DEFICIENT KNOWLEDGE IN HEMODIALYSIS PATIENTS: AN INTEGRATIVE REVIEW

CONHECIMENTO DEFICIENTE DE PACIENTES SUBMETIDOS À HEMODIÁLISE: REVISÃO INTEGRATIVA

CONOCIMIENTOS DEFICIENTES DE PACIENTES EN HEMODIÁLISIS: REVISIÓN INTEGRADORA

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ABSTRACT
Objective: to identify the antecedents and consequences of the nursing diagnosis Deficient Knowledge in hemodialysis patients. **Method:** an integrative review was carried out in BIREME, CINAHL, SCOPUS, Web of Science, and LILACS. The time frame used in the searches was from 2018 to 2022, with the final sample consisting of 12 articles. **Results:** among the selected articles, there was a prevalence of level VI studies and studies with a level A methodological rigor. The antecedents identified were male gender, advanced age, low education, lack of a partner, low socioeconomic status, lack of educational interventions for patients, and alteration in memory. Furthermore, the consequences were lack of therapeutic adherence, injuries, and low quality of life. **Conclusion:** the antecedents and consequences of Deficient knowledge can be identified in hemodialysis patients, helping professionals accurately infer the nursing diagnosis.
Descriptors: Renal Dialysis; Chronic Renal Failure; Knowledge; Health Education; Nursing Process.

RESUMO
Objetivo: identificar os antecedentes e consequentes do diagnóstico de enfermagem Conhecimento Deficiente em pacientes submetidos à hemodiálise. **Método:** revisão integrativa, cuja busca aos artigos foi realizada nas bases de dados: BIREME, CINAHL, SCOPUS, Web of Science e LILACS. O recorte temporal usado nas buscas foi entre 2018 e 2022, sendo a amostra final composta por 12 artigos. **Resultados:** dentre os manuscritos selecionados, observou-se a prevalência de estudos com nível VI de evidência e rigor metodológico nível A. Os antecedentes identificados foram relacionados ao sexo masculino, à idade avançada, baixa escolaridade, falta de companheiro (a), baixo nível socioeconômico, inexistência de intervenções educativas para pacientes e ausência de memória. E os consequentes identificados foram relacionados à falta de adesão terapêutica, à presença de agravos e menor qualidade de vida. **Conclusão:** identificaram-se os antecedentes e consequentes do diagnóstico de enfermagem Conhecimento Deficiente em pacientes submetidos à hemodiálise, para auxiliar o profissional a inferir um diagnóstico de enfermagem de forma acurada.
Descritores: Diálise Renal; Insuficiência Renal Crônica; Conhecimento; Educação em Saúde; Processo de Enfermagem.

RESUMEN
Objetivo: identificar los antecedentes y consecuencias del diagnóstico de enfermería Conocimientos Deficientes en pacientes en hemodiálisis. **Método:** revisión integradora, cuya búsqueda de artículos se realizó en las bases de datos: BIREME, CINAHL, SCOPUS, Web of Science y LILACS. El marco temporal utilizado en las búsquedas fue entre 2018 y 2022, siendo la muestra final de 12 artículos. **Resultados:** entre los manuscritos seleccionados, hubo una

prevalencia de estudios con nivel VI de evidencia y nivel de rigor metodológico A. Los antecedentes identificados fueron sexo masculino, edad avanzada, baja escolaridad, falta de pareja, bajo nivel socioeconómico, falta de intervenciones educativas para los pacientes y falta de memoria. Las consecuencias identificadas fueron falta de adherencia terapéutica, presencia de lesiones y menor calidad de vida. ***Conclusión:*** se identificaron los antecedentes y las consecuencias del diagnóstico Conocimientos Deficiente en pacientes en hemodiálisis, para ayudar a los profesionales a inferir con precisión esto diagnóstico de enfermería.
Descriptores: Diálisis Renal; Insuficiencia Renal Crónica; Conocimiento; Educación en Salud; Proceso de Enfermería.

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INTRODUCTION

With a gradual increase in recent years, chronic kidney disease (CKD) is considered a public health problem worldwide, affecting about 10% to 15% of the global population.[1]

The evolution of the disease happens due to the gradual loss of renal function. In the first stage, the disease is characterized by kidney damage without symptoms.[2] In the fifth and last stage of the disease, the glomerular filtration rate is <15 ml/min/1.73m^2, and life-sustaining renal replacement therapy, which consists of kidney transplantation, peritoneal dialysis, or hemodialysis (HD), becomes necessary due to the body's inability to maintain homeostasis.[3]

Among the renal replacement therapies mentioned above, HD is the most common, which consists of filtering and purifying the blood by removing toxic substances and excess water from the body to maintain normal standards.[3]

In addition to the need for renal replacement therapy, a patient in stage five CKD lives with the complexity of the therapeutic regimen since there is a need to carry out a specific diet, with fluid intake control and adherence to a medication regimen[4]. The lack of knowledge about therapy directly influences the presence of complications, which can lead to an increase in morbidity and mortality.[2]

The most evidenced and reported complications of non-adherence to renal replacement therapy (HD and fluid restriction) in the literature are respiratory difficulties, arterial hypertension, and pulmonary edema. Moreover, patients may develop increased phosphate levels due to non-adherence to diet and drug treatment, causing secondary hyperparathyroidism and renal osteodystrophy.[4-5] Thus, it is necessary to implement activities that provide means for acquiring and increasing knowledge about the disease and treatment, with a view to greater adherence to the therapeutic regimen by the patient.[4-6]

First, the implementation of these activities begins with the identification of deficient knowledge by the nurse through the diagnostic inference since this nursing phenomenon is found as a diagnosis of the North American Nursing Diagnosis Association International

(NANDA-I) taxonomy II, in the Perception/cognition domain and in the Cognition class, being defined as the absence of cognitive information related to a specific topic, or its acquisition, with four defining characteristics/clinical indicators: inaccurate statements about a topic, inappropriate behavior, inaccurate performance on a test, inaccurate follow-through of instruction.[7]

Diagnostic inferences based on scientific evidence require that nursing diagnoses be submitted to studies that define the predictive power of the clinical indicators, through the construction and validation of antecedents and possible consequences that the phenomenon can cause in specific populations.[8] Given the above, this study aimed to identify the antecedents and consequences of the nursing diagnosis Deficient Knowledge in hemodialysis patients.

OBJECTIVE

To identify the antecedents and consequences of the nursing diagnosis Deficient Knowledge in hemodialysis patients.

METHOD

An integrative review was carried out following the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) and Whittemore and Knalf's steps: 1) identification of the problem, 2) literature search, 3) data collection, 4) data analysis, and 5) presentation.[9]

The study sought to answer the following guiding question: What are the antecedents and consequences of the nursing diagnosis Deficient Knowledge in hemodialysis patients? This question was elaborated from the PICo strategy, where P – population: hemodialysis patients; I – interest: antecedents and consequences; and Co - context: Deficient Knowledge.

The data collection took place from January to February 2022, through the Portal of Journals of the Coordination for the Improvement of Higher Education Personnel (CAPES), with access validated by the Federated Academic Community (CAFe), in the following databases: Nursing database (BIREME), National Library of Medicine (PUBMED), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Scopus, and Web of Science.

The following Health Sciences Descriptors (DeCS) and the Medical Subject Headings (MeSH) were applied, with the respective translations: renal dialysis, chronic renal failure, knowledge, health education, health care outcome assessment, nursing care, and nursing process. Subsequently, the crossings were made using seven descriptors in the time frame of five years to obtain and discuss results and current evidence from the literature, as shown in Table 1.

After completing the search, the articles were exported to the collaborative software Rayyan® for reviews and bibliographic selection, allowing the researchers to perform a primary selection of articles according to their titles and abstracts.

As an inclusion criterion, original articles published in full format in the selected databases that answered the study's guiding question were considered. The exclusion criteria

were editorials, letters to the reader, abstracts, theses, dissertations, reviews, and duplicate articles.

Table 1. Number of publications on Deficient Knowledge in hemodialysis patients in the databases. Campina Grande, Paraíba, Brazil, 2022.

CROSSINGS	DATABASE				
	SCOPUS	BIREME	PUBMED	WEB OF SCIENCE	CINAHL
Renal Dialysis OR Chronic Kidney Failure AND Knowledge AND Patient Education OR Health Education AND Health Care Outcome Assessment AND Nursing Care	217	1	6,297	101,451	16,341
Renal Dialysis OR Chronic Kidney Failure AND Knowledge AND Patient Education OR Health Education AND Health Care Outcome Assessment AND Nursing Process	10	1	2,675	99,730	16,331
Total	227	2	8,972	201,181	32,672

The level of evidence of the studies was classified using Melnyk and Fineout-Overholt's framework, which characterizes as level I – evidence from systematic reviews or meta-analysis of relevant clinical trials, level II – evidence from at least one well-designed randomized controlled clinical trial, level III – well-designed clinical trials without randomization, level IV – well-designed cohort and case-control studies, level V – systematic reviews of descriptive and qualitative studies, weak evidence, level VI – evidence derived from a single descriptive or qualitative study, and level VII – opinion of authorities or report of expert committees.[10]

Regarding the methodological rigor, an instrument was adapted from the Critical Appraisal Skills Program (CASP), with the answer 'yes' being assigned when the criterion was properly described (score 1) and 'no' when the criterion was not described (score 0). The total scores ranged from zero to 10 and can be classified as level A (6 to 10 points) – good methodological quality and reduced bias, or level B (less than or equal to 5 points) – satisfactory methodological quality with potentially increased bias.[11]

A total of 243,054 studies were identified in the selected databases. From the careful reading of titles and abstracts, 34 articles were selected for full text screening. Twelve articles met the required criteria and made up the final sample, as displayed in Figure 1.

The data obtained through the selection of articles that responded to the objectives and guiding question of the study were listed and grouped in charts. Then, the antecedents and consequences of Deficient Knowledge in hemodialysis patients were exposed.
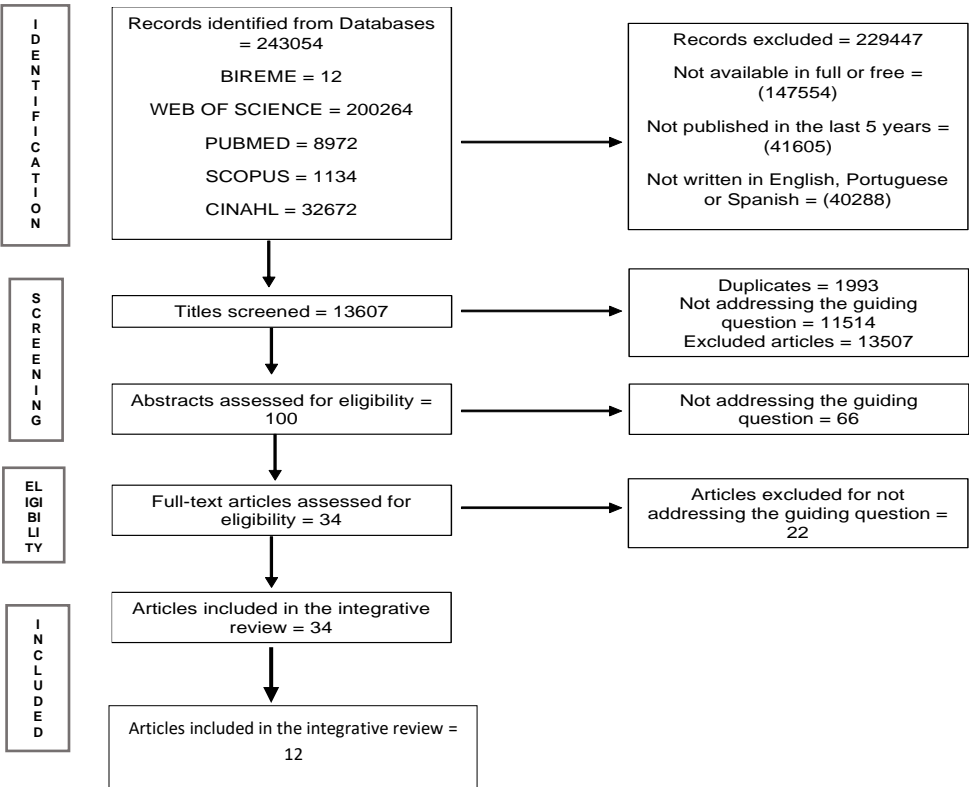
Figure 1. Flow chart of study selection adapted from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). Campina Grande, Paraíba, Brazil, 2022.

RESULTS

The sample consisted of 12 articles. Of these, one was available on the PUBMED database, four on the Web of Science, one on BIREME, two on SCOPUS, and four on CINAHL. Two studies were carried out in Brazil, the United States, and England. The other studies were carried out in countries such as India, Finland, Greece, Saudi Arabia, Holland, and the African continent.

Table 2. Characterization of included articles, according to authors, year of publication, objective/research question, database, study design, and CASP level of evidence. Campina Grande, Paraíba, Brazil, 2022.

AUTHORS/YEAR OF PUBLICATION	OBJECTIVE/ RESEARCH QUESTION	DATABASE	STUDY DESIGN	CASP LEVEL OF EVIDENCE
RATHINASAM, 2019.	To evaluate the effectiveness of an education and exercise intervention on the quality of life of patients with end-stage renal disease.	SCOPUS	Randomized clinical trial	LEVEL A LEVEL II
NEL; VAN DEN BERG; SPIES, 2021.	To describe the knowledge, attitudes, and practices regarding the 'renal diet' of patients	WEB OF SCIENCE	Cross-sectional study	LEVEL A LEVEL VI

	receiving MHD in Bloemfontein, Free State province.			
GLYDE ET AL., 2019.	To explore hemodialysis patients' perceptions of fluid management.	SCOPUS	Qualitative study	LEVEL A LEVEL VI
INKEROINEN ET AL., 2021.	To evaluate the subjective and objective sufficiency of knowledge processed in patient education in dialysis care and treatment.	CINAHL	Cross-sectional study	LEVEL A LEVEL VI
ALIKARI ET AL., 2019.	To evaluate the impact of an educational intervention on the level of knowledge, quality of life, and adherence to the treatment regimen in hemodialysis patients, and describe the association between these variables.	CINAHL	Case-control study	LEVEL A LEVEL IV
LINS ET AL., 2018.	To identify the adherence behavior of chronic renal patients to the therapeutic regimen in the four dimensions: hemodialysis, medication use, diet, and fluid restriction.	WEB OF SCIENCE	Cross-sectional study	LEVEL A LEVEL VI
PARKER, 2019.	To evaluate the improvement of prescribed fluid restriction in patients with chronic renal failure on hemodialysis.	CINAHL	Cross-sectional study	LEVEL B LEVEL VI
COMBES ET AL., 2017.	To identify the effectiveness of the pre-dialysis education from the perspective of patients and staff.	CINAHL	Qualitative study	LEVEL B LEVEL VI
SIEW ET AL., 2019.	To identify disease-specific awareness and knowledge	BIREME	Cross-sectional study	LEVEL A LEVEL VI

	among acute kidney injury survivors.			
DE-ARAUJO-FERREIRA ET AL., 2018.	To identify the relationship between socioeconomic variables and indicators of the nursing outcome Knowledge: disease process.	PUBMED	Cross-sectional study	LEVEL A LEVEL VI
ALOBAIDI, 2021.	To explore the knowledge of CKD among the population of the Kingdom of Saudi Arabia, using a validated questionnaire to determine the level of knowledge about CKD and predictors of knowledge of CKD.	WEB OF SCIENCE	Cross-sectional study	LEVEL A LEVEL VI
THIO ET AL., 2020.	To examine the strength of the association of lower socioeconomic status with longitudinal outcomes, CKD incidence, and annual variation and estimated glomerular filtration rate in a general Dutch population sample.	WEB OF SCIENCE	Cohort study	LEVEL A LEVEL IV

Regarding the study designs, seven cross-sectional studies were found, two qualitative studies, one case-control study, one cohort study, and one clinical trial. Except for two articles, the others presented a level A methodological rigor. Even so, the selected sample remained in the study.

Table 3. Distribution of articles, according to antecedents and consequences of Deficient Knowledge in hemodialysis patients. Campina Grande, Paraíba, Brazil, 2022.

ARTICLES	ANTECEDENTS	CONSEQUENCES
EDUCATIONAL LEVEL AND RISK OF CHRONIC KIDNEY DISEASE: LONGITUDINAL DATA FROM THE PREVEND STUDY	-Low education level; -Low socioeconomic status.	-Exposure to traditional risk factors; -Advancement in the stages of Chronic Kidney Disease; -Lower glomerular filtration rate; -Higher urinary albumin excretion; -Low quality diet; -Higher prevalence of hypertension and diabetes; -Higher protein intake.

EFFECTIVENESS OF EDUCATION AND EXERCISE ON QUALITY OF LIFE AMONG PATIENTS UNDERGOING HEMODIALYSIS	-Lack of educational interventions for patients.	-Functional disabilities; -Unstable mood; -Low physical performance; -Low quality of life.
HOW DOES PRE-DIALYSIS EDUCATION NEED TO CHANGE? FINDINGS FROM A QUALITATIVE STUDY WITH STAFF AND PATIENTS	-Lack of information; -Alteration in memory; -Inconsistency in the information passed on; -Complex information; -Less than ideal education; -Difficulty with reading written materials; -Limited teaching methods; -Deficit in dialogue with professionals and other patients; -Little diversity of teaching methods.	-Dissatisfaction with the treatment; -Difficulty and limitation in decision-making; -Lack of patient involvement in treatment.
KIDNEY DISEASE AWARENESS AND KNOWLEDGE AMONG SURVIVORS OF ACUTE KIDNEY INJURY	-Deficit in understanding the health state; -Male gender; -Deficit in communication between professionals and patients; -Lack of health education actions; -Low health literacy; -Low income.	-Worsening of health outcomes; -Difficulty in making decisions; -Increased risk of recurrent kidney injury; -Difficulty in recovery; -Lack of nephrology consultation; -Difficulty with self-care.
KNOWLEDGE: DISEASE PROCESS IN PATIENTS UNDERGOING HEMODIALYSIS	-Advanced age (> 50 years); -Male gender; -Low education level.	-Long-term search for health care; -Harmful outcomes; -Deficit in recognizing signs and symptoms; -Self-care deficit; -Low adherence to treatment.
KNOWLEDGE OF CHRONIC KIDNEY DISEASE AMONG POPULATION OF SAUDI ARABIA EVALUATED USING A VALIDATED QUESTIONNAIRE: A CROSS-SECTIONAL STUDY	-Advanced age (> 55 years); -Low educational level; -Low economic level; -Marital status (individuals without a partner).	-Late detection of CKD; -Adherence to ineffective and/or harmful treatments.
KNOWLEDGE, ATTITUDE AND PRACTICES OF PATIENTS RECEIVING MAINTENANCE HAEMODIALYSIS IN BLOEMFONTEIN, SOUTH AFRICA	-Low educational level; -Lack of information on the topic; -Complex information.	-Low adherence to treatment; -Negative and/or harmful attitudes to the patient's health condition.
PATIENTS' PERCEPTIONS OF THEIR EXPERIENCE, CONTROL AND KNOWLEDGE OF FLUID MANAGEMENT WHEN RECEIVING HAEMODIALYSIS	-Advanced age (> 50 years); -Deficit in understanding the health state; - Low educational level.	-Low adherence to treatment; -Lack of patient involvement in treatment.

SUFFICIENCY OF KNOWLEDGE PROCESSED IN PATIENT EDUCATION IS DIALYSIS CARE	-Advanced age (> 50 years); -Male gender; -Low educational level; -Deficit in understanding the health state.	-Low adherence to treatment; -Self-care deficit; -Lack of involvement of the companion in the treatment.
THE IMPACT OF EDUCATION ON KNOWLEDGE, ADHERENCE AND QUALITY OF LIFE AMONG PATIENTS ON HAEMODIALYSIS	-Lack of information; -Low educational level; -Low socioeconomic level; -Male gender.	-Unstable mood; -Difficulty in making decisions; -Low physical performance; -Low quality of life; -Dissatisfaction with treatment.
TREATMENT ADHERENCE OF CHRONIC KIDNEY DISEASE PATIENTS ON HEMODIALYSIS	-Advanced age (> 55 years); -Male gender; -Low educational level; -Deficit in communication between professionals and patients; -Lack of health education actions.	-Low adherence to treatment; -Difficulty in recovery; -Difficulty with self-care.
USE OF AN EDUCATIONAL INTERVENTION TO IMPROVE FLUID RESTRICTION ADHERENCE IN PATIENTS ON HEMODIALYSIS	-Advanced age (> 50 years); -Low educational level.	-Dissatisfaction with the treatment; -Difficulty and limitation in decision-making; -Absence of companion involvement in treatment.

DISCUSSION

The studies addressed the diversity of antecedents that favor the development of Deficient Knowledge in HD patients and the consequences of this phenomenon. The antecedents identified were related to sociodemographic/economic data and the absence of educational interventions, having, as consequences, the lack of therapeutic adherence, the presence of kidney injuries, and the lower quality of life.

It was possible to understand that age, socioeconomic factors, and low education are present in the research results, and it is important to recognize that the literacy level of patients interferes with adherence to treatment.[6]

A study in Africa found that patients with a high education level better understood the diagnosis and treatment. By knowing the disease, there is a greater probability of carrying out measures to prevent injuries, which can decrease complications or delay the disease recovery. Furthermore, low education is associated with a lack of self-care and low adherence to treatment.[1-12]

Knowledge about kidney disease is still scarce in society since it is below expectations, both in hospitalized patients and those who receive care from specialized nephrology professionals. Patients claim that they receive much information about the disease, and some criticize the information overload, awakening the desire for more specific and easy-to-understand information.[13-14]

A study in Saudi Arabia and another in Australia described that the participants had insufficient knowledge about kidney function, especially concerning blood pressure regulation

and maintenance of bone health. On the other hand, practitioners had good knowledge about blood and urine tests.[15]

In Rio de Janeiro, Brazil, strategies were developed to improve communication between professionals and patients in an outpatient clinic. Collectively, the team developed debates in the waiting room mediated by health professionals and created a CKD follow-up card to facilitate visualization of the progression of the disease and other information about the treatment. These strategies were effective on increasing the understanding and adherence to treatment, in addition to allowing self-reflection in the therapeutic approach.[2]

Treatment adherence is a dynamic process, and information needs to be provided continuously during treatment. About 26.9% to 33.3% of patients receive information only at the beginning of treatment. This fact favors the individual's demotivation and non-adherence to therapy.[2]

A study in Greece demonstrated that educational actions could improve patients' knowledge, adherence to treatment, and quality of life. This improvement is associated with educational programs emphasizing patient-centered care, which benefits physical, mental, self-care, and clinical decision-making. During the study, an intervention was carried out with two groups with a similar level of knowledge, and after the intervention, the intervention group obtained a better score when compared to the control group.[4]

The application of educational sessions before and after the procedure increases the levels of knowledge and improves therapeutic adherence, as verified on the adherence to fluid restriction, with went from 47% before to 71.5% after an intervention tested in a prior study.[4]

In South Africa, men are the majority when it comes to renal replacement therapy, even though women have a higher rate of CKD. Concerning knowledge about feeding and food restriction, men had average knowledge. Furthermore, when asked about electrolytes, such as sodium, potassium, and phosphate content, they showed inadequate knowledge.[12]

In addition to adequate nutrition, drug therapy is indispensable for controlling the disease. When being assessed on drug use, about three-fifths of participants in the African study had inadequate knowledge about the drug and how to use it.[12]

In a study carried out in Saudi Arabia, 50.1% of the participants did not know that the drugs help slow the progress of the disease, and 66.9% mistakenly believed that herbal supplements were effective in the treatment. These data demonstrate the poor understanding of the population about the treatment.[15]

A study carried out in Saudi Arabia shows that older, married persons, with a higher educational and economic level, and who routinely practiced physical activity (>150 min/week) had greater knowledge. Besides, study participants who had Diabetes Mellitus (DM), Systemic Arterial Hypertension (SAH), and a family history of renal failure had superior knowledge compared to the others.[15] Regarding age, patients younger than 50 had better knowledge, self-management, and perception of symptoms of the disease in more advanced stages.[3]

It is acknowledged that nursing consultation has a vital role that favors the increase in therapeutic adherence. The application of multidisciplinary models with protocols led by nurses showed superior results in adherence to treatment in renal patients, with the main elements being: an organized approach, evidence-based therapies, and self-management.[2]

CONCLUSION

The study made it possible to clarify the understanding of the phenomenon Deficient Knowledge in hemodialysis patients by identifying antecedents and consequences that permeate this phenomenon.

The antecedents identified were male gender, advanced age, low education, lack of a partner, low socioeconomic status, lack of educational interventions for patients, and alteration in memory. The consequences were non-adherence to therapy, injuries, and low quality of life.

Thus, knowing the antecedents of this phenomenon and evaluating them in clinical practice allows the inference of an accurate diagnosis, the establishment of nursing interventions focused on the real needs of each person, and the reduction of the consequences of Deficient Knowledge in this clientele.

CONTRIBUTIONS

The authors contributed in an equivalent way to the development of the research, considering the stages of project design, data collection and analysis, discussion, writing and content review, with the final version of the study being approved by all.

CONFLICT OF INTERESTS

Nothing to declare.

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REFERENCES

1. Thio, CH, Vart P, Kieneker LM, Snieder H, Gansevoort RT, Bültmann U. Educational level and risk of chronic kidney disease: longitudinal data from the PREVEND study. Nephrol Dial Transplant. 2020 Jul 1;35(7):1211-1218.

2. Lins SMDSB, Leite JL, Godoy SD, Tavares JMAB, Rocha RG, Silva FVC. Treatment adherence of chronic kidney disease patients on hemodialysis. Acta paul. enferm. 2018;31(1):54-60.

3. Ferreira JKA, Pessoa NRC, Pôrto NP, Santos LNM, Lira ALBC, Frazão CMFQ. Knowledge: disease process in patients undergoing hemodialysis. Invest. educ. enferm. 2018;36(2).

4. Alikari V, Tsironi M, Matziou V, Tzavella F, Stathoulis J, Babatsikou F, Zyga S. The impact of education on knowledge, adherence and quality of life among patients on haemodialysis. Qual Life Res. 2019 Jan;28(1):73-83.

5. Parker JR. Use of an educational intervention to improve fluid restriction adherence in patients on hemodialysis. Nephrol Nurs J. 2019 Jan-Feb;46(1):43-47.

6. Inkeroinen S, Koskinen J, Karlsson M, Kilpi T, Leino-Kilpi H, Puukka P, et al. Sufficiency of Knowledge Processed in Patient Education in Dialysis Care. Patient Prefer Adherence. 2021 May;15:1165-1175.

7. Herdman TH, Kamitsuru S, Takáo CL. Nursing Diagnoses: Definitions and classification, 2021-2023. 12th ed. [s.l.]: Thieme; 2021.

8.Monteiro FPM, Araújo TL, Costa FBC, Leandro TA, Cavalcante TF, Lopes MVO. Validação clínica do diagnóstico de enfermagem "Disposição para desenvolvimento melhorado do lactente". Rev. bras. enferm. 2016 Oct;69(5):855-863.

9.Whittemore R, Knafl K. The integrative review: updated methodology. J Adv Nurs. 2005;52(5):546-553.

10.Melnyk BM, Fineout-Overholt E. Making the case for evidence-based practice and cultivating a spirit of inquiry. In: Melnyk BM, Fineout-Overholt E, editors. Evidence-based practice in nursing & healthcare A guide to best practice. Philadelphia: Wolters Kluwer; 2011. p. 3-24.

11.Trust MKPC. Adaptado Critical Appraisal Skills Programme (CASP) - Programa de habilidades em leitura crítica. 2013.

12.Spies HC, Van den Berg VL, Nel M. Knowledge, attitude and practices of patients receiving maintenance haemodialysis in Bloemfontein, South Africa. South Afr J Clin Nutr. 2021 Apr; 34(3):116-122.

13. Siew ED, Parr SK, Wild MG, Levea SL, Mehta KG, Umeukeje EM, et al. Kidney disease awareness and knowledge among survivors of acute kidney injury. Am J Nephrol. 2019 Apr;49(6):449-459.

14. Combes G, Sein K, Allen K. How does pre-dialysis education need to change? Findings from a qualitative study with staff and patients. BMC Nephrol. 2017 Nov;18(1):1-11.

15. Alobaidi S. Knowledge of chronic kidney disease among the population of Saudi Arabia evaluated using a validated questionnaire: a Cross-sectional study. Patient Prefer Adherence. 2021 Jun 14;15:1281-1288.
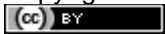
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