EAS Journal of Anaesthesiology and Critical Care
Abbreviated Key Title: EAS J Anesthesiol Crit Care
ISSN: 2663-094X (Print) & ISSN: 2663-676X (Online)
Published By East African Scholars Publisher, Kenya

OPEN ACCESS

Volume-8 | Issue-2 | Mar-Apr-2026 | DOI: https://doi.org/10.36349/easjacc.2026.v08i02.008

Original Research Article

Impact of an Early Analgesia Protocol on Time to Pain Management in the Emergency Department

Serge Nga Nomo[1]*, Aristide Giles Kuitchet[2], Charles Emmanuel Toussaint Binam Bikoi[3], Cristela Iroume Bifouna[4], Dominique Djomo Tamchom[5], Clovis Kuetche[1], Bonaventure Jemea[4]

[1]Higher Institute of Medical Technology, University of Douala; Department of Anaesthesia and Intensive Care, Essos Hospital Center
[2]University of Garoua, Department of Anaesthesia and Intensive Care, Garoua General Hospital
[3]University of Ebolowa, Department of Anaesthesia and Intensive Care, Yaoundé General Hospital
[4]University of Yaoundé I, Department of Anaesthesia and Intensive Care, Yaoundé University Teaching Hospital
[5]University of Buea, Department of Anaesthesia and Intensive Care, Douala Gynaecological, Obstetric and Paediatric Hospital

Article History
Received: 06.02.2026
Accepted: 30.03.2026
Published: 01.04.2026

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: ***Background*:** Delays in the administration of analgesia remain common in emergency departments, with more than 75% of patients experiencing treatment delays exceeding 60 minutes. This persistent undertreatment contributes to oligoanalgesia and avoidable patient suffering. ***Objective*:** To evaluate the effect of implementing an early analgesia protocol on time to pain management in the emergency department of Essos Hospital Center over a 3-month period. ***Methods*:** We performed a quasi-experimental before-and-after study including 180 consecutive adult patients presenting with moderate to severe acute pain (visual analogue scale [VAS] ≥4). The intervention consisted of a standardised, protocol-driven analgesia algorithm combined with focused staff training. The primary outcome was the proportion of patients receiving analgesia within 30 minutes of triage. Secondary outcomes included median time to analgesic administration, pain intensity at 60 minutes (VAS), and patient satisfaction at 24 hours. ***Results*:** Following implementation of the protocol, the proportion of patients receiving analgesia within 30 minutes increased significantly from 21% to 66% ($p<0.001$). The median time to analgesic administration was reduced from 76 minutes (IQR, not reported) to 29 minutes, and mean pain scores at 60 minutes decreased from 6.2±1.3 to 3.3±1.0 ($p<0.001$). Patient satisfaction at 24 hours improved markedly, rising from 48% to 79% ($p<0.001$). ***Conclusion*:** The introduction of an early, protocol-driven analgesia strategy in the emergency department was associated with a substantial reduction in treatment delays and a clinically meaningful improvement in pain relief and patient satisfaction. These findings support the routine implementation of structured analgesia pathways to optimise the timely management of acute pain in resource-limited emergency care settings.

Keywords: Acute Pain, Emergency Department, Early Analgesia, Protocol-Driven Care, Time to Treatment, Patient Satisfaction.

INTRODUCTION

Acute pain is among the most frequent reasons for presentation to the emergency department, yet its management remains suboptimal worldwide. A substantial proportion of patients either receive no analgesia or experience prolonged delays before treatment initiation, resulting in persistent pain and avoidable suffering [1, 2]. This phenomenon, commonly referred to as oligoanalgesia (defined as delayed, inadequate, or absent analgesic treatment) continues to represent a significant and well-documented gap in the quality of emergency care [2, 3]. Multiple determinants contribute to this shortfall, including organisational constraints such as overcrowding and workflow inefficiencies, challenges in timely and accurate pain assessment at triage, and variability in clinicians' knowledge, attitudes, and prescribing practices [3]. In addition, the absence of structured protocols often leads to inconsistent decision-making and delays in initiating appropriate analgesic therapy, particularly in resource-constrained settings. Time to analgesia has emerged as a robust and clinically meaningful quality indicator in emergency medicine. Evidence consistently shows that

***Corresponding Author:** Serge Nga Nomo
Higher Institute of Medical Technology, University of Douala; Department of Anaesthesia and Intensive Care, Essos Hospital Center

delays exceeding 30 minutes from triage to analgesic administration are associated with sustained high pain intensity, poorer patient experience, and reduced satisfaction with care [4, 5]. Early, effective pain control is therefore not only an ethical imperative but also a critical component of patient-centred care and overall emergency department performance. Protocolised approaches to early analgesia, combining standardised treatment algorithms with targeted staff training, have been proposed as effective system-level interventions to reduce variability in care and improve timeliness of analgesic delivery. However, data on their implementation and impact in low- and middle-income settings remain limited. In this context, the present study aimed to evaluate the effect of implementing an early analgesia protocol on time to pain management and clinical outcomes among patients presenting with acute pain to the emergency department.

PATIENTS AND METHODS

Study Design and Participants

We conducted a quasi-experimental, before-and-after study at the Essos Hospital Centre, a tertiary referral hospital in Yaoundé, Cameroon, over a 3-month period (December 2025 to February 2026). The primary objective was to evaluate the effect of implementing a structured early analgesia protocol on time to pain management in the emergency department.

All consecutive adult patients (≥18 years of age) presenting with moderate to severe acute pain were eligible for inclusion. Pain intensity was assessed at triage using a 10-point visual analogue scale (VAS), and only patients with a score of 4 or greater were included. Patients with contraindications to analgesic therapy, including documented hypersensitivity to study medications or severe hepatic or renal impairment, were excluded. In addition, patients with chronic pain syndromes already managed under established therapeutic regimens were excluded in order to specifically capture acute pain presentations requiring immediate intervention.

Intervention

The early analgesia protocol was designed as a standardised, protocol-driven strategy to optimise and expedite pain management. Systematic pain assessment using the VAS was performed at triage, with rigorous documentation to facilitate prioritisation of patients requiring urgent analgesia. Analgesic administration followed a predefined, severity-based algorithm: patients with moderate pain (VAS 4–6) received paracetamol, with or without a non-steroidal anti-inflammatory drug, whereas those with severe pain (VAS ≥7) were treated with weak opioids or intravenous morphine, according to clinical judgement, patient tolerance, and contraindications. Maximum allowable doses, routes of administration, and predefined intervals for reassessment were explicitly specified within the protocol. In parallel, a structured educational intervention was delivered to both physicians and nursing staff, focusing on early recognition of pain, timely initiation of analgesia, systematic reassessment, and high-quality documentation. Adherence to the protocol was reinforced through daily reminders and visual decision-support tools displayed in clinical areas. The protocol was designed to ensure that analgesia was administered within 30 minutes of triage for the majority of eligible patients.

Data Collection and Follow-Up

Clinical and demographic data were collected prospectively using a standardised case report form. Variables included age, sex, baseline pain intensity, time interval between triage and analgesic administration, type and dosage of analgesics administered, and VAS scores at 30 and 60 minutes. Patient-reported satisfaction was assessed at 24 hours using a validated questionnaire. Data quality was ensured through daily verification by a designated study coordinator, with systematic checks for completeness and internal consistency.

Outcomes

The primary outcome was the proportion of patients receiving analgesia within 30 minutes of triage. Secondary outcomes included median time to analgesic administration, pain intensity at 30 and 60 minutes as measured by the VAS, and patient satisfaction at 24 hours.

Statistical Analysis

All analyses were performed using SPSS software, version 26 (IBM Corp., Armonk, NY, USA). Categorical variables were compared using the chi-square test or Fisher's exact test, as appropriate. Continuous variables were assessed for distributional normality and compared using the Mann–Whitney U test when non-normally distributed. Results are presented as medians with interquartile ranges for continuous variables and as frequencies with percentages for categorical variables. All statistical tests were two-sided, and a p value of less than 0.05 was considered to indicate statistical significance.

RESULTS

Baseline Characteristics of the Study Population

A total of 180 patients were included in the analysis, with 90 patients in the pre-intervention group and 90 in the post-intervention group following implementation of the early analgesia protocol. The mean (±SD) age was 38±13 years (range, 18 to 76), and 53% of the participants were female (male-to-female ratio, 0.88). The mean body-mass index was 24.7±4.1 kg/m², with no significant between-group differences observed.

With regard to coexisting conditions, 15% of patients had a history of hypertension, 8% had diabetes mellitus, and 6% had mild renal impairment. Previous

surgical history was notable for abdominal procedures in 20% of patients and orthopedic interventions in 12%.

Overall, baseline sociodemographic and clinical characteristics were well matched between the pre- and post-intervention groups, with no statistically significant differences, supporting the comparability of the two cohorts and strengthening the internal validity of the before-and-after analysis.

Table I: Baseline Sociodemographic and Clinical Characteristics of the Study Population

Characteristic	Pre-intervention (n=90)	Post-intervention (n=90)	*P* value
Mean age (yr), ±SD	38±13	37±12	0.48
Female sex, (%)	47 (52)	49 (54)	0.75
Mean body-mass index (kg/m²), ±SD	24.6±4.0	24.8±4.2	0.62
Hypertension, n (%)	14 (16)	13 (14)	0.82
Diabetes mellitus, n (%)	6 (7)	8 (9)	0.56
Mild renal impairment, n (%)	5 (6)	6 (7)	0.74
Previous abdominal surgery, n (%)	19 (21)	17 (19)	0.70
Previous orthopaedic surgery, n (%)	12 (13)	10 (11)	0.64

Primary Outcome

The proportion of patients receiving analgesia within 30 minutes of triage increased markedly from 21% in the pre-intervention period to 66% following implementation of the early analgesia protocol ($p < 0.001$).

Table II: Proportion of Patients Receiving Analgesia within 30 Minutes of Triage

Period	Patients receiving analgesia <30 min, n (%)	Total, n	P value
Pre-intervention	19 (21)	90	-
Post-intervention	59 (66)	90	<0.001

Secondary Outcomes

The implementation of the early analgesia protocol was associated with marked and statistically significant improvements in all secondary endpoints. The median time from triage to analgesic administration was reduced from 76 minutes in the pre-intervention period to 29 minutes post-intervention ($p < 0.001$). Mean pain intensity, as assessed using the visual analogue scale (VAS), decreased from 6.2 to 4.1 at 30 minutes ($p < 0.001$) and from 6.2 to 3.3 at 60 minutes ($p < 0.001$).

Patient-reported satisfaction at 24 hours increased substantially, from 48% before protocol implementation to 79% following intervention ($p < 0.001$). No serious adverse events attributable to analgesic administration were observed during the study period, indicating that the protocol was safe and well tolerated.

Table III: Time to Analgesia, Pain Intensity, and Patient Satisfaction

Outcome	Pre-intervention	Post-intervention	*P* value
Median time to analgesia (minutes, IQR)	76 [65–88]	29 [20–38]	<0.001
Mean VAS score at 30 minutes (±SD)	6.2 ± 1.3	4.1 ± 1.1	<0.001
Mean VAS score at 60 minutes (±SD)	6.2 ± 1.3	3.3 ± 1.0	<0.001
Patient satisfaction at 24 hours, n (%)	43 (48)	71 (79)	<0.001
Serious analgesia-related complications	None observed	None observed	-

DISCUSSION

The management of acute pain in the emergency department remains a global challenge despite advances in clinical practice and organisational strategies. Evidence from multiple systematic reviews demonstrates that oligoanalgesia, defined as delayed or absent administration of analgesics, persists in a substantial proportion of clinical scenarios, with treatment delays often exceeding 60 minutes from patient arrival [8, 9]. Such delays have been consistently associated with higher pain intensity, reduced patient satisfaction, and adverse physiological and psychological consequences [8, 9]. Current international guidelines recommend that patients presenting with moderate to severe pain should receive appropriate analgesia within 15–30 minutes of triage [10, 11]. Our study at the Essos Hospital Centre aligns with this framework, demonstrating that implementation of an early analgesia protocol increased the proportion of patients receiving analgesia within 30 minutes from 21% to 66%. These findings are consistent with international evidence supporting the efficacy of standardised protocols and nurse-driven analgesia initiatives in expediting pain relief and improving patient outcomes [10–13]. By combining a structured, severity-based analgesia algorithm with targeted staff training and systematic pain assessment, our intervention addressed key barriers to timely analgesia, including workflow

inefficiencies, inconsistent pain documentation, and variability in clinician decision-making. The observed reductions in time to analgesia and pain scores, along with improved patient satisfaction, underscore the practical and clinical relevance of early, protocol-driven analgesia pathways in emergency care settings, particularly in low- and middle-income contexts.

The study population was well balanced between the pre- and post-intervention periods in terms of sociodemographic characteristics (age, sex, BMI) and clinical history (medical and surgical comorbidities), minimising the risk of selection bias or confounding. Such comparability strengthens the internal validity of the study and allows the observed improvements to be more confidently attributed to the intervention itself rather than to intrinsic differences between patient cohorts, a key methodological consideration in quasi-experimental clinical studies [14, 15]. The primary outcome of analgesia within 30 minutes of triage represents a robust quality-of-care indicator, endorsed as a performance metric in multiple international guidelines [9, 10]. The substantial increase in the proportion of patients achieving this target aligns with systematic review evidence demonstrating that nurse-initiated analgesia protocols significantly improve the timeliness of pain management [11]. Furthermore, studies published in 2024 across diverse clinical settings have confirmed that triage-initiated analgesia protocols reduce the time to first analgesic administration and enhance patient satisfaction [12-16]. The reduction in median time to analgesia (from 76 to 29 minutes) and the significant decrease in VAS scores at 30 and 60 minutes reflect meaningful improvements in pain control, consistent with the beneficial effects reported in comparable studies [11-17]. Similarly, the marked increase in patient satisfaction (from 48% to 79%) underscores a tangible improvement in the patient experience, corroborating international evidence that rapid, structured pain management is associated with higher satisfaction levels [7-13]. Importantly, no serious analgesia-related adverse events were observed, which aligns with previous findings indicating that early analgesia is safe when accompanied by appropriate monitoring and staff training [11-18]. Collectively, these results provide compelling evidence that the introduction of a standardised, early analgesia protocol can improve both the timeliness and quality of acute pain management in emergency care settings.

Our approach, based on a simple, severity-driven algorithm combined with targeted staff training, is consistent with recent international recommendations advocating the systematic integration of validated pain assessment tools and multimodal pain management strategies in the emergency setting [9-19]. Evidence from systematic reviews and meta-analyses published in 2025 demonstrates that standardised pain management protocols, including patient-controlled analgesia and nurse-initiated pathways at triage, significantly reduce time to analgesia without compromising diagnostic accuracy [8-21]. These findings support the concept that structured early analgesia protocols, incorporating both delegation and focused education of nursing staff, represent an effective strategy to enhance the quality of emergency care [11-16]. In resource-limited settings, such as many countries in sub-Saharan Africa, these simple, evidence-based interventions constitute critical levers for reducing oligoanalgesia and its associated adverse consequences [11-25]. Future work should consider incorporating data on cost-effectiveness, impact on hospital length of stay, and overall resource utilisation, as such information would provide valuable guidance for healthcare policymakers and administrators seeking to implement sustainable pain management strategies in emergency departments [22, 23].

Limitations

Although our study employed a quasi-experimental before-and-after design, this approach has inherent limitations, including the absence of randomisation and the potential for temporal confounding. Despite these constraints, recent prospective randomised trials and controlled studies emphasise the importance of systematically evaluating early analgesia protocols across diverse clinical settings and larger patient populations to strengthen the generalisability of findings [8-26].

CONCLUSION

This quasi-experimental before-and-after study demonstrates that the implementation of a structured early analgesia protocol in the emergency department at Essos Hospital Center significantly improved the timeliness and quality of acute pain management. Following protocol introduction, the proportion of patients receiving analgesia within 30 minutes of triage increased from 21% to 66%, the median time to analgesic administration fell from 76 to 29 minutes, and mean pain scores at 30 and 60 minutes were markedly reduced. Importantly, no serious adverse events related to analgesic therapy were observed. These results directly address the study's objectives, confirming that a simple, algorithm-driven approach combined with targeted staff training can enhance rapid and effective pain relief. The findings underscore that structured, nurse-inclusive analgesia protocols are a safe, feasible, and evidence-based strategy to reduce oligoanalgesia, particularly in resource-limited emergency care settings. Future investigations should assess long-term patient outcomes, cost-effectiveness, and scalability across diverse healthcare systems to consolidate these findings and inform policy decisions for broader implementation of early analgesia strategies.

Conflict of Interest: There is no conflict on the source of funding or on the affiliation of author.

REFERENCES

1. Zanza C, Romenskaya T, Zuliani M, et al. Acute Traumatic Pain in the Emergency Department. *Diseases*. 2023;11(1):45. doi:10.3390/diseases11010045. PMID: 36975594.
2. Hughes JA, Alexander KE, Spencer L, Yates P. Factors associated with time to first analgesic medication in the emergency department. *J Clin Nurs*. 2021;30(13-14):1973-1989. doi:10.1111/jocn.15750. PMID: 33829583.
3. Hughes JA, Alexander KE, Spencer L, Yates P. Factors associated with time to first analgesic medication in the emergency department. *J Clin Nurs*. 2021;30(13-14):1973-1989. doi:10.1111/jocn.15750
4. Keating L, Smith S. Acute Pain in the Emergency Department: The Challenges. *Emerg Med Int*. 2011;5(3):13-17. PMID: 26526458.
5. Ayano WA, Fentie AM, Tileku M, Jiru T, Hussen SU. Assessment of adequacy and appropriateness of pain management practice among trauma patients at the Ethiopian Aabet Hospital: A prospective observational study. *BMC Emerg Med*. 2023;23(1):92. Published 2023 Aug 17. doi:10.1186/s12873-023-00869-9.
6. Varndell W, Fry M, Elliott D. Quality and impact of nurse-initiated analgesia in the emergency department: A systematic review. *Int Emerg Nurs*. 2018;40:46-53. doi:10.1016/j.ienj.2018.05.003.
7. Calder J, Wanbon R, Thompson J, et al. Canadian nurse initiated analgesia protocol to reduce delays in the emergency department: A quality improvement study. *Int Emerg Nurs*. 2024;75:101488. doi:10.1016/j.ienj.2024.101488.
8. Taylor DM, Chen J, Khan M, et al. Variables associated with administration of analgesia, nurse-initiated analgesia and early analgesia in the emergency department. *Emerg Med J*. 2017;34(1):13-19. doi:10.1136/emermed-2016-206044.
9. Burgess L, Theobald K, Kynoch K, Keogh S. Implementing Evidence-Based Pain Management Interventions Into an Emergency Department: Outcomes Guided by Use of the Ottawa Model of Research Use. *J Adv Nurs*. 2025;81(11):7956-7967. doi:10.1111/jan.16457.
10. Kefyalew M, Deyassa N, Gidey U, Temesgen M, Mehari M. Improving the time to pain relief in the emergency department through triage nurse-initiated analgesia - a quasi-experimental study from Ethiopia. *Afr J Emerg Med*. 2024;14(3):161-166. doi:10.1016/j.afjem.2024.06.004.
11. Papa L, Maguire L, Bender M, Boyd M, Patel S, Samcam I. Patient controlled analgesia for the management of acute pain in the emergency department: A systematic review. *Am J Emerg Med*. 2022;51:228-238. doi:10.1016/j.ajem.2021.10.042.
12. Nagpal AK, Gadkari C, Singh A, Pundkar A. Optimizing Pain Management in Emergency Departments: A Comprehensive Review of Current Analgesic Practices. *Cureus*. 2024;16(9):e69789. Published 2024 Sep 20. doi:10.7759/cureus.69789.
13. Royal College of Emergency Medicine. Management of Acute Pain in Adults in the Emergency Department. RCEM; 2024. (RCEM).
14. Kanani F, Messer N, Khalil M, Khabarov E, Zoabi N. Effectiveness of Standardized Pain Management Protocols for Acute Abdominal Pain in Emergency Departments: A Systematic Review and Meta-Analysis. *J Emerg Med*. 2025;78:132-153. doi:10.1016/j.jemermed.2025.07.027.
15. Villoing B, Galinski M, et al. Acute pain management in emergencies in 2024: Formalized recommendations from experts of the French Society of Emergency Medicine. *Ann Fr Med Urgence*. 2025;15(3):177–203. (ResearchGate)
16. Scotti B, Szczesna A, Nickel CH, et al. Defining the need for analgesia in the emergency department: protocol for an international Delphi process. *BMJ Open*. 2025;15(3):e089396. Published 2025 Mar 22. doi:10.1136/bmjopen-2024-089396.
17. Sokoloff C, Daoust R, Paquet J, Chauny JM. Is adequate pain relief and time to analgesia associated with emergency department length of stay? *BMJ Open*. 2014;4(3):e004288. (PMC)
18. Hatherley C, Jennings N, Cross R. Time to analgesia and pain score documentation best practice standards for the Emergency Department - A literature review. Australas Emerg Nurs J. 2016;19(1):26-36. doi:10.1016/j.aenj.2015.11.001.
19. Fournier Y, et al. Impact of patients, nurses, and workload on use of nurse-initiated pain protocols in EDs. *J Clin Med*. 2026;15(2):782. (MDPI)
20. Finn JC, Rae A, Gibson N, Swift R, Watters T, Jacobs IG. Reducing time to analgesia in the emergency department using a nurse-initiated pain protocol: a before-and-after study. *Contemp Nurse*. 2012;43(1):29-37. doi:10.5172/conu.2012.43.1.29.
21. Guiner A, Street MH, Oke O, Young VB, Hennes H. Pain Reduction Emergency Protocol: A Prospective Study Evaluating Impact of a Nurse-initiated Protocol on Pain Management and Parental Satisfaction. *Pediatr Emerg Care*. 2022;38(1):e157-e164. doi:10.1097/PEC.0000000000002193.
22. Patil A, Srinivasarangan M, Ravindra P, Mundada H. Studying Protocol-Based Pain Management in the Emergency Department. *J Emerg Trauma Shock*. 2017;10(4):180-188. doi:10.4103/JETS.JETS_83_16.
23. Zhu M, Zhang J, Liang D, et al. Global and regional trends and projections of chronic pain from 1990 to 2035: Analyses based on global burden of diseases study 2019. *Br J Pain*. 2025;19(2):125-137. doi:10.1177/20494637241310697.
24. Mills SEE, Nicolson KP, Smith BH. Chronic pain: a review of its epidemiology and associated factors in population-based studies. *Br J Anaesth*. 2019;123(2):e273-e283. doi:10.1016/j.bja.2019.03.023.

25. Tongbua S, Sri-On J, Thong-On K, Paksophis T. Non-inferiority of intranasal ketamine compared to intravenous morphine for musculoskeletal pain relief among older adults in an emergency department: a randomised controlled trial. *Age Ageing*. 2022;51(3):afac073. doi:10.1093/ageing/afac073.

26. Guo J, Zhao F, Bian J, Hu Y, Tan J. Low-dose ketamine versus morphine in the treatment of acute pain in the emergency department: A meta-analysis of 15 randomized controlled trials. *Am J Emerg Med*. 2024;76:140-149. doi:10.1016/j.ajem.2023.11.056.

Cite this article: Serge Nga Nomo, Aristide Giles Kuitchet, Charles Emmanuel Toussaint Binam Bikoi, Cristela Iroume Bifouna, Dominique Djomo Tamchom, Clovis Kuetche, Bonaventure Jemea (2026). Impact of an Early Analgesia Protocol on Time to Pain Management in the Emergency Department. *EAS J Anesthesiol Crit Care, 8*(2), 106-111.