

Use of E-fast Protocol by Nurses in the Emergency Department: Integrative Literature Review

Uso do Protocolo E-fast por Enfermeiros no Departamento de Emergência: Revisão Integrativa de Literatura
Uso del Protocolo E-fast por Enfermeras en el Departamento de Urgencias: Revisión Integrativa de la Literatura

RESUMO

Objetivo: Analisar o que tem sido publicado cientificamente sobre os aspectos relacionados ao uso do protocolo E-FAST por enfermeiros no departamento de emergência. **Método:** Revisão integrativa realizada nas bases PubMed, EMBASE, CINAHL, Scopus, SciELO, e LiLACS, no mês de agosto de 2025. **Resultado:** A seleção final foi de 4 artigos. Os estudos foram realizados entre os anos de 2009 e 2017, com predomínio dos Estados Unidos; foram classificados em sua totalidade em grau de evidência nível 3, 50% foram estudo prospectivos e 50% Revisões Sistemáticas. **Conclusão:** O protocolo E-FAST demonstrou ser uma ferramenta viável e eficiente nos departamentos de emergência, com destaque para sua utilização por enfermeiros de práticas avançadas em diferentes países. Apesar das limitações relacionadas ao número de publicações e nível de evidência dos estudos, destaca-se a capacitação profissional como fator contribuinte para otimizar seu uso. Reforça-se a necessidade de estudos metodologicamente robustos para ampliar a base de evidências e consolidar sua aplicação neste contexto.

DESCRITORES: Avaliação sonográfica focada no trauma; Enfermagem; Serviço hospitalar de emergência.

ABSTRACT

Objective: To analyze what has been published scientifically on aspects related to the use of the E-FAST protocol by nurses in the emergency department. **Method:** Integrative review conducted in the PubMed, EMBASE, CINAHL, Scopus, SciELO, and LiLACS databases in August 2025. **Results:** The final selection consisted of four articles. The studies were conducted between 2009 and 2017, predominantly in the United States; they were all classified as level 3 evidence, with 50% being prospective studies and 50% systematic reviews. **Conclusion:** The E-FAST protocol proved to be a viable and efficient tool in emergency departments, with emphasis on its use by advanced practice nurses in different countries. Despite limitations related to the number of publications and level of evidence of the studies, professional training stands out as a contributing factor to optimizing its use. The need for methodologically robust studies to expand the evidence base and consolidate its application in this context is reinforced.

DESCRIPTORS: Trauma-focused ultrasound assessment; Nursing; Emergency hospital service.

RESUMEN

Objetivo: Analizar lo que se ha publicado científicamente sobre los aspectos relacionados con el uso del protocolo E-FAST por parte de enfermeros en el departamento de urgencias. **Método:** Revisión integradora realizada en las bases PubMed, EMBASE, CINAHL, Scopus, SciELO y LiLACS, en el mes de agosto de 2025. **Resultado:** La selección final fue de 4 artículos. Los estudios se realizaron entre los años 2009 y 2017, con predominio de los Estados Unidos; se clasificaron en su totalidad en grado de evidencia nivel 3, el 50 % fueron estudios prospectivos y el 50 % revisiones sistemáticas. **Conclusión:** El protocolo E-FAST demostró ser una herramienta viable y eficaz en los servicios de urgencias, destacando su uso por parte de enfermeros de prácticas avanzadas en diferentes países. A pesar de las limitaciones relacionadas con el número de publicaciones y el nivel de evidencia de los estudios, se destaca la capacitación profesional como factor que contribuye a optimizar su uso. Se refuerza la necesidad de estudios metodológicamente sólidos para ampliar la base de evidencia y consolidar su aplicación en este contexto.

DESCRIPTORES: Evaluación ecográfica centrada en el trauma; Enfermería; Servicio hospitalario de urgencias.

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INTRODUCTION

Point of Care Ultrasound (POCUS) is a tool used to obtain ultrasound images by scanning body structures, and is considered a new pillar of bedside physical examination^[1]. As such, it has become a guiding

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and complementary tool for clinical decisions in various areas of health-care, with the emergency department being the pioneer and main field of use over the last two decades^[2].

In addition, POCUS has become a powerful semiological tool for reducing the risks of serious and potentially fatal harm related to nursing care. Initially used as a guide for invasive procedures, its use has now been expanded to complement physical examinations, assist in clinical reasoning, support the identification of nursing diagnoses, and monitor outcome indicators sensitive to nursing interventions^[3].

Approved in 2021, through Resolution No. 679 of the Federal Nursing Council (COFEN), the standardization of the use of bedside and pre-hospital ultrasound authorizes its use by properly trained nurses, prohibiting the issuance of ultrasound reports, as well as its use for nosological diagnostic purposes^[4].

The applicability of bedside ultrasound within the emergency department has facilitated the identification and management of various serious health conditions, such as trauma^[5]. The protocol used and validated for this purpose is called Extended Focused Assessment with Sonography for Trauma (E-FAST), which consists of detecting free fluid in the abdominal, thoracic, cardiac, and pulmonary cavities and verifying the absence of pleural sliding indicating pneumothorax, with emphasis on blunt chest trauma^[6].

According to the WHO, trauma is one of the leading causes of death worldwide, with a higher prevalence in large urban centers^[7]. In Brazil, it ranks fourth among causes of mortality, mainly affecting the 20-49 age group^[8].

E-FAST is characterized by its rapid execution and effectiveness in trauma emergency departments, with an

accuracy of approximately 95%, in addition to its low cost and easy accessibility^[6]. However, its use is operator-dependent, and there are still significant barriers to its implementation by nurses, such as cultural and qualification issues^[9].

Given the above, it is possible to understand the fundamental role of the E-FAST protocol in promoting quality and safety in the care of trauma patients, given the need for rapid identification of traumatic injuries in order to establish intervention measures. Thus, the need to disseminate and strengthen this practice in academic and professional nursing circles is also highlighted.

Therefore, the present study aims to analyze what has been published scientifically on aspects related to the use of the E-FAST protocol by nurses in the emergency department.

METHODS

This is an Integrative Literature Review (ILR), following the recommendations of the Preferred Reporting Items For Systematic Reviews And Meta-Analyses (PRISMA) guide ([10]), conducted in August 2025 by two separate reviewers, with a third reviewer to clarify any disagreements between them, based on the guiding question using the PICO strategy: "What is the main evidence in the literature on the use of the E-FAST protocol by nurses in the emergency department?"

The databases used for the research were the National Library of Medicine (PubMed), EMBASE, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Elsevier SciVerse Scopus (Scopus), Scientific Electronic Library Online (SciELO), and Latin American Literature in Health Sciences (LiLACS). The information extracted from the publications was manually entered into a spreadsheet prepared by the researchers for this purpose.

The search strategy focused on the use of the terms: "Trauma-Focused Ultrasound Assessment," "Nursing," and "Nurse" according to the Health Sciences Descriptors (DECS) and Medical Subject Headings (MeSH), with adaptations in the search terms according to the database used to expand the findings; They were also combined with the Boolean operators AND (restrictive combination) and OR (additive combination) in the different databases (Table 1).

Regarding eligibility criteria, articles published in full, without time limits, in Portuguese, English, and Spanish, with the theme of the use of E-FAST by nurses were included; editorials, annals, incomplete articles, and those not conducted in an intra-hospital emergency setting were excluded.

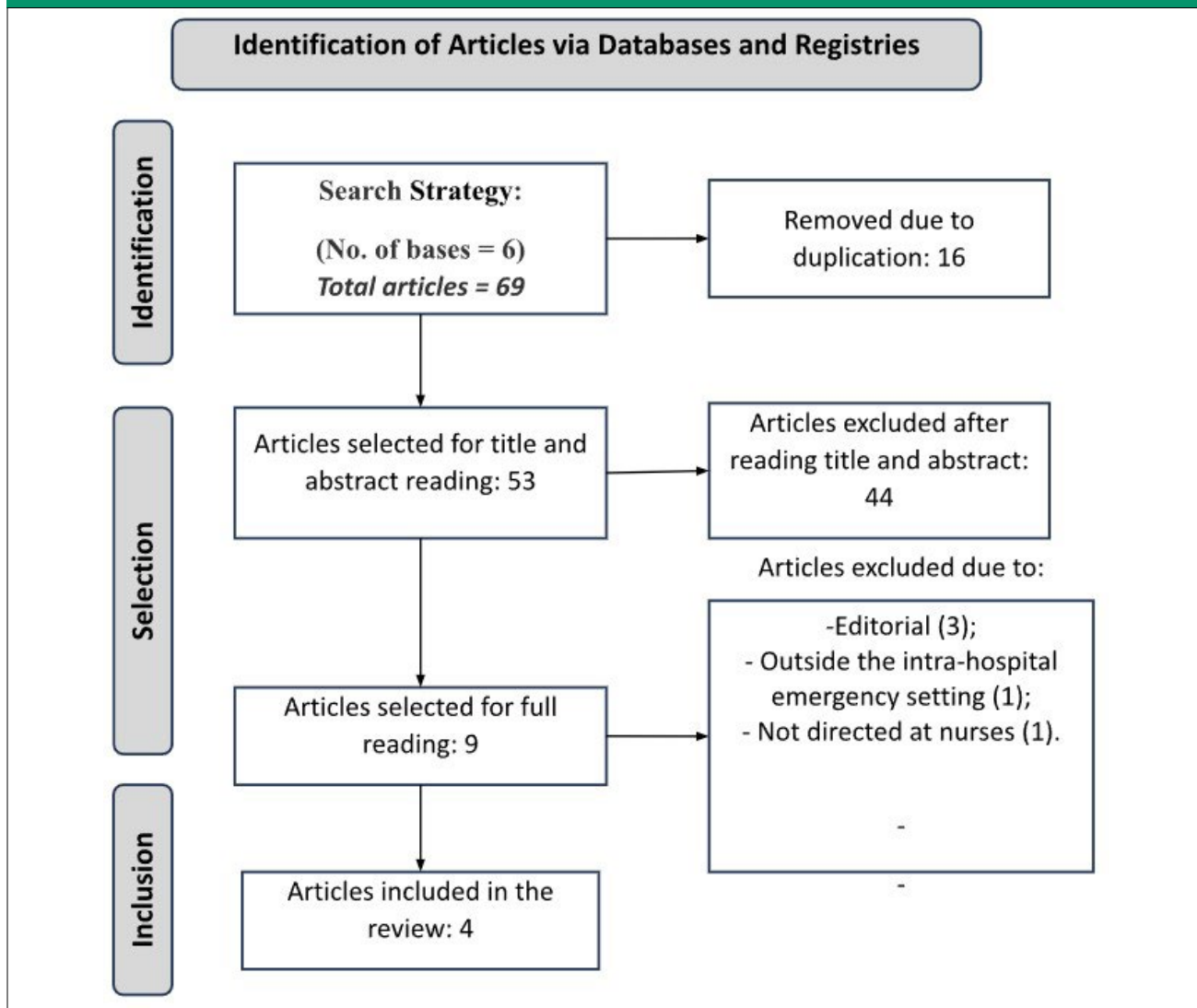
The selection was carried out in three stages: reading of titles and abstracts, full reading of eligible texts, and application of inclusion and exclusion criteria. After the final selection of articles, data on the characteristics of the studies (title, authors, country of origin, year of publication, professional training, design, and level of evidence) were extracted. The information obtained was categorized in a Microsoft® 365 Excel spreadsheet (version 2022) for analysis of the results.

Thus, the presentation of the results followed the PRISMA model guidelines, aiming to ensure transparency and methodological reproducibility, as shown in Figure 1.

Table 1. Search strategy layout according to database and number of articles. São Paulo, Brazil, 2025.

Database	Search strategy	Nº of articles
EMBASE		2
Scopus	('fast ultrasound' OR 'e-fast ultrasound') AND ('nurse'/exp OR nurse OR nursing)	2
CINAHL	TITLE-ABS-KEY ("fast ultrasound" OR "e-fast ultrasound" AND (nurses OR nursing))	17
PubMed	fast AND ultrasound AND (nurse OR nurses OR nursing)	29
Scielo	((FAST[Text Word] OR E-FAST[Text Word]) AND (ultrasound[Text Word])) AND (nurse[Text Word] OR nurses[Text Word] OR nursing[Text Word])	18
LILACS	((*"enfermagem" OR "enfermeiro") AND ("Avaliação Sonográfica Focada no Trauma" OR "FAST" OR "eFAST")) AND ("Ultrassom" OR "Ultrasonografia")	1
	((nursing) OR (nurse) OR (nurses)) AND ((ultrasound) OR (ultrasonics) OR (ultrasonography)) AND ((focused assessment with sonography for trauma) OR (fast) OR (efast)) AND (db:("LILACS"))	Total: 69

Figure 1 – Flowchart of articles selected in the integrative review, São Paulo, São Paulo, Brazil, 2025.



RESULTS

Among the searches performed in the databases, 69 publications were found following the search strategies defined based on the guiding question, including 2 articles in EMBASE; 2 in SCOPUS; 17 in CINAHL; 29 in PUBMED; 18 in SCIELO; and 1 in LI-

LACS (Table 1).

Thirteen duplicate articles were identified and excluded, leaving 53 articles for selection. Forty-three articles were excluded because they did not meet the criteria based on reading the title and abstract, leaving nine articles for full reading. Among these, four articles were included in the re-

view following the eligibility criteria set out in Figure 1.

The four articles included in the review are listed in Table 2, along with information collected for review analysis, including title, authors, country of origin, year of publication, professional training, design, and level of evidence.

Table 2 - Summary of selected articles, São Paulo, SP, Brazil, 2025.

ID	Title	Author	Year	Country	Professional Training	Design	Level of Evidence (JBI)
E1	Validation of nurse-performed FAST ultrasound	Bowra J et al. ^[11]	2009	Australia	Nurse	Prospective study	3
E2	Nurse-performed FAST ultrasound in the emergency department: a systematic review	Storti M et al. ^[12]	2013	Italy	Nurse / NP	Systematic Review	3.e
E3	Emergency department ultrasound by nurse practitioners	Henderson SO et al. ^[13]	2010	USA	NP	Prospective study	3
E4	eFAST Simulation Training for Trauma Providers	Pencil K ^[14]	2017	USA	NP / Trauma Residents; Interns; and PA	Systematic Review/Field Study	3.e

Legend: United States of America (USA) Nurse Practitioner (NP); Physician Assistant (PA)

Regarding the year of publication, publications were obtained between 2009 and 2017, with minimum intervals of one year and maximum intervals of four years. The origins of the publications were concentrated in North America, with the United States of America (USA) being the location with the highest number of publications on the subject, including 50% of the articles, 25% were from Australia (n=1), and 25% from Italy (n=1).

Regarding professional training within the selected articles, there were graduate nurses, advanced practice nurses entitled Nurse Practitioner (NP), Trauma Medical Residents, Medical Interns, and Physician Assistant (PA), with NP being the main training present in the publications with 75% (n=3).

The studies presented two methodological designs, 50% prospective (n=2) and 50% systematic review (n=2). The level of evidence, following the Joana Briggs Institute (JBI) classi-

fication, was predominantly classified as level of evidence “3.”

DISCUSSION

The degree of evidence of the publications was unanimous at level 3 according to the JBI, which shows that these are studies that, when related to best practices and Evidence-Based Practice (EBP), are classified as having intermediate strength, which requires caution regarding the translation of this knowledge into practice^[15]. Studies such as randomized clinical trials and meta-analyses classified as strong evidence were not found in the literature when related to the topic.

Studies E1, E3, and E4 are primary research studies that apply observational and analytical methodologies. One of the common features in their methodological designs was the implementation of prior training of participants in order to evaluate the performance of the use of E-FAST in the respective care provided in the samples^[11-13]. Simulations and training are effective ways to standardize con-

tinuing education so that participants have the necessary skills to perform interventions and assessments, thereby reducing biases^[16].

The use of POCUS is operator dependent, regardless of the assessment performed, which means that professionals who are not experienced in using the tool may have difficulty using it or even use it incorrectly^[17]. The 2018 study by Akoglu et al. showed that a group of emergency physicians performing E-FAST compared to computed tomography results had a specificity of 42.9% and sensitivity of 98.4%^[18]. The E1 study showed that there was no statistical difference when performed by senior nurses with trauma experience and prior training^[11].

Articles E1-E3 describe the technical use of FAST in its non-extended format, traditionally known as four-window ultrasound analysis (spleno-renal, hepato-renal, suprapubic, and subxiphoid)^[11-13]. Only article E4 adopted the extended assessment with the addition of the

lung apex windows in the search for findings characteristic of the absence of pleural sliding suggestive of pneumothorax^[14].

Some studies present associations with other professional categories, as is the case with studies E2, E3, and E4^[11-13]. E1 stands out in this regard as it is the only exclusive finding with nursing professionals with higher education and prior experience and training^[14]. Studies E2, E3, and E4 present in their sample professionals called Nurse Practitioners (NP), who are nurses with master's/doctorate degrees who perform advanced practices and have expanded professional autonomy to perform health diagnoses and treatments^[19-20]. NPs are nurses, but their work is similar to medical practice, making it impossible to compare them analytically with undergraduate and specialized nursing assistants.

The first article related to the FAST topic written by a nurse was only published in 2009 (E1), while the use of E-FAST/FAST in medical practice has been around for at least 27 years, con-

solidated by its inclusion in Advanced Trauma Life Support (ATLS), one of the world's leading guides to systematic trauma care. The first articles highlighting the practice originated in Europe in the 1970s^[21]. It took ten years from the consolidation of FAST use for the first evidence to be published reporting its use by nurses.

The distribution of publications in relation to the country of origin is mainly North American (50%), and there were no Brazilian publications captured by the research search strategy that prove the practice and use of E-FAST by nurses. However, a case report article by Ribeiro DR et al.^[22] reported the use of E-FAST by nurses for the identification and management of hemothorax in a trauma patient, becoming the only Brazilian publication reporting on the subject. This article was not included in the research sample because it was not published in an indexed journal and, therefore, was not identified in the search described in the study method.

With the increased use of bedside ultrasound in Brazilian nursing care,

it can be inferred that other professionals are also using E-FAST in their care^[3]. It is also hoped that other researchers will conduct studies focused on the use of E-FAST in Brazil by nurses to confirm its use and study local peculiarities that differ from other countries.

CONCLUSION

Given the above, it is clear that despite the limitations in terms of the number and level of evidence of studies involving the subject in question, the use of the E-FAST protocol by nurses in emergency departments has been described as a viable and efficient tool in the care of trauma patients, with its use in different countries. advanced practice nurses are the main professionals in the nursing team to use it, and professional training optimizes the use of this tool in traumatic emergency care. It is essential to conduct studies with greater methodological rigor, aiming to improve the evidence base and consolidate its use in emergency departments.

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