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NURSING DIAGNOSIS INEFFECTIVE PROTECTION:
content validation in patients under hemodialysis

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ABSTRACT

The present study is a content validation, to validate the defining characteristics (DC) of the nursing diagnosis (ND) Ineffective Protection in patients under hemodialysis. For the sample delimitation, the experts selection method used was adapted from the literature. The data search was carried out with an instrument that bore the participant's data. Besides that, there was a Likert to each one of the DC. To the 18 DC was added the characteristic Malnutrition. 5 temporary primary indexes were obtained as results: Immunity Deficient, Neurossensory Alteration, Dyspnea, Itching and Malnutrition. It was concluded that the characteristics listed as primary indexes are related to the chronic kidney disease and can lead to the Ineffective Protection nursing diagnosis in those patients who go through hemodialysis.

Descriptors: Nursing diagnosis. Validation studies. Nursing process. Renal insufficiency. Renal dialysis.

RESUMO

O presente constitui-se de um estudo de validação de conteúdo, sobre as Características Definidoras (CD) do Diagnóstico de Enfermagem (DE) Proteção Ineficaz em pacientes em hemodiálise. Da amostra, fizeram parte 63 enfermeiros peritos, eleitos pelo método de seleção de peritos, adaptado da literatura. A coleta de dados ocorreu por meio de um instrumento, no qual constavam dados do participante e uma escala Likert para avaliação das CD. Às 18 CD contidas na Taxonomia da North American Nursing Diagnosis *(NANDA) para o DE em estudo foi acrescentada a Desnutrição. Como resultados, foram obtidos 5 Indicadores Principais Provisórios: Deficiência na Imunidade, Alteração Neurossensorial, Dispnéia, Prurido e Desnutrição. Concluiu-se que os Indicadores Principais são relacionados com a doença renal crônica e podem conduzir ao DE Proteção Ineficaz nos sujeitos que realizam hemodiálise.*

Descritores: *Diagnóstico de enfermagem. Estudos de validação. Processos de enfermagem. Insuficiência renal. Diálise renal.*
Título: *Diagnóstico de enfermagem Proteção Ineficaz: validação de conteúdo em pacientes em hemodiálise.*

RESUMEN

El presente trabajo constituye un estudio de validación de contenido sobre las Características Definidoras (CD) del Diagnóstico de Enfermería (DE) Protección Ineficaz en pacientes en hemodiálisis. Formaron parte de la muestra 63 enfermeros peritos elegidos a través del método de selección de peritos, adaptado de la literatura. La toma de datos se hizo por medio de un instrumento en el que constaban datos del participante y una escala Likert para evaluación de las CD. A las 18 CD contenidas en la Taxonomía de la North American Nursing Diagnosis *(NANDA) para el DE en estudio, se agregó la Desnutrición. Como resultado se obtuvieron 5 Indicadores Principales Provisorios: Deficiencia en la Inmunidad, Alteración Neurosensorial, Disnea, Prurito y Desnutrición. Se concluyó que los Indicadores Principales están relacionados con la enfermedad renal crónica y pueden llevar al DE Protección Ineficaz en los sujetos que hacen hemodiálisis.*

Descriptores: *Diagnóstico de enfermería. Estudios de validación. Procesos de enfermería. Insuficiencia renal. Diálisis renal.*
Título: *Diagnóstico de enfermería Protección Ineficaz: validación de contenido en pacientes en hemodiálisis.*

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INTRODUCTION AND JUSTIFICATION

The present study was developed by one of the authors in order to obtain the Masters Degree in Nursing at the *Universidade Federal do Rio Grande do Sul* (UFRGS)[1], and it focuses on the Nursing Diagnoses (ND) and their validation in Nephrology.

The Nursing Process (NP), also known as Nursing Assistance Systematization in Brazil, comprehends a guiding method for the actions of the profession. It arrived in the 1950s and was developed in hopes of standardizing actions and unifying the professional language. Its use makes possible to apply the Nursing theoretical fundaments to the reality in which these professionals act, organizing and directing the care in individual, personal and human ways[2] as to offer a fitting structure regarding the needs of the client, family and community.

The Nursing Diagnosis (ND) – being one of the steps in NP– is "a clinical judgement about individual, family or community responses to actual or potential health problems/life processes. Nursing diagnosis provides the basis for selection of nursing interventions to achieve outcomes for which the nurse is accountable"[3].

In the Nephrological area, the ND translate the reality experienced by the patients with chronic kidney disease; although the disease they live with is an agressive one, it acts progressively and silently, making its discovery in most of the cases a late one, when the only choice is to opt for a renal replacement therapy (RRT).

The present study focused in the Nursing Diagnosis (ND) and their validation in Nephrology.

The Chronic Renal Insufficiency (CRI), characterized by the presence of a kidney injury related or not to the decreased glomerular filtration, may lead to manifestations, including: anemia, articular bone disease, malnutrition and cardiovascular complications[4]. For the subjects going through hemodialysis (HD), the symptoms of fatigue, pruritus, migraine, cramps, articular and toracic pain, nausea and vomit and muscular weakness are intensified[5].

According to the Brazilian Society of Nephrology's Census – referring to the year of 2007 – there are over 73 thousand people in dialytic treatment in Brazil; 391 patients for every million people. From these, 90.8% go through hemodialysis[6].

Although there are NDs that bear aspects of unquestionable importance in the care for patients with chronic kidney disease (CKD), the one studied here was chosen because it not only identified the reality of the patient going through hemodialysis, but also because it can identify the multifactoriality present in the CKD. For this reason, we opted for "Ineffective Protection", which according to North American Nursing Diagnosis (NANDA) is the "decrease in the ability to guard self from internal or external threats such as illness or injury"[3].

According to the causes, manifestations and methabolical alterations related to the CKD, the patientes who go through HD are more prone to environmental aggression and they present a seires of manifestations that make possible to identify the ND Ineffective Protection – which justifies the validation study for the defining characteristics of this diagnosis in these patients.

Another justification for the choosing the Nephrologic area is that it is directly linked to the works conducted by the author, who has been directly involved with patients with CKD since graduation. Still – when referring to the NP – validation studies are important as they investigate the ND and their DC in specific realities.

This way, as the Ineffective Protection ND is validated, the nursing profession is also improved, as there is a kind of uniformity in the language used in the care for the patient going through HD. At the same time, new actions might be attempted because of the results present in this diagnosis, enchancing the chances to reach the expected results.

Although the expert selection criteria needed changes to better fit the present reality in Brazil – and more specifically *Rio Grande do Sul* – the content validation model[7] was selected and deemed appropriate for the purposes of this study.

This way, the research's proposal was guided by the following question: Which definning characteristics of the Ineffective Protection ND – from NANDA's Taxonomy II – are present in patients that go through hemodialysis, according to the evaluation of the expert nurses?

OBJECTIVE

To validate the defining characteristics of the Nursing Diagnosis Ineffective Protection in

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patients going through hemodialytic treatment and cared for by nurses from the Dialysis Centers in *Rio Grande do Sul*, Brazil.

METHOD

It is a descriptive transversal study, under a quantitative perspective.

The research was carried through along with the Dialysis Centers in *Rio Grande do Sul,* Brazil, registered at the *Sociedade Brasileira de Nefrologia* (Brazilian Society of Nephrology – SBN), in the year of 2006.

The number of centers, their addresses and telephones were obtained at SBN's webpage (http://www.sbn.org.br/), which presented the Neprhologic Census 2004-2005[6]. The Census showed 72 Dialysis Centers located in Rio Grande do Sul; 64 of which were operating. Another 2 Centers from *Porto Alegre* were added as well, for being located inside major hospitals, although they were not present in SBN's registers. In the end, out of the 66 centers consulted; professionals from 31 of them participated in the project.

For the sample delimitation, the experts selection method for Diagnostic Content Validation (DCV) used was adapted from the literature[7], along with the intentional non-probabilistic sampling one.

The sample selection followed the criteria shown in Panel 1, which should sum up to at least five points.

Criteria	Score
Abstract published about the NP, ND or Nephrology	1
Research published about the NP, ND or another content that is relevant to the studied diagnosis	2
Article published about the NP, ND or Nephrology	2
Final paper regarding the highest degree about the NP, ND or Nephrology	2
Minimal clinical practice of one year in the relevant arear for the studied diagnosis	3
Being a specialist or taking a specialization in either Nursing or Nephrology (in this case, the student must have had Nursing Process as a discipline)	2
Participation in a course about the NP; 4 hours minimum	1

Panel 1 – Criteria used for the expert nurses selection in this study.

Also, less than one year of clinical practice in nephrology was considered an excluding factor.

The data were collected by the researcher herself, in a period that went from October 2006 to the first half of January 2007. With the addresses obtained at the SBN, it was possible to contact the nurses at the Dialysis Centers by telephone.

The collection was done with an instrument – which contemplated the 18 definning characteristics for the ND Ineffective Protection established by NANDA[3], along with their respective conceptual definitions with a base reference[7]. Also, the characteristic Malnutrition was added by suggestion of the researcher.

The Likert scale was given following values: 1: not characteristic; 2: slightly characteristic; 3: somewhat characteristic; 4: considerably characteristic; and 5: very characteristic.

For both the treatment and the data analysis, the study variables referring to the participants' private data were studied and analysed. For such characteristics, the descriptive statistics were used.

The frequency and the average were used as a means to sumarize the informations and values of the quantitative data regarding the studied definning characteristics; standard deviation was used to indicate the data variability in these characteristics.

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Regarding the definning characteristics, the weighted average was calculated from the grades given by the nurses for every one of them, in which they considered the following values according to the Likert scale: 1 = 0; 2 = 0.25; 3 = 0.50; 4 = 0.75; 5=1. The ≤ 0.50 values were discarded and the definning characteristics with weighted average ≥ 0.80 were considered temporary primary indicators[c]; the ones whose weighted average was < 0.80 e > 0.50 were considered temporary secondary indicators.

Following that, a DCV score was obtained by summing up the individual scores and dividing them by the total number of definning characteristics of the diagnostic, excluding the ones with a weighted average of ≤ 0.50[7].

The programs used were the Microsoft Office Excel 2003 and the WinPepi Version 2.6/Describe 1.62.

As for the ethical aspects, the research project was approved by the Research Committee of the Nursing Scholl and by UFRGS's Ethics Committee, as resolution of the Ministry of Health on research with human beings[8].

The participants signed a Term of Agreement; and for the ones who replyed by e-mail, their response was considered to be an agreement to participate in this study.

RESULTS

Out of a sample composed of 139 nurses, a 63 experts sample was finally obatined.

As for the academical education of the experts, 14 (22.2%) were graduated in Nursing, 47 (74.6%) were specialized in Nephrology, 1 (1.6%) had a masters degree and 1 (1.6%) was a PhD.

Regarding their active time working in Nephrology, 15 (46%) had been working in this specialty from 1 to 5 years, 14 (22.2%) from 6 to 10 years and 20(31.8%) for 11 or more years. It was also observed that 23.8% of the participants had been working in this specialty from 1 to 3 years, and 76.2% for 4 or more years.

Only 7.9% of the experts had developed and published some research. Articles or abstracts in journals of the area – Nephrology – were published by 15.8% of the experts. Participated in a course, seminar or lecture about the NP 21 experts (33.3%); which occurred on the same institution in which the nurses worked.

Out of the participant experts, only the ones who were vinculated to 5 (five) of the 31 participant dialysis centers have admitted to using the NP.

The result of the expert nurses evaluation regarding the definning characteristics of the ND Ineffective Protection in patients goingh through renal dialysis – by weighted average and standard deviation – is presented on Table 1.

Table 1 – Weighted Average and Standard Deviation of the Definning Characteristics of the Ineffective Protection Nursing Diagnosis, according to the judgement of nurses who have an expertise in Nephrology. Porto Alegre, RS, 2007.

Definning Characteristic	Weighted Average	Standard Deviation
Temporary Primary Indicators		
Immunity Deficiency	0,86	0,2
Neurossensory Alteration	0,81	0,2
Dyspnea	0,81	0,3
Pruritus	0,81	0,3
Malnutrition	0,80	0,2
Temporary Secondary Indicators		
Impaired Healing	0,77	0,3
Weakness	0,77	0,3
Altered Clotting	0,76	0,2
Maladaptive Stress Response	0,75	0,2
Fatigue	0,75	0,2
Anorexia	0,73	0,2
Insomnia	0,61	0,3
Disorientation	0,61	0,3
Chilling	0,61	0,3
Cough	0,60	0,3
Perspiring	0,55	0,3
Restlessness	0,52	0,3
Immobility	0,51	0,3
Excluded Indicators		
Ulcer Pressure	0,42	0,3

The total DCV found was 0.70.

DISCUSSION

Regarding the sample's profile, the majority of the participants is a Nephrology Specialist (74.6%), and a good part claimed to have been working in Nephrology for 4 or more years (76.2%). This

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[c] The term "temporary" will be used until other studies with broader samples – on a national level – or smaller and repeated ones that prove the results of this research are carried through.

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data shows that the ones working in the area are not only qualified for such, but also that they possess experience in assisting chronic kidney disease patients. This is very relevant, seeing as the quality of the care offered is related to factors already discussed, among other aspects.

It was also observed that, although there is a significative percentual of post-graduated nurses (specialists, masters and PhD) (77.8%), the scientific production is handled by less than a quarter of these experts (23.7%). This data signals the need of reviewing the importance of research regarding assistance; at the same time, it is imperative that scientific production be estimulated, so that it will be intensified on the Nursing area involved with Neprhology.

Still, when referring to a course or lecture about the NP, professionals seem to be more interested in seeking related knowledge, although only a third of them have disclosed to have any continual education regarding the NP.

Only 5 dialysis centers – according to the participants' information – adopted the NP in their routine activities, which presents an important obstacle in and off itself. The validation researches have a significative role, for they favor the adoption of the ND by the nursing community, using as a basis the knowledge of the DCs.

An important fact to be considered abou the NP and the ND is that their knwoledge is crucial to researches dealing with this theme. They may influence the final results, depending on the knowledge of the participants involved.

Regarding the definning charactersitics (DC), they will be presented according to the obtained results, respecting the Fehring categorization[7].

After the weighted average calculation, the results pointed out: **Immunity Deficiency** (score 0,86), **Neurossensory Alteration** (score 0,81), **Dyspnea** (score 0,81), **Pruritus** (score 0,81) and **Malnutrition** (score 0,80) as Temporary Primary Indicators of the Ineffective Protection ND.

Being a multiple etiology disease, the CKD is responsible for impairments of various kinds. As a matter of fact, the definning characteristics related by expert nurses manifest in the subjects going through HD.

Amongst the primary indicators present in the results, there is **Immunity Deficency**. The immunity of individuals with CKD is compromised because of factors like: uremia, inflamma-

tion, decrease in EPO production, malnutrition and advanced age.

Patients with RI have low immunity as a direct result of loss of kidney function. The mechanisms involved in the inadequate response of phagocytic cells, linphocytic cells and antigen processors are probably related to the inadequate elimination of suppressive components by bad kidneys, or the improper metabolism in the damaged renal parenchyma[9].

The disregulation of the immune system in terminal CKD is a multifactorial process that combines profound immunodeficiency with a state of cell activation. The dialysis procedure is the main factor for the beginning of the recurring cell activation process, which leads to a state of chronic inflammation named oxidative stress; this state is related to severe complications, such as atherosclerosis[10]. Therefore, patients going through HD are more susceptible to inflammation than healthy individuals.

Malnutrition – whose prevalence is high in terminal CKD – badly influences the immune response[11]. There are many causes for malnutrition, such as the psychosocial variables and serum albumin, which might have a straight relation to the state of uremia in patients goingh through hemodialysis.

Another primary index obtained in the results was **Neurossensory Alteration**. In patients with CKD going through HD, it can be related to the comorbidities frequently present in these pathologies as well as to the CKD-inherent manifestations. It is known that peripheral neuropathy occurs in up to 65% of the patients going through dialysis[12].

The alterations produced by uremia can occur in the central nervous system (CNS) and in the peripheral; they are both very vulnerable and compromised in patients with CRI[13]. Additionally, CNS complications can be induced by dialytic treatment.

Many times the neuropathy is subclinical, and it presents a variation in symptomathology. This variation affects both sensibility and motor activity; there is a noticeable occurrence in the inferior limbs, manifesting as a burning in the feet, paresthesia, loss of sensitivity, muscular weakness and walking difficulty[13].

The neurossensorial alteration pointed out in the results is a complication that normally takes

place in CKD bearers. There is a great possibility of association with the Ineffective Protection ND in this population.

The **dyspnea**, also pointed out as a primary index, is frequently reported in subjects going through HD; it is related to hypervolemia as well as to heart insufficiency and chronic obstructive pulmonary disease.

A survey that investigated the symptoms referred by the patients going through hemodialysis noticed that the prevalence of dyspnea in these subjects is of 33%[6]. Also another systematic review about the prevalence of symptoms on the final stage of the kidney disease showed a 35% prevalence of dyspnea[14].

For the nurse, working with orientations that can contribute to avoid or diminish dyspnea might generate more comfort and welfare to the patients involved.

Another Primary Index established by the results is the **Pruritus**. This DC has a special relation with the CKD, and occurs differently in other pathologies.

In a systematic review, 55% percent of the patients in the studies researched had prevalence of pruritus – this being one of the most important complaints in patients with CKD going though hemodialytic treatment. Amongst the multiple symptoms of this population, the pruritus occurs in one out of every 2 patients[14].

The study "Dialysis Outcomes and Practice Patterns Study" (DOPPS) investigated the relation between pruritus and morbidity, mortality, quality of life, sleep quality and laboratory parameters in over 300 dialysis unities from 12 countries. During 2002 and 2003, the prevalence of pruritus in patients going through HD, either moderately or severly, was of 42%. The study concluded that these patients possibly presented worse sleep quality, diagnosed depression and quality of physical/mental life with low scores[15].

Malnutrition – also gaining a Primary Index score in the present study – is a common characteristic in the CKD; it adversely affects the morbimortality of the patients. This complication – which is characterized by the increase of the proteic catabolism and by the insufficient protein intake and other energetic substances isolatedly[16] – occurs from 25 to 50% of the patients with chronic renal insufficiency.

To identify malnutrition, it is possible to use laboratory and anthropometric indicators. One indicator of simple application and interpretation is the body mass index (BMI) (weight/height^2). The classification of the BMI, according to the World Health Organization (WHO)[17], is the following: Normal (BMI ≥ 18,5), Mild Malnutrition (BMI 17,0 – 18,49), Moderate Malnutrition (BMI 16,0 – 16,99) and Severe Malnutrition (BMI < 16,0).

In chronic kidney disease, it is important to underline the ifluence anemia has over the severity of malnutrition.

To treat malnutrition, correcting anemia is an absolutely imperative action to be taken. Treating both – malnutrition and anemia – results in a far better – and faster – effect than treating malnutrition isolatedly[16].

Studies have been demonstrating that the serum albumin is a predicting factor independent from these patients' mortality – and strong in this same case. The multicentric study HEMO[18] showed that low values in the majority of the nutritional indicators (laboratory, anthropometric) are associated to the increase in the relative mortality risk. This underlines the need to improve – or in the least mantain – a good nutritional state in patients going through HD[18].

Even though they are not part of the DCs pointed out by NANDA, malnutrition is closely linked to the CKD, to the morbidity risk and to the Ineffective Protection ND. Although NANDA's Taxonomy regards the Inability to absorb nutrients as a related factor, the inclusion of the definning characteristic Ineffective Protection is suggested; its close relation to patients in chronic hemdialysis is confirmed in the present validation sutdy. However, new studies must be carried through if this suggestion is to be confirmed.

Regarding the Secondary Indicators, the results obtained according to the expert nurses' evaluation pointed out the following definning characteristics: healing impairment, weakness, altered clotting, maladaptvie stress response, fatigue, anorexia, insomnia, disorientation, chilling, cough, perspiring, restlessness and immobility.

It is important to emphasize that, although **Fatigue** and **Weakness** were not given a Primary Index score by this study, they are still referred to in the literature as important manifestations of the chronic kidney disease[5].

In a study about the patients with HD's most frequent complaints, fatique was indicated by 77% of the patients, and muscular weakness by 51%[5]. In a systematic review about symptoms reported

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by patients in HD, fatigue was the prevalent complaint by 71%[14].

Such symptoms can be easily related to the chronic disease and its manifestations, and specially to the anemia that is part of the CKD database.

The definning characteristic of **pressure ulcer** was excluded for attaining a score of ≤ 0.5.

The total CVD found was of 0.70. 57.9% of the characteristics inherent to the Ineffective Protection ND – along with the DCs indicated in this study – obtained a score above the total CVD. This value proves that most of the DCs are relevant to the Ineffective Protection's diagnosis and, therefore, to offer nursing care according to the needs of the patients.

CONCLUSIONS

This research attempted to validate the defining characteristics of the ND Ineffective Protection in patients going through renal dialysis, in which the opinion of the expert nurses was taken as basis. Such population was chosen as to value their knowledge in identifying specific characteristics observable in patients going through hemodialysis.

Amongst the prevalent NDs pointed out by the respective literature for the population involved, Ineffective Protection was elected due to its great reach for the multifactoriality of the chronic kidney disease.

Therefore, the 63 nurses participating in this study have pointed out the characteristics that take part in the clinical state of the kidney disease patients as Temporary Primary Indicators; such indicators are also tied to the comorbidities present in pathology, out of which diabetes is the main one. For the nurses who assist these subjects, such characteristics have an important meaning, since they might serve as a basis for care interventions.

As for Malnutrition, it is decidedly an important factor to the medical decisions – as in a renal replacement therapy – as well as an impactant factor to the individual's health and welfare. This way, despite the fact that NANDA Taxonomy takes Nutritional Alteration as a related factor, the inclusion of Malnutrition as a definning characteristic of Ineffective Protection is highly suggested for its close relation to the chronic renal disease. However, new studies must be carried through if such suggestion is to be attended.

As for the Secondary Indicators, a great deal of attention is payed to Weakness and Fatigue; both closely related to anemia of uremia. Although they were not pointed out as main factors, there are studies that prove the importance that their prevalence bears to the referred patients. These are manifestations that, more often than not, make the social reestablishment of these individuals difficult, keeping the subjects from exercising various activities that involve mobility and physical force.

The CVD total score was 0.70 and shows that the majority of the DCs of the Ineffective Protection diagnosis are relevant to the subjects with CKD in hemodialysis, since 11 NDs out of the 19 studied obtained a socre higher than the total CVD.

This study's limitation can be placed at the characterization of the expert nurses, for it was necessary to adapt the Fehring criteria[7] in order to better suit Brazilian reality. There is also the reduced number of centers that adopted the NP in their clinical practice. This fact translates the need the Nursing Process has for greater capacitation, specially in Nursing Diagnosis.

The clinical validation of the Ineffective Protection ND and of other nursing diagnosis in Neprhology suggests that this study will continue. For the nurses to be able to properly use the ND, it is necessary that they become aware of them. Therefore, it is up to the nursing community to contribute with other studies in order to employ the diagnosis to the regular treatment and to make them befitting of the reality in which they are used.

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