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EDUCATIONAL TECHNOLOGIES IN PATIENT GUIDANCE FOR ELECTIVE PROCEDURES: SCOPING REVIEW PROTOCOL

TECNOLOGIAS EDUCACIONAIS NA ORIENTAÇÃO DE PACIENTES PARA PROCEDIMENTOS ELETIVOS: PROTOCOLO DE REVISÃO DE ESCOPO

TECNOLOGÍAS EDUCATIVAS EN LA ORIENTACIÓN DE PACIENTES PARA PROCEDIMIENTOS ELECTIVOS: PROTOCOLO DE REVISIÓN DE ALCANCE

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ABSTRACT
Introduction: Proper preparation for elective exams and procedures is essential to ensure care safety and effectiveness. Educational technologies, whether digital or analog, enhance patient guidance by expanding information reach, promoting autonomy, and reducing preventable cancellations, contributing to more qualified and patient-centered care. **Objective:** To map health education practices mediated by technologies used to guide adult patients preparing for elective exams or procedures in healthcare services. **Method:** This is a scoping review protocol developed according to the JBI method, based on the question: What are the educational practices, mediated by technologies, directed at patients preparing for elective exams or procedures? The search will be conducted in the CINAHL, Embase, LILACS, PubMed/MEDLINE, and Scopus databases, including studies from the last ten years, with no language restrictions, that describe educational interventions aimed at adults. Studies with undefined methodology, case reports, expert opinions, and grey literature will be excluded. Screening will be carried out by two independent reviewers using Rayyan software. Data extraction will follow a structured instrument and will be presented in tables, graphs, and narrative synthesis. **Expected results:** The review aims to identify technologies, formats, contents, and evaluation strategies employed, contributing to the strengthening of health education practices. **Conclusion:** The findings may support nursing practice, promoting greater patient adherence to preparation guidelines, reducing preventable cancellations, and improving care continuity and safety.
Keywords: Health Education; Educational Technology; Health Services; Scoping Review.

RESUMO
Introdução: O preparo adequado para exames e procedimentos eletivos é essencial para a segurança e efetividade do cuidado. Tecnologias educacionais, digitais ou analógicas, potencializam a orientação de pacientes, ampliando o alcance das informações, promovendo autonomia e reduzindo cancelamentos evitáveis, contribuindo para uma assistência mais qualificada e centrada no paciente. **Objetivo:** Mapear as práticas de educação em saúde mediadas por tecnologias utilizadas na orientação de pacientes adultos em preparo para exames ou procedimentos eletivos realizados em serviços de saúde. **Método**: Trata-se de um protocolo de revisão de escopo, elaborado conforme o método JBI, com base na pergunta: quais são as práticas educativas, mediadas por tecnologias, direcionadas a pacientes em preparo para exames ou procedimentos eletivos? A busca será conduzida nas bases CINAHL , Embase, LILACS, Pubmed/MEDLINE e Scopus, incluindo estudos dos últimos dez anos, sem restrição de idioma, que descrevam intervenções educativas voltadas ao público adulto. Serão excluídos estudos com metodologia indefinida, relatos de caso, opiniões de especialistas e literatura cinzenta. A triagem será realizada por dois revisores independentes, utilizando o software Rayyan. Os dados extraídos seguirão instrumento estruturado e serão apresentados em tabelas, gráficos e síntese narrativa. **Resultados esperados:** Espera-se identificar tecnologias, formatos, conteúdos e estratégias de avaliação empregados, contribuindo para o fortalecimento das práticas educativas em saúde. **Conclusão:** Os achados poderão subsidiar a atuação da enfermagem, promovendo maior adesão dos pacientes às orientações de preparo, redução de cancelamentos evitáveis e melhoria da continuidade e segurança do cuidado.
Palavras-chave: Educação em Saúde; Tecnologias Educacionais; Serviços de Saúde; Revisão de Escopo.

RESUMEN
Introducción: La preparación adecuada para exámenes y procedimientos electivos es esencial para la seguridad y efectividad de la atención. Las tecnologías educativas, digitales o analógicas, potencian la orientación a los pacientes al ampliar el alcance de la información, promover la autonomía y reducir cancelaciones evitables, contribuyendo a una atención más calificada y centrada en el paciente. **Objetivo:** Mapear las prácticas de educación en salud mediadas por tecnologías utilizadas en la orientación de pacientes adultos en preparación para exámenes o procedimientos electivos realizados en los servicios de salud. **Método:** Se trata de un protocolo de revisión de alcance, elaborado conforme al método JBI, basado en la pregunta: ¿Cuáles son las prácticas educativas, mediadas por tecnologías, dirigidas a pacientes en preparación para exámenes o procedimientos electivos? La búsqueda se realizará en las bases de datos CINAHL, Embase, LILACS, PubMed/MEDLINE y Scopus, incluyendo estudios de los últimos diez años, sin restricción de idioma, que describan intervenciones educativas dirigidas a adultos. Se excluirán estudios con metodología indefinida, informes de casos, opiniones de expertos y literatura gris. La selección será realizada por dos revisores independientes, utilizando el software Rayyan. Los datos extraídos seguirán un instrumento estructurado y se presentarán en tablas, gráficos y síntesis narrativa. **Resultados esperados:** Se espera identificar tecnologías, formatos, contenidos y estrategias de evaluación empleadas, contribuyendo al fortalecimiento de las prácticas educativas en salud. **Conclusión:** Los hallazgos podrán respaldar la práctica de enfermería, promoviendo una mayor adhesión de los pacientes a las orientaciones de preparación, reduciendo cancelaciones evitables y mejorando la continuidad y seguridad de la atención.
Palabras clave: Educación en Salud; Tecnologías Educativas; Servicios de Salud; Revisión de Alcance.

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INTRODUCTION

The Unified Health System (SUS) represents one of Brazil's greatest social achievements, conceived under the principles of universality, comprehensiveness, and equity. With significant advances over the last few decades, such as the expansion of Primary Health Care, the increase in vaccination coverage, and the implementation of policies for free access to medicines, the system has decisively contributed to reducing historical inequalities and guaranteeing the constitutional right to health [1].

Despite its relevance and progress, the SUS still faces structural and operational obstacles that compromise the quality, effectiveness, and continuity of care. Among these challenges, the following stand out: deficiencies in the physical and technological infrastructure of services; the unequal distribution of health professionals; limitations in regulation and scheduling systems; and difficulties in effective communication with users. These obstacles are aggravated by chronic underfunding, which restricts the expansion and improvement of the supply of specialized services [2].

These conditions particularly impact the millions of Brazilians who depend exclusively on the public healthcare system and lack the resources to access private health insurance plans. For this population, access to exams and procedures can be marked by long waiting periods, discontinuities in care, and worsening of clinical conditions [3]. Furthermore, the absence of effective communication and support mechanisms between services and users contributes to missed appointments, canceled exams, and other cancellations, which in turn fuel a cycle of inefficiency [4].

Many of these cancellations are avoidable and result from causes such as poorly understood guidelines, unanswered questions, travel barriers, or failures in patient preparation [5]. These situations not only exacerbate individual suffering by prolonging diagnostic and therapeutic time but also represent a significant social and institutional cost, with wasted public resources and low effectiveness in filling already limited available slots [6].

In this scenario, health education emerges as an essential strategy to transform the user experience and optimize the use of services. Offering clear, accessible, and contextualized information promotes adherence to clinical guidelines, strengthens self-care, and reduces the risk of avoidable cancellations. Furthermore, by promoting understanding and engagement among users, educational actions contribute to safer, more effective, and people-centered care [7].

Nursing plays a central role in this educational process. With broad reach across health services and strong integration into user contact points, these professionals act as educators of care, whether in individual or group settings [8]. Their mediating role contributes to qualified listening, the translation of technical guidelines into understandable language, and the

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strengthening of the bond between patients and services [9].

The educational dimension of nursing practice can be significantly enhanced with the use of innovative, evidence-based technologies. Tools such as explanatory videos, applications, automated messages, and interactive platforms broaden the reach of guidance, standardize essential content, and promote greater user autonomy [7,9]. Thus, they become strategic allies in reducing avoidable errors and promoting more effective and humanized care [10-11].

Given this panorama, this scoping review protocol aims to map technology-mediated health education practices that aim to improve the preparation of adult patients for examinations and procedures performed in health services. The aim is to identify interventions that promote adherence to guidelines, reduce avoidable cancellations, and strengthen the promotion of more continuous, safe, and user-centered care.

METHOD

This scoping review protocol was developed according to the methodological guidelines of the JBI Manual for Evidence Synthesis [12] and follows the recommendation of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR) [13] extension, ensuring transparency, reproducibility, and quality in conducting the study. To broaden access and promote open science, the protocol was registered on the Open Science Framework (OSF) platform and is publicly available via DOI: 10.17605/OSF.IO/6X2H3. As it is a review protocol, the study received exemption from analysis by a Research Ethics Committee.

The research question was constructed based on the Population, Concept, and Context (PCC) strategy, which guides the definition of broad and exploratory scopes. The question defined to guide the investigation was: What are the health education practices, mediated by technologies, directed at patients preparing for examinations or procedures performed in health services?

Inclusion Criteria

Studies addressing health education practices, mediated by digital or analog technologies, aimed at preparing adult patients (over 18 years of age) will be included.

Referred for examinations or procedures at healthcare facilities. Eligible publications include peer-reviewed scientific papers, technical reports, official guidelines, systematic or scoping reviews, as well as empirical studies with complete data, published in the last ten years. There will be no language restrictions. Studies without a clear methodology, case reports, expert opinions, and grey literature will be excluded.

Research Strategy

The search strategy will be carried out in three complementary stages, aiming to ensure

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broad and consistent coverage of available evidence. The first stage will involve a preliminary search in the MEDLINE/PubMed database to identify controlled descriptors and keywords relevant to the topic. Subsequently, a systematic search will be conducted in the MEDLINE (via PubMed), LILACS, Scopus, CINAHL, and EMBASE databases, accessed through the researcher's institution's portal using the Federated Academic Community (CAFe). The third stage comprises the analysis of the reference lists of the included studies, with a view to identifying potentially relevant additional sources.

The development of search strategies will follow five methodological steps: extraction, conversion, combination, construction, and use [14]. Initially, keywords will be identified (extraction), which will later be adapted to the controlled vocabularies and specific syntaxes of each database (conversion). Then, the terms will be combined using Boolean and truncation operators (combination), resulting in the elaboration of the final equations (construction) and application to the respective sources of evidence (use). The preliminary search equations adapted for each database are detailed in Table 1.

Selection of evidence sources

The process of selecting evidence sources will follow a systematic and transparent flow, according to the defined eligibility criteria. Initially, all results obtained from the databases will be exported to the Rayyan software, which will allow for the automatic identification and removal of duplicates. In the next step, the studies will be screened by two independent reviewers, based on reading the titles and abstracts. Disagreements between reviewers will be resolved by a third reviewer, ensuring the impartiality and methodological rigor of the selection.

Studies that meet the inclusion criteria will proceed to full-text reading, with detailed content analysis. The entire selection process will be rigorously documented and presented through a flowchart in accordance with the PRISMA-ScR guidelines [12].

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Chart 1 – Preliminary research strategies. Rio de Janeiro, Brazil, 2025.

Step	P – Population	C – Concept	C – Context
Extraction	Adult patients	Technology-mediated health education practices	Examinations or procedures in health services
Conversion & combination	"Adult"[MeSH]; "Patients" "[MeSH] Termos livres – "Adult"; "Patients"	"Health Education"[MeSH]; "Education, Public Health Professional"[MeSH]; "Patient Education as Topic"[MeSH]; "Education"[MeSH]; "Technology"[MeSH]; "Educational Technology"[MeSH] Termos livres – Health*; Educat*; Tech*	"Health Services"[MeSH]; "Outpatient Clinics, Hospital"[MeSH]; "Ambulatory Care"[MeSH]; "Hospitals"[MeSH] Termos livres – Exam*; Test*; Proced*
Strings from search and results	Medline: ("Adult"[MeSH] AND "Patients"[MeSH]) AND ("Health Education"[MeSH] OR "Patient Education as Topic"[MeSH] OR "Education, Public Health Professional"[MeSH] OR "Education"[MeSH] OR (health* AND educat*)) AND ("Educational Technology"[MeSH] OR "Technology"[MeSH] OR tech*) AND ("Health Services"[MeSH] OR "Outpatient Clinics, Hospital"[MeSH] OR "Ambulatory Care"[MeSH] OR "Hospitals"[MeSH] OR exam* OR test* OR proced*)		
	CINAHL: (MH "Adult") AND (MH "Patients") AND (MH "Health Education" OR MH "Patient Education as Topic" OR MH "Education, Public Health Professional" OR MH "Education" OR (health* AND educat*)) AND (MH "Educational Technology" OR MH "Technology" OR tech*) AND (MH "Health Services" OR MH "Outpatient Clinics, Hospital" OR MH "Ambulatory Care" OR MH "Hospitals" OR exam* OR test* OR proced*)		
	EMBASE: 'adult'/exp AND 'patient'/exp AND ('health education'/exp OR 'patient education as topic'/exp OR 'education, public health professional'/exp) AND ('educational technology'/exp OR technol*) AND 'health service'/exp AND (exam* OR proced* OR test*)		
	LILACS: ((mh:"Adulto" OR mh:"Paciente") AND (mh:"Educación en Salud" OR mh:"Educación del Paciente como Asunto" OR mh:"Educación en Salud Pública Profesional" OR mh:"Educación" OR (tw:salud* AND tw:educac*)) AND (mh:"Tecnología Educacional" OR mh:"Tecnología" OR tw:tecn*) AND (mh:"Servicios de Salud" OR mh:"Clínicas Externas de los Hospitales" OR mh:"Atención Ambulatoria" OR tw:examen* OR tw:proced*))		
	Scopus: TITLE-ABS-KEY('adult') AND TITLE-ABS-KEY('patient') AND (TITLE-ABS-KEY('health education') OR TITLE-ABS-KEY('patient education as topic') OR TITLE-ABS-KEY('education, public health professional')) AND (TITLE-ABS-KEY('educational technology') OR TITLE-ABS-KEY(technol*)) AND TITLE-ABS-KEY('health service') AND (TITLE-ABS-KEY(exam*) OR TITLE-ABS-KEY(proced*) OR TITLE-ABS-KEY(test*))		

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Data Extraction

Data extraction will be conducted by two independent reviewers using a structured instrument that will include the following variables: author and year of publication, country of origin of the study, objective, population and context, type of educational technology used, methodology for developing and validating the intervention, educational content, outcomes assessed (such as reduction in cancellations, adherence to preparation, and patient satisfaction), main results, and conclusions.

In case of disagreements between reviewers during extraction, the differences will be resolved by consensus or, if necessary, with the participation of a third reviewer, ensuring greater methodological rigor, analytical coherence, and reliability in data collection.

Data Analysis and Presentation

The synthesis of the extracted data will be conducted through narrative analysis, with the presentation of results in tables, charts, and/or graphs, according to the nature of the evidence. The organization of the information will seek to map the characteristics of the studies, the educational technologies used, and the main outcomes observed.

The analysis will be guided by the alignment between the findings, the objectives of the review, and the research question, ensuring coherence and scientific relevance. To facilitate the communication of results, the data may be systematized in visual representations that promote clarity, accessibility, and critical interpretation.

EXPECTED RESULTS

This review is expected to comprehensively map the available evidence on the use of educational technologies in guiding adult patients in preparation for examinations and procedures. Analysis of the studies will identify the most frequently used technologies (such as videos, apps, messaging, and interactive brochures), the content primarily addressed, and the effectiveness indicators analyzed, such as adherence, patient satisfaction, and reduction in cancellations.

CONCLUSION

This protocol offers a rigorous, transparent, and coherent methodological basis, allowing for the identification of technology-mediated educational practices that can be easily integrated to routine care.

The findings may support the development of efficient technological tools, based on scientific research, that can be incorporated into nursing work and the management processes of health services.

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Ultimately, this approach aims to contribute to safer, more continuous, and user-centered care, filling crucial gaps in preparation for examinations and procedures performed in health services.

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