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BMJ Open

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Emma Duffield,[1] Liza Keating ,[2] Sarah Wilson ,[3] Amelia Hollywood [1]

To cite: Duffield E, Keating L, Wilson S, *et al*. Adult pain scores in the emergency department: a scoping review protocol. *BMJ Open* 2025;**15**:e106729. doi:10.1136/bmjopen-2025-106729

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (https://doi.org/10.1136/bmjopen-2025-106729).

Received 18 June 2025
Accepted 04 September 2025

[1]School of Pharmacy, University of Reading, Reading, UK
[2]Emergency Department, Royal Berkshire NHS Foundation Trust, Reading, UK
[3]Emergency Department, Frimley Health NHS Foundation Trust, Slough, UK

Correspondence to
Dr Amelia Hollywood;
a.hollywood@reading.ac.uk

ABSTRACT

Introduction Pain is a common complaint in patients presenting to an Emergency Department (ED). Data show that timely delivery of pain relief in this setting remains a challenge. Adequate treatment of pain requires recognition and assessment. The Royal College of Emergency Medicine advocates for early pain assessment and reassessment post-analgesia; however, it does not specify how best to do this. Therefore, a review of existing literature is needed to identify which pain assessment tools have been shown to be useful in the ED.

Methods and analysis This scoping review will use the Joanna Briggs Institute methodology. A search of PubMed, Embase, Cumulated Index in Nursing and Allied Health Literature, Web of Science, Scopus and the Cochrane Library will identify relevant studies published in English since January 2004. Studies will be included that recruit adults (aged 18 years and over) presenting to an ED with acute pain (duration under 3 months). Publications must assess or compare tools for measuring pain in an ED setting. Full-text articles published internationally will be considered. After duplicate removal, abstract screening and full-text analysis by two independent reviewers will identify relevant papers, using the inclusion criteria. Discrepancy resolution will be via a third reviewer. Pain measurement tools and their evidence will be extracted, collated and described. The findings will be reported according to Preferred Reporting Items for Systematic reviews and Meta-Analyses for Scoping Reviews.

Ethics and dissemination Ethical approval is not required for this review. Published results will be shared with relevant parties interested in ED pain management. Potential next steps include patient involvement in the evaluation of pain assessment tools identified in this review and implementation into practice. The insights of patients with relevant lived experience in assessing these tools would be invaluable to the objective of improving pain management in the emergency setting.

Trial registration number This project is registered with the Open Science Framework accessible at https://doi.org/10.17605/OSF.IO/ENVPY.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ Robust methodology based on Joanna Briggs Institute recommendations.
⇒ Scoping review methodology was selected with a broad inclusion criteria to adequately capture and describe a highly heterogeneous data set.
⇒ Popular and prominent databases will be searched, providing inclusive peer-reviewed journals with a range of scientific studies and reducing retrieval bias.
⇒ The search will be limited by English language and will not include grey literature.
⇒ The use of a research team, with multiple independent reviewers, will maximise the credibility of the findings.

INTRODUCTION

Rationale

Pain is one of the most common presenting symptoms in the Emergency Department (ED) but is often poorly managed. Timely delivery of analgesia is a patient priority,[1] and the alleviation of pain is a basic human right. Effective treatment of acute pain has been shown to reduce length of hospital stay, reduce incidence of delirium, improve patient satisfaction with care and decrease the likelihood of the development of chronic pain.[2] Improving pain management in the ED has been recognised as a research priority by the James Lind Alliance and Royal College of Emergency Medicine (RCEM).[3 4] Despite long-standing recognition of inadequate pain management, little has changed to improve pain management and EDs in the United Kingdom (UK) are consistently not meeting RCEM standards for timely pain assessment and management.[5–7] There is also substantial evidence of inequalities in pain management in the ED with reported disparities in analgesia provision based on age, sex and ethnic background.[8 9]

One major barrier to pain management is the inadequate assessment of pain. RCEM guidelines[1] recommend documenting patient pain scores and providing pain management appropriate to the score. However, the use of a pain score in the ED is problematic, and clinician reluctance to accept patient-reported pain scores is widespread.[10 11] Pain scoring is highly subjective and affected by several factors including cultural background and previous experience of pain. There is a need for a pain assessment tool that is meaningful to both patients and clinicians

and that can be used to assess both the initial need for pain management and how well pain has been managed. Other tools for measuring pain management include the Global Impression of Change score[12] and questions used within national audits, such as 'do you feel staff have done everything to address your pain?'.[13] However, there is a lack of work exploring which tools would be appropriate and feasible to use specifically within an ED setting.

Emergency clinicians have been trying to improve assessment of pain and analgesia administration in the ED for many years. This has been the topic of multiple RCEM national audits and quality improvement projects since 2008, as well as research to understand how pain management can be improved.[14–16] However, difficulties in assessing pain are recognised as hindering improvements in this area.[10 11] Ultimately, it is difficult to achieve improvements in pain levels without first being able to adequately measure them.

Currently, most EDs use some form of numerical pain score (eg, 0–10) to record the assessment of pain. RCEM Best Practice Guidelines (2024) describe a standard of care that mandates a pain score within 15 minutes of arrival and subsequent categorisation of the severity of the pain based on the ascribed score.[1] The ascribed score guides the most appropriate analgesia. There is an increasing body of opinion that objective functional scoring systems offer an effective alternative to numerical scores. In 2018, the Joint Commission (USA) implemented new and revised pain assessment and management standards, emphasising patient engagement and improving pain assessment by focusing on how pain affects patients' physical function.[17] Consideration needs to be given to the underlying cause of the pain. There is a wider recognition that a pain score of zero may not be achievable and that the alleviation of suffering is the target we should be aiming for.[18]

Objective

We aim to understand how pain management can be assessed within the ED to improve the patient experience and reduce inequalities in pain management. This research is important in terms of improving both the short- and long-term health and well-being of patients and the quality of emergency healthcare service provision. The first step in this process is a methodical review of the literature to identify existing tools and the evidence for their use in the emergency setting.

Scoping reviews identify the types of available evidence within a given field, allowing identification of knowledge gaps. They can inform future research and identify implications for decision-making in policy and practice.[19] This type of review aligns with our objectives. In addition, this scoping review will explore existing literature which is expected to be too heterogenous for a systematic literature review and meta-analysis. The aim is to understand the current pain assessment tools that have been used for adults in the ED and which are more effective at enabling pain management.

A review of the literature indicates that no current systematic or scoping review has yet been undertaken on the specific topic. Although multiple reviews exist that compare one or two specific pain scores against each other,[20–22] none identify and collate the range of pain assessment tools available that have been used in the ED setting and explore the evidence for each, as would occur in this scoping review. Other reviews focused on a specific subset of the adult population, for example, the elderly,[23] but none were found that looked at methods of pain assessment across the entire adult population.

In summary, this scoping review broadly aims to contribute to the improvement of pain management in the ED. The objective of the review is to identify evidence exploring different pain assessment tools used for adults with acute pain in the ED setting, to summarise these and to propose which are superior for implementation into practice.

Review question

What is the evidence supporting different tools for assessing acute pain in adults presenting to an ED?

METHODS AND ANALYSIS

Study design

This study is a scoping review that will be conducted in accordance with the Joanna Briggs Institute (JBI) methodology for scoping reviews.[19] It has been registered online with the Open Science Framework and can be accessed at https://doi.org/10.17605/OSF.IO/ENVPY. Any deviations from the registered protocol will be reported and justified in the appropriate section of the methods in the final scoping review publication. The findings will be reported according to Preferred Reporting Items for Systematic reviews and Meta-Analyses for Scoping Review (PRISMA-ScR) guidelines.[24]

Eligibility criteria

Population

Studies that include human adults (aged 18 years and over) presenting to the ED in acute pain (duration of less than 3 months from any cause) will be included. The review will include participants of all ethnicities, sex and cognitive abilities.

Concept

The utility or comparison of tools used for assessing pain in the ED is the focus of this review. Publications will be excluded if there is no use of pain assessment tools, no evaluation of pain assessment tools and if pain assessment tools are being used outside of the ED setting.

Context

Sources must relate to assessment of acute pain, be available and complete in nature. Incomplete research, abstract only and study protocols would be excluded along with any inaccessible publications.

ublications from within the last 20 years from any geographical location would be considered, although the search will be limited to publications in the English language. No limits on ethnicity, sex, age or cognitive abilities are planned, to match the broad adult population presenting to UK EDs.

Information sources

This scoping review will consider both experimental and quasi-experimental study designs including randomised controlled trials, non-randomised controlled trials, before and after studies and interrupted time-series studies. In addition, analytical observational studies including prospective and retrospective cohort studies, case-control studies and analytical cross-sectional studies will be considered for inclusion. This review will also consider descriptive observational study designs including case series, individual case reports and descriptive cross-sectional studies for inclusion. Qualitative studies will also be considered. Systematic reviews will not be included in this scoping review but will have their reference lists screened for relevant papers for inclusion. Publications worldwide will be considered, but they must have been published in English.

Search strategy

The search strategy aims to locate relevant publications of any type, to answer the review question. A three-step search strategy will be used in this review. First, an initial limited search of MEDLINE (PubMed) and Web of Science was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop the proposed search strategies (see online supplemental appendix I).

The strategy, including all identified keywords and index terms, will be adapted for each included database and/or information source. The search strategy will be developed with the assistance of a university librarian (from the University of Reading) prior to being performed. The reference list of each included paper, and any relevant systematic reviews excluded during screening, will be reviewed for additional studies. Studies published in English will be included as this is the language spoken by all authors. Studies published since 1 January 2004 (within the last two decades) will be included to capture the majority of the available evidence while keeping up to date with current clinical practice. The databases to be searched include Web of Science (Core Collection), Scopus, MEDLINE (PubMed), Cochrane databases, Embase and Cumulated Index in Nursing and Allied Health Literature (CINAHL).

Selection of sources of evidence

Following the search, all identified citations will be collated and uploaded into EndNote 21 (Clarivate Analytics, PA, USA) and duplicates removed. Titles and abstracts will then be screened by two or more independent reviewers for assessment against the inclusion criteria. In accordance with the JBI methodology, a pilot test will be conducted during which the independent reviewers will meet early in the process to identify and address any issues or ambiguities that may arise. The full text of selected citations will be assessed in detail against the inclusion criteria by two or more independent reviewers. In the instance of being unable to access the full text of publications, authors will be contacted to request access to the paper. If there is no response after 1 month the request will be repeated. Librarians associated with the authors' institutions will be available to aid in obtaining access to all the relevant publications for review. Reasons for exclusion of sources of evidence at full text that do not meet the inclusion criteria will be recorded and reported. Any disagreements that arise between the reviewers at each stage of the selection process will be resolved through discussion or with an additional reviewer/s. The results of the search and the study inclusion process will be reported in full in the final scoping review publication and presented in a PRISMA flow diagram adapted for scoping reviews.[25]

Data extraction and charting process

Data from included papers will be extracted by two or more independent reviewers into a spreadsheet data table developed by the reviewers in advance of data analysis. The extracted data will include specific details about the participants, concept, context, study methods and key findings relevant to the review question/s. Following independent extraction, the reviewers will amalgamate findings, with any disagreements resolved through discussion or via an additional independent reviewer/s.

A draft data table is provided (see online supplemental appendix II). This draft will be modified and revised as necessary during the process of extracting data from each included evidence source. Modifications will be detailed in the final scoping review. If appropriate, authors of papers will be contacted to request missing or additional data, where required.

Critical appraisal of individual sources of evidence

A critical appraisal of included sources of evidence will be conducted through quality assessment. The final selection of included papers will be assessed by two reviewers. The following tools will be used according to study type: Risk of Bias 2[26] (randomised controlled studies), Risk Of Bias In Non-randomised Studies—of Interventions V2[27] (non-randomised interventional studies), Newcastle–Ottawa Scale[28] (non-interventional cohort/case-control studies), JBI checklist for analytical cross-sectional studies[29] (cross-sectional studies) and Critical Appraisal Skills Programme checklist for qualitative studies[30] (qualitative studies).

Data synthesis

Data will be presented graphically or in diagrammatic or tabular form, depending on the nature of the information gathered. A narrative summary will accompany the tabulated and/or charted results and will describe how the results relate to the review's objective and research question. Analysis will be descriptive as this is a scoping review.

Patient and public involvement statement

As a structured literature review, direct patient involvement in the study and its design is not always feasible. However, the research question itself is highly patient-focused and has been set as a priority by the James Lind Alliance.[3 4] The James Lind Alliance uses Priority Setting Partnerships (PSPs) to enable patients, carers and clinicians to agree on future research priorities.[31] Many of the areas flagged for research in recent years include the management of painful conditions such as fragility fractures and burn injuries. The research question for this project is in line with priorities set by these PSPs, and so is in line with the patient voice.

There is patient representation on the Royal Berkshire NHS Foundation Trust ED research committee that made the decision to fund a research fellowship to investigate pain assessment in the ED setting. This investment indicates the importance of this research area to patients and has directly facilitated this project.

Future work built on the findings of this review has the potential for active patient involvement. RCEM pain guidance lacks input from service users. Underserved communities are over-represented in ED across the UK,[32] and so the inclusion of patients' lived experience is essential to ensure the identification of tools that are appropriate for diverse groups. To fulfil this unmet need, the authors recommend further research with the inclusion of patient voices to incorporate their insights and perspectives on the utility of these tools in assessing their pain.

ETHICS AND DISSEMINATION

Ethical approval is not applicable for this study as no original data are being collected and the intention is to analyse existing data. However, ethical principles will be adhered to throughout the scoping review.

Results will be shared through peer-reviewed publication and through presentations at scientific conferences. We aim to share findings with relevant interested parties, such as RCEM, who have made pain management one of their research priorities.[4] Evidence-based pain assessment tools identified in this review have the potential for further evaluation through patient and clinician focus groups, with the ultimate aim of updating pain management guidance and improving how pain is assessed and treated in the emergency setting.

Acknowledgements Jackie Skinner (Academic Liaison Librarian, University of Reading Library) for her assistance in search strategy development.

Contributors AH, LK and SW conceived and obtained funding for the project. ED registered the review, developed the search strategy and wrote the first draft of the manuscript. AH, LK and SW provided critical appraisal for the design and revised the manuscript. AH edited the manuscript for publication, also designated corresponding author and guarantor. All the authors approved the final version of the protocol.

Funding This work was supported by the University of Reading and the Royal Berkshire NHS Foundation Trust Emergency Department (ED) Research Committee through the Applied Health Research in Acute Pain Grant awarded to ED.

Competing interests None declared.

Patient and public involvement Patients and/or the public were involved in the design, conduct, reporting or dissemination plans of this research. Refer to the Methods section for further details.

Patient consent for publication Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

ORCID iDs
Liza Keating https://orcid.org/0000-0001-9028-2520
Sarah Wilson https://orcid.org/0000-0003-3964-0809
Amelia Hollywood https://orcid.org/0000-0001-9670-2506

REFERENCES

1 Royal College of Emergency Medicine. Best Practice Guideline: Management of Acute Pain in Adults in the Emergency Department, 2024. Available: https://rcem.ac.uk/wp-content/uploads/2024/10/Management_of_Acute_Pain_in_Adults_2024_v1.pdf
2 Sinatra R. Causes and consequences of inadequate management of acute pain. *Pain Med* 2010;11:1859–71.
3 James Lind Alliance. Broken Bones in Older people - Musculoskeletal Injury: fragility fracture of the lower limb and pelvis Top 10, 2018. Available: https://www.jla.nihr.ac.uk/priority-setting-partnerships/broken-bones-in-older-people/top-10-priorities.htm
4 James Lind Alliance. Emergency Medicine Refresh Top 10 (priority setting in association with the JLA), 2022. Available: https://www.jla.nihr.ac.uk/priority-setting-partnerships/emergency-medicine-refresh/top-10-priorities.htm
5 Wilson S, Dainty J, Quinlan J, *et al*. n.d. Do any UK EDs perform consistently well in the assessment and management of pain? *Research Letter Submitted to Emergency Medicine Journal*.
6 Sheehan JR, Wilson S, Quinlan J, *et al*. Prescription Of analgesia in Emergency Medicine (POEM): a multicentre observational survey of pain relief in patients presenting with an isolated limb fracture and/or dislocation. *Br J Pain* 2020;14:211–20.
7 Wilson S, Quinlan J, Beer S, *et al*. Prescription of analgesia in emergency medicine (POEM) secondary analysis: an observational multicentre comparison of pain relief provided to adults and children with an isolated limb fracture and/or dislocation. *Emerg Med J* 2021;38:830–3.
8 Tamayo-Sarver JH, Hinze SW, Cydulka RK, *et al*. Racial and Ethnic Disparities in Emergency Department Analgesic Prescription. *Am J Public Health* 2003;93:2067–73.
9 Platts-Mills TF, Esserman DA, Brown DL, *et al*. Older US Emergency Department Patients Are Less Likely to Receive Pain Medication Than Younger Patients: Results From a National Survey. *Ann Emerg Med* 2012;60:199–206.
10 Sampson FC, Goodacre SW, O'Cathain A. The Reality of Pain Scoring in the Emergency Department: Findings From a Multiple Case Study Design. *Ann Emerg Med* 2019;74:538–48.
11 Green SM, Krauss BS. The Numeric Scoring of Pain: This Practice Rates a Zero Out of Ten. *Ann Emerg Med* 2016;67:573–5.
12 Hogan TM, Howell MD, Cursio JF, *et al*. Improving Pain Relief in Elder Patients (I-PREP): An Emergency Department Education and Quality Intervention. *J Am Geriat Soc* 2016;64:2566–71.
13 Care Quality Commission. More people report a 'very good' overall experience of urgent and emergency care, but access to emotional support and timely pain relief both areas for improvement, 2021. Available: https://www.cqc.org.uk/news/releases/more-peoplereport-very-good-overall-experience-urgent-emergency-care-access

14 Sampson FC, Goodacre SW, O'Cathain A. Interventions to improve the management of pain in emergency departments: systematic review and narrative synthesis. *Emerg Med J* 2014;31:e9–18.
15 Sampson FC, O'Cathain A, Goodacre S. How can pain management in the emergency department be improved? Findings from multiple case study analysis of pain management in three UK emergency departments. *Emerg Med J* 2020;37:85–94.
16 Sampson FC, Johnson M. Systematic mixed studies review and thematic analysis of Emergency Department staff' perceptions of enablers and barriers to pain management. *Emerg Med J* 2023;40:606–13.
17 Joint Commission. R3 Report Issue 11: Pain Assessment and Management Standards for Hospitals, 2017. Available: https://www.jointcommission.org/standards/r3-report/r3-report-issue-11-pain-assessment-and-management-standards-forhospitals/
18 Lee TH. Zero Pain Is Not the Goal. *JAMA* 2016;315:1575–7.
19 Peters MDJ, Godfrey C, McInerney P, *et al*. Scoping reviews. In: Aromataris E, Lockwood C, Porritt K, *et al*., eds. *JBI Manual for Evidence Synthesis JBI*. 2020. Available: https://synthesismanual.jbi.global. https://doi.org/10.46658/JBIMES-24-09
20 Williamson A, Hoggart B. Pain: a review of three commonly used pain rating scales. *J Clin Nurs* 2005;14:798–804.
21 Hjermstad MJ, Fayers PM, Haugen DF, *et al*. Studies comparing Numerical Rating Scales, Verbal Rating Scales, and Visual Analogue Scales for assessment of pain intensity in adults: a systematic literature review. *J Pain Symptom Manage* 2011;41:1073–93.
22 Karcioglu O, Topacoglu H, Dikme O, *et al*. A systematic review of the pain scales in adults: Which to use? *Am J Emerg Med* 2018;36:707–14.
23 Hwang U, Platts-Mills TF. Acute Pain Management in Older Adults in the Emergency Department. *Clin Geriatr Med* 2013;29:151–64.
24 Tricco AC, Lillie E, Zarin W, *et al*. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med* 2018;169:467–73.
25 PRISMA. PRISMA Flow Diagram, 2024. Available: https://www.prisma-statement.org/prisma-2020-flow-diagram
26 Sterne JAC, Savović J, Page MJ, *et al*. RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ* 2019;366:l4898.
27 Sterne JA, Hernán MA, Reeves BC, *et al*. ROBINS-I: a tool for assessing risk of bias in non-randomised studies of interventions. *BMJ* 2016;355:i4919.
28 Wells GA, Shea B, O'Connell D, *et al*. The Newcastle-Ottawa Scale (NOS) for assessing the quality if nonrandomized studies in meta-analyses, Available: http://www.ohri.ca/programs/clinical_epidemiology/oxford.htm
29 Joanna Briggs Institute. Checklist for analytical cross sectional studies, 2020. Available: https://jbi.global/sites/default/files/2020-08/Checklist_for_Analytical_Cross_Sectional_Studies.pdf
30 Critical Appraisal Skills Programme. CASP Checklist: For Qualitative Research, Available: https://casp-uk.net/casp-checklists/CASP-checklist-qualitative-2024.pdf
31 James Lind Alliance. Top 10s of priorities for research, 2025. Available: https://www.jla.nihr.ac.uk/top-10-priorities#letter-P
32 NHS England. People in most deprived areas were almost twice as likely to visit A&E as those in least deprived, 2020. Available: https://digital.nhs.uk/news/2020/people-in-most-deprived-areas-were-almost-twice-as-likely-to-visit-ae-as-those-in-leastdeprived