

Clinical indicators for knowledge assessment of venous ulcer patients

Indicadores clínicos para avaliar o conhecimento de pacientes com úlcera venosa
Indicadores clínicos para evaluar el conocimiento de pacientes con úlceras venosas

Viviane Maria Osmarin¹
Taline Bavaresco¹
Amália de Fátima Lucena¹
Isabel Cristina Echer¹

Keywords

Varicose ulcer; Nursing care; Standardized nursing terminology; Outcome assessment; Nursing process

Descritores

Úlcera varicosa; Cuidados de enfermagem; Terminologia padronizada em enfermagem; Avaliação de resultados; Processo de enfermagem

Descritores

Úlcera varicosa; Atención de enfermería; Terminología normalizada de enfermería; Evaluación de resultado; Proceso de enfermería

Submitted

April 24, 2018

Accepted

August 27, 2018

Corresponding author

Viviane Maria Osmarin
http://orcid.org/0000-0002-9110-0933
E-mail: vivianemariaosmarin@gmail.com

DOI

http://dx.doi.org/10.1590/1982-0194201800055



Abstract

Objectives: Select, develop and validate the definitions of the clinical indicators for the outcome "Knowledge: Chronic Disease Management" in the Nursing Outcomes Classification (NOC) for venous ulcer (VU) patients.

Methods: Validation study by expert consensus, developed at a university hospital in 2017. The study participants were 10 experts knowledgeable on the use of NOC and care for VU patients. The data were collected during a face-to-face meeting with the experts, who validated the indicators the researchers had previously selected. Then, the conceptual and operational definitions were developed for nine selected indicators, in line with the literature and the experts' clinical experience. Next, the experts answered a questionnaire in Google Forms to contribute to the refining of the indicators' conceptual and operational definitions and, finally, a new face-to-face meeting was held, when the experts validated the indicators and their definitions, considering an agreement level of 100%.

Results: The nine selected and validated indicators, with their conceptual and operational definitions, were: cause and contributing factors; benefits of disease management; signs and symptoms of chronic disease; strategies to prevent complications; strategies to balance activity and rest; strategies to manage pain; procedures involved in treatment regimen; personal responsibilities for treatment regimen and financial resources for assistance.

Conclusion: The selected clinical indicators validated by expert consensus can help nurses to plan interventions and assess outcomes on the patients' knowledge about care in VU treatment and prevention.

Resumo

Objetivos: Selecionar, desenvolver e validar as definições dos indicadores clínicos do resultado "Conhecimento: Controle da Doença Crônica" da *Nursing Outcomes Classification* (NOC) para pacientes com úlcera venosa (UVe).

Métodos: Estudo de validação por consenso de especialistas, realizado em um hospital universitário em 2017. Participaram do estudo 10 especialistas com experiência na utilização da NOC e no cuidado aos pacientes com UVe. A coleta de dados ocorreu por meio de encontro presencial com os especialistas, que validaram os indicadores previamente selecionados pelos pesquisadores. Posteriormente, foram desenvolvidas as definições conceituais e operacionais de nove indicadores selecionados, em consonância com a literatura e a experiência clínica dos especialistas. Na sequência, os especialistas responderam a um instrumento no *google form*, para contribuir com o refinamento das definições conceituais e operacionais dos indicadores e, por fim, houve novo encontro presencial, onde os especialistas validaram os indicadores e suas definições, considerando-se a concordância de 100%.

Resultados: Os nove indicadores selecionados e validados com suas definições conceituais e operacionais foram: causas e fatores contribuintes; benefícios do controle da doença; sinais e sintomas da doença crônica; estratégias de prevenção UVe de complicações; estratégias para equilibrar atividade e repouso; estratégias de controle da dor; procedimentos envolvidos no regime de tratamento; responsabilidades pessoais com o regime de tratamentos e recursos financeiros para assistência.

Conclusão: Os indicadores clínicos selecionados e validados, por consenso de especialistas, poderão auxiliar enfermeiros no planejamento de intervenções e na avaliação dos resultados sobre o conhecimento do paciente referente aos cuidados no tratamento e prevenção da UVe.

Resumen

Objetivo: Seleccionar, desarrollar y validar las definiciones de los indicadores clínicos del resultado "Conocimiento: Control de la Enfermedad Crónica" de *Nursing Outcomes Classification* (NOC) para pacientes con úlcera venosa (UVe).

Métodos: Estudio de validación por consenso de expertos, realizado en un hospital universitario en el año 2017. Participaron del estudio 10 especialistas con experiencia en el uso de NOC y en el cuidado de los pacientes con UVe. La recolección de datos ocurrió por medio de un encuentro presencial con los especialistas, los cuales validaron los indicadores previamente seleccionados por los investigadores. Posteriormente, se desarrollaron las definiciones conceptuales y operacionales de nueve indicadores seleccionados, en consonancia con la literatura y la experiencia clínica de los especialistas. Además, los expertos respondieron a un instrumento en *Google formulario*, para contribuir al refinamiento de las definiciones conceptuales y operacionales de los indicadores y, por último, hubo una nueva reunión presencial, donde los expertos validaron los indicadores y sus definiciones, considerándose la concordancia del 100%.

Resultados: Los nueve indicadores seleccionados y validados con sus definiciones conceptuales y operacionales fueron: causas y factores contribuyentes; beneficios del control de la enfermedad; signos y síntomas de la enfermedad crónica; estrategias de prevención UVe de complicaciones; estrategias para equilibrar actividad y reposo; estrategias de control del dolor; procedimientos implicados en el régimen de tratamiento; responsabilidades personales con el régimen de tratamientos y recursos financieros para asistencia.

Conclusión: Los indicadores clínicos seleccionados y validados por consenso de expertos, podrán ayudar a enfermeros en las intervenciones de planificación y evaluación de los resultados sobre el conocimiento del paciente referente al cuidado en el tratamiento y prevención de la UVe.

How to cite:

Osmarin VM, Bavaresco T, Lucena AF, Echer IC. Clinical indicators for knowledge assessment of venous ulcer patients. *Acta Paul Enferm.* 2018;31(4):391-8.

¹Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil.
Conflicts of interest: none to declare.

Introduction

Chronic venous insufficiency (CVI) is associated with impairment of the venous system of the lower limbs due to obstruction, valve incompetence and/or calf muscle failure.⁽¹⁾ The final stage of CVI is characterized by the appearance of the venous ulcer (VU), which affects approximately 70% to 90% of this population, with a prolonged healing process, reaching a relapse rate of 40% after healing.^(2,3)

Therapeutic management involves topical care of the lesion, compression therapy associated or not to invasive treatments for the control of venous hypertension, adoption of healthy life habits and control of chronic diseases such as diabetes and hypertension. The combination of care is intended to manage the underlying disease that triggers the injury, as well as to minimize the factors that hinder the tissue repair process. The difficulty in healing the lesion and the high relapse rates are related to the patient's lack of knowledge about his/her disease and therapeutic process though.^(4,5)

Therefore, it is believed that the patient's knowledge about the etiology, treatment, prevention of VU relapse turns him into an active participant in care.⁽⁵⁾ In this sense, the nurse's role as a patient educator is fundamental, as clarification about the illness and daily care, which are essential, provide favorable conditions for healing and prevention of VU.⁽⁶⁾

Therefore, as a starting point, it is necessary to evaluate the patients' knowledge about their chronic illness, in order to plan the necessary care guidelines. This evaluation becomes accurate when the nurse uses a standardized classification system, which measures the results or the effectiveness of the implemented actions, in order to consolidate evidence-based behaviors.⁽⁷⁾

One of the nursing classification systems that evaluates the response of nursing interventions and helps determine changes in care is the Nursing Outcomes Classification (NOC), which presents indicators and scales capable of assessing the patient's state at defined intervals according to the nurse's clinical judgment.⁽⁷⁾ Studies have shown that the use of this classification favors the evalu-

ation of different groups of patients, but no study was found that evaluates VU patients' knowledge on their disease.

The "Knowledge: Chronic Disease Management (1847)" outcome of the NOC is part of domain IV (Health Knowledge and Behavior) and is defined as the extent of understanding about a specific chronic disease, as well as its treatment and prevention of disease progression and complications. There are 30 indicators, which are measured on a five-point Likert scale, with five being considered the best score and one the worst score.⁽⁷⁾ Further definition is needed though as to which of these indicators is more applicable to VU patients. Thus, which are the indicators of the NOC outcome "Knowledge: Chronic Disease Management" that are best suited to assess the patient's knowledge about his or her chronic disease, and what are their conceptual and operational definitions?

The relevance of the study is in the selection of indicators applicable in the actual care scenario for VU patients, as well as in the development of their conceptual and operational definitions, permitting less subjectivity in the evaluation of the patients.

Therefore, this study aims to select, develop and validate the definitions of the clinical indicators of the Nursing Outcomes Classification (NOC) "Knowledge: Chronic Disease Management" outcome for VU patients.

Methods

A validation study was undertaken by expert consensus, which permits reaching a collective opinion or agreement on a phenomenon among the participants, being applicable in the refinement of standardized nursing languages.^(8,9-12) The study was carried out in the outpatient clinic of a high-complexity university hospital in the South of Brazil from March to November of 2017.

The convenience sample consisted of ten nurse specialists. The inclusion criteria adopted were clinical experience in care for VU patients and in the use of the NOC for at least one year, besides having participated in courses or congresses in the area of

training for chronic wound treatment. The number of specialists and the inclusion criteria were defined based on previous studies performed in different scenarios.^(8,9,11,12)

For the data collection, first, the specialists were invited to participate voluntarily in a face-to-face meeting, in which the proposal of the study and the indicators of the NOC outcome “Knowledge: Chronic Disease Management”, previously selected by the researchers, were presented. The researchers also possess clinical experience in care for VU patients and in NOC use. During this meeting, the experts could include or exclude clinical indicators of the outcome “Knowledge: Chronic Disease Management (1847)”. The pre-selection of the indicators took into account that there are 30 indicators for this outcome, and that applying all of them would be unfeasible in clinical practice. Therefore, the indicators were preselected that could best assess the knowledge of VU patients due to CVI, based on the literature, which were later validated by the experts. After selecting the indicators, their conceptual and operational definitions were elaborated, considering the magnitude on the five-point Likert scale for each selected indicator.⁽⁷⁾ To elaborate these definitions, the literature was consulted in the databases SciELO, Excerpta Medica Database (EMBASE) and *Literatura Latino Americana em Ciências da Saúde e do Caribe* (LILACS) and MEDLINE, using the descriptors: Nursing Care, Varicose Ulcer, Prevention & Control; Risk Factors. Full articles were considered, published between 2013 and 2017 in Portuguese, Spanish and English.

Next, the experts responded to a questionnaire formatted in Google Forms, which covered aspects related to their professional characteristics, as well as the conceptual and operational definitions developed. Through the alternatives (I fully agree, I partially agree, I neither disagree nor agree, I disagree, I strongly disagree), the relevance and clarity were assessed and corrections were suggested to refine the definitions.

Finally, there was an additional face-to-face meeting between the specialists and the researchers to reach a final consensus on the selection of the

indicators and the conceptual and operational definitions of each of the validated clinical indicators.

For the final consensus among the experts, a 100% agreement was considered.

The study complied with National Health Council Resolution 466 from 2012. All participants signed the Free and Informed Consent Form and the project received approval from the Ethics and Research Committee of the institution (Certificate of Presentation for Ethical Appreciation: 53362816.1.0000.5327/Opinion: 1.904.412).

Results

Ten nurse experts participated in the study, being four Ph.D.'s who work in nursing care, teaching and research in wound care and use nursing classifications, three wound specialists who provide care to VU patients with one, five and 18 years of experience, respectively. One M.Sc. active in research and teaching for five years, and two nursing graduates, one with five and one with 10 years of experience in the field of study. All the specialists had already participated in courses, congresses and training in the area of chronic wound treatment.

The outcome Knowledge: Chronic Disease Management (1847) has 30 indicators, nine of which were pre-selected by the researchers and later validated by expert consensus. For all of them, conceptual and operational definitions were elaborated, which were also validated by consensus. These outcomes are presented in chart 1.

It is highlighted that the outcome “Chronic Disease Management (1847)” has 21 other indicators, namely “Correct use of the prescribed medication”, “Medication therapeutic effects”, “Medication side effects”, “Medication adverse effects”, “Potential medication interactions”, “Usual course of disease”, “Signs and symptoms of disease progression”, “Signs and symptoms of complications”, “Actions to take in an emergency”, “Strategies to cope with adverse effects of disease”, “Available treatment options”, “Reputable sources of chronic disease information related to disease”, “When to obtain assistance from a health professional”, “Available

Chart 1. Indicators, conceptual and operational definitions and magnitude of operational definition of outcome “Knowledge: Chronic Disease Management (1847)” in the Nursing Outcomes Classification”

Indicator, numerical code and conceptual definition	Operational definition of indicator	Magnitude on Likert scale for application of indicator
Cause and contributing factors (184701): Patient knows the causes and factors that contribute to the development and relapse of VU.	Ask the patient if he knows the causes and factors contributing to the development and relapse of VU. The patient is expected to answer: - Report genetic factors, overweight, multiple pregnancies, female sex, decompensated chronic conditions; - Be a smoker; - Suffer from diseases with circulatory problems; - Present failure of the calf muscle due to age and sedentariness; Include: not using compression therapy after healing / not performing skin hydration and avoiding traumas / not performing ankle flexion and extension exercises / not raising lower limbs - Not performing compression therapy, skin hydration, lower limb raising, isometric lower limb exercises. Include: not using compression therapy after healing / not performing skin hydration and avoiding traumas / not performing ankle flexion and extension exercises / not raising lower limbs Include: not using compression therapy after healing / not performing skin hydration and avoiding traumas / not performing ankle flexion and extension exercises / not raising lower limbs	1. Patient is unable to report the causes and factors contributing to the development and relapse of VU; 2. Patient reports one cause and/or factor contributing to the development and relapse of VU; 3. Patient reports two causes and/or factors contributing to the development and relapse of VU; 4. Patient reports three causes contributing to the development and relapse of VU; 5. Patient reports more than three causes and/or factors contributing to the development and relapse of VU and describes them properly.
Benefits of disease management (184703) Patient knows the benefits of chronic disease – CVI management in his daily and social life.	Ask the patient if he knows the benefits of CVI management. The patient is expected to answer: - Perform self-care without constraints; - Perform habitual and social activities; - Walk unrestrictedly; - Achieve wound healing and prevent relapse; - Reduce pain; - Prevent circulatory complications such as thrombosis.	1. Patient is unable to report the benefits of CVI management; 2. Patient reports one benefit of CVI control; 3. Patient reports two benefits of CVI control 4. Patient reports three benefits of CVI control; 5. Patient reports more than three benefits of CVI control and describes them properly.
Signs and symptoms of chronic disease (184704): Patient knows the signs and/or symptoms of CVI.	Ask the patient if he knows the signs and symptoms of CVI. The patient is expected to answer: - Present varicose veins; telangiectasia; edema; hyperpigmentation; eczema; venous ulcer; - Feeling pain in lower limbs: feeling of fatigue and weight in the lower limbs; pruritus and heat in the lower limbs.	1. Patient does not know any sign and/or symptom of CVI; 2. Patient knows at least one sign and/or symptom of CVI; 3. Patient knows two signs and/or symptoms of CVI; 4. Patient knows three signs and/or symptoms of CVI; 5. Patient knows more than three signs and/or symptom of CVI and describes them properly.
Strategies to prevent complications (184707): Patient knows the care to prevent the complications of CVI, VU and relapse.	Ask the patient if he knows the strategies to prevent complications of CVI, VU and relapse. The patient is expected to answer: - Weight management; - Avoid smoking; - Manage other chronic conditions; - Appropriate fluid volume intake; - Skin hydration in lower limbs; - Protect feet and limbs to avoid lesions; - Rest and raise the lower limbs; - Use indicated compression therapy with periodical replacements; - Follow-up with health professional; - Perform isometric exercises of the lower limbs; - Walk periodically.	1. Patient does not know the strategies to prevent complications of CVI, VU and relapse; 2. Patient mentions knowing one strategy to prevent complications of CVI, VU and relapse; 3. Patient mentions knowing one strategy to prevent complications of CVI, VU and relapse; 4. Patient knows three strategies to prevent complications of CVI, VU and relapse; 5. Patient clearly describes and knows more than three strategies to prevent the complications of CVI, VU and relapse;
Strategies to balance activity and rest (184708): Patient knows the strategies to balance activity and rest in CVI management.	Ask the patient if he knows the strategies to balance activity and rest in CVI control. The patient is expected to answer: - Perform isometric exercises of the lower limbs; - Walk regularly using compression therapy as indicated; - Raise lower limbs above the level of the heart; - Mix physical activities with rest; - Avoid long periods sitting or standing..	1. Patient does not know the strategies to balance activity and rest in CVI control; 2. Patient knows one strategy to balance activity and rest in CVI control; 3. Patient knows two strategies to balance activity and rest in CVI control; 4. Patient knows three strategies to balance activity and rest in CVI control; 5. Patient knows more than three strategies to balance activity and rest in CVI control and describes them properly.
Strategies to manage pain (184709): Patient knows pharmacological and non-pharmacological actions for pain management.	Ask the patient if he knows the pain management strategies. The patient is expected to answer: - Follow analgesic therapeutic plan; - Use music therapy and relaxation; - Perform effective distraction technique; - Provide a calm environment; - Perform breathing exercises; - Perform massage, movements and stretching of the limb; - Raise lower limbs; - Take a comfortable position; - Maintain the dressing occluded using anti-adhesive and moist material on the VU.	1. Patient does not know pain management strategies; 2. Patient knows and describes one pain management strategy; 3. Patient knows and describes two pain management strategies; 4. Patient knows and describes three pain management strategies; 5. Patient knows and properly describes more than three pain management strategies;

Continue...

Continuation.

Indicator, numerical code and conceptual definition	Operational definition of indicator	Magnitude on Likert scale for application of indicator
Procedures involved in treatment regimen (184717): Patient knows the procedures involved in the treatment regimen for CVI and VU.	Ask the patient if he knows the procedures involved in his treatment regimen for CVI and VU. The patient is expected to answer: - Use compression therapy daily and correctly with periodical replacements; - Perform programmed walks and exercises to strengthen the calf muscle; - Raise the lower limbs regularly; - Avoid smoking; - Manage one's weight through appropriate diet and hydration; - Manage chronic conditions such as hypertension and diabetes; - Perform hydration and protective care of the lower limbs; - Perform care for VU dressing and according to the health team's instructions; - Comply with the medication regimen; - Follow-up with a health professional.	1. Patient does not know the procedures involved in the treatment regimen for CVI and VU; 2. Patient knows one procedure involved in the treatment regimen for CVI and VU; 3. Patient knows two procedures involved in the treatment regimen for CVI and VU; 4. Patient knows three procedures involved in the treatment regimen for CVI and VU; 5. Patient knows more than three procedures involved in the treatment regimen for CVI and VU and describes them properly.
Personal responsibilities for treatment regimen (184718): Patient knows his responsibilities in VU prevention and treatment.	Ask the patient if he knows his responsibilities to prevent and treat VU. The patient is expected to answer: - Comply with the medication regimen; - Attend the consultations with health professionals; - Perform care for CVI and/or VU prevention and treatment in accordance with health professionals' advice; - Comply with lifestyle changes as recommended; - Seek resources for his treatment.	1. Patient does not know what he has to do and which are his responsibilities to prevent and treat VU; 2. Patient knows at least one responsibility to prevent and treat VU; 3. Patient knows two responsibilities to prevent and treat VU; 4. Patient knows three responsibilities to prevent and treat VU; 5. Patient knows more than three responsibilities to prevent and treat VU and describes them properly.
Financial resources for assistance (184725): Patient knows how to seek and which are the resources for assistance in CVI and/or VU prevention and treatment.	Ask the patient if he knows how to seek and which resources are necessary for CVI and/or VU prevention and treatment. The patient is expected to answer: - Replace elastic stockings and/or compression bandages periodically; - Purchase materials for dressing and skin hydration, - Use appropriate and comfortable pants; - Seek resources for healthy diet; - Purchase medication according to doctor's prescription; - Get transportation to health services; - Have an available companion with resources for his/her food and transportation needs; - Seek social support for CVI and/or VU prevention and treatment: health service, public defense office; - Seek personal and Family support for the prevention and treatment of CVI and/or VU.	1. Patient does not know social and personal resources for CVI and/or VU prevention and treatment; 2. Patient knows and seeks, but is unable to get social and personal resources for CVI and/or VU prevention and treatment; 3. Patient knows, seeks and partially manages to get social and personal resources for CVI and/or VU prevention and treatment assistance; 4. Patient knows, seeks and manages to get most social and personal resources for CVI and/or VU prevention and treatment assistance; 5. Patient knows, seeks and manages to get social and personal resources for CVI and/or VU prevention and treatment assistance.

CVI – chronic venous insufficiency, VU – venous ulcer, SAH – systemic arterial hypertension

community resources”, “Cultural influences on compliance to treatment regimen”, “Importance of compliance with treatment regimen”, “Prescribed diet”, “Strategies for tobacco cessation”, “Available support groups”, “Recommended immunizations” and “Required laboratory tests”. These indicators were not selected for application in clinical practice because, according to the specialists’ expertise and the literature in the area, they would not be the most appropriate for the study population.

Discussion

The limitation of the study is related to the fact that the specialists were selected from a single institution, although the criteria to define the selection and achieve the study objective were rigorously applied.

The results obtained in this study can contribute to the use of a standardized nursing language, reducing the subjectivity in the evaluation of the VU patients’ knowledge on their disease. In addition, they will guide the nurse in the planning of the interventions, which will be based on individual needs.

The identification of individual needs should include the evaluation of the patient’s level of knowledge about his/her chronic illness, so that the teaching and learning process is truly effective.⁽¹³⁾ Thus, validated clinical indicators will ensure the identification of the patient’s baseline level of knowledge and subsequent follow-up by the nursing professional, with the possibility of demonstrating an evolution according to the suitability of the implemented nursing interventions.

The validated clinical indicator “Cause and contributing factors for the development of chronic

disease (184701)” is related to internal and external factors that favor the development of CVI and/or VU such as hereditariness, decompensated chronic diseases, age, number of pregnancies, standing or sitting for long periods and lower limb traumas.⁽¹⁻²²⁾

Another validated clinical indicator is “Signs and Symptoms of Chronic Disease (184704)”, which assesses whether the patient identifies changes in the lower limbs. The recognition of signs and symptoms is relevant for the patient to seek help from a health professional in order to prevent complications such as dilated veins, edema, cellulitis, leg pain, hyperpigmented skin, dermatitis, lipodermatosclerosis and the final stage of CVI, which is VU.⁽¹⁾

The management of venous hypertension and VU care are essential for therapeutic success and require daily and quality actions performed by the patient. These actions include the use of compression therapy and its periodic replacement, the application of dressings according to specific guidelines, the management of chronic diseases such as hypertension and diabetes to re-establish the circulation and wound healing. Based on these data, the indicator “Procedures involved in treatment regimen (184717)” was validated. In addition to these actions, studies point to the need for weight control, proper diet and hydration, a healthy lifestyle, as well as the follow-up by trained health professionals. This care can be evaluated in the validated indicator “Strategies to prevent complications (184707)”.^(16,23)

Research indicates that specific care is needed in the treatment of VU to enhance venous return and re-establish effective circulation, which includes compression therapy, walking, regular calf exercises and lower limb elevation.^(17,18) The patients’ knowledge on these actions is necessary, as it facilitates the understanding and development of this care. To account for these aspects, the indicator “Strategies to balance activity and rest (184708)” was selected and validated.

The VU and CVI can trigger pain, so the indicator “Strategies to manage pain (184709)” becomes necessary to evaluate the patient’s knowledge on the actions practiced to reduce this discomfort, in

search of a better quality of life. A Canadian study monitored pain in the healing process of patients with venous or mixed ulcers, and found that 82% of participants reported pain ranging from moderate to severe but without medication. Thus, medical follow-up with an analgesic regimen would facilitate pain control.⁽¹⁹⁾ Nevertheless, it should be highlighted that non-pharmacological actions, such as music therapy, relaxation and breathing, also support pain management.

The clinical indicator “Financial resources for assistance (184725)” collaborates to evaluate the knowledge on the acquisition of resources in the control of CVI and in the healing of VU. A Brazilian study involving 51 patients with VU, 66.7% of whom were women, 58.8% lived in houses without basic sanitation network, 56.9% had never studied or had less than five years of study and 88.2% gained a family income of three minimum wages. It was also identified that 78.4% spent an average R\$ 150.00 per month on dressing materials and only 29.45% received material from the public service.⁽²⁰⁾ The use of medication, as well as material for dressings, transportation and food may interfere in the treatment when financial resources are limited or inaccessible. In these situations, knowing the benefits that public entities can offer will support the therapeutic follow-up without harm to the patient.

The indicator “Personal Responsibilities for Treatment Regimen (184718)” assesses the patient’s responsibility for the treatment. The daily, continuous follow-up and educational guidelines of the professionals result in independent patients who are knowledgeable on the necessary care for healing and prevention of relapse.⁽²¹⁾

The patients’ quality of life is also affected by VU, due to the chronic healing process and the consequent physical and social restrictions arising from the disease process.⁽²²⁾ Thus, the indicator “Benefits of disease management (184703)” helps the patient to identify the gains from following the therapeutic regimen and taking control over their treatment and prevention of VU.

Studies indicate that the effective management of chronic disease, control of risk factors, and aware-

ness of prevention are associated with the patients' knowledge and attitude to perform care in relation to their illness.^(24,25) In identifying the patients' knowledge needs about their illness, the nurse can develop intervention strategies that can help in the success of the therapeutic plan. Based on the validated clinical indicators, it can be inferred that the patients' knowledge on their illness can contribute to qualify the health care.

Conclusion

The expert validation of the clinical indicators of the NOC outcome "Knowledge: Chronic Disease Management (1847)" will aggregate scientific knowledge to nursing and can provide greater accuracy to clinical practice. The use of the NOC classification in the evaluation of knowledge on the treatment and prevention of VU allows nurses to measure the patients' progress and intervene in their health education process, favoring care. The use of validated indicators can help to determine how each of them will be evaluated in clinical practice, aiming for greater reliability in the applicability of the NOC, with less subjectivity in the understanding of their meanings.

Collaborations

Osmarin VM, Bavaresco T, Lucena AF and Echer IC contributed to the project design, data analysis and interpretation, writing of the article, relevant critical review of the intellectual content and approval of the final version for publication.

References

- Eberhardt RT, Raffetto JD. Chronic venous insufficiency. *Circulation*. 2014 Jul;130(4):333–46.
- Benevides JL, Coutinho JF, Pascoal LC, Joventino ES, Martins MC, Gubert FA, et al. Development and validation of educational technology for venous ulcer care. *Rev Esc Enferm USP*. 2016;50(2):309–16.
- Patel SK, Surowiec SM. Venous insufficiency. *StatPearls*. Treasure Island (FL): StatPearls Publishing; 2018.
- Santos SF, Camacho AC, Oliveira BR, Nogueira GA, Joaquim FL. Influence of venous ulcer in patients' quality of life: an integrative review. *J Nursing UFPE Online*. 2015;9(3):7710–22.
- Brown A. Self-care strategies to prevent venous leg ulceration recurrence. *Pract Nurs*. 2018;29(4):152–8.
- El-Sayed ZM. Impaired healing risk factors among venous leg ulcer patients: recommended protective measures. *J Nursing and Health Science*. 2016;5(3):43–52.
- Moorhead S, Johnson M, Maas M, Swanson E. [Nursing outcomes classification]. 5a ed. Rio de Janeiro: Elsevier; 2016. Portuguese.
- de Abreu Almeida M, Barragan da Silva M, Paulsen Panato B, de Oliveira Siqueira AP, Palma da Silva M, Engelman B, et al. Clinical indicators to monitor patients with risk for ineffective cerebral tissue perfusion. *Invest Educ Enferm*. 2015;33(1):155–63.
- Monteiro Mantovani V, Rodríguez Acelas AL, Lucena AF, de Abreu Almeida M, Paz da Silva Heldt E, Klockner Boaz S, et al. Nursing Outcomes for the Evaluation of Patients During Smoking Cessation. *Int J Nurs Knowl*. 2017;28(4):204–10.
- Canto DF, Almeida MA. Nursing outcomes for ineffective breathing patterns and impaired spontaneous ventilation in intensive care. *Rev Gaúcha Enferm*. 2013; 34(4):137–45.
- Almeida MA, Seganfredo DH, Barreto LN, Lucena AF. Validation of indicators of the nursing outcomes classification for hospitalized adults at risk of infection. *Texto Contexto Enferm*. 2014;23(2):309–17.
- Santos EC, Oliveira IC, Feijó AR. Validation of a nursing care protocol for patients undergoing palliative care. *Acta Paul Enferm*. 2016;29(4):363–73.
- Alvarenga SR, Carneiro CS, Santos VB, Moreira RS. Instructional instrument of the NOC outcomes: control knowledge of cardiac disease for patients with heart failure. *Rev Eletr Enf*. 2015;17(4):1–10.
- Gonzalez A. The Effect of a Patient education intervention on knowledge and venous ulcer recurrence: results of a prospective intervention and retrospective analysis. *J Wound Ostomy Continence Nurs*. 2017;63(6):16–28.
- Wellborn J, Moceri JT. The lived experiences of persons with chronic venous insufficiency and lower extremity ulcers. *J Wound Ostomy Continence Nurs*. 2014;41(2):122–6.
- Joaquim FL, Camacho AC, Silva RM, Leite BS, Queiroz RS, Assis CR. Impact of home visits on the functional capacity of patients with venous ulcers. *Rev Bras Enferm*. 2017;70(2):287–93.
- O'Brien J, Finlayson K, Kerr G, Edwards H. Evaluating the effectiveness of a self-management exercise intervention on wound healing, functional ability and health-related quality of life outcomes in adults with venous leg ulcers: a randomised controlled trial. *Int Wound J*. 2017;14(1):130–7.
- Fariñas RC, Valenzuela AR, Clemente PI, Castro OG. [Clinical practice guide: Consensus on vascular ulcers and diabetic foot]. 2a ed. Sevilla: Asociación Española de Enfermería Vasculare y Heridas; 2014. Spanish.
- Vandenkerkhof EG, Hopman WM, Carley ME, Kuhnke JL, Harrison MB. Leg ulcer nursing care in the community: a prospective cohort study of the symptom of pain. *BMC Nurs*. 2013 ;12(3):3.
- Brito CK, Nottingham IC, Victor JF, Feitoza SM, Silva MG, Amaral HE. [Venous ulcer: clinical assessment, guidelines and dressing care]. *Rev Rede Enferm Nordeste*. 2013;14(3):470–80. Portuguese.
- Lima LV, Sousa AT, Costa IC, Silva V. [Knowledge of people with vasculogenic ulcers about preventing and caring for injuries]. *Rev Estima [Internet]*. 2013 [cited 2017 Nov 10]; 11(3). Available from: <https://www.revistaestima.com.br/index.php/estima/article/view/85>. Portuguese.

22. Jesus P, Brandão E, Silva C. Nursing care to clients with venous ulcers an integrative review of the literature. *Rev Pesq: Cuidado Fundamental Online*. 2015;7(2):2639–48.
23. Borges EL, Ferraz AF, Carvalho DV, de Matos SS, Lima VL. Prevention of varicose ulcer relapse: a cohort study. *Acta Paul Enferm*. 2016;29(1):9–16.
24. Gautam A, Bhatta DN, Aryal UR. Diabetes related health knowledge, attitude and practice among diabetic patients in Nepal. *BMC Endocr Disord*. 2015;15(1):25.
25. Moraes KL, Brasil VV, Oliveira GF, Cordeiro JA, Silva AM, Boaventura RP, et al. Functional health literacy and knowledge of renal patients on pre-dialytic treatment. *Rev Bras Enferm*. 2017;70(1):155–62.