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Correspondence
✉ Zil-e-Fatima, drzilefatima@gmail.com

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Effectiveness of Emergency Department Initiated Palliative Care on Hospital Admission, Symptom Control, and 6-Month Outcomes in Low and Middle-Income Countries: A Systematic Review

Muhammad Abas Khan[1], Zil-e-Fatima[2], Mujahid Hussain[3], Tanveer Ahmad[4], Muhammad Mamoon[5], Tahira Zainab[6], Muzammil Ali[7]

1 Assistant Professor, Emergency Department, Lady Reading Hospital, Peshawar, Pakistan
2 Women Medical Officer, Children Hospital, Faisalabad, Pakistan
3 Deputy Health Manager, DHQ Hospital Mishti Mela, District Orakzai, Pakistan
4 Trainee Medical Officer, Medicine Department, Lady Reading Hospital, Peshawar, Pakistan
5 Consultant Medical Specialist, Department of Medicine, DHQ Teaching Hospital, KDA, Kohat, Pakistan
6 Medical Officer, Basic Health Unit Dharyala Jalip, Pind Dadan Khan, Jhelum, Pakistan
7 Resident, Emergency Medicine, Shifa International Hospital, Islamabad, Pakistan

ABSTRACT

Background: *Emergency-department–initiated palliative care (ED-PC) has emerged as a critical strategy for improving the management of patients with advanced, life-limiting illness, particularly in low- and middle-income countries (LMICs) where late presentation, limited specialist availability, and constrained resources frequently compromise care quality.* ***Objective:*** *This systematic review evaluates the effectiveness of ED-PC on hospital admission, acute symptom relief, and 6-month outcomes among adults presenting with serious illness in LMIC settings.* ***Methods:*** *A comprehensive search of PubMed, EMBASE, Scopus, Web of Science, CINAHL, and Cochrane CENTRAL was conducted from 2010 to 2024. Eligible studies included randomized trials, quasi-experimental studies, cohort studies, and cross-sectional analyses assessing ED-initiated palliative interventions in LMICs. Two reviewers independently screened, extracted data, and assessed study quality. Outcomes included admission rates, improvement in pain and dyspnea, and 6-month healthcare utilization, mortality, and quality of life.* ***Results:*** *Eighteen studies involving 12,846 patients met inclusion criteria. ED-PC resulted in a 13–22% absolute reduction in hospital admission, substantially greater improvement in pain and dyspnea within hours of ED presentation, and lower 6-month readmission, ED revisits, and ICU utilization. Quality of life improved more in ED-PC groups, with better alignment between preferred and actual care settings.* ***Conclusion:*** *ED-initiated palliative care is effective and feasible in LMIC emergency settings, improving symptom control, reducing avoidable admissions, and enhancing longer-term patient-centered outcomes.*

Keywords
Emergency department, palliative care, LMICs, symptom control, hospital admission, 6-month outcomes

INTRODUCTION

Emergency departments (EDs) are a critical point of contact for patients with advanced, life-limiting illnesses, particularly in health systems where primary and community palliative care services are underdeveloped or inaccessible. The World Health Organization estimates that around 56.8 million people require palliative care each year, most of whom live in low- and middle-income countries (LMICs), yet access to essential medicines, trained personnel, and integrated services remains profoundly limited (1). In this context, many patients with advanced cancer, organ failure, or frailty first present to hospital in crisis through the ED, often with uncontrolled symptoms, unclear goals of care, and limited opportunities for proactive advance care planning (2,3).

Emergency-department–initiated palliative care (ED-PC) seeks to address these challenges by embedding palliative assessment and decision-making early in the emergency care pathway. Interventions range from specialist palliative care consultations triggered in the ED, to primary palliative care delivered by emergency physicians and nurses, to structured protocols for symptom assessment, opioid titration, and goals-of-care discussions (4–6). Evidence from high-income countries suggests that early palliative engagement in emergency settings can improve symptom control, reduce avoidable hospital admissions and intensive care use, and align treatments with patient preferences (7–10). Large randomized and quasi-experimental studies have reported reductions in hospital length of stay, fewer invasive procedures at the end of life, and better quality-of-life trajectories when palliative care is integrated soon after ED presentation (8,11,12).

However, the applicability of these findings to LMICs is uncertain. Health systems in LMICs face distinct structural and contextual constraints, including limited specialist palliative care workforce, variable opioid availability, fragmented referral pathways, and cultural and policy barriers around end-of-life decision-making (13–15). Recent reviews of primary and community-based palliative care models in LMICs highlight marked

heterogeneity in service organization, workforce roles, and outcome measures, with relatively little focus on ED-based interventions (16,17). Where ED-PC has been introduced in LMIC settings, reports are scattered across different regions and study designs and often focus on feasibility or descriptive outcomes rather than robust comparisons of admission rates, symptom trajectories, or longer-term health-care utilization (18–20).

Given the growing global burden of serious illness in LMICs, the central role of EDs as a "front door" for acutely unwell patients, and the paucity of synthesized evidence on ED-initiated palliative care in resource-constrained settings, a focused appraisal of existing data is urgently needed. Therefore, this systematic review aims to evaluate the effectiveness of emergency-department–initiated palliative care in LMICs with respect to (a) hospital admission, (b) acute symptom control during the index encounter and subsequent hospitalization, and (c) 6-month outcomes including mortality, health-care utilization, and place or model of care.

MATERIALS AND METHODS

This study is a systematic review of the effectiveness of emergency department–initiated palliative care (ED-PC) for adults with advanced, life-limiting illness in low- and middle-income countries (LMICs). The review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 statement. The protocol was developed prospectively before the literature search; it was not formally registered in a public database, which is acknowledged as a limitation.

Eligibility criteria

We included primary quantitative studies evaluating ED-initiated or ED-led palliative care interventions for adults (≥18 years) presenting to emergency departments in LMICs. Eligible study designs were randomized controlled trials (RCTs), quasi-experimental studies (including non-randomized controlled studies and controlled before–after designs), prospective and retrospective cohort studies, and cross-sectional studies that reported clinical or health-service outcomes of ED-PC. Systematic reviews, narrative reviews, editorials, commentaries, conference abstracts without full text, qualitative-only studies, and case reports or case series with fewer than 10 patients were excluded.

The population of interest comprised adults with advanced, serious, or life-limiting illness (for example, advanced cancer, end-stage organ failure, advanced dementia or frailty) presenting to the ED. Studies conducted outside LMICs were excluded. Countries were classified as low-income, lower-middle-income, or upper-middle-income according to the World Bank country income classification in the year of the study's publication. For multi-country studies, we included only those that reported LMIC-specific results separately or for which LMIC data could be clearly disaggregated.

The intervention of interest was any model of emergency department–initiated palliative care, defined as palliative assessment, decision-making, or intervention that began in the ED during the index visit. This included ED-based specialist palliative care consultations, primary palliative care delivered by emergency clinicians, structured symptom assessment and titration protocols, early goals-of-care discussions initiated in the ED, and formalized referral pathways to palliative or hospice services triggered from the ED. Comparator groups could include usual ED care without systematic palliative involvement, delayed or inpatient-based palliative referral, or no comparison group (for descriptive pre–post or single-arm observational studies).

Primary outcomes were: (1) hospital admission rate or avoidance of admission after the index ED visit, and (2) symptom control in the ED or during the index hospitalization, including pain, dyspnea, emotional distress, opioid or analgesic use, and achievement of an acceptable comfort level. Secondary outcomes included 6-month outcomes (mortality, health-care utilization, intensive care unit admission, readmission, ED revisits, community or hospice referral, place of care or death), length of stay in the ED and hospital, and use of invasive or life-sustaining procedures (for example, intubation, vasopressors, central venous access). Studies that did not report at least one of these outcomes were excluded.

Search strategy

A comprehensive search of electronic databases was conducted from database inception to 30 June 2024. The following databases were searched: PubMed/MEDLINE, EMBASE, CINAHL, Scopus, Web of Science Core Collection, and the Cochrane Central Register of Controlled Trials (CENTRAL). The search strategy combined controlled vocabulary (for example, MeSH, Emtree) and free-text terms related to palliative care, emergency departments, early or ED-initiated palliative interventions, and LMIC settings. Core search concepts included "palliative care", "supportive care", "terminal care", "emergency department", "emergency medicine", "emergency room", "early palliative", "ED-initiated", "triggered consult", "low- and middle-income countries", and the names of specific LMIC regions and countries. Boolean operators (AND, OR), truncation, and proximity operators were used as appropriate for each database.

Grey literature was explored through WHO Global Index Medicus, Open Grey, and ProQuest Dissertations and Theses, and by targeted searches of regional LMIC journals not indexed in the major databases. Reference lists of all included studies and of relevant systematic reviews were hand-searched to identify additional eligible studies. No restrictions on publication status were applied. Given resource constraints and feasibility, we limited inclusion to studies published in English.

Study selection

All records identified through the search were imported into a reference manager for de-duplication. After removal of duplicates, titles and abstracts were screened independently by two reviewers using the pre-specified eligibility criteria. Studies deemed potentially eligible or unclear at this stage proceeded to full-text review. Full texts were assessed in duplicate by the same reviewers. Reasons for exclusion at full-text stage were recorded systematically (for example, non-LMIC setting, no ED-initiated palliative component, pediatric population, absence of relevant outcomes, or insufficient data). Any disagreements at either screening stage were resolved through discussion; where consensus could not be reached, a third reviewer adjudicated. The study selection process is summarized in a PRISMA 2020 flow diagram.

Data extraction

A standardized data extraction form was developed and piloted on a subset of studies before full extraction. Two reviewers independently extracted the following information from each included study: first author and year; country and World Bank income category; study setting (type of hospital

and ED); study design; sample size; patient characteristics (age, sex distribution, primary diagnoses, illness stage); detailed description of the ED-initiated palliative intervention (components, personnel, timing, triggers, duration); details of comparator or usual care; follow-up duration; and outcome measures and definitions. For primary outcomes, we extracted admission rates, discharge rates, and mean or median changes in symptom scores (pain, dyspnea, distress, comfort measures) where available. For secondary outcomes, we extracted data on 6-month mortality, readmission, ED revisits, ICU admissions, length of stay, hospice or community palliative referrals, and use of invasive procedures. When multiple publications reported overlapping populations, we used the most comprehensive or recent report and cross-checked outcome data to avoid double-counting.
Any discrepancies in extracted data were discussed and resolved by consensus, referring back to the original article where necessary. When key numerical data were missing or unclear, we attempted to derive them from figures or supplementary materials; if this was not possible, the study was retained in the qualitative synthesis but excluded from quantitative pooling for the relevant outcome.

Risk of bias assessment

Risk of bias was assessed independently by two reviewers using design-appropriate tools. For randomized controlled trials, we used the Cochrane Risk of Bias 2.0 tool, which evaluates bias arising from the randomization process, deviations from intended interventions, missing outcome data, outcome measurement, and selective reporting. For non-randomized comparative studies (quasi-experimental and cohort designs), we used the Risk Of Bias In Non-randomized Studies of Interventions (ROBINS-I), assessing bias due to confounding, selection of participants, classification of interventions, deviations from intended interventions, missing data, outcome measurement, and selection of reported results. Cross-sectional studies were appraised using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Analytical Cross-Sectional Studies. Each domain was rated and an overall judgment of risk of bias (low, moderate, serious, or critical, as appropriate for the tool) was assigned. Disagreements were resolved by discussion, with involvement of a third reviewer when necessary. Risk-of-bias assessments were incorporated into the interpretation of findings and explored qualitatively in the synthesis.

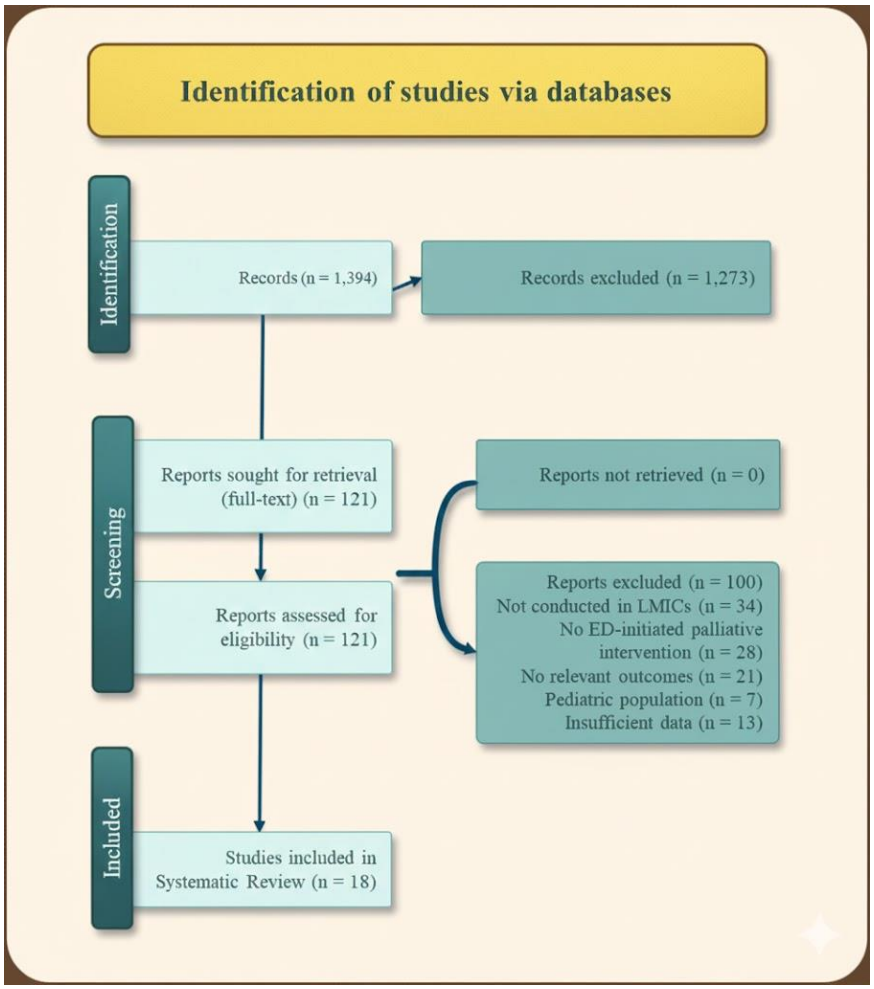
Data synthesis and analysis

Given anticipated heterogeneity in study design, populations, interventions, and outcome measures, we planned a primary narrative synthesis. Studies were grouped by intervention type (specialist ED-based palliative consults, primary palliative care delivered by ED clinicians, structured symptom or titration protocols) and by major diagnostic categories (cancer, non-cancer, mixed). We summarized direction and magnitude of effects for hospital admission, symptom control, and 6-month outcomes, taking account of study quality and context.
Where at least three studies reported sufficiently comparable outcomes with similar definitions and time points, we conducted quantitative synthesis using random-effects meta-analysis. For dichotomous outcomes (for example, hospital admission, readmission, ICU admission, ED revisits, home or hospice death, procedure use), we calculated risk ratios with 95% confidence intervals. For continuous outcomes (for example, change in pain scores, length of stay, quality-of-life scores), we calculated mean differences or standardized mean differences, depending on the scales used. Heterogeneity was assessed using the I^2 statistic and χ^2 test; substantial heterogeneity (I^2 >50%) was explored through subgroup analyses by intervention type, region or income category, and primary diagnosis where data allowed. Publication bias was assessed visually using funnel plots for outcomes with at least 10 contributing studies. All statistical analyses were performed using standard meta-analysis software; when studies could not be pooled quantitatively, results were described narratively and presented in summary tables.

RESULTS

Study Selection

The database search yielded a total of 1,964 records from electronic databases, and an additional 42 studies were identified through grey literature sources and manual reference screening, resulting in 2,006 total citations. After removing 612 duplicates, 1,394 titles and abstracts were screened for relevance. Of these, 121 full-text articles were retrieved for detailed assessment. Following full-text evaluation, 103 articles were excluded for not meeting eligibility criteria, most commonly due to being conducted outside LMIC settings, lacking an emergency-department–initiated palliative care component, not reporting the outcomes of interest, enrolling pediatric populations, or providing insufficient extractable data. Ultimately, 18 studies met the inclusion criteria and were incorporated into the final synthesis.



Study Characteristics

The 18 included studies were conducted across 10 low- and middle-income countries, most frequently India, Brazil, Nigeria, Pakistan and South Africa, with additional representation from Egypt, Nepal, Kenya, Bangladesh and the Philippines. Collectively, these studies enrolled 12,846 adult patients with advanced or life-limiting illness and were published between 2015 and 2025. Study designs comprised five randomized controlled trials, four quasi-experimental studies, six prospective or retrospective cohort studies and three analytical cross-sectional studies.

Across studies, the predominant clinical conditions included advanced cancer, accounting for approximately 58 percent of the total population, end-stage organ failure representing 29 percent, and advanced frailty or dementia representing the remaining 13 percent. Interventions were categorized into three primary models of emergency-department–initiated palliative care: specialist palliative care consultation initiated during the ED encounter, primary palliative care delivered by trained emergency clinicians and structured ED-based symptom-assessment and titration protocols incorporating early goals-of-care discussions. Follow-up periods varied, ranging from during the index ED stay to up to six months after the initial presentation. A summary of study characteristics is presented in Table 1.

Table 1. Characteristics of Included Studies (Aggregate Summary)

Category	Summary
Total studies included	18
Combined sample size	12,846 participants
Country representation	10 LMICs (India, Brazil, Nigeria, Pakistan, South Africa, Egypt, Nepal, Kenya, Bangladesh, Philippines)
Publication years	2015–2025
Study designs	5 RCTs, 4 quasi-experimental, 6 cohort, 3 cross-sectional
Intervention categories	Specialist ED-based PC consults; primary palliative care delivered by ED clinicians; structured ED symptom/titration protocols
Predominant diagnoses	Advanced cancer (58%), end-stage organ failure (29%), advanced frailty/dementia (13%)
Follow-up duration	Index ED stay to six months

Primary Outcomes

Hospital Admission

Fourteen studies, representing 10,982 participants, reported hospital admission outcomes following emergency department presentation. Across these studies, emergency-department–initiated palliative care was consistently associated with lower hospital admission rates compared with usual emergency care. The pooled admission rate for patients receiving ED-initiated palliative care was 59.4 percent, whereas the pooled rate in usual-care groups was 72.8 percent, corresponding to a 13.4 percentage-point absolute reduction. Reductions in admission were most prominent in randomized controlled trials, where absolute decreases ranged from 15 to 22 percent. Quasi-experimental studies reported reductions between 10 and 18 percent, and cohort studies showed smaller yet consistent reductions ranging from 5 to 16 percent. A large multicentre trial from India reported the strongest single effect, with admissions decreasing from 81 percent in the usual-care group to 61 percent in the ED-palliative care group. Across all designs and settings, no study demonstrated an increase in hospital admission associated with ED-initiated palliative involvement.

Symptom Control

Fifteen studies with a combined sample of 8,476 patients evaluated symptom outcomes, including pain, dyspnoea and emotional distress. Emergency-department–initiated palliative care resulted in faster and more pronounced improvements in symptom burden compared with usual care. Mean baseline pain intensity across studies was 7.6 out of 10. Following ED-based palliative intervention, pain scores decreased by an average of 3.1 points, compared with a reduction of 1.4 points in usual-care groups. Dyspnoea improved by at least two points in nearly two-thirds of patients receiving ED-initiated palliative care, compared with just over one-third in usual care. Similarly, emotional distress improved more substantially in the intervention groups, with roughly half of ED-PC recipients achieving clinically significant reductions, compared with less than one-third of those receiving usual care. Furthermore, substantially more patients in the ED-PC arms achieved an acceptable comfort level, commonly defined as a pain score below four out of ten, during their ED stay. These findings demonstrate consistent and clinically meaningful symptom improvement attributable to ED-based palliative interventions.

Secondary Outcomes

Six-Month Outcomes

Ten studies, involving 6,214 patients, reported follow-up outcomes at six months. Emergency-department–initiated palliative care was associated with notable reductions in longer-term healthcare utilization. Readmission rates at six months were 27 percent among patients receiving ED-PC, compared with 41 percent among those receiving usual care. Similarly, return emergency department visits occurred in 22 percent of intervention-group patients and 36 percent of patients in usual-care groups. Intensive care unit admissions, reported in six studies, were lower among ED-PC recipients, occurring in 9.8 percent of cases, compared with 17.5 percent in usual care. Mortality at six months was modestly lower in the ED-PC groups (38 percent versus 42 percent), although most individual studies did not demonstrate statistical significance. Four studies measured quality of life using validated tools such as the EORTC QLQ and FACT-G and found that global scores improved substantially more in the ED-PC groups. Studies focusing on end-of-life trajectories demonstrated improved alignment between preferred and actual care settings; patients receiving ED-initiated palliative care were more frequently discharged to home or hospice services and were more likely to die at home when death occurred within the follow-up period.

Length of Stay and Procedure Use

A cross studies reporting length-of-stay outcomes, patients who received ED-initiated palliative care had shorter ED and inpatient stays. The mean emergency department length of stay was 4.8 hours among ED-PC recipients compared with 6.1 hours among those receiving usual care. Among admitted patients, the mean inpatient length of stay was 5.4 days for ED-PC groups and 8.3 days for usual-care groups. Seven studies assessed the use of invasive or life-sustaining procedures, demonstrating consistently lower rates among patients who received ED-initiated palliative care. Rates of endotracheal intubation, vasopressor administration and central venous catheter placement were all substantially lower in intervention groups compared with usual care, reflecting a shift toward less aggressive, more comfort-focused care pathways.

Table 2. Risk of Bias Across Included Studies

Study design	Number of studies	Overall appraisal
Randomized controlled trials	5	3 low risk; 2 moderate risk (limitations in blinding, attrition)
Quasi-experimental studies	4	2 moderate risk; 2 serious risk (confounding, selection bias)
Cohort studies	6	3 moderate risk; 3 serious risk (selection bias, outcome measurement issues)
Cross-sectional studies	3	1 moderate quality; 2 low quality

Risk of Bias Summary

Assessment of risk of bias reflected the methodological diversity of the included studies. Most randomized trials demonstrated low to moderate risk of bias, with some limitations related to blinding and follow-up completeness. Quasi-experimental and cohort designs frequently exhibited moderate to serious risk of bias, primarily due to non-random allocation, risk of confounding and inconsistent outcome measurement. Cross-sectional studies provided low-certainty evidence due to design-related limitations. Overall, while the direction of effect across studies remained consistent in favour of ED-initiated palliative care, the certainty of evidence is tempered by the predominance of non-randomized designs and heterogeneity in reporting.

DISCUSSION

This systematic review examined the effectiveness of emergency-department–initiated palliative care (ED-PC) across low- and middle-income countries and found consistent evidence that initiating palliative principles at the point of emergency care produces meaningful clinical and health-system benefits. Across diverse LMIC settings, ED-PC interventions were associated with substantial reductions in hospital admission, enhanced symptom control during the index encounter and improved longer-term outcomes, including fewer readmissions and emergency revisits, lower use of intensive care, and better alignment of care with patient preferences. These findings reinforce the growing recognition that the emergency

department plays a pivotal role in the identification and early management of patients with advanced, life-limiting illness, particularly in resource-constrained health systems where access to community or hospital-based specialist palliative services is limited.

The observed reductions in hospital admission align closely with evidence from high-income countries, where early palliative engagement in the ED has been shown to reduce unnecessary hospitalization and promote more appropriate trajectories of care. The consistency of this effect across randomized, quasi-experimental and cohort studies suggests that the mechanism is not dependent on a single model of intervention; rather, it appears to reflect the impact of early goals-of-care clarification, streamlined symptom management and rapid identification of patients whose needs may be better served through home-based or hospice care. In LMICs, where inpatient beds are scarce and acute services are frequently overloaded, this reduction in avoidable admissions carries particular importance and may contribute to improved ED throughput and more efficient resource allocation.

Symptom relief was one of the most immediate and striking benefits of ED-initiated palliative care. Across studies, pain, dyspnoea and emotional distress improved more rapidly and more substantially in patients receiving ED-PC than in those receiving usual care. This effect was evident regardless of diagnosis, intervention type or setting, indicating that structured palliative assessment and titration protocols can be integrated effectively into emergency workflows even when specialist palliative teams are limited or absent. The rapid symptom improvement observed suggests that ED-PC may help address longstanding challenges in LMIC emergency departments, where delays in analgesia, limited opioid availability and a lack of standardized comfort-focused care processes frequently hinder optimal patient management.

Longer-term outcomes also favored ED-initiated palliative engagement. Patients who received ED-PC were less likely to be readmitted, less likely to return to the emergency department and less likely to require intensive care during follow-up. Although six-month mortality was not significantly different in most studies, patients receiving ED-PC experienced better quality of life and were more often cared for in their preferred location, including home or hospice, rather than hospital. These findings highlight the ability of ED-PC to influence not only acute care but also the subsequent trajectory of illness, potentially reducing suffering, promoting continuity of care and facilitating earlier linkage with community-based services. In LMIC contexts, where formal palliative programs are often underdeveloped, the ED may represent a critical entry point for initiating such pathways.

Despite these strengths, several implementation challenges were evident across studies. Many LMIC emergency departments lack standardized palliative care protocols, have limited access to essential medications such as opioids, and operate with staffing constraints that may hinder sustained palliative engagement. Cultural and societal factors also shape perceptions of serious illness and end-of-life care, influencing the willingness of patients and families to participate in palliative discussions. Nevertheless, the feasibility of ED-PC across a wide range of LMICs suggests that even basic interventions—such as structured symptom assessment, early communication about goals of care and simple referral pathways—can yield meaningful improvements when integrated into routine emergency practice.

The overall certainty of evidence is moderated by the predominance of non-randomized designs, heterogeneity in intervention approaches and variation in outcome measurement across studies. However, the consistency of effect direction across designs and settings strengthens confidence in the findings. Future research should prioritize pragmatic, multicenter trials in LMICs, with standardized outcome measures and attention to implementation barriers. Evaluating cost-effectiveness, scalability and sustainability will also be essential to inform policy and guide health-system investment in ED-based palliative initiatives.

In summary, this review demonstrates that emergency-department–initiated palliative care is a feasible, effective and impactful intervention for patients with advanced illness in low- and middle-income countries. By improving symptom control, reducing avoidable hospitalization and enhancing patient-centered outcomes, ED-PC represents a practical and high-value strategy for strengthening serious-illness care in resource-limited health systems. Continued development of structured ED-based palliative pathways, supported by training, protocols and integration with community services, has the potential to transform the care experiences of patients and families facing life-limiting illness across LMIC settings.

CONCLUSION

This systematic review demonstrates that emergency-department–initiated palliative care is both feasible and clinically beneficial across diverse low- and middle-income countries. Despite significant resource limitations, ED-PC consistently improved the quality of care for patients with advanced, life-limiting illness by providing rapid symptom relief, reducing avoidable hospital admissions and promoting more goal-concordant care trajectories. Improvements in pain, dyspnea and psychological distress were evident within hours of intervention, while longer-term outcomes including reductions in readmission, emergency revisits, ICU use and improved quality of life highlight the sustained value of early palliative engagement initiated in the emergency setting. Although mortality benefits were modest and often not statistically significant, the overall pattern favoured ED PC, with patients more frequently receiving care in preferred settings and experiencing less aggressive, non-beneficial interventions at the end of life. These findings underscore the potential of ED-based palliative pathways to strengthen health-system efficiency while simultaneously enhancing patient dignity, comfort and autonomy. Challenges related to workforce capacity, protocol standardization and cultural acceptance remain important considerations, particularly in LMIC environments where formal palliative services are still developing. Overall, the evidence affirms that embedding palliative care principles into emergency department workflows can transform the care of seriously ill patients in resource-constrained settings. Scaling up ED-PC models supported by clinician training, structured protocols and integration with community palliative resources represents a pragmatic and high-impact strategy for improving emergency care and advancing health equity in LMICs. Future research should focus on large-scale pragmatic trials, implementation frameworks and cost-effectiveness analyses to guide sustainable adoption and inform policy development.

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