

Educational technologies used by the nurse with the elderly on hemodialysis: a scoping review protocol

Tecnologias educacionais utilizadas pelo enfermeiro ao idoso em hemodiálise: protocolo de revisão de escopo

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ABSTRACT

Objective: To identify the educational technologies used by nurses in the care of the elderly on hemodialysis. **Method:** This is a scoping review protocol developed based on the recommendations of the Joanna Briggs Institute Manual and registered with the Open Science Framework: <https://osf.io/9qfge>. Articles will be searched in Medline/PubMed, Scopus, Web of Science, Embase, LILACS, BDNF, CINAHL, and Google Scholar databases. Studies that answer the research question, "What educational technologies are used by nurses working with the elderly in hemodialysis?" will be considered eligible. Two reviewers will work independently to select articles. Rayyan software will be used as a tool to assist in document archiving. The reference lists of the selected articles will also be consulted. A third reviewer will assess the disagreement in case of disagreement between the reviewers. For data synthesis and extraction, the authors will use a pre-designed form. The results will be presented in tables, flowcharts, summaries, and narrative discussions.

Descriptors: Nurse; Kidney Dialysis; Elderly.

RESUMO

Objetivo: Mapear as tecnologias educacionais utilizadas pelo enfermeiro no cuidado ao idoso em hemodiálise. **Método:** Trata-se de um protocolo de revisão de escopo desenvolvido com base nas recomendações do Manual do Instituto Joanna Briggs e registrado na Open Science Framework: <https://osf.io/9qfge>. A busca pelos artigos será realizada nas bases de dados Medline/PubMed, Scopus, Web of Science, Embase, LILACS, BDNF, CINAHL e Google Scholar. Serão considerados elegíveis os estudos que respondam à pergunta de pesquisa "Quais são as tecnologias educacionais utilizadas pelo enfermeiro ao idoso em hemodiálise?". Dois revisores atuarão de maneira independente para promover a seleção dos artigos. O software Rayyan será utilizado como ferramenta para auxiliar no arquivamento dos documentos. As listas de referências dos artigos selecionados também serão consultadas. Caso haja divergências entre os revisores, um terceiro revisor fará a apreciação para resolver as discordâncias. Para a síntese e extração dos dados, os autores utilizarão um formulário previamente elaborado. A apresentação dos resultados será feita por meio de quadros, fluxogramas, resumo e discussão narrativa.

Descritores: Enfermeiro; Diálise Renal; Idoso.

INTRODUCTION

It is known that using health technologies can improve the monitoring of the clinical progression of chronic patients, such as using mobile devices for self-monitoring, based on the knowledge gained from nursing work experience. In addition, informatics in health care streamlines services and human resources and assists professionals in providing quality patient care⁽¹⁾. Health informatics is a broad field that aims to optimize the storage and management of health information. Telemedicine is one of the most practical ways of using telecommunication technologies to facilitate remote interaction between health professionals and their patients⁽²⁻³⁾, contributing to health care and patient education.

Among the patients to be supported are the elderly. By 2025, Brazil is projected to become a country with a significant elderly population, ranking sixth globally. The growth is particularly pronounced in the elderly age group,

potentially putting a strain on hospital costs⁽⁴⁾. In this context, public policies must ensure “universal and redistributive” care for chronic diseases, investing in health programs that promote healthy aging and reduce social inequalities⁽⁵⁾. Kidney injury is directly related to aging, as evidenced by increased serum creatinine levels and oliguria in elderly patients. Natural aging of the kidney leads to a reduced glomerular filtration rate capacity. In addition, the elderly population is often associated with underlying medical conditions such as diabetes mellitus and hypertension⁽⁵⁻⁶⁾. Patients with kidney injury may require hemodialysis treatment.

The Brazilian daily dialysis census (2009-2018) revealed a significant trend toward increasing elderly patients in dialysis services. This phenomenon can be attributed to several factors: the population’s life expectancy has risen in recent years; techniques used in hemodialysis services significantly improved; more effective pharmacological support has been introduced to combat complications arising from end-stage chronic kidney disease⁽⁶⁾.

On the other hand, managing a Hemodialysis Service by nursing professionals, especially in Intensive Care Units, presents a significant challenge for nurses. This sector involves numerous complexities related to management itself, and the preparation of professionals working in these units is crucial to meet the specific health demands of this environment. In this context, organizing nursing care in nephrology requires providing safety and effectiveness in caring for the elderly, aiming to avoid worsening their clinical condition⁽⁷⁾.

Research on hemodialysis service management suggests that certain actions can ensure the safe execution of dialysis procedures. These actions include developing specific protocols for hemodialysis, implementing the Nursing Process with all its stages, particularly related to choosing diagnoses and nursing prescriptions, constructing tools for patient safety in dialysis, creating content for continuous nurse education, analyzing, and selecting strategies for educating renal injury patients, and other related processes⁽⁸⁻⁹⁾.

Globally, therapeutic interventions for elderly individuals with Chronic Kidney Disease in the non-dialytic phase focus on controlling hypertension and diabetes⁽¹⁰⁾, making health education necessary to prevent the progression to dialysis. Hence, it is presumed that Educational Technologies (ETs) directed towards elderly individuals

with renal injury treated in Hemodialysis Services are important as they can facilitate the nursing process in caring for these patients during dialysis procedures. ETs encompass the interaction between the educator and the learner and can be applied in various areas of learning. They may not necessarily involve technological advancements but can manifest as processes or strategies that enable learning, promote behavior change, and enhance autonomy⁽¹¹⁾. A review study demonstrated that various educational technologies, such as videos, mobile applications, games, booklets/manuals, and light technology through group meetings addressing health-related topics, have been used to promote elderly health⁽¹²⁻¹³⁾. Thus, it becomes imperative for nurses to find effective and efficient ways to manage Hemodialysis Services, improve service quality, and maintain procedure safety, thereby avoiding unnecessary health risks⁽¹⁴⁾. Therefore, developing specific educational technology protocols for them is crucial to prevent complications in their clinical conditions. In the absence of effective health education to maintain their well-being, elderly individuals may develop chronic kidney disease and become dependent on a regular hemodialysis program.

No scoping review was found in the databases and the Open Science Framework registry concerning the educational technologies used by nurses for the elderly in hemodialysis, underscoring the significance of this research aiming to enhance the quality of nursing practice provided to this population. Furthermore, this study will contribute to expanding the scientific literature in the nursing field. Various review types could have been conducted for this study regarding the chosen review type. However, we believe that a scoping review would best achieve the objective of this work by enabling the mapping of the largest possible number of existing evidence on the subject. Therefore, this scoping review protocol aims to map the educational technologies nurses use in caring for elderly individuals undergoing hemodialysis.

METHOD

This is a protocol for conducting a scoping review, developed following the Joanna Briggs Institute (JBI) Manual for Evidence Synthesis⁽¹⁵⁾, which will be considered for the entire review process. The protocol was registered on the Open Science Framework under the following DOI identifier: <https://osf.io/9qfge>.

Review question

The PCC (Population, Concept, Context) strategy was used to formulate the review question and establish eligibility criteria. Accordingly, we developed the following review question: "What educational technologies are used by nurses to care for older adults undergoing hemodialysis?" Figure 1 illustrates the PCC strategy that will be used in the current scoping review.

Inclusion and exclusion criteria

The scoping review will include both primary and secondary studies that address the use of educational technology by nurses for older adults undergoing hemodialysis. These studies will be collected from scientific databases and gray literature sources with no restrictions on language or year of publication. However, texts available in preprint repositories and those presented only in abstracts, proceedings, and scientific meeting programs will be excluded from the review.

Population

The review will include studies conducted with nurses caring for the needs of older people (60 years and older), regardless of gender or ethnicity, who have undergone hemodialysis treatment.

Concept

This review aims to identify the most relevant scientific evidence on using educational technologies to improve the care of elderly patients undergoing hemodialysis. Therefore, different types of educational technologies (such as videos, mobile applications, booklets, manuals, etc.) used by nurses and designed for patients undergoing hemodialysis will be addressed.

Context

The context of this review will be older people undergoing renal dialysis.

Sources of evidence

The proposed scoping review protocol will allow for analyzing a wide range of scientific studies without language or year of publication restrictions. The review will include studies conducted with nurses, as the objective is to comprehensively map all educational technologies used by these professionals for elderly individuals undergoing hemodialysis. The following study types will be considered: primary and secondary; experimental and quasi-experimental; analytic observatio-

nal and descriptive observational (including case series and case reports); cohort; case-control; cross-sectional; case series; case reports; qualitative research; and clinical practice guidelines. In addition, the inclusion of gray literature sources such as dissertations, opinion pieces, and articles from non-traditional sources is planned.

Search strategy and information sources

Multiple evidence sources, including grey literature, will be utilized in this review. The search process will unfold across three distinct stages: In the first stage, searches will be conducted in databases like Medline (via PubMed), Web of Science, Scopus, LILACS (Latin American and Caribbean Health Sciences Literature), BDNF (Nursing Database), CINAHL, and Embase. Additionally, grey literature sources from Google Scholar will be explored. These searches will be constructed using terms derived from Health Sciences Descriptors/Medical Subject Headings (DeCS-MeSH) and index terms. In this stage, the titles and abstracts of selected articles will be analyzed to identify terms to be used in the search structure.

In the second stage, the search strategy will be adapted for other databases considering their individual peculiarities.

In the third stage, a manual search of relevant studies will be conducted, including checking the reference lists of already selected articles.

The search strategy was developed by an expert or librarian, based on consultation with DeCS/MeSH terms.

Figure 2 demonstrates the preliminary search strategy on PubMed.

Study selection

The process of selecting studies is carried out in several stages. First, the studies obtained by searching the above databases are exported to EndNote (Clarivate Analytics, USA), a reference manager. This export process aims to automate the removal of duplicate articles found. Next, the Rayyan software is used to export the studies. At this point, the study exclusion steps are performed in the following order: first, the title and abstract are evaluated, then the full study is evaluated. During this peer review process, two reviewers will work independently. A third reviewer will be consulted in case of disagreement regarding the exclusion of articles.

A flowchart adapted from the PRISMA-ScR checklist⁽¹⁶⁾ (Preferred Reporting Items for Systematic

Problem	What educational technologies are used by nurses to care for older adults undergoing hemodialysis?		
	Population	Context	Concept
Extraction	Enfermeiro	Idoso em Diálise renal	Tecnologia educacional
Conversion	"Nurse"	"Aged" "Renal Dialysis"	"Educational Technology"
Combination	Nurses Nurses Nurse Nursing Personnel Registered Nurses Registered Nurse Nursing Nursings	Aged Elderly aged, 80 and over 80 and over Oldest Old Renal Dialysis Renal Dialyses Hemodialysis Hemodialyses Extracorporeal Dialyses Extracorporeal Dialysis Kidney Diseases Kidney Disease Acute Kidney Injury Acute Kidney Injuries Acute Renal Injury Acute Renal Injuries Acute Renal Insufficiencies Acute Renal Insufficiency Acute Kidney Insufficiencies Acute Kidney Insufficiency Acute Kidney Failures Acute Renal Failures Acute Kidney Failure Renal insufficiency, chronic Chronic Renal Insufficiencies Chronic Renal Insufficiency Chronic Kidney Diseases Chronic Renal Disease Kidney Diseases Kidney Disease	Educational Technology Educational Technology Educational Technologies Instructional Technology Instructional Technologies Technology Technologies Educational Instructional
Construction	"Nurses" OR "Nurses" OR "Nurse" OR "Nursing Personnel" OR "Registered Nurses" OR "Registered Nurse" OR "Nursing" OR "Nursings"	"Aged" OR "Elderly" OR "aged, 80 and over" OR "80 and over" OR "Oldest Old" "Renal Dialysis" OR "Renal Dialyses" OR "Hemodialysis" OR "Hemodialyses" OR "Extracorporeal Dialyses" OR "Extracorporeal Dialysis" OR "Kidney Diseases" OR "Kidney Disease" OR "Acute Kidney Injury" OR "Acute Kidney Injuries" OR "Acute Renal Injury" OR "Acute Renal Injuries" OR "Acute Renal Insufficiencies" OR "Acute Renal Insufficiency" OR "Acute Kidney Insufficiencies" OR "Acute Kidney Insufficiency" OR "Acute Kidney Failures" OR "Acute Renal Failure" OR "Acute Renal Failures" OR "renal insufficiency, chronic" OR "Chronic Renal Insufficiencies" OR "Chronic Renal Insufficiency" OR "Chronic Kidney Insufficiency" OR "Chronic Kidney Diseases" OR "Chronic Kidney Disease" OR "Chronic Renal Diseases" OR "Chronic Renal Disease" OR "Kidney Diseases" OR "Kidney Disease"	"Educational Technology" OR "Educational Technology" OR "Educational Technologies" OR "Instructional Technology" OR "Instructional Technologies" OR "Technology" OR "Technologies" OR "Educational" OR "Instructional"
Strategy use	("Educational Technology" OR "Educational Technology" OR "Educational Technologies" OR "Instructional Technology" OR "Instructional Technologies" OR "Technology" OR "Technologies" AND ("educational" OR "instructional") AND ("Nurses" OR "Nurses" OR "Nurse" OR "Nursing Personnel" OR "Registered Nurses" OR "Registered Nurse" OR "Nursing" OR "Nursings") AND ("Renal Dialysis" OR "Renal Dialyses" OR "Hemodialysis" OR "Hemodialyses" OR "Extracorporeal Dialyses" OR "Extracorporeal Dialysis" OR "Kidney Diseases" OR "Kidney Disease" OR "Acute Kidney Injury" OR "Acute Kidney Injuries" OR "Acute Renal Injury" OR "Acute Renal Injuries" OR "Acute Renal Insufficiencies" OR "Acute Renal Insufficiency" OR "Acute Kidney Insufficiencies" OR "Acute Kidney Insufficiency" OR "Acute Kidney Failures" OR "Acute Renal Failure" OR "Acute Renal Failures" OR "renal insufficiency, chronic" OR "Chronic Renal Insufficiencies" OR "Chronic Renal Insufficiency" OR "Chronic Kidney Insufficiency" OR "Chronic Kidney Diseases" OR "Chronic Kidney Disease" OR "Chronic Renal Diseases" OR "Chronic Renal Disease" OR "Kidney Diseases" OR "Kidney Disease") AND ("Aged" OR "Elderly" OR "aged, 80 and over" OR "80 and over" OR "Oldest Old")		

Figure 1 – PCC strategy. João Pessoa, PB, Brazil, 2022

Database	Search strategy
PubMed	("Educational Technology" OR "Educational Technology" OR "Educational Technologies" OR "Instructional Technology" OR "Instructional Technologies" OR "Technology" OR "Technologies" AND ("educational" OR "instructional") AND ("Nurses" OR "Nurses" OR "Nurse" OR "Nursing Personnel" OR "Registered Nurses" OR "Registered Nurse" OR "Nursing" OR "Nursing" OR "Nursings") AND ("Renal Dialysis" OR "Renal Dialyses" OR "Hemodialysis" OR "Hemodialyses" OR "Extracorporeal Dialyses" OR "Extracorporeal Dialysis" OR "Kidney Diseases" OR "Kidney Disease" OR "Acute Kidney Injury" OR "Acute Kidney Injuries" OR "Acute Renal Injury" OR "Acute Renal Injuries" OR "Acute Renal Insufficiencies" OR "Acute Renal Insufficiency" OR "Acute Kidney Insufficiencies" OR "Acute Kidney Insufficiency" OR "Acute Kidney Failures" OR "Acute Renal Failure" OR "Acute Renal Failures" OR "renal insufficiency, chronic" OR "Chronic Renal Insufficiencies" OR "Chronic Renal Insufficiency" OR "Chronic Kidney Insufficiency" OR "Chronic Kidney Diseases" OR "Chronic Kidney Disease" OR "Chronic Renal Diseases" OR "Chronic Renal Disease" OR "Kidney Diseases" OR "Kidney Disease") AND ("Aged" OR "Elderly" OR "aged, 80 and over" OR "80 and over" OR "Oldest Old")

Figure 2 - MEDLINE database search strategy via PubMed. João Pessoa, PB, Brazil, 2022

Reviews and Meta-Analyses extension for Scoping Reviews) will be used to follow the entire process in detail. This flowchart will be presented in the final version of the scoping review.

Figure 3 demonstrates the search and selection steps for studies to be included in the scoping review.

Data extraction

Concerning the data extraction phase, it will be conducted according to the following criteria: Data extraction will be performed by two reviewers; strict independence between the reviewers will be maintained throughout the data extraction process; training and guidance will be provided to the reviewers to ensure the quality of the information obtained from the selected studies based on the guiding question, as well as the organization, analysis, and interpretation of the data; a structured form will be developed by the authors, including information such as study characterization, authorship, year of publication,

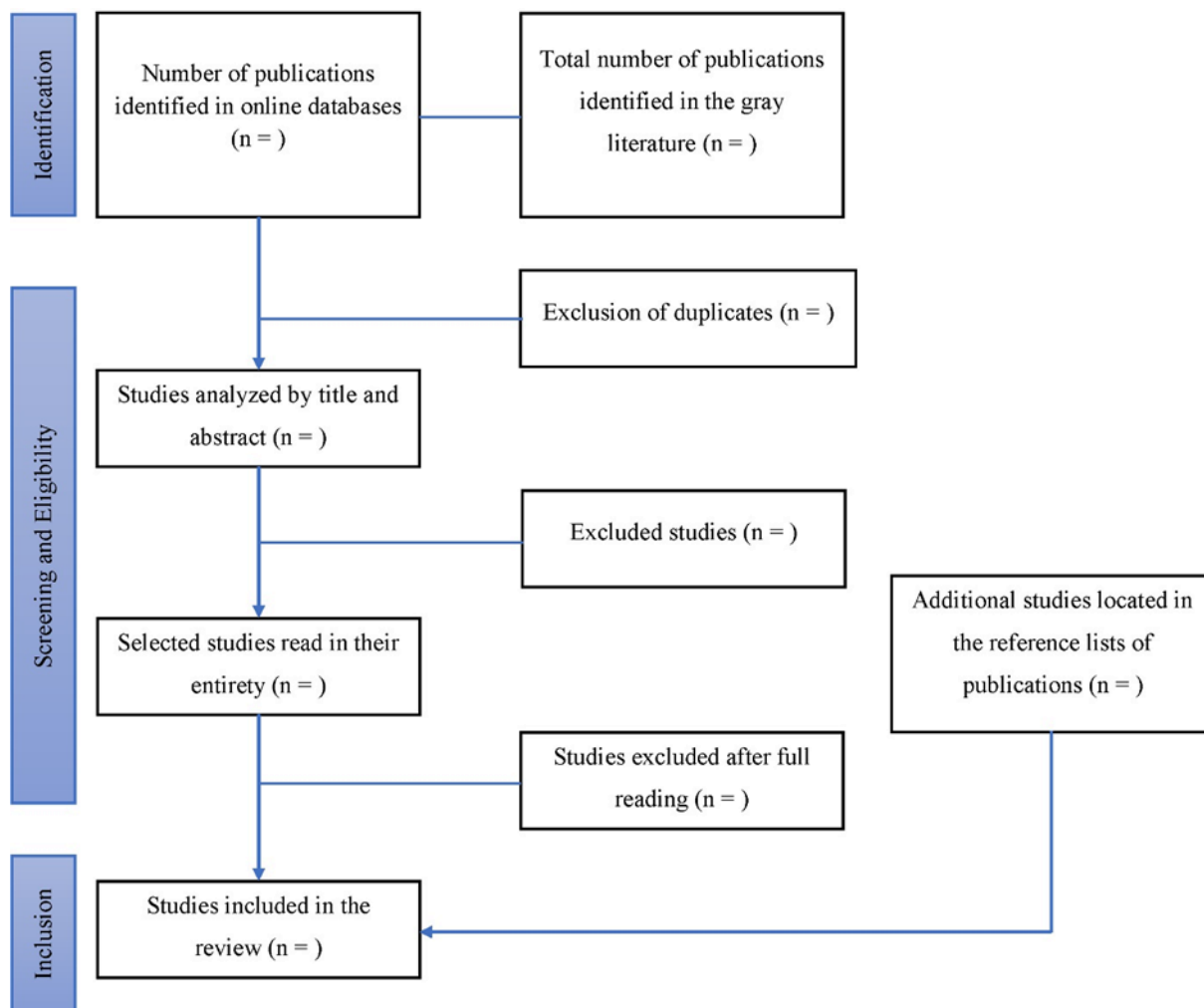
country of origin, objectives, methodology used, main results, and conclusions. In the "Results" section, the key technologies used by nurses in the care of elderly patients undergoing hemodialysis will be listed; a pilot test will be conducted using three selected articles. The aim is to assess the agreement between the reviewers regarding the completion of the form. If necessary, the reviewers may suggest adjustments to ensure the best possible presentation of the data.

Data presentation

The data collected are summarized and presented in tables and/or graphs, along with a descriptive narrative. This approach is intended to provide the reader with a thorough understanding of the research topic.

CONFLICT OF INTERESTS

The authors have declared that there is no conflict of interests.



Source: Flowchart PRISMA adapted from Page et al., 2021.

Figure 3 – Flowchart of the stages of search and selection of studies included in the scoping review. João Pessoa, PB, Brazil, 2022

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