REVISTA ENFERMAGEM ATUAL IN DERME

POINT-OF-CARE ULTRASOUND FOR URINARY VOLUME ASSESSMENT IN ADULTS: SCOPING REVIEW PROTOCOL

ULTRASONIDO PORTÁTIL PARA EVALUAR EL VOLUMEN URINARIO EN ADULTOS: PROTOCOLO DE REVISIÓN DE ALCANCE

ULTRASSONOGRAFIA À BEIRA-LEITO PARA AVALIAÇÃO DO VOLUME URINÁRIO EM ADULTOS: PROTOCOLO DE REVISÃO DE ESCOPO

[1]Lilian Josiane da Rosa Soares
[2]Ketlen Monteiro Mussart
[3]Guilherme Kayser Prates
[4]Giovani Basso da Silva
[5]João Gabriel Toledo Medeiros
[6]Luccas Melo de Souza

[1]Mestranda. Programa de Pós-Graduação em Enfermagem. Universidade Federal de Ciências da Saúde de Porto Alegre, Porto Alegre, Brazil. ORCID: https://orcid.org/0009-0002-6915-4801
[2]Residente. Programa de Residência Multiprofissional em Saúde, Programa de Terapia Intensiva. Universidade Federal de Ciências da Saúde de Porto Alegre, Porto Alegre, Brazil. ORCID: https://orcid.org/0000-0001-8558-1008
[3]Graduando de enfermagem da Universidade Federal de Ciências da Saúde de Porto Alegre, Porto Alegre, Brazil. ORCID: https://orcid.org/0009-0002-6817-8991
[4]Mestrando. Programa de Pós-Graduação em Pediatria. Universidade Federal de Ciências da Saúde de Porto Alegre, Porto Alegre, Brazil. ORCID: https://orcid.org/0000-0002-3108-445X
[5]Doutorando. Programa de Pós-Graduação em Pediatria. Universidade Federal de Ciências da Saúde de Porto Alegre, Porto Alegre, Brazil. ORCID: https://orcid.org/0000-0002-2789-9189
[6]Doutor em enfermagem e Professor do Departamento de Enfermagem. Universidade Federal do Rio Grande do Sul e do Programa de Pós-Graduação em Enfermagem da Universidade Federal de Ciências da Saúde de Porto Alegre, Porto Alegre, Brazil. ORCID: https://orcid.org/0000-0003-1629-9935

Corresponding Autor
Guilherme Kayser Prates
Rua 24 de agosto, 1188- Esteio, RS. Brazil. CEP: 932800-14. contact: +55(51) 98152-9998. E-mail: guikprates@gmail.com

Submission: 26-02-2025
Approval: 02-07-2025

ABSTRACT
Introduction: Urinary retention is a common condition in hospitalized patients and can lead to complications such as infections and bladder injuries. Bedside bladder ultrasonography emerges as a promising tool, enabling more timely interventions and reducing unnecessary urinary catheterization. **Objective:** To identify scientific evidence regarding bedside ultrasonography for the assessment of urinary volume in hospitalized adult patients. **Method:** This is a scoping review guided by the Joanna Briggs Institute manual and reported according to the PRISMA-ScR checklist, based on the research question: What evidence is available in the literature regarding the use of bedside ultrasonography by healthcare professionals to assess urinary volume in hospitalized adult patients? The review will include primary and secondary studies, as well as grey literature. Searches will be conducted in PubMed, Scopus, Web of Science, CINAHL, EMBASE, and the CAPES Portal of Journals. Study selection will be conducted independently by two reviewers, with organization and screening performed using the Rayyan software. Inclusion and exclusion criteria will be applied, and any discrepancies will be resolved by a third reviewer. Data will be extracted using a structured form containing information such as author, year, objective, and key findings. The analysis will be presented narratively and descriptively, supplemented by tables, graphs, and diagrams to facilitate understanding of the results. **Expected Results:** The findings are expected to support clinical decision-making by helping to identify more precise criteria for assessing urinary volume using bladder ultrasonography.
Keywords: Ultrasonography; Urinary Retention; Urinary Bladder; Urinary Tract Infections; Nursing.

RESUMEN
Introducción: La retención urinaria es una condición común en pacientes hospitalizados y puede provocar complicaciones como infecciones y lesiones en la vejiga. Lo ultrasonido portátil surge como una herramienta prometedora, permitiendo intervenciones más oportunas y reduciendo la necesidad de cateterización urinaria innecesaria**. Objetivo:** Identificar la evidencia científica sobre el uso del ultrasonido portátil para la evaluación del volumen urinario en pacientes adultos hospitalizados. **Método:** Se trata de una revisión de alcance, guiada por el manual del Joanna Briggs Institute y reportada según la lista de verificación PRISMA-ScR, basada en la siguiente pregunta de investigación: ¿Qué evidencia está disponible en la literatura sobre el uso del ultrasonido portátil de cama por profesionales de la salud para evaluar el volumen urinario en pacientes adultos hospitalizados? La revisión incluirá estudios primarios y secundarios, así como literatura gris. La búsqueda se realizará en las bases de datos PubMed, Scopus, Web of Science, CINAHL, EMBASE y el Portal de Periódicos de CAPES. La selección de estudios se llevará a cabo de manera independiente por dos revisores, con organización y cribado a través del software Rayyan. Se aplicarán criterios de inclusión y exclusión, y cualquier discrepancia será resuelta por un tercer revisor. Los datos serán extraídos mediante un formulario estructurado que incluirá información como autor, año, objetivo y principales hallazgos. El análisis se presentará de forma narrativa y descriptiva, complementado con tablas, gráficos y diagramas para facilitar la comprensión de los resultados. **Resultados esperados:** Se espera que los hallazgos contribuyan a respaldar la toma de decisiones clínicas, ayudando a identificar criterios más precisos para la evaluación del volumen urinario mediante ecografía vesical.
Palabras-Clave: Ultrasonografía; Retención Urinaria; Vejiga Urinaria; Infecciones Urinarias; Enfermería.

RESUMO
Introdução: A retenção urinária é uma condição comum em pacientes hospitalizados, podendo levar a complicações como infecções e lesões na bexiga. A ultrassonografia de bexiga à beira leito surge como uma ferramenta promissora, facilitando intervenções mais oportunas e evitando cateterismo vesical desnecessário. **Objetivo:** Identificar as evidências científicas acerca da ultrassonografia à beira leito para avaliação do volume urinário em pacientes adultos hospitalizados. **Método:** Trata-se de uma revisão de escopo, orientada pelo manual do Joanna Briggs Institute e reportada segundo o checklist PRISMA-ScR, a partir da questão de pesquisa: Quais são as evidências disponíveis na literatura sobre o uso da ultrassonografia à beira leito por profissionais de saúde na avaliação do volume urinário em pacientes adultos hospitalizados. A revisão incluirá estudos primários e secundários, além de literatura cinzenta. A busca ocorrerá na PubMed, Scopus, Web of Science, CINAHL, EMBASE e Portal de Periódicos da CAPES. A seleção dos estudos ocorrerá de forma independente por dois revisores. No software Rayyan ocorrerá organização e triagem. Serão aplicados os critérios de inclusão e exclusão, e eventuais divergências serão resolvidas por um terceiro revisor. Os dados serão extraídos por formulário estruturado, contendo informações como autor, ano, objetivo e principais achados. A análise será apresentada de forma narrativa e descritiva, complementada por tabelas, gráficos e diagramas para facilitar a compreensão dos resultados. **Resultados esperados:** Espera-se que os achados contribuam para embasar a tomada de decisão clínica, auxiliando na detecção de critérios mais precisos para a avaliação do volume urinário por ultrassonografia bexiga.
Palavras-chave: Ultrassonografia; Retenção Urinária; Bexiga Urinária; Infecções Urinárias; Enfermagem.

REVISTA ENFERMAGEM ATUAL IN DERME

INTRODUCTION

Urinary retention (UR) results from partial or total dysfunction of bladder emptying, resulting in abnormal accumulation of urine in the urinary tract. This disorder may occur in an acute, chronic, complete or incomplete form. Acute UR is defined as a painful and acute event, characterized by the sensation of full, palpable or percutable bladder, with complete inability to urinary elimination. On the other hand, chronic urinary retention occurs when there is a persistent and gradual difficulty in emptying the bladder completely, which results in an accumulation of residual urine volume after urination. Unlike the acute form, chronic UR may be asymptomatic or have mild symptoms such as feeling of incomplete emptying or frequent need to urinate. This may lead to recurrent urinary infections, damage to the bladder wall or kidney failure. This condition may be associated with factors such as neurological conditions, physical obstructions, adverse effects of medications or injuries to the muscles involved in the urination process[1].

In critical care patients, there is a relationship of acute UR associated with the use of hypnotics and sedatives, prolonged use of a bladder catheter and bed restriction[2]. The critical condition of patients directly influences the inability to urinary control. In this context, considering the need for adequate and continuous urinary flow monitoring, the use of a continuous bladder catheter for more than 24 hours may be present in up to 93.3% of patients admitted to Intensive Care Units (ICU)[3].

Although this device is widely used in the hospital context, the importance of its rational use is highlighted, given that it represents a risk factor for the development of urinary tract infection (UTI)[3-4]. Patients with UTI are 7.4 times more likely to develop urinary retention[5].

A prospective cohort study in an ICU - with 85 patients (71.8% were surgical) from a university hospital - identified that 26 (30.6%) developed acute urinary retention after removal of the urinary catheter. In addition, the continuous infusion of propofol or midazolam, the prolonged use of a continuous catheter for more than seven days and bed restriction were identified as independent risk factors for this condition[2].

The most common and immediate way to treat UR is intermittent urinary catheterization, a procedure exclusive of the nurse within the nursing team. Because it is an invasive procedure, catheterization requires care of greater technical complexity and specific knowledge to ensure patient safety and minimize associated risks[6].

This method is widely used because it is less invasive and avoids the complications associated with prolonged use of continuous bladder catheters. However, although it is a preferable alternative, this procedure is not without risk. Among the main complications are the risk of urinary infection and urethral trauma, including false path formation due to frequent insertion[4,7]. In addition, the recurrent (and sometimes unnecessary) procedure results in increased costs for materials and nursing care,

REVISTA ENFERMAGEM ATUAL IN DERME

including the time devoted to performing the procedure[8-9].

The decision to perform intermittent catheterization is usually based on the patient's complaint and the traditional physical examination based on semiological techniques, such as percussion and palpation to identify the vesical globe[10]. Although these techniques play an important role in the detection of UR, they have limitations due to their subjectivity and may lead to unnecessary vesical catheterization. Sometimes, they do not confirm the diagnosis of urinary retention and consequently have a direct impact on patient safety[11-12].

In 2018, a cross-sectional study was conducted in a clinical unit of a public university hospital in the southern region of Brazil to describe the relationship between patients' complaints and vesical globe detection by nurses with the diagnosis of urinary retention. There were 205 evaluations and urinary retention was identified by ultrasonography in 33.2% of the evaluations, with a strong correlation ($r = 0.997$; $p < 0.005$) between the volume estimated by ultrasonography (493.1±185.4 mL) and that drained by vesical catheterization (501.9±184.7 mL). There was a higher frequency of vesical globe identification in urinary volumes ≥300mL. The identification of urinary retention was higher when ultrasound was used for diagnosis, when compared to the patient's complaint and physical examination[12].

In legal terms, the Resolution of the Federal Council of Nursing (COFEN) 679/2021 establishes that the qualified nurse is properly supported to use point-of-care ultrasound[13]. Unlike conventional ultrasonography, bedside ultrasound for evaluation of urinary retention is easy to perform and allows a fast and safe evaluation of the bladder, presenting high specificity[5,11].

The bladder point-of-care ultrasound has stood out as an efficient and accurate tool for the evaluation of urinary volume. This method provides greater accuracy and security in the detection of AUR, facilitating more timely interventions and avoiding unnecessary procedures, which improves the quality of care provided[12]. The use of this tool contributes to decision-making and optimizes the nursing practice. However, in Brazil, few places have this resource available, and there is still a shortage of qualified nurses to handle it[9].

Because it is an innovative and incipient method in Brazilian nursing, it becomes relevant to map the scientific production on the use of bedside ultrasonography for evaluation of urinary volume in hospitalized patients, in order to identify the existing scientific production and gaps[9]. Thus, this study aims to identify the scientific evidence about bedside ultrasonography for evaluation of urinary volume in hospitalized adult patients.

METHODS

Type of study

The present study will be a scoping review, in line with the recommendations of the Joanna Briggs Institute (JBI)[14]. The presentation of the findings will be guided by the checklist Preferred Reporting Items for

REVISTA ENFERMAGEM ATUAL IN DERME

Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR)[15]. The scope reviews are characterized as studies that seek to perform a systematic mapping of literature on a given concept or field of knowledge, ie represent a form of synthesis of evidence. Unlike other types of reviews, the role of the scope review is not to inform questions related to the feasibility, significance or effectiveness of a treatment or practice, but rather to clarify concepts and practices. Thus, they include evidence from a variety of databases, including gray literature[16]. The registration of this scope review protocol is located in the Open Science Framework (OSF) platform, which is available for public access (https://osf.io/qn42t/), Registration DOI 10.17605/OSF.IO/QN42T, ensuring transparency and integrity of the steps.

Guiding question/Review question

For the elaboration of the guiding question, the mnemonic PCC (Population, Concept, Context) was adopted, as recommended by the JBI Manual, to define the following research question: "What evidence is available in the literature on the use of bedside ultrasound by health professionals to assess urinary volume in hospitalized adult patients?".

Population

The population of interest includes studies that address the use of bedside ultrasonography by health professionals to evaluate urinary volume in adult patients in the hospital context.

Concept

In this review, the concept of interest will be the use of bedside ultrasonography as a tool for evaluation of urinary volume, performed by health professionals who provide assistance to adult patients in the hospital environment. Studies using the term Point of Care Ultrasound (POCUS) or Point of Care Ultrasonography for evaluation of the bladder at the bedside may be included, since it is a method that allows ultrasound examinations to be performed directly at the point of care. This practice offers the advantage of being performed in real time, without the need to move the patient to the imaging service, which contributes to greater safety in invasive procedures and complements the findings of the traditional physical examination[17].

Context

The context of this study will consider the world literature on the use of point-of-care ultrasound for urinary volume evaluation in hospitalized adult patients, focusing on the intra-hospital environment, including emergency areas, inpatient units, surgical center, anesthetic recovery room and intensive care.

Types of studies

This scoping review will include primary studies (randomized clinical trials, cohort studies, case-control and cross-sectional studies), secondary studies (integrative, systematic reviews and meta-analyses). Grey literature data will also be included, such as theses, dissertations and books. Publications in the Portuguese, English and Spanish languages will

REVISTA ENFERMAGEM ATUAL IN DERME

be included, without restriction of period that meet the research question. Publications related to the use of ultrasound in obstetrics, neonatology and pediatrics, those aimed at diagnosis and reports or those carried out outside the hospital context, such as pre-hospital care or imaging diagnostic service will be excluded.

Databases and search strategies

The search strategy will be developed in three stages, as recommended by the JBI. The first step was carried out to identify the most used descriptors related to the theme. For this, advanced search was used in the PubMed and CINAHL databases, initially with the descriptors "Urinary retention", "Ultrasonography" and "Nursing". The titles and abstracts of articles relevant to the research question were then analyzed, when the most used descriptors to describe them were identified. This search occurred on 24/09/2024 (CINAHL) and 15/10/2024 (PubMed).

The second stage will be the search for publications that will be part of the sample. The selected databases will be PubMed, Scopus, Web of Science, CINAHL and EMBASE. For gray literature, the Catalog of Theses and Dissertations of the Coordination of Improvement of Higher Level Personnel (CAPES) was defined.

For the CAPES Thesis and Dissertation Portal, they defined the Descriptors in Health Sciences (DeCS) "ultrasound" and "Urinary retention". For the other bases, the following descriptors will be used (in English) indexed in the Medical Subject Headings (MESH): BladderScan, Portable Ultrasound, Ultrasonography, Urinary Catheterization, Urinary Retention and Residual Urine Volume. In order to enlarge the results, the Boolean operators AND and OR will be used to combine the alternative terms. Specific research strategies were adopted in each database and are described in Chart 1. They were designed to broaden and optimize the findings.

In the third stage, the references of the selected studies will be consulted to verify the need to include additional publications. The curriculums of the Lattes® Platform of the main authors (if any) of each article included will also be consulted, expanding the search for other publications.

Chart 1 - Search strategy used by database. Porto Alegre, RS, Brazil, 2024

Database	Search Strategy
Pubmed	("BladderScan"[Title/Abstract] OR "Portable Ultrasound"[Title/Abstract] OR "Ultrasonography"[Mesh]) AND ("Urinary Catheterization"[Title/Abstract] OR "Urinary Retention"[Mesh] OR "Residual Urine Volume"[Title/Abstract])
Scopus	(TITLE-ABS-KEY (‘bladderscan’ OR ‘portable AND ultrasound’ OR ‘ultrasonography’) AND TITLE-ABS KEY(‘urinary AND catheterization’ OR ‘urinary AND retention’ OR ‘residual AND urine AND volume’))
Web of Science	ALL=("BladderScan" OR "Portable Ultrasound" OR "Ultrasonography") AND ALL=(“Urinary Catheterization" OR "Urinary Retention" OR “Residual Urine Volume”)

CINAHL	(MH "Ultrasonography" OR “BladderScan" OR "Portable Ultrasound") AND (MH "Urinary Retention" OR “Urinary Catheterization" OR "Residual Urine Volume")
EMBASE	('ultrasound bladder scanner'/exp OR 'bladderscan'/exp) AND ('bladder catheterisation'/exp OR 'urinary catheterization'/exp) AND ('urine retention'/exp OR 'postvoid residual urine volume'/exp) AND [embase]/lim
CAPES Portal of Theses	("Ultrassom") AND ("Retenção urinária")

Source: Created by the authors, 2024.

Selection of evidence

After research and data collection, the studies found will be grouped and exported to the Rayyan application (Qatar Computing Research Institute, Doha, Qatar), which will be used to identify and remove duplicates, as well as organize the selection period of the studies found. The screening will then be carried out in two steps. Initially, two independent reviewers will perform blindly the reading of titles and abstracts.

In the second stage, the full texts of the selected studies will be analyzed in detail to verify eligibility, based on the research question and the inclusion and exclusion criteria previously defined. When the process of discrepancies between the two reviewers on the eligibility of a study occurs, a third reviewer (senior researcher) will make the final decision. The data resulting from the analyses will be synthesized and presented according to the PRISMA-ScR flow diagram[15]. In addition, they will be organized in a descriptive way, detailing the characteristics of the selected studies and the main findings in relation to the objectives of the review. After this step, the references of each selected study will be analyzed, as well as the curriculum of the Lattes® Platform of the main authors of each article, expanding the search for other publications.

Extraction of results

The process to extract the results from studies included in this scoping review will be performed using an extraction instrument recommended by JBI. It will be adapted according to the needs identified by the authors, in order to organize in a clear and logical way the relevant information of each study, aligned with the objectives and the guiding question of the review, as shown in Chart 2.

Chart 2 - Results extraction instrument

Details of the scoping review	
Title of the scoping review:	
Objective(s) of the review:	
Review question(s):	
Inclusion/exclusion criteria	
Population	
Concept	

REVISTA ENFERMAGEM ATUAL IN DERME

Context	
Types of evidence source	
Evidence source Details and characteristics	
Details of citation (such as author(s), date, title, journal, volume, edition, pages)	
Country	
Context	
Participants (details such as age/sex and number)	
Details/Results extracted from the evidence source (regarding the concept of the scoping review)	
Type of evaluation of the urinary volume (formula used, measurements, ultrasound device, professional performer)	
Main results	
Study recommendations	
Limitations/ gaps highlighted in the study	

Source: Adapted from Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. Porto Alegre, RS, Brazil, 2024

Analysis and presentation of the results

After the data extraction step, with the completion of the global mapping of professional practice related to the use of bedside ultrasound for the evaluation of urinary volume in hospitalized adult patients, aims to identify and highlight the countries with greater scientific production on the subject, as well as highlighting trends, knowledge gaps and methodological aspects that can guide future studies.

The data analysis will be presented in a narrative form, complemented by tables detailing relevant information such as author, year of publication, country of origin, objective, methodology, population characteristics, hospital configuration, main findings and research gaps. The results of this scope review will be presented in a descriptive way, according to the objectives and the guiding question of the study. In addition, diagrams, graphs and other forms of visualization can be used, allowing a clear and dynamic understanding of the findings, facilitating the identification of relationships between concepts and characteristics of the studies. This approach will ensure a detailed presentation, transparent and aligned with the objectives of the research, contributing to the expansion of knowledge on the subject.

REVISTA ENFERMAGEM ATUAL IN DERME

EXPECTED RESULTS

This scoping review aims to identify the scientific evidence about point-of-care ultrasonography for evaluation of urinary volume in hospitalized adult patients. The findings are expected to contribute to support clinical decision making, helping in the detection of more precise criteria to determine the need for interventions in order to reduce the performance of unnecessary invasive procedures.

A possible implication for practice and research is that, by verifying and systematizing this information, this review may serve as a basis to qualify the use of ultrasonography in the evaluation of urinary volume, determining criteria such as calculation, anatomical points and definition of screens in the intervention. In addition, the study is expected to contribute to the standardization of the use of the technique through the development of guidelines and protocols based on evidence from future research, facilitating its incorporation into clinical practice and professional training.

Another relevant aspect of this review will be the mapping of scientific production on the theme over time, allowing an overview of its evolution in the area. This analysis can highlight gaps in the literature and point out directions for future research, encouraging new investigations on the applicability of bladder ultrasonography at the bedside in nursing. Finally, it is hoped that this study will contribute to strengthening the autonomy of nursing professionals in using this technology, promoting greater accuracy in monitoring urinary volume and improving the quality of care provided to hospitalized patients.

REFERENCES

1. Fernandes A, Sacomani CA, Averbeck M, Prezotti JA, Ferreira RS, Moser D, et al. Tradução para o português: An International Continence Society (ICS) report on the terminology for adult neurogenic lower urinary tract dysfunction (ANLUTD). Einstein (São Paulo). 2022;20:eAO1023.

2. Schettini DA, Incidence and risk factors for urinary retention in critically ill patients. Nurs Crit Care. 2019;24(6):355-61. Available from: https://doi.org/10.1111/nicc.12341

3. Mota EC, Oliveira AC. Catheter-associated urinary tract infection: why do not we control this adverse event? Rev Esc Enferm USP. 2019;53:e034522019. Available from: https://doi.org/10.1590/S1980-220X2018007503452

4. Alghoraibi H, Recurrent urinary tract infection in adult patients, risk factors, and efficacy of low dose prophylactic antibiotics therapy. J Epidemiol Glob Health. 2023;13(2):200-11. Available from: https://doi.org/10.1007/s44197-023-00105-4

5. Lopes KR, Jorge BM, Barbosa MH, Barichello E, Nicolussi AC. Use of ultrasonography in the evaluation of urinary retention in critically ill patients. Rev. Latino-Am. Enfermagem. 2023;31:e4026. Available from: https://doi.org/10.1590/1518-8345.6618.4026

6. Conselho Federal de Enfermagem (BR). Parecer normativo para atuação da equipe de enfermagem em sondagem vesical [Internet]. Brasília-DF: COFEN; 2013. Available from: http://novo.portalcofen.gov.br/wp-content/uploads/2014/01/ANEXOPARECER-NORMATIVO-PARA-ATUACAO-DA-EQUIPE-DE-ENFERMAGEM-EM-SONDAGEM-VESICAL1.pdf

7. Barbosa LR, Mota EC, Oliveira AC. Infecção do trato urinário associada ao cateter

vesical em unidade de terapia intensiva. Epidemiol Serv Saúde [Internet]. 2019;28(2):1-10. Available from: https://online.unisc.br/seer/index.php/epidemiologia/article/view/11579

8. Billet M, Windsor TA. Urinary Retention. Emerg Med Clin North Am. 2019;37(4):649-60. Available from: https://doi.org/10.1016/j.emc.2019.07.005

9. Carnaval BM, Teixeira AM, Carvalho R de. Uso do ultrassom portátil para detecção de retenção urinária por enfermeiros na recuperação anestésica. Rev SOBECC [Internet]. 2019;24(2):91-8. Available from: https://doi.org/10.5327/Z1414-4425201900020007

10. Bastos M, Silveira Vieira AL, Muniz Pazeli Jr J. Uso da ultrassonografia "point-of-care" na prática nefrológica: transpondo os limites do trato urinário. HU Rev [Internet]. 2019;45(3):341-5. Available from: https://periodicos.ufjf.br/index.php/hurevista/article/view/28745

11. Moraes VM, Lucena AF, Bavaresco T, Cruz ACB, Oliveira KLR, Silva TS, et al. Desenvolvimento da Intervenção de Enfermagem "Ultrassonografia: bexiga" segundo a Nursing Interventions Classification. Acta paul enferm [Internet]. 2024;37:eAPE006722. Available from: https://doi.org/10.37689/acta-ape/2024AO0000672

12. Ceratti RN, Beghetto MG. Incidence of urinary retention and relations between patient's complaint, physical examination, and bladder ultrasound. Rev Gaúcha Enferm [Internet]. 2021;42:e20200014. Available from: https://doi.org/10.1590/1983-1447.2021.20200014

13. Conselho Federal de Enfermagem (COFEN). Cofen aprova resolução que permite ultrassonografia beira-leito e pré-hospitalar [Internet]. Brasília, DF: COFEN; 2021. Available from: https://www.cofen.gov.br/cofen-aprova-resolucao-que-permite-ultrassonografia-beira-leito-e-pre-hospitalar/

14. Peters MDJ, Marnie C, Tricco AC, Pollock D, Munn Z, Alexander L, et al. Updated methodological guidance for the conduct of scoping reviews. JBI Evid Synth. 2020;18(10):2119-26. Available from: https://doi.org/10.11124/JBIES-20-00167

15. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. Ann Intern Med. 2018;169(7):467-73. Available from: https://doi.org/10.7326/M18-0850

16. Munn Z, Pollock D, Khalil H, Alexander L, McInerney P, Godfrey CM, et al. What are scoping reviews? Providing a formal definition of scoping reviews as a type of evidence synthesis. JBI Evid Synth. 2022;20(4):950-2. Available from: https://doi.org/10.11124/JBIES-21-00483

17. Lee L, De Cara JM. Ultrassom no local de atendimento. Curr Cardiol Rep. 2020;22:149. Available from: https://doi.org/10.1007/s11886-020-01394-y

Funding and Acknowledgments:

This research did not receive funding.

Authorship Criteria (Author Contributions)

All authors contributed to the article.

Declaration of Conflict of Interest

Nothing to declare.

Scientific Editor: Francisco Mayron Morais Soares. Orcid: https://orcid.org/0000-0001-7316-2519