







# Nursing interventions for people undergoing hemodialysis treatment: content validity

*Intervenções de enfermagem para pessoas em tratamento hemodialítico: validação de conteúdo*  
*Intervenciones de enfermería para personas en tratamiento de hemodiálisis: validación de contenido*

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**How to cite this article:** Almeida ARLP, Oliveira FA, Costa LEL, Alves MB, Sousa AR, Silva RS. Nursing interventions for people undergoing hemodialysis treatment: content validity. Rev. Eletr. Enferm. 2024;26:76073. <https://doi.org/10.5216/ree.v26.76073> English, Portuguese.

Extracted from the master's thesis: "Subconjunto terminológico ICNP<sup>®</sup> para pessoas com doença renal crônica em tratamento hemodialítico ancorado na teoria das transições", defended in 2022 in the Graduate Program in Nursing and Health, Universidade Federal da Bahia, Salvador, Bahia, Brazil.

Received: 6 May 2023  
Accepted: 26 May 2024  
Published online: 14 August 2024

## ABSTRACT

**Objective:** to validate nursing interventions for people with chronic kidney disease undergoing hemodialysis based on a cluster of nursing diagnoses/outcomes and based on the Transitions Theory. **Methods:** a methodological study of content validity of nursing interventions by experts, in which their pertinence and relevance were assessed using a Likert scale. The Content Validity Index (CVI) was calculated, considering CVI  $\geq 0.80$  acceptable. **Results:** 125 nursing interventions were identified, based on two Standardized Nursing Language systems. In the first round of validity, 104 statements achieved CVI  $\geq 0.80$ , five were eliminated (CVI  $< 0.70$ ) and 16 achieved CVI  $\geq 0.70$  and  $< 0.80$ , which were sent to the second round. Of these, 10 achieved CVI  $\geq 0.80$ , of which two were disbanded, and six were eliminated (CVI  $< 0.70$ ). **Conclusion:** a total of 116 nursing interventions was validated to care for people with chronic kidney disease undergoing hemodialysis, which represents a basis for evidence-based clinical practice.

**Descriptors:** Standardized Nursing Terminology; Renal Insufficiency, Chronic; Nursing Process.

## RESUMO

**Objetivo:** validar intervenções de enfermagem para pessoas com doença renal crônica em tratamento hemodialítico, a partir de um cluster de diagnósticos/resultados de enfermagem e com base na Teoria das Transições. **Métodos:** estudo metodológico de validação de conteúdo de intervenções de enfermagem por especialistas, no qual foram avaliadas a pertinência e relevância das mesmas por meio de uma escala tipo Likert. Foi calculado o Índice de Validade de Conteúdo (IVC), considerando aceitável IVC  $\geq 0,80$ . **Resultados:** foram identificadas 125 intervenções de enfermagem, com base em dois sistemas de Linguagem Padronizada da Enfermagem. Na primeira rodada de validação, 104 enunciados alcançaram IVC  $\geq 0,80$ ; cinco foram eliminados (IVC  $< 0,70$ ) e 16 atingiram IVC  $\geq 0,70$  e  $< 0,80$ , os quais foram enviados para a segunda rodada. Destes, 10 alcançaram IVC  $\geq 0,80$ , dos quais dois foram desmembrados, e seis foram eliminadas (IVC  $< 0,70$ ). **Conclusão:** foram validadas 116 intervenções de enfermagem para o atendimento a pessoas com doença renal crônica em tratamento hemodialítico, as quais representam uma base para a prática clínica baseada em evidência.

**Descritores:** Terminologia Padronizada em Enfermagem; Insuficiência Renal Crônica; Processo de Enfermagem.

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## RESUMEN

**Objetivo:** validar intervenciones de enfermería para personas con enfermedad renal crónica sometidas a hemodiálisis a partir de un conjunto de diagnósticos/resultados de enfermería y basados en la Teoría de las Transiciones. **Métodos:** estudio metodológico de validación de contenido de intervenciones de enfermería por parte de especialistas, en el que se evaluó su pertinencia y relevancia mediante una escala Likert. Se calculó el Índice de Validez de Contenido (CVI), considerando aceptable un CVI  $\geq 0,80$ . **Resultados:** se identificaron 125 intervenciones de enfermería basadas en dos sistemas de Lenguaje Estandarizado de Enfermería. En la primera ronda de validación, 104 declaraciones alcanzaron CVI  $\geq 0,80$ , cinco fueron eliminadas (CVI  $< 0,70$ ) y 16 alcanzaron CVI  $\geq 0,70$  y  $< 0,80$ , las cuales fueron enviadas a la segunda ronda. De ellos, 10 alcanzaron un CVI  $\geq 0,80$ , de los cuales dos fueron desmembrados y seis fueron eliminados (CVI  $< 0,70$ ). **Conclusión:** se validaron 116 intervenciones de enfermería para cuidar a personas con enfermedad renal crónica en hemodiálisis, las cuales representan una base para la práctica clínica basada en evidencia.

**Descriptor:** Terminología Normalizada de Enfermería; Insuficiencia Renal Crónica; Proceso de Enfermería.

## INTRODUCTION

Chronic kidney disease (CKD) is characterized by kidney damage that results in loss of kidney function. It occurs progressively and irreversibly, leading to these organs' inability to maintain a person's homeostasis<sup>(1)</sup>. To classify the disease into stages and, consequently, determine the type of treatment to be used, the glomerular filtration rate and albuminuria are observed<sup>(2)</sup>. In people with advanced disease, renal replacement therapy is recommended, with hemodialysis being the most commonly used, followed by peritoneal dialysis and kidney transplantation<sup>(3)</sup>.

When caring for people with chronic kidney disease (CKD), the role of nurses stands out as mediators of information about the disease and supporters in transitional processes and changes in a person's behavior, establishing a bond that allows an attentive look at the scenario and their needs<sup>(4)</sup>.

From CKD diagnosis, a person begins a health-disease transition process, which was understood by Meleis<sup>(5)</sup> as a change from one place, state, or condition to another, being able to refer to both the process and the result of person-environment interactions<sup>(6,7)</sup>. In this regard, nursing must seek to understand the behavior presented by a person with CKD, identify their needs, and determine nursing interventions (NIs) that can assist them in the process being experienced so that it is resolute and efficient, contributing to promoting self-care<sup>(4)</sup>.

Thus, the Nursing Process (NP), as a methodological resource, is an important tool that helps these professionals develop clinical and therapeutic reasoning; together with a Standardized Nursing Language System (SNLS), it favors the recording and continuity of care, the visibility of what is being practiced and provides scientificity to nursing actions/interventions<sup>(8)</sup>.

In this context, the Transitions Theory<sup>(5)</sup> presents concepts and assumptions that direct professionals'

gaze to each individual's individualized needs in the health/illness process, making it possible to establish nursing diagnoses (ND), outcomes, and interventions that meet the specificities of that person to whom the care will be provided<sup>(9)</sup>.

Research on the nursing process applied to care for people with CKD has focused especially on NDs, whether based on the NANDA International Taxonomy<sup>(10-13)</sup> or the International Classification for Nursing Practice (ICNP<sup>®</sup>)<sup>(14)</sup>, and Nursing Diagnoses, Outcomes and Interventions for people on peritoneal dialysis<sup>(15)</sup>.

Studies on NIs based on Standardized Language Systems and based on theoretical nursing frameworks aimed at people with CKD on hemodialysis represent an original approach.

Considering the complexity of the transition process experienced by people with CKD undergoing hemodialysis<sup>(16)</sup>, it is essential to select validated NIs that contribute to the resolution and/or minimization of complicating factors, enhancing those that facilitate the transition experience to guarantee a look at a person's diverse needs, understood as a biopsychosocial and spiritual being.

Considering the above, the present study aimed to validate NIs for people with chronic kidney disease undergoing hemodialysis based on a cluster of NDs/nursing outcomes and based on the Transitions Theory.

## METHODS

This is a methodological study, carried out from January to June 2022, based on a cluster of NDs/nursing outcomes, produced in previous research<sup>(17)</sup>, developed in a private nephrology clinic, in the state of Bahia, affiliated with the Brazilian Health System (In Portuguese, *Sistema Único de Saúde*).

This cluster involved the following NDs/nursing outcomes: Anemia; Anxiety; Maintaining a positive attitude; Fatigue; Recognizing personal physical limitations; Fear of death; Impaired adaptation; Fall; Effective arteriovenous fistula maturation; Ineffective fistula recovery; Insufficient liquid intake; Obtaining adequate sleep; Impaired sleep; Effective religious belief support; Willingness to abandon treatment; Limitation of arm movement [specify]; Limitation in work activity; Exhaustion of treatment; Knowledge of hemodialysis; Lack of knowledge of hemodialysis; Difficulty coping with the disease; Difficulty accepting treatment; Effective response to therapy; Positive family support; Family knowledge of disease; Effective social support<sup>(17)</sup>.

The present investigation covered two stages, namely:

1. Identification of statements of nursing actions/interventions; and
2. Content validity of these statements by experts.

### Identification of statements of nursing actions/interventions

To identify statements of nursing actions/interventions with potential use to assist people with CKD who present the NDs mentioned above, two of the SNLS most used in the Brazilian reality were used, such as the ICNP<sup>®(14)</sup> and the Nursing Interventions Classification (NIC)<sup>(18)</sup>.

In ICNP<sup>®</sup>, NIs are “actions practiced, supervised or prescribed by a nurse to improve or maintain the health of a person, group or population”<sup>(14)</sup>. In the structure of NIC<sup>(18)</sup>, intervention is a treatment initiated by a nurse, in response to an ND or carried out by nursing professionals in response to a treatment decision by another professional, and encompasses a list of activities that correspond to the actions to be developed<sup>(18)</sup>. In both cases, independent (implemented autonomously by nurses), interdependent (implemented in partnership with other professionals), and dependent (implemented upon decision by medical professionals) nursing actions are included.

In the present study, NIs in the context of the Nursing Process were considered to be actions planned and implemented by nursing professionals resulting from a therapeutic decision to achieve expected results in patients' health concerning certain NDs.

Based on a study<sup>(19)</sup> that compared the ICNP<sup>®(16)</sup>, and NIC<sup>(20)</sup> NIs, the applicable intervention statements for meeting the NDs of interest<sup>(17)</sup> were identified by two researchers and, subsequently, discussed during three meetings of the research group, in search of sup-

port for use by the target audience, through therapeutic reasoning based on the Transitions Theory<sup>(5)</sup>.

A total of 125 interventions was selected to meet the demands of empirically based NDs<sup>(17)</sup>, of which 104 were identified in ICNP<sup>®</sup>, based on pre-coordinated statements (molecular terms), and 21 in NIC, based on activities listed in different interventions.

### Content validity of NIs to address the cluster of NDs of interest in people with CKD undergoing hemodialysis therapy

NIs were organized based on three therapeutic nursing measures provided for in Transitions Theory:

1. Readiness assessment;
2. Preparing for transition; and
3. Role supplementation<sup>(5)</sup>, which supported the discussion of validated NI.

Data collection, during content validity, took place through technological mediation using Google Forms, in which a structure was developed to assess content related to clinical judgment between NDs<sup>(17)</sup> and NIs, considering their organization in light of Basic Theory<sup>(5)</sup>.

The form also provided a space for experts to present suggestions for improving the writing of NI statements, seeking to better adapt them to the context of care for people with chronic kidney disease.

Nurses who met the following inclusion criteria participated in the first round of content validity of interventions: clinical practice with at least specialization in nephrology and working in care for at least two years; professor or researcher who has developed (master's and/or doctoral degree) in nephrology and/or research with ICNP<sup>®</sup>.

These participants were identified using snowball sampling<sup>(20)</sup>, therefore configuring a non-probabilistic sample. Experts were identified based on an initial guest<sup>(21)</sup>, a nurse who works in a hemodialysis unit and who met the aforementioned criteria. This expert accepted the invitation and recommended new potential participants who were contacted via telephone or email, from January to March 2022, totaling 20 guests, to whom the Informed Consent Form and Google Form containing 125 statements of nursing actions/interventions were sent.

NI statements were assessed based on a Likert-type scale that included four answer options: a lot pertinent, corresponding to score = 1; very pertinent, score = 0.75; pertinent, score = 0.50; not very pertinent, score = 0.25; nothing pertinent, score = 0<sup>(22)</sup>.

To analyze content validity, the Content Validity Index (CVI) was used, which seeks to measure the proportion of agreement between experts according to what was presented in the answers referring to the instrument<sup>(23)</sup>.

NIs that achieved CVI scores  $\geq 0.80$  were considered pertinent and relevant<sup>(22)</sup>. Those who reached CVI between 0.70 and 0.80 were sent back to experts for a second round of validity between April and June 2022. Those with CVI  $< 0.69$  were considered non-validated nursing actions/interventions.

The present study was conducted in compliance with the guidelines and regulatory standards for studies with human beings, established in Resolutions 466/2012 and 510/2016 of the Brazilian National Health Council, and was assessed and approved by the *Universidade Estadual da Bahia* Research Ethics Committee, under Certificate of Presentation for Ethical Consideration (In Portuguese, *Certificado de Apresentação para Apreciação Ética* (CAAE)) 23968919.8.0000.0057.

## RESULTS

For the first stage of assessment, 20 experts were invited, 11 of whom answered the form. They were invited to participate in the second stage of assessment, and seven answered the invitation. Most experts were female (90.9%), aged between 30 and 37 years (63.7%). Approximately half (54.5%) held a master's degree, and 63.6% were employed in the private sector.

Regarding the context of experience with statements of NDs, outcomes, and interventions, 63.6% reported having experience in direct patient care, 54.5%, in teaching, and 36.4%, in research.

In the first round, of the 125 NI, 104 obtained a CVI score  $> 0.80$  and were considered validated; five were eliminated for having a CVI score  $< 0.69$ ; and 16 whose CVI scores remained between  $\geq 0.70$  and  $< 0.80$  were returned to experts for a new validity round. Of these, 10 obtained a CVI score  $\geq 0.80$  and were considered validated, and six of them were eliminated because they did not reach the minimum desired CVI score.

There were suggestions for changes to the statements of eight interventions to better adapt to the context of care for people with chronic kidney disease undergoing hemodialysis (**Table 1**).

The statements were organized according to the therapeutic nursing measures proposed in Transitions Theory<sup>(5)</sup>, and the new NIs, created based on experts' suggestions, are marked in bold (**Table 2**). The first therapeutic measure, Readiness Assessment, has 33 NI statements; the second, Preparing for transition, has 57 NI statements; and the third, Paper supplementation, includes 26 NI statements.

It is important to highlight that although the intervention to monitor wound healing [operative to create the arteriovenous fistula — AVF] and guide exercises for AVF maturation has been suggested and validated, this represents two distinct actions and is therefore counted as two interventions. The same occurred to “monitor signs and symptoms of infection and guide local hygiene care”.

The intervention “Monitor laboratory results for the presence or absence of bleeding” was complemented in its meaning in the analysis process, becoming “Monitor laboratory results for components that indicate the presence or absence of risk of bleeding”.

**Table 1.** Statements of nursing interventions before and after experts' suggestions and respective Content Validity Index, Brazil, 2022

| Nursing intervention statements submitted to the assessment | Statements of nursing interventions with indication of changes in wording by experts | CVI  |
|---|--|------|
| Monitor wound healing (10042936)                            | Monitor wound healing and guide exercises for AVF maturation                         | 1.00 |
| Monitor laboratory result (10032099)                        | Monitor laboratory results for the presence or absence of bleeding                   | 0.93 |
| Guidance on fall prevention (10040253)                      | Educate patients and families on fall prevention                                     | 0.91 |
| Monitor signs and symptoms of infection (10012203)          | Monitor signs and symptoms of infection and guide local hygiene care                 | 0.91 |
| Encourage positive affirmations (10024377)                  | Encourage positive affirmations and self-care to cope with the disease               | 0.91 |
| Advise on device security (10044944)                        | Provide guidance on vascular access device safety                                    | 0.89 |
| Ensure patient acceptance of treatment (5922 – NIC)         | Encourage patient acceptance of treatment  | 0.86 |
| Measure (or verify) fluid intake (10039245)                 | Monitor fluid intake   | 0.82 |

Note: CVI: Content Validity Index; AVF: arteriovenous fistula; NIC: Nursing Interventions Classification.

**Table 2.** Validated nursing interventions, distributed according to therapeutic nursing measures, in light of Transitions Theory, 2022

| Nursing interventions  |   |  |
|--|---|--|
| Readiness assessment   | Preparing for transition  | Paper supplementation  |
| <ul style="list-style-type: none"> <li>Monitor participation in fatigue-generating activities while awake;</li> <li>Monitor changes in sleep patterns;</li> <li><b>Monitor wound healing [operative to create the arteriovenous fistula - AVF]</b></li> <li><b>Guide exercises for Arteriovenous Fistula (AVF) maturation;</b></li> <li><b>Monitor fluid intake;</b></li> <li>Monitor weight;</li> <li>Monitor response to treatment;</li> <li><b>Monitor laboratory results for components that indicate the presence or absence of risk of bleeding;</b></li> <li>Monitor activity tolerance;</li> <li><b>Monitor signs and symptoms of infection;</b></li> <li><b>Guide local hygiene care;</b></li> <li>Obtain knowledge data about the therapeutic regimen;</li> <li>Obtain data on fluid intake;</li> <li>Obtain data on acceptance of health conditions;</li> <li>Obtain data on active range of motion;</li> <li>Obtain data on anxiety;</li> <li>Obtain data on attitude towards the disease;</li> <li>Obtain data on self-esteem;</li> <li>Obtain data on barriers to adherence;</li> <li>Obtain data on the psychological condition;</li> <li>Obtain data on social status;</li> <li>Obtain data on family knowledge of the disease;</li> <li>Obtain data on spiritual beliefs;</li> <li>Obtain data on coping;</li> <li>Obtain data on fatigue;</li> <li>Obtain wound data;</li> <li>Obtain data on fear of death;</li> <li>Obtain mobility data;</li> <li>Obtain sleep data;</li> <li>Obtain data on susceptibility to infection;</li> <li>Obtain data on tradition in the face of death;</li> <li>Identify family members' abilities to engage in patient care;</li> <li>Introduce yourself to the patient's treatment team and family.</li> </ul> | <ul style="list-style-type: none"> <li>Advise patient;</li> <li>Advise on hope;</li> <li>Advise on fears;</li> <li>Apply safety device;</li> <li>Support beliefs;</li> <li>Support family;</li> <li>Support family coping process;</li> <li>Support spiritual rites;</li> <li>Help the family to use the social support network;</li> <li>Help eliminate stressful situations before bedtime;</li> <li>Help the patient break down complex goals into small, manageable steps;</li> <li>Help the patient develop self-motivation and reinforcement;</li> <li>Assist patient and family in adapting the environment to accommodate desired activities;</li> <li>Create a care plan to encourage patient/family to assess appropriate levels of care in the most cost-efficient manner;</li> <li>Demonstrate relaxation technique;</li> <li>Forward to a social worker;</li> <li>Forward to a nutritionist;</li> <li>Refer to speech therapy service;</li> <li>Refer to occupational therapy;</li> <li><b>Encourage positive affirmations and self-care to cope with the disease;</b></li> <li>Encourage rest;</li> <li>Teach the patient to self-monitor signs and symptoms that indicate the need for medical treatment (e.g., fever, bleeding, clotted fistula, thrombophlebitis, and irregular pulse);</li> <li>Explain the hemodialysis procedure and its purpose;</li> <li>Facilitate understanding of medical aspects and patient's condition for family members;</li> <li>Facilitate access to treatment;</li> <li>Facilitate adherence to regimen;</li> <li>Facilitate the ability to communicate needs;</li> <li>Facilitate the ability to communicate feelings;</li> <li>Facilitate the ability to talk about the dying process;</li> <li>Advance (or promote) mobility;</li> <li>Provide family/significant others with information about the patient's progress as appropriate;</li> <li>Provide family members with crucial information about the patient's condition, according to the patient's preference;</li> <li>Provide information frequently to the family to help them identify limitations, progress, and implications for the patient's care;</li> <li>Advise the family about sleep;</li> <li>Advise families about hemotherapy;</li> <li><b>Educate patients and families on fall prevention;</b></li> <li>Provide guidance on self-care;</li> <li>Provide guidance on wound healing;</li> <li>Provide guidance on physical exercise;</li> <li>Provide guidance on fatigue;</li> <li>Provide guidance on hemodialysis;</li> <li>Advise on fluid intake;</li> <li><b>Provide guidance on vascular access device safety;</b></li> <li>Provide guidance on self-help services;</li> <li>Guidance on sleep;</li> <li>Provide guidance on walking technique;</li> <li>Provide guidance on risk reduction techniques;</li> <li>Guide relaxation techniques;</li> <li>Prevent infection;</li> <li>Promote acceptance of health conditions;</li> <li>Promote spiritual support;</li> <li>Promote family support;</li> <li>Promote social support;</li> <li>Promote effective coping;</li> <li>Protect religious beliefs;</li> <li>Provide emotional support;</li> <li>Administer medication and/or blood products.</li> </ul> | <ul style="list-style-type: none"> <li>Monitor patient;</li> <li>Support capacity to manage the scheme;</li> <li>Assess adherence to therapeutic regimen;</li> <li>Assess wound healing;</li> <li>Assess response to treatment;</li> <li>Assess psychosocial response to instruction on physical exercise;</li> <li>Assess psychosocial response to wound instruction;</li> <li>Assess satisfaction with health care;</li> <li>Assess response to treatment;</li> <li>Assess after a fall;</li> <li>Categorize surgical wounds;</li> <li>Collaborate with a social worker;</li> <li>Collaborate with family members in planning and implementing therapies and changes to patient's lifestyle;</li> <li>Collaborate with patients;</li> <li>Discuss lifestyle changes that may be necessary to prevent future complications and/or control the disease process;</li> <li>Agree on positive behavior;</li> <li><b>Encourage patient acceptance of treatment;</b></li> <li>Manage anxiety;</li> <li>Manage patient activity;</li> <li>Manage dehydration;</li> <li>Manage response to treatment, negative;</li> <li>Reinforce positive behavior;</li> <li>Change wound coverage (or dressing);</li> <li>Use social and family support systems to improve the effectiveness of lifestyle modification or healthy behavior;</li> <li>Verify the patient's ability to participate in specific activities;</li> <li>Guarantee (or ensure) continuity of care.</li> </ul> |

Note: In bold are the interventions that underwent changes in the wording due to experts' suggestions.

## DISCUSSION

The Nursing Process is a methodological tool that directs nurses' clinical reasoning, decision-making, and the organization and documentation of professional care<sup>(24)</sup>. To this end, the diagnoses, interventions, and outcomes stages need to follow an SNLS<sup>(8)</sup> so that the benefits of their documentation extend to favor professional visibility, the scientificity of nursing practice, and continuity of care. The present study makes contributions in this context by validating 116 NIs based on SNLS to care for people with CKD undergoing hemodialysis, who may have one of the NDs from the reference cluster<sup>(17)</sup>, which were organized and analyzed based on the Transitions Theory<sup>(5)</sup>. These outcomes constitute a reference framework that can support nursing professionals to work in the transition process of these individuals.

Therapeutic reasoning to make decisions to select these interventions demands overcoming the hegemonic biomedical model<sup>(25)</sup>, establishing bonds with patients so that this relationship strengthens individual care promotion<sup>(26)</sup>, to meet the needs of real needs of people with CKD undergoing hemodialysis.

Nurses must understand how people with CKD become aware of their health condition and how is the transition process, in which they may be suffering due to the need for changes related to the disease and treatment, presenting weaknesses that need professional support to be minimized so that the transition is less traumatic.

As the first therapeutic measure to be carried out, readiness assessment refers to nurses' judgment in seeking to identify the profile of a person experiencing the transition so that they can understand their needs<sup>(27)</sup>. In this therapeutic measure, the following interventions with CVI = 1 stood out: "Obtain data on social status"; "Monitor wound healing [operative to create the arteriovenous fistula — AVF]"; "Guide exercises for AVF maturation"; and "Obtain data on acceptance of health condition".

The challenges of the transition in the face of the occurrence of CKD and hemodialysis renal replacement therapy have implications in the most diverse contexts of these people's lives. There is a limitation to carrying out certain activities and a high demand for treatment, which has repercussions on the practice of work activities, generating social, economic, and psychological suffering for people with CKD, going from being independent (financial and social) to being dependent on family members and a support network<sup>(28)</sup>. Therefore, it is important to obtain data on social status.

Hemodialytic renal replacement therapy is commonly performed through an arteriovenous fistula, which re-

quires time for its maturation, which can vary between 4 and 6 weeks to then serve its purpose<sup>(29)</sup>, which justifies the relevance of interventions "Monitor wound healing [operative to create the arteriovenous fistula — AVF]" and "Guide exercises for AVF maturation" for planning care in the context of NP.

In light of the concepts inherent to Transitions Theory, concerning the statement "Obtain data on acceptance of health condition", it is important to highlight that the concept "acceptance" must be understood as the process of becoming aware of a person with CKD about their health condition.

After identifying the profile of people with CKD, nurses must begin preparing for transition, this being the second therapeutic nursing measure.

To this end, effective communication must be established, to contemplate biopsychosocial and spiritual aspects so that, together with the person, the nurse can plan care for a healthy transition to minimize complicating factors and empower those who are facilitators<sup>(30)</sup>.

Nurses can have appropriate mechanisms to assist people with CKD in managing their emotions and facilitating the transition to be experienced, especially by providing adequate information to this person about their condition and the process to be experienced, as well as clarifying the importance of adequate support to maintain their life and understanding the challenge imposed by renal replacement therapy as a decisive change in that person's existence<sup>(30)</sup>.

When preparing for transition, health education is the main strategy to be used by nurses<sup>(27)</sup>. In this therapeutic measure, the NIs that stood out, for obtaining a CVI score = 1.0, were: "Explain the hemodialysis procedure and its purpose"; "Teach patient to self-monitor signs and symptoms that identify the need for medical treatment" (e.g., fever, bleeding, clotted fistula, thrombophlebitis, and irregular pulse)".

Provided with information inherent to the process as a whole, a person in transition will be able to understand the importance of their role in self-care and lifestyle changes to maintain their health<sup>(31)</sup>. Although this intervention is considered relevant by experts in this investigation, it is an area that is not always adequately addressed in nursing care planning. A study showed that, although individuals with CKD undergoing hemodialysis were satisfied with the care received from the nursing team when specifically analyzing the educational dimension, there was a lower level of satisfaction, demonstrating the existence of a gap in these actions/interventions in this regard in the care planning and the need to strengthen health

education as a therapeutic intervention in facilitating the transition process<sup>(32)</sup>.

When exploring the process of transition to hemodialysis, it becomes clear how much CKD diagnosis and renal replacement therapy implementation affects all spheres of people's lives, bringing to light major and important decisions that will culminate in whether or not they maintain their lives. Therefore, it is essential to understand the transition process and the factors that are involved in it so that nursing can provide people with CKD with mechanisms that will facilitate their quality of life, starting from health education interventions and exploring and encouraging the crucial role of people in their self-care<sup>(33)</sup>.

To help people in the process of self-control their health, it is also necessary to provide the opportunity for them to ask questions about what they are experiencing and how they can carry out self-care<sup>(34)</sup>.

As a third nursing therapeutic measure, role supplementation is understood as that moment in which nurses must make the persons who are experiencing the transition understand their role in the process as a biopsychosocial and spiritual being so that these spheres need to be met so that this leading role is awakened<sup>(27)</sup>. The theory reinforces that therapeutic nursing measures are based on role complementation, a socio-psychological construct that should be used in planning NIs<sup>(5)</sup>.

The NIs to be highlighted in the context of role complementation include: supporting the ability to manage the therapeutic regimen (CVI = 1.0); and discussing lifestyle changes that may be necessary to avoid future complications and/or control the disease process (CVI = 0.93). Although people with CKD undergoing hemodialysis understand the importance of changing habits and practicing self-care, many report that there are difficulties in self-care actions, due to the presence of obstacles associated with this disease, such as physical fatigue and the use of a large number of medications<sup>(35)</sup>.

Therapeutic reasoning must start from the demands of people with CKD, to enhance the positive factors in the health/illness transition experience and minimize the negative factors within this process. Because of this, it is necessary that, when planning care for people with CKD, nurses seek to understand what factors hinder the process, developing strategies that minimize them, contributing to the experience of a less traumatic transition.

Understanding that the health/illness transition process occurs through the interruption of previously adopted bonds or points of reference, permeated by feelings of insecurity and fear, is essential for adherence to established therapy. The transition to be experienced

must be consistent with the needs presented by people with CKD undergoing renal replacement therapy who are dealing with a diagnosis and treatment that affect all areas of their life and require changes that will define the course of the disease and their quality of life<sup>(36)</sup>.

In this regard, helping people with CKD undergoing hemodialysis therapy to reformulate their identity and role, in the context of transition, becomes a challenge to overcome so that they become aware of the process and can overcome this experience in the least traumatic way possible, given all its repercussions and impositions, incorporating the necessary changes, reorienting oneself and experiencing the transition not as a line between two points, but rather as something in motion, with the integration of new skills and adaptations to new roles<sup>(36)</sup>.

Some validated NI statements, presented in **Table 2**, may require complementarity when used in practice, such as "Prevent infection". However, it should be noted that considering that this cluster is a tool that aims to provide support, based on evidence-based practice, for nurses' clinical and therapeutic reasoning, it is expected that nurses, when carrying out the using this resource, be able to understand the observed reality of people with CKD based on anamnesis and detailed physical examination, having sufficient subsidies to determine, as stated above, under what circumstances this infection must be prevented, which risks must be minimized to achieve success in this prevention.

Despite the contributions of this study to nephrology nursing, it presents as a limitation the small number of evaluators in the second round, but without harming the content validity process.

It is necessary to implement these interventions in nephrologist nurses' practice, in the context of the nursing process, to produce evidence about their effects and support clinical trials in the future, which can demonstrate their effectiveness in achieving the desired results concerning the identified diagnoses.

## CONCLUSION

Among the NIs necessary for the process of caring for people with CKD undergoing hemodialysis, who may have one or more NDs from the cluster of interest, 116 were validated in this study in light of the health-disease transition process of individuals. These NIs can be considered a frame of reference in the context of the therapeutic reasoning of nurses who will provide care to this population, based on the nursing process and SNLS.

## Funding

This research received financial support from the Brazilian National Council for Scientific and Technological Development (In Portuguese, *Conselho Nacional de Desenvolvimento Científico e Tecnológico* (CNPq)) through the Research Productivity Grant - Process 306417/2022-7 (Grant Term) and ProForte UNEB Notice 110/2023.

## Conflict of interest

None.

## Authors' contributions - CRediT

**ARLPA:** conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; writing – original draft and writing – review & editing.

**FAO:** conceptualization; project administration and writing – review & editing.

**LELC:** validation and writing – review & editing.

**MBA:** validation and writing – review & editing.

**ARS:** validation and writing – review & editing.

**RSS:** conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; supervision; writing – original draft and writing – review & editing.

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