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Content analysis of the nursing diagnosis "Excess fluid volume (00026)" in renal patients

Análise de conteúdo do diagnóstico de enfermagem "Volume de líquido excessivo (00026)" em pacientes renais

Análisis de contenido del diagnóstico de enfermería "Volumen de líquido excesivo (00026)" en pacientes renales

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ABSTRACT

Objective: To analyze the content of the conceptual and operational definitions of the related factors, associated condition and defining characteristics of the nursing diagnosis "Excess fluid volume (00026)" in hemodialysis renal patients. **Methods:** Methodological study, of the content analysis type, with 49 specialists who reached a score equal to or greater than 5, according to Fehring's criteria. Thirty elements were evaluated for relevance, clarity, and precision. The experts' profile was analyzed using descriptive statistics, and the binomial test analyzed the agreement between them in relation to the terms. **Results:** The main validated indicators were "Oliguria", "Anasarca", "Paroxysmal nocturnal dyspnea", "Dyspnea", "Change in blood pressure", "Edema", "Ingestion greater than elimination" and "Increased central venous pressure". This shows that this phenomenon is present in this population. **Conclusion:** 29 elements were validated for relevance, clarity, and precision. This result clarifies the terms that make up the phenomenon, providing a better understanding of the concept; and assists in the accurate diagnostic proposition.

Descriptors: Nursing Diagnosis; Renal Insufficiency; Renal Dialysis; Patients; Validation Studies.

RESUMO

Objetivo: Analisar o conteúdo das definições conceituais e operacionais dos fatores relacionados, condição associada e características definidoras do Diagnóstico de Enfermagem "Volume de líquido excessivo (00026)" em pacientes renais hemodialíticos. **Métodos:** Estudo metodológico, do tipo análise de conteúdo, com 49 especialistas que atingiram pontuação igual ou maior a cinco, segundo critérios de Fehring. Trinta elementos foram avaliados quanto à relevância, clareza e precisão. O perfil dos especialistas foi analisado por meio da estatística descritiva, e o teste binomial analisou concordância entre eles em relação aos termos. **Resultados:** Os principais indicadores validados foram "Oligúria", "Anasarca", "Dispneia paroxística noturna", "Dispneia", "Alteração na pressão arterial", "Edema", "Ingestão maior que a eliminação" e "Aumento da pressão venosa central". Isso evidencia que tal fenômeno está presente nessa população. **Conclusão:** Foram validados quanto à relevância, clareza e precisão, 29 elementos. Esse resultado clarifica os termos que compõem o fenômeno, conferindo uma melhor compreensão do conceito; e auxilia na proposição diagnóstica acurada.

Descritores: Diagnóstico de Enfermagem; Insuficiência Renal Crônica; Diálise Renal; Pacientes; Estudos de Validação.

RESUMEN

Objetivo: Analizar el contenido de las definiciones conceptuales y operacionales de los factores relacionados, condición asociada y características definidoras del diagnóstico de enfermería "Volumen de líquido excesivo (00026)" en pacientes renales hemodialíticos. **Métodos:** Estudio metodológico, del tipo análisis de contenido, con 49 especialistas que alcanzaron puntuación igual o mayor a 5, segundo criterios de Fehring. Treinta elementos fueron evaluados cuanto a la relevancia, claridad y precisión. El perfil de los especialistas fue analizado por medio de la estadística descriptiva, y la prueba binomial analizó concordancia entre ellos en relación a los términos. **Resultados:** Los principales indicadores validados fueron "Oliguria", "Anasarca", "Disnea paroxística nocturna", "Disnea", "Alteración en la presión arterial", "Edema", "Ingestión mayor que la eliminación" y "Aumento de la presión venosa central". Eso evidencia que tal fenómeno está presente en esa población. **Conclusión:** Fueron validados cuanto a la relevancia, claridad y precisión, 29 elementos. Ese resultado clarifica los términos que componen el fenómeno, confiriendo una mejor comprensión del concepto; y auxilia en la proposición diagnóstica cuidada.

Descriptores: Diagnóstico de Enfermería; Insuficiencia Renal Crónica; Diálisis Renal; Pacientes; Estudios de Validación.

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INTRODUCTION

The concept of "nursing diagnosis" (ND) emerged in the early 1970s when North American nurses observed that, in clinical practice, nursing professionals diagnosed and treated events related to patients and their families; and that such events were distinct from medical diagnoses. Thus was created the professional organization, currently known as NANDA-International (NANDA-I)[1].

For just over four decades, NANDA-I has named the phenomena presented by patients and which are the responsibility of nurses. Today, the classification is the best known worldwide, being translated into almost 20 different languages; and its 2018 version brings 244 diagnoses distributed in 13 domains and 47 classes[1].

The various existing classifications aim to favor some phases of the NP, as they name the phenomena that are the responsibility of nursing. Thus, NANDA-I is most commonly used to support the proposition of ND through its diagnostic concepts[1]. Such concepts favor the execution of the second stage of the nursing process (NP), called "nursing diagnosis", which consists of judging the data collected in the investigation phase. Such clinical judgment allows the identification of concepts that best represent the responses of the person, family or human community at a given moment in the health and disease processes[1].

NDs are classified into diagnoses: problem-focused, risk-focused, health-promoting, and syndrome. Each concept is structured by components called "diagnostic indicators" (defining characteristics, related factors, and risk factors). In addition, NANDA-I, in its 2018 version, adopted two new categories (populations at risk and associated conditions). Although not considered independently modifiable by the nurse, they support precision in the diagnostic process performed by the nurse[1].

Among the various concepts existing in NANDA-I — inserted in Domain 2 (Nutrition), Class 5 (Hydration) — is the ND "Excess fluid volume (00026)", defined as "excessive intake and/or fluid retention" (1:183). This ND was introduced in the classification in 1982, revised in 1996, 2013 and 2017, which provides greater clarity to the concept. Considered a problem-focused ND, it structurally has a title, definition, defining characteristics (DC), related factors (RF) and associated condition (AC)[1].

Some studies[2-3] indicate that this phenomenon has often been attributed to patients with chronic kidney disease (CKD). The accumulation of fluids results from several factors that are associated with the impairment of regulatory mechanisms, being more common in patients with CKD, due to the decrease in the glomerular filtration rate (GFR), which is less than 15/ml/min/1.73m^2 in stage 5 patients, considered the most advanced stage of the disease[4].

The inefficiency of the GFR results from the interstitial injury, which causes the glomerular membrane to be compromised and the mesangial cells to be weakened. This picture characterizes CKD, defined as the progressive (over three months) and irreversible loss of renal function, which leads to hydro-electrolytic, acid-base, endocrine and metabolic imbalances[5-6].

The accumulation of fluids can cause numerous signs and symptoms for patients who suffer from it. Among them, alteration in blood pressure, mental status and respiratory pattern, azotemia, electrolyte imbalance, dyspnea, edema, decrease hematocrit and hemoglobin, oliguria and adventitious breath sounds can be observed in clinical practice and cause numerous damages to the patient's life[1,3].

Although it is known that fluid accumulation shows a high prevalence in patients undergoing hemodialysis, reaching frequencies of 80% and high rates of morbidity and mortality due to the complications of fluid overload in patients with CKD[5], greater a deeper understanding of the elements that make up the phenomenon. Understanding the causal mechanisms (related factors) and their clinical consequences (defining characteristics) can clarify for the nurse the dynamics that involve the phenomenon under study and, thus, direct the diagnostic process in clinical practice and, later, the proposition of a more assertive care plan[5].

It is worth mentioning that the diagnostic process requires precise clinical reasoning, so that the identified human response and its indicators present due accuracy[7]. This process will take place through validation studies in specific populations, which are structured to refine the classification, provide greater accuracy in the diagnostic process and guide the choice of interventions to achieve the proposed results[8].

The literature points out several methods that can be used for ND validation, such as content analysis, which consists of obtaining expert opinions about the degree to which each element studied is in fact indicative of an ND and reflects the reality found. in a specific population[8]. Experts consider, in this inference, the conceptual (CD) and operational (DO) definition of each element, built in the integrative review phase developed according to the adopted reference[9].

The judgment of the definitions carried out by the experts guides the identification of the elements of the ND "Excess fluid volume (00026)" in the population with CKD and on hemodialysis treatment. This fact provides specificity in the relationship between the phenomenon and the population under study; it directly contributes to the accurate identification of the ND studied, since studies of this nature make the phenomenon applicable through the decoding of validated elements; and indirectly, helps to refine the classification[7-8].

Such definitions bring research and clinical practice closer, as they clarify the terms, favor validation studies and improve the identification of phenomena in practice, providing accuracy to the clinical indicators observed[10]. The definitions, derived from reviews and observation in clinical practice, must be adapted to specific populations to improve the precision in the diagnostic process, considering that the results of a validation study allow the exploration of a phenomenon in a comprehensive way in theoretical terms. and specific[10].

Given the above, the question is: Which definitions of the elements that make up the nursing diagnosis "Excess fluid volume (00026)" are more appropriate for the population of renal patients undergoing hemodialysis treatment?

OBJECTIVE

To analyze the content of the conceptual and operational definitions of the related factors, defining characteristics and associated conditions of the nursing diagnosis "Excess fluid volume (00026)" in hemodialysis renal patients.

METHODS

Ethical aspects

The study complied with Resolution No. 466/2012 of the National Health Council of Brazil and was approved by the Research Ethics Committee of the State University of Campinas.

Study design, period, and location

Methodological study, type validation of nursing diagnosis content by experts, considered as the second stage of validation studies. Occurs after the integrative review stage and precedes clinical validation[8].

The study was guided by the SQUIRE tool[11] and developed between April 2018 and January 2019, using the Google Forms tool®.

Population or sample; inclusion and exclusion criteria

For the sample size, the literature[8,12-13] recommends the formula $n = Z\alpha^2 * P * (1-P)/e^2$, where "Zα" is the confidence level adopted in this study (95%), " P" is the expected proportion of experts who considered the item to be adequate (0.85) and "e" refers to the 10% sampling error, resulting in a sample size of 49 experts.

They were selected according to the criteria of clinical and academic experience and theoretical knowledge about the study topic[8]. Chart 1 presents the criteria proposed by Fehring[14] and adapted for the present study. This adaptation included the specific area of knowledge about the object of study — namely, the nursing process, the phenomenon studied and nephrology. Nurses with scores equal to or greater than 5 points were included in the sample. Those who did not complete the form were excluded.

Study protocol

Recruitment of specialists was based on information made available in research groups on ED and/or nephrology and on the Lattes Platform of the National Council for Scientific and Technological Development.

On this Platform, the search for curricula used the terms "Nursing Diagnosis", "Nursing Process" and "Nephrology", considering subject (title or production keyword); the bases "doctors and other researchers"; and "Brazilian nationality in all countries". The search also took place in Brazilian Postgraduate Programs in Nursing and Health (stricto sensu); and by indication of previously selected nurses, configuring the Snowball method[15].

Subsequently, the letter of invitation to participate in the study was sent by e-mail; and, to those who accepted, the Free and Informed Consent Forrm (ICF) was sent, the instrument with the categorization data of the experts' profile as well as the evaluation and analysis of the ND elements built in Google Forms®.

Such instruments were previously evaluated by three specialists, nurses not belonging to the study sample. They analyzed the instrument for clarity, scope, and relevance.

Initially, the experts signed the informed consent and then were directed to the instrument that contained two parts. The first, the registration of the profile of the specialists following, as a parameter, the proposed criteria[14] and adapted for the present study; and the second, the components of the ND for the evaluation and analysis of the DC and OD of the components of the ND, elaborated in the integrative literature review phase, in a five-level Likert scale related to the ND under study: 1 – non-indicative; 2 – little indicative; 3 – in some indicative way; 4 – considerably indicative; and 5 – very indicative[8].

It is noteworthy that, during the integrative review phase, no new indicators were found, in addition to those present in NANDA-I, that characterized the diagnostic concept in the population studied.

Experts rated the DC and DO for relevance, clarity, and accuracy. Relevance refers to the fact that the item is consistent for patients with CKD. Clarity is when an item is intelligible, has short sentences, simple expressions (presents a single idea) and unambiguous. Precision, on the other hand, exists when the item has a defined position in the attribute continuum, that is, it occurs continuously, accurately indicating its presence in the population studied[16].

After the evaluation made by the specialists, the Likert scale was recoded in a dichotomous way so that the definitions were submitted to the binomial test. Items that received scores 1, 2 and 3 were considered inadequate; and items with a score of 4 or 5, deemed appropriate[8].

Chart 1 – Criteria used in the selection of specialists for content analysis of the nursing diagnosis "Excess fluid volume (00026)" in patients with chronic kidney disease, Campinas, São Paulo, Brazil, 2019

Criteria adapted for the study	Punctuation
Master's, doctoral or post-doctoral degree in nursing	2
Master's or PhD degree in nursing with dissertation/thesis with relevant content for the diagnosis of interest	3
Clinical practice of at least two years duration in the diagnostic area of interest or in nephrology	1
Certificate of specialization/residence relevant to the diagnosis of interest or in nephrology	2
Specialist certificate in nephrology with a degree recognized by the Brazilian Association of Nephrology Nursing (SOBEN)	3
Research or publication of an article dealing with the nursing process, nursing diagnosis or nephrology	2
Abstracts or complete published works dealing with the nursing process, nursing diagnosis or nephrology	1
Courses or participation in congresses on the nursing process, nursing diagnosis or nephrology	1

Source: Criteria proposed by Fehring[14] and adapted for the present study.

Analysis of results and statistics

The experts' profile was analyzed using descriptive statistics; and, for the analysis of diagnostic content, the binomial test was used, whose objective was to infer the proportion of specialists who considered a certain item appropriate. In this study, the value of 85% was adopted according to the hypotheses constructed (null hypothesis - the proportion of specialists who considered the clinical indicator as adequate is not different from 85%; and alternative hypothesis - the proportion of specialists who considered the clinical indicator as adequate is different from 85%); and the *p* value used was 0.05[8].

It is worth mentioning that, in cases where p was greater than 0.05, the indicator was accepted as validated, as it showed that the proportion of agreement is not different from 85%. In cases where *p* was less than or equal to 0.05 and the proportion of agreement was equal to or greater than 85%, the item was considered validated. On the other hand, in the presence of *p* less than or equal to 0.05 and a percentage of agreement less than 85%, the null hypothesis was rejected, considering the item not validated.

At the time of proposing the research, as well as at the beginning of data collection, the RFs and DCs of the DE were considered as elements to be evaluated, according to the NANDA-I version (2015-2017)[17]. During the study period, due to the publication of the new version of NANDA-I (2018-2020)[1], it was decided to readjust the nomenclature of the ND components. Thus, the element "Committed Regulatory Mechanism", classified as RF until then, was renamed AC.

RESULTS

A total of 287 nurses were invited: 64 responded to the form, 6 were excluded for not responding fully and 9 for not reaching the minimum score established as an inclusion criterion. The final sample included 49 nurses, named "specialists"; 81.63% (n = 40), female; and age ranged from 24 to 66 years, with a mean of 39.93 (± 10.81) years.

The regional location of the specialists showed that 2.04% (n = 1) were in Portugal. The others, in Brazil, being that 38.78% (n = 19) were from the Southeast of the country; 30.61% (n = 15), from the Northeast; 16.33% (n = 8), from the South; and 12.24% (n = 6), from the Midwest.

The training time as a nurse ranged from 2 to 44 years, with a mean of 15.39 years and SD 10.71. Regarding the maximum degree, 46.93% (n = 23) had a master's degree; 40.81% (n = 20), doctorate; 12.24% (n = 6), specialization and/or residency; and 30.61% (n = 15) had the certificate of specialist in nephrology with a degree recognized by the Brazilian Association of Nephrology Nursing (SOBEN).

As for academic production and life, 75.51% (n = 37) had published an article on EP and/or ED and/or nephrology in the last five years. Regarding abstracts or complete works published and participation in courses or conferences on the aforementioned topics in the last five years, 77.55% (n = 38) and 81.63% (n = 40) gave an affirmative answer.

In the sample, 75.51% (n = 37) were developing or supervising studies at different levels of education (undergraduate and specialization work, thesis, articles or other dissertation).

Table 1 – Characterization of the sample of experts regarding the topic, area and time of professional experience and score obtained, Campinas, São Paulo, Brazil, 2019 (N = 49)

Variables	Frequency	%
Experience Theme*		
Nursing process	37	75.51
Nursing diagnosis	37	75.51
Nephrology	30	61.22
Experience area*		
Search	39	79.59
Teaching	36	73.46
Assistance	36	73.46
Extension	12	24.48
Time of experience		
less than 3 years	8	16.32
4 to 10 years	17	34.69
more than 10 years	24	48.97
Punctuation		
5 points	5	10.20
6 to 10 points	34	69.38
11 to 15 points	10	20.40

**The specialist could tick more than one option.*

Table 2 – Content analysis of the nursing diagnosis "Excess fluid volume (00026)" according to expert opinion, Campinas, São Paulo, Brazil, 2019 (N = 49)

Components	% of agreement	*p* value*
Related factors		
Excessive fluid intake	91.38	0.2110
Excessive sodium intake	87.08	0.6834
Associated condition		
Compromised regulatory mechanism	90.93	0.2450
Defining characteristics		
Alteration in urine specific gravity	85.49	0.9235
Alteration in pulmonary artery pressure (PAP)	75.28	0.0567
Alteration in blood pressure	92.97	0.1182
Alteration in mental state	77.32	0.1322
Alteration in respiratory pattern	90.93	0.2450
Anasarca	94.56	0.0609
Anxiety	82.09	0.5684
Increase in central venous pressure (CVP)	92.07	0.1657
Azotemia	91.61	0.1950
Pleural effusion	89.34	0.3949
Electrolyte imbalance	91.61	0.1950
Dyspnea	93.20	0.1079
Paroxysmal nocturnal dyspnea	94.56	0.0609
Jugular vein distention	90.02	0.3251
Edema	92.74	0.1292
Weight gain over short period of time	90.93	0.2450
Decrease hematocrit	91.61	0.1950
Decrease hemoglobin	91.61	0.1950
Hepatomegaly	78.00	0.1700
Intake exceeds output	92.29	0.1530
Oliguria	94.79	0.5500
Orthopnea	91.61	0.1950
Presence of S3 heart sound	83.67	0.7943
Positive hepatojugular reflex	82.31	0.5980
Adventitious breath sounds	87.53	0.6199

** p value obtained by means of the Binomial test.*

Table 1 presents the other characterization data of the sample of experts.

The experts assessed the relevance, clarity, and precision of the DCs and ODs of each ND element under study, using the five-level Likert scale, later recoded. Table 2 shows the validated RFs, AC and DCs based on the binomial test results.

Another validated element was the DC "Pulmonary Congestion", since it presented p less than or equal to 0.05 and a proportion

of agreement between experts above 85% (95.24%, p = 0.0447). In this analysis, the DC "Restlessness" was not validated because it had p less than 0.05 and a proportion of agreement between experts below 85% (74.83%, p = 0.0462).

DISCUSSION

In the present study, the adaptation of the criteria proposed by Fehring privileged both academic aspects and clinical experience in interest diagnosis and/or nephrology. It is understood that such adaptation could give greater robustness to the work, as the sample was composed of nurses with a care and academic profile, which brings legitimacy to the analysis of the content of the ND components and subsequent validation.

There was a predominance of young women, from the Southeast region of the country, data that are similar to those found in a study that analyzed the profile of nurses and other members of the nursing team in Brazil[18]. A previous study that sought to analyze the ND content showed similarity with the profile of nurses in relation to sex and age[19].

Associated with this fact, the score obtained by the study participants corroborates the age and training time factor. The result showed that the majority represented a young population, in the process of developing their training. Another relevant issue is anchored in the fact that the sample consisted of professionals with an academic and care profile. This may have influenced the score, as professionals who are immersed in care do not have the same time to produce scientific works, participate in events and other activities in the academic environment frequently, which limited the score obtained[18].

The academic aspect showed that most were masters and doctors, had research with relevant productions in the area of interest of the study and, in addition, during the collection period, they were developing some type of scientific work. This corroborates a study of content analysis of the ND "Impaired Comfort (00214)" in cancer patients, carried out with 53 nurses[19].

It is worth mentioning that the participating professionals had a broad profile and showed consolidated knowledge in the area of interest, considering that dealing with human responses and their characteristics requires a high degree of technical-scientific knowledge from the professional, as it involves human cognition and practical experience with the population studied[1].

As a result of the content analysis regarding the relevance, clarity and precision of DCs and Dos, 29 elements of the ND studied were validated, showing that this phenomenon is present in such a population[2-3].

This result reflects what previous studies have pointed out about water overload and its relationship with the renal patient. As can be seen, water overload has a high prevalence in chronic renal patients undergoing HD[2-3] and is associated with impaired quality of life, high rates of complications and mortality in these patients[20].

NANDA-I describes the ND "Excess fluid volume (00026)" through the elements (RF, AC and DC) present in its classification[1]. Although the concept is not linked to a specific population, and can be generalized, the antecedent and consequent elements of water overload are common and may present in greater or lesser proportions according to the installed pathology, which establishes a correlation with the ND. Therefore, ND validation studies aim to consolidate this knowledge through its results in specific populations[8], as is the case of this study.

The components of the ND in studies validated by experts are related to the pathophysiological mechanisms that regulate body fluids and generate fluid imbalance in chronic kidney patients. In this phenomenon, the body's inability to excrete excess body fluids comes from the compromise of regulatory mechanisms. This favors water overload and, in turn, affects the cardiovascular system, causing an increase in blood pressure and the presence of S3 heart sound, cardiac pump inefficiency and cerebrovascular dysfunction. As a consequence, there is a alteration in respiratory pattern, adventitious breath sounds, pulmonary congestion, alteration in pulmonary arterial pressure (PAP), increase in central venous pressure (CVP), anasarca, dyspnea, paroxysmal nocturnal dyspnea, jugular vein distention, edema, gain of weight in a short period of time, oliguria and positive hepatojugular reflex[2,6,20].

A study that analyzed the concept of "liquid overload" directs towards the early and exact detection of the characterizing elements of the phenomenon. In the analysis performed, the following elements stood out as antecedents of water overload: excessive fluid intake, a high-sodium diet and decreased GFR[5]. Such elements are similar to those presented by NANDA-I and denote that the concept has been well described by the classification[1].

The glomerular filtration mechanism becomes inefficient due to progressive and irreversible damage to the renal parenchyma, specifically the glomeruli. Thus, glomerular cells lose their function, decreasing GFR and causing hydro-electrolytic, acid-base, endocrine and metabolic imbalances[6,21].

With regard to excessive fluid intake and a high-sodium diet, it is known that excessive sodium consumption predisposes to excessive fluid intake[21-22], given that plasma sodium levels lead to a hypertonic state and, consequently, to a hypertonic state. consequently, the desire to ingest liquids. In this sense, thirst in HD patients has an osmometric nature, that is, with the intake of salt, there is an increase in the osmolarity of the extracellular fluid and, consequently, changes in the osmoreceptor cells in the hypothalamus and an intensification of the desire to ingest fluids[23]. Volumetric thirst occurs in the immediate hours after the HD session, as the cardiac baroreceptors signal the low volume of cardiac return that occurs shortly after the loss of water and salt, leading to a desire to ingest fluids[23].

Another factor that contributes to excessive fluid intake is xerostomia, which is highly prevalent in renal patients undergoing HD. The salivary glands of these patients undergo a process of atrophy and consequent fibrosis, which decreases salivary flow and increases thirst. In addition, some antidepressants, antihistamines, antihypertensives, aspirin, bronchodilators, hypnotics, opioids, decongestants and proton pump inhibitors can intensify hyposalivation and xerostomia[23].

This situation directly influences the occurrence of the human response, because the compromised regulatory mechanisms do not favor the control of water and sodium and intensify the accumulation of liquids[21]. In addition, diabetic patients, who constitute 31% of patients with CKD undergoing treatment in Brazil[24], tend to ingest large volumes of fluids due to hyperglycemia.

The relationship between excessive sodium intake, excess fluid volume and the impact on blood pressure changes has been described in the literature[5]. Thus, sodium restriction is associated with an improvement in blood pressure levels, in cardiac function[5], in a decrease in fluid intake and, consequently, in an improvement in water volume[23].

The antecedents of the phenomenon studied contribute to the presence of consequent elements, which, in this study, are called "defining characteristics (DC)". Understanding the direct correlation between these factors can elucidate the pathophysiological mechanisms that culminate in signs and symptoms present in patients, as well as favoring the proposition of effective nursing interventions to achieve the proposed results[3].

Another DC evidenced in the literature and validated in this study concerns weight gain over short period of time, considered as weight gain between two consecutive dialysis sessions, that is, the so-called "interdialytic weight gain (IWG)". This should be less than 4% of the individual's dry weight, however findings show that patients have an IPG between 10% and 20%, and this increase is associated with cardiovascular morbidities, extra HD sessions and an increased risk of death[23].

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The elements discussed constitute the main antecedents and consequents of fluid accumulation[5]. However, the pathophysiological developments are numerous, and elements such as pulmonary congestion, adventitious breath sounds, dyspnea, anasarca, edema, electrolyte imbalance, presence of S3 heart sound and decrease hemoglobin have been referenced in the literature as consequents of the phenomenon[5].

The DC "Electrolyte imbalance", resulting from the impairment of regulatory mechanisms, evidences the impairment of body homeostasis. This is because the degradation products that should be excreted in the urine accumulate causing hypernatremia, hyperkalemia, disturbance in the regulation of calcium and phosphorus — responsible for constant cramps and bone fracture, even if arising from low-impact trauma. In addition, electrolyte imbalance can lead to hyperchloremia (chloride level above 103 mEq/L) and hypermagnesemia (greater than 2.6 mg/dL); the latter causes loss of muscle reflexes, and values above 7.2 mg/dL can lead to cardiac conduction abnormalities, respiratory paralysis and, consequently, loss of consciousness[26-27].

This picture justifies the presence of azotemia, a validated DC, which is a biochemical abnormality with elevated plasma urea and creatinine levels and is largely due to a decreased GFR. The accumulation of urea causes cognitive impairment, which can start with "alteration in mental status" leading to uremic coma[22-23].

In addition, laboratory data on density or osmolarity associated with the other DCs already mentioned can help in the detection of water retention and indicate the patient's hydration status. The DC "Alteration in Urine Specific Gravity" can be detected on urinalysis, and the result reflects the solute concentration in the urine, which can be determined by urinary density, refractive index, or osmolarity. In other words, they are changes in the measurement of the density of chemical substances dissolved in the urine, influenced both by the number of particles present and by their size, which may indicate dehydration and excess of substances in the urine, which is a reflection of the excess of these substances in the blood[28-29].

Other indicators such as "Paroxysmal nocturnal dyspnea", "Orthopnea", "Anxiety", "Hepatomegaly", "Positive hepatojugular reflex", "Jugular vein distention", "Increase in central venous pressure (CVP)" and "Pleural effusion" do not establish an exclusive relationship with the phenomenon studied and can also be evidenced as signs and symptoms of other NDs. Therefore, although relevant for the detection of fluid accumulation, they are not well described in the literature as being specific to this condition.

Study limitations

A limitation found in the study was the location of professionals with experience in the areas of interest, especially in the area of nephrology. As an example, the minority had the certificate of specialist in nephrology with a degree recognized by SOBEN. Another issue was the nurses' availability of time, given that an evaluation like this lasts, on average, from 40 minutes to two hours, depending on the human response evaluated. Another limitation is related to the tool used, Google Forms®: it does not allow the work to be saved and continued later, a factor that may have influenced the non-acceptance of most guests. Thus, in order not to compromise the recruitment of professionals with the minimum criteria established, it was decided to extend the data collection time.

Contributions to the field of nursing

The present research provides positive effects for the nursing practice, as it contributes to the understanding of the clinical indicators present in the population in question, which will help in the refinement of the study and the classification of the phenomenon.

The use of robust statistical tests, such as the binomial test, conferred significance on the results found and greater security in their interpretation, when compared to the methodology used in other validation studies, such as those that make use of the Content Validity Index.

Thus, it is considered that the content analysis stage of the DE "Excess fluid volume (00026)" was successfully completed and that the refinement of the DE will contribute to a better understanding of the phenomenon. In addition, validation studies value the use of NP in clinical practice, since the second stage, Nursing Diagnosis, is well supported through classification, which, through similar studies, improves the study of phenomena, describes, and explores them thoroughly and clearly in specific populations.

CONCLUSIONS

The experts who evaluated the components of the ND "Excess fluid volume (00026)" demonstrated solid knowledge in the areas of interest of the study, and the sample had the appropriate size according to what the literature recommends.

29 of the 30 elements analyzed were considered validated regarding the relevance, clarity, and precision of the DCs and DOs. Of these, "Oliguria", "Anasarca", "Paroxysmal nocturnal dyspnea", "Dyspnea", "Alteration in blood pressure", "Edema", "Intake exceeds output" and "Increased central venous pressure" were validated with percentage of agreement among the specialists, showing that this ND is present in such a population. The CD "Restlessness" was not validated.

The present study supported the next stage of the validation process of the ND "Excess fluid volume (00026)": clinical validation with renal patients undergoing hemodialysis treatment.

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