by means of low qualification of nurses in the care management of DF,[5,9-12] due to patients' understanding of a sick foot,[11] reduced appropriation of the ulcer concept and impact,[5] superficial actions that are little grounded in scientific evidence,[13] being essential to implement a systematized care.

The use of the International Classification for Nursing Practice (ICNP®) - standardized terminology that names, classifies, and links phenomena - describes essential elements of professional practice such as judgments about human and social needs (nursing diagnoses), nursing actions to positively influence such diagnoses (nursing interventions), and intervention-sensitive outcomes (nursing outcomes).[14]

Although there is a subset of ICNP® for people with diabetes in specialized care, this study is innovative and is justified by presenting people with DFU as a priority and PHC as a setting, enabling the building from identified terms, statements of diagnoses/outcomes and later nursing interventions related to the essential attributes of PHC: attention on first contact; longitudinality; completeness; coordination.[15] An expansion in response to the population's health needs can be made possible through access, sociocultural understanding, collective and participatory actions, networking and action on social determinants.[15-17]

The present study intends to contribute to building a specialized ICNP® terminology to be implemented in the PHC health information systems in the future, with a possible positive impact on the qualification of nursing care and aimed to build a specialized nursing terminology for people with DFU in PHC.

Methods

This is a methodological study with a quantitative approach, developed between 2019 and 2020, using the first, second and third steps of the guidelines for elaborating the ICNP® terminology subsets:[18] 1) Identification of nursing terms for the care of people with DFU; 2) Normalization of terms; 3) Cross-mapping of terms found with ICNP® 2019/2020 primitive terms.

To carry out the first step of this study, an integrative literature review was carried out, using the PICO[19] strategy with the following research question: What empirical evidence is available in the literature about nursing care for people with DFU? In this context, the "P" represents people with DFU, "I" stands for nursing care, "C" stands for the comparison between people who receive and who do not receive adequate nursing care, and "O" stands for the outcome of nursing care.

To answer the question, a review was performed in the Medical Literature Analysis and Retrieval System Online (MEDLINE), Latin American and Caribbean Literature on Health Sciences Information (LILACS), and Cumulative Index to Nursing and Allied Health Literature (CINAHL) databases. For the MEDLINE search, the following combinations of health descriptors were used with the use of Boolean operators: ((Diabetic foot[mj] OR diabetic foot ulcer*[tiab] OR diabetic foot [tiab] OR foot ulcer*[tiab]) AND (Nursing [mh] OR Nursing Care [mh] OR Nurses [mh] OR nurs* [tiab] OR diagnos*[ti])) AND (English [lang] OR Portuguese [lang] OR Spanish [lang]), and 364 articles were found.

In VHL/LILACS, the combination *tw:* ("Diabetic foot" OR diabetic foot ulcer* OR *"ulcera do pie diabetico"* OR *"ulcera diabetica do pe"* OR *"ulcera del pie diabetico"* OR *"ulcera diabética del pie")* AND (Nursing OR "Nursing Care" OR Nurses OR nurs* OR diagnos* OR *enfermagem* OR *enfermeir** OR *enfermer*)* AND (instance:"regional") AND (db:("LILACS") AND year_cluster:("2016" OR "2015" OR "2017" OR "2018" OR "2019")) was used, and 83 articles were found. In CINAHL, the combination ((Diabetic foot OR diabetic foot ulcer* OR foot ulcer*) AND (Nursing OR nurse* OR diagnos*)) was used, finding 113 articles.

Publications in the time frame from 2015 to 2019, in Portuguese, English or Spanish, compliance with the theme of nursing care for people with DFU were included. Articles not available in full and those repeated in the databases were excluded. The final sample consisted of 62 articles. Five official documents were also used, two from the Ministry of Health of Brazil,[2,20] one from Portugal,[21] one from Peru,[22] and one from the Brazilian Society of Diabetes.[4] These documents were chosen because they are reference guides for multidisciplinary health teams for the care of people with diabetes and/or DF in the different care settings of the care network, and may also suggest actions not developed in the Brazilian reality, in addition to being the publications latest from these countries.

After normalizing the terms, the third step consisted of cross-mapping the terms from the literature and the terms listed in the ICNP® 2019/2020.

In step 1, the publications were submitted to the adaptation process with removal of sections with low potential for relevant terms, such as titles, authors, acknowledgments, abstracts, methodology, references, footnotes and information about the authors. The articles in English and Spanish were fully translated into Portuguese by a proficient translator, for subsequent unification to articles in Portuguese, fulfilling the grouping of publications in a single Word® file and subsequent conversion to the portable document format (Portable Document Format – PDF).

The terms were extracted using a computational tool called Poronto,[23] a list of terms was processed

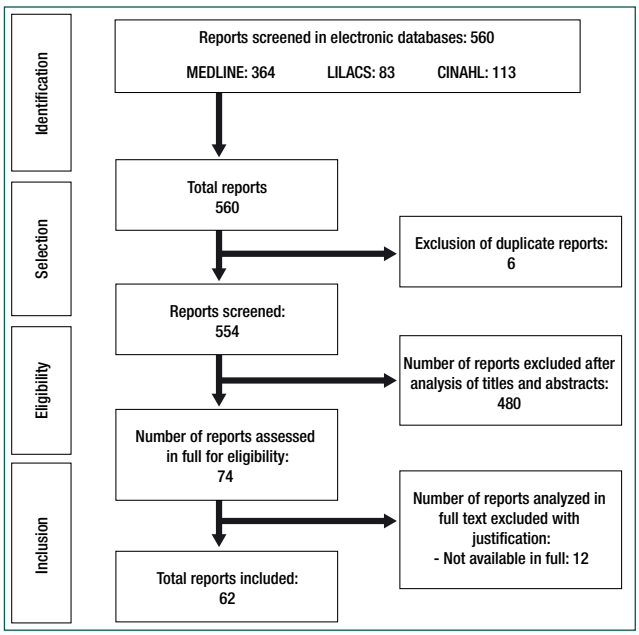

Figure 1. Search flow and selection of articles about nursing care for people with diabetic foot ulcers, published in journals indexed in the MEDLINE, LILACS and CINAHL databases

in Excel® according to occurrence. In step 2, terms were arranged in alphabetical order for better visualization, followed by normalization with standardization of inflections of gender, number, degree of nouns and adjectives, as well as verbal inflections. Duplicates were identified and removed.

In the analysis of step 3, a manual mapping of terms/concepts found in literature was performed, with the primitive terms/concepts of the ICNP® 7-Axis Model, paying attention to their definitions, in order to compare them and establish semantic equivalence and synonym exclusion, with a view to identifying similarity and enabling adaptations to the standardized terminology. In cases of semantic doubts, Portuguese dictionaries were used in comparison with the definitions listed in the ICNP®, in order to reduce difficulties and/or incurring errors in interpretation.

The International Organization for Standardization (ISO) 12300:2016 was used in this step,[24] which addresses the standards for mapping between terminological systems, providing subsidies for the creation of clinical terminologies or subsets for specific use. The mapping result generated a new Excel® worksheet with primitive concepts listed and not listed in ICNP® 2019/2020.

The unlisted terms were subjected to an analysis process regarding the similarity and scope in relation to the terms listed in the ICNP® 2019/2020, according to the criteria proposed by Leal:[25] the ICNP® term is similar to the identified term, when there is no spelling agreement, but its meaning is identical; the term is broader when it has a greater meaning than existing term in the ICNP®; the term is more restricted when it has a lesser meaning than the one existing in the ICNP®, and there is no agreement when the term is totally different from existing term in the ICNP®.

Thus, the terms were mapped in the 7-Axis Model, obtaining primitive concepts mapped from the nursing terminology to the selected clientele. The outcomes were descriptively analyzed regarding the absolute and relative frequency of terms, whether or not they were consistent in the 7-Axis Model, and duly presented in charts with the respective codes extracted from the ICNP® Browser, allowing for data verification and reliability.[26]

This study is part of a doctoral research that aims to build an ICNP® terminology subset for people with DFU in PHC. The Opinion of the Research Ethics Committee of the *Universidade do Estado do Rio de Janeiro* is number 2,152,962, CAAE (*Certificado de Apresentação para Apreciação Ética* - Certificate of Presentation for Ethical Consideration) 15357119.1.0000.5282.

Results

The extraction of terms found in the 62 articles and five official documents resulted in 12,696 terms, which underwent exclusion of repetitions, normalization and uniformization in relation to ICNP® 2019/2020. At the end of this procedure, 392 terms related to the person with DFU remained. The 392 identified terms were submitted to similarity and scope analysis, with the removal of synonyms, resulting in 308 primitive terms. Of these, 182 (59%) were classified as listed in the ICNP® 2019/2020, and 126 (41%) as unlisted.

Primitive terms listed in the study showed prevalence in axis Focus, representing 46% (n =

84), followed by axis Action 19% (n = 35), axis Location 12% (n = 22), axis Means 11% (n = 20), axis Judgment and Time 5% (n = 09) and axis Client 2% (n = 03). Among the unlisted terms, 48% (n = 61) were classified as more restricted in relation to ICNP® 2019/2020 terms, 46% (n = 59) were more comprehensive and 6% (n = 07) were not in agreement.

Charts 1 and 2 show the 20% of the most frequent terms of the total found, in each axis with their respective codes.

Chart 1. Terms identified as relevant for people with diabetic foot ulcers listed in the ICNP®

Axis	n*	Listed terms (n = 37)
Focus	(n = 17)	Ulcer (10020237), Caretaking (10004002), Diabetes (10005876), Complication (10025459), Wound (10021178), Injury (10010284), Infection (10010104), Knowledge (10011042), Pain (10013950), Integrity (10010416), Pressure (10015608), Need (10012495), Self Care (10017661), Hyperglycaemia (10027521), Behavior (10003217), Condition (10018793), Adherence (10030298)
Judgement	(n = 02)	Risk (10015007), Abnormal (10013269)
Action	(n = 07)	Evaluating (10007066), Treating (10020133), Controlling (10005142), Educating (10006564), Altering (10002185), Categorising (10004060), Performing (10014291)
Time	(n = 02)	Examination (10007241), Chronic (10004395)
Means	(n = 04)	Amputation (10002246), Surface Neurostimulating Device (10019188), Assessment Tool (10002832), Insulin (10010400)
Location	(n = 04)	Foot (10008155), Skin (10018239), Nail (10012392), Blood Vessel (10003374)
Client	(n = 01)	Patient (10014132)

*n - absolute number

Chart 2. Terms identified as relevant for people with diabetic foot ulcers unlisted in the ICNP®

Axis	n*	Unlisted terms (n = 25)
Focus	(n = 18)	Diabetic Foot, Neuropathy, Sensitivity, Pulses, Neurological, Deformity, Quality, Healing, Diagnosis, Glycemic, Screening, Mobility, Information, Hygiene, Changing, Familiar, Mental, Ischemia
Action	(n = 01)	Disseminating
Means	(n = 01)	Professional
Location	(n = 04)	Lower Limbs, Area, Fiber, Ankle
Client	(n = 01)	Friend

*n - absolute number

Discussion

The specialized nursing terminology for people with DFU in PHC built in this study contains 126 terms not included in the ICNP®. Although the terminology is not widely used in clinical practice, it is portrayed in the literature and in official documents, representing situations in nurses' daily lives. The terms most often relate to nurses' care for people with DFU in PHC, minimizing risks, increasing patients' knowledge of self-care through health education and early treatment of initial injuries,[27,28] demonstrating practical usability of standardized nursing terminology.

Some terms classified as not constant in the ICNP®, such as "DF", "neuropathy", "deformity", "sensitivity", demonstrate that its evolution, through the contribution of studies and research, has been fundamental for the standardization and expansion of a standardized language for nursing practice. Because people with DF, due to high plasma glucose, may present lesions in peripheral and vascular nerves, with loss of sensitivity, progressive osteoarticular and muscular deformity, with greater exposure to trauma, causing ulcers.[22,29]

Although the term "DF" presented the highest frequency in the study, it does not appear in the ICNP® as a composite term, with only the term "foot" being constant in the classification. DF is defined as "Infection, ulceration or destruction of tissues of the foot associated with neuropathy and/or peripheral artery disease in the lower extremity of a person with (a history of) diabetes mellitus".[2] In the ICNP®, the term "foot" is defined as "body region", and the term "diabetic foot ulcer", listed in the axis Focus, is defined as "Wound: Open sore or lesion, loss of deeper layer of tissue, circumscribed crater like lesion, decreased blood supply to the area, red granulation tissue, yellow fat necrosis, wound odour, peri-wound soreness, pain, sloughing of inflamed necrotic tissue associated with inflammatory infectious or malignant process".[14]

Although broadly defined, the term "diabetic foot ulcer" does not include the main causes of "DF" such as neurological abnormalities and peripheral vascular disease that have signs and symptoms and/or complications represented in terms "neuropathy", "cyanosis", "altered pulses", "hyperkeratosis", "anhidrosis", which are widely used in nurses' clinical practice, fundamental for the differential diag-

nosis of other ulcers, and for proper management by professionals.

Thus, it is necessary to assess the insertion of the term "DF" both for its completeness of definition and for an adequate classification according to its etiopathogenesis, in this classification system. Furthermore, it is worth mentioning that studies from several countries use the term "DF" with the same meaning as in Brazil,[5,9-11,30] thus not only having a national relevance and contribution to ICNP®, but also an international one, which it proposes.

The term "hyperglycemia", listed in the ICNP®, is a condition responsible for "complications" that will give rise to "amputations" present in people with diabetes,[6,9] and must be monitored through glycated hemoglobin test, as directed by the Brazilian Society of Diabetes.[4] A study with patients amputees due to diabetes complications showed that 70.8% did not have adequate follow-up and less than 32% received health education, not knowing how to express necessary foot care, developing harmful actions in self-care.[30] This reinforces, thus, verbs "to care", "to educate", "to assess", "to treat" and "to diagnose", identified in literature as relevant for amputation prevention.

Another identified term that deserves attention is "wound". In ICNP®, this is defined as tissue injury, usually associated with physical or mechanical trauma; crusting and tunneling in fabrics; serous, bloody, or purulent drainage. However, the term "injury" described in literature by nurses to translate wound is also listed in the ICNP®, and defined as "trauma", i.e., it has a very restricted definition in relation to "wound",[14] requiring a nurses' adequacy in the use of terms in their documentary records, as until now they have considered the terms to be similar,[12] differently from what is defined by ICNP®.

One of the main goals of nursing for people with DFU is self-care promotion.[2] This term, listed in the ICNP® axis Focus, is related to others identified, such as "knowledge", "nail", "feeding", "glycemia", "hygiene", "wound", "skin", demonstrating that the terms found in this study support the practice of nurses, being relevant for the planning of nursing diagnoses and interventions.

A limitation of this study lies in the fact that the terms have been explored in literature in the area, and focus specifically on people with DFU, and may not reveal the complexity of care for people with other complications caused by diabetes. The non-performance of validation by experts at this step can also generate some limitation. Another aspect refers to the use of articles and official documents in English and Spanish, which needed to go through a process of translation into Portuguese, and some evidence may have been lost, generating an impact on the assistance to the priority group of this study.

The International Council of Nurses (ICN) considers it relevant that nurses from all countries use the ICNP® to fulfill the objectives of having a relevant, practical and useful classification for clinical nursing care, making it possible to validate the terms included and/or identify new terms and concepts. The use of standardized language orders the terms or expressions, accepted by nurses, to describe the assessments, interventions and outcomes relevant to nursing care.

Conclusion

The existence of terms without agreement demonstrates that ICNP®, like all existing terminologies, needs to continually include new terms, requiring the maintenance of studies to update this classification. To this extent, therefore, the present study meets the proposed objective. Considering that many terms found are not included in the ICNP® 2019/2020 and that six, namely "bubble", "color", "hypercholesterolemia", "early", "antidepressant", "hypoglycemic agent", do not have any agreement with the classification, future evaluation must be considered for probable inclusion, since they have relevance for the care of people with DFU, as well as those cited that are unlisted in the classification. The specialized nursing terms constituted in this study will contribute to building an ICNP® terminology subset for people with DFU in PHC, with

the potential to foster information systems with a view to qualifying care for people with the chosen priority.

Collaborations

Armada e Silva HCD, Nóbrega MML, Lins SMSB, Fuly PSC and Acioli S contributed to project design, data analysis and interpretation, article writing, relevant critical review of intellectual content and approval of the final version to be published.

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