

# The Critical Role of Health Practitioners in Saving Accident Victims: A Comprehensive Review

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## ABSTRACT

Accidents represent one of the leading causes of morbidity and mortality worldwide, making the role of health practitioners in saving victims a matter of global importance. This review synthesizes current evidence on the contribution of health practitioners in accident response, spanning pre-hospital interventions, emergency trauma care, surgical management, rehabilitation, and psychological support. Emphasis is placed on the time-sensitive nature of interventions, multidisciplinary collaboration, and advances in training and technology. The findings reveal that early intervention by trained practitioners significantly improves survival rates, reduces disability, and enhances recovery outcomes. The article concludes with recommendations for strengthening training, infrastructure, and policy frameworks to empower health practitioners in accident care.

**Keywords:** accident victims, health practitioners, trauma care, pre-hospital emergency, patient survival, rehabilitation

## 1. INTRODUCTION

Accidents remain one of the leading causes of morbidity and mortality worldwide, posing a major public health concern that demands urgent and coordinated responses. According to the **World Health Organization (WHO, 2018)**, road traffic accidents alone claim approximately 1.35 million lives each year, with millions more suffering from non-fatal injuries that often result in long-term disabilities. Beyond road traffic incidents, industrial, domestic, and occupational accidents also contribute significantly to the global burden of disease. In such scenarios, health practitioners—including paramedics, nurses, emergency physicians, and trauma specialists—play a pivotal role in bridging the gap between injury occurrence and definitive medical care.

The immediate post-accident period, often referred to as the “golden hour,” is crucial for determining patient survival and recovery outcomes. Research highlights that timely interventions by trained health practitioners can reduce mortality rates by as much as 25–30% in trauma cases (**Peden et al., 2020; Alharbi&Almutairi, 2021**). These interventions may include airway management, bleeding control, stabilization of fractures, cardiopulmonary resuscitation (CPR), and rapid transfer to specialized care units. Importantly, health practitioners are not only lifesavers at the accident site but also essential contributors to rehabilitation, psychological support, and long-term recovery of victims.

Over the past decades, the scope of the health practitioner’s role has expanded in parallel with advancements in trauma care, pre-hospital emergency systems, and multidisciplinary collaboration. Studies show that the presence of well-trained paramedics and emergency nurses at the scene significantly improves survival chances, especially in low- and middle-income countries where advanced trauma centers may not be immediately accessible (**Mock et al., 2019; Sasser et al., 2017**). Moreover, the integration of telemedicine and artificial intelligence into emergency responses has further highlighted the need for continuous capacity building among health practitioners.

This review aims to provide a comprehensive understanding of the critical role health practitioners play in saving accident victims. It synthesizes available evidence on their contributions across different stages of

accident care, identifies challenges faced in diverse healthcare settings, and highlights future directions for strengthening accident victim care through health workforce development. By examining the multifaceted role of practitioners, this paper underscores their indispensable contribution to public health and patient safety in accident management.

## 2. LITERATURE REVIEW

The role of health practitioners in saving accident victims has been widely examined across the domains of pre-hospital care, in-hospital trauma management, and post-accident rehabilitation. This section synthesizes existing evidence from recent studies (2016 onward), focusing on the evolving contributions of health practitioners, the challenges they face, and the innovations shaping their roles in accident victim care.

Pre-hospital care is often the most decisive factor in survival following an accident. Several studies emphasize the role of **paramedics, emergency medical technicians (EMTs), and nurses** in providing immediate interventions such as bleeding control, airway management, spinal immobilization, and rapid evacuation. For instance, **Eaton et al. (2019)** found that pre-hospital interventions conducted by skilled practitioners reduced preventable deaths in road traffic accident cases by 20–25%. Similarly, **Alzahrani and Kyratsis (2017)** highlighted that the effectiveness of pre-hospital care in Saudi Arabia depends significantly on the competence and training of practitioners, underscoring the importance of capacity-building initiatives.

Upon arrival at emergency departments, the timely actions of health practitioners—particularly trauma surgeons, emergency physicians, and critical care nurses—determine patient outcomes. **Stevens et al. (2018)** demonstrated that coordinated multidisciplinary teams improve trauma survival rates, especially in the "golden hour." Further, **Roche et al. (2020)** emphasized that standardized trauma protocols, such as Advanced Trauma Life Support (ATLS), significantly enhance practitioner effectiveness in stabilizing accident victims. In low- and middle-income countries, however, resource limitations often hinder the implementation of such protocols, placing additional burdens on practitioners.

The role of health practitioners extends beyond immediate life-saving measures. **Tsegay et al. (2021)** showed that nurses and rehabilitation specialists play a critical role in accident victim recovery by addressing psychological trauma, post-injury rehabilitation, and reintegration into daily life. Such holistic care not only improves survival but also enhances quality of life, especially for victims with long-term disabilities.

Despite their critical role, health practitioners often face challenges that compromise accident care. **Okonkwo et al. (2019)** identified barriers such as insufficient training, lack of medical supplies, delayed ambulance response, and weak referral systems, particularly in developing nations. In addition, **Shrestha et al. (2020)** reported that occupational stress, burnout, and lack of psychosocial support among practitioners directly affect the quality of emergency services provided to accident victims.

The introduction of telemedicine, artificial intelligence (AI), and mobile health technologies has reshaped the scope of health practitioners in saving accident victims. **Smith et al. (2022)** highlighted how AI-assisted triage systems can support practitioners in making faster, evidence-based decisions in accident scenarios. Moreover, **Al-Hassan et al. (2023)** reported positive outcomes in rural accident response when telemedicine was used to guide practitioners in real time, reducing mortality rates where specialist services were unavailable. These developments emphasize the evolving nature of health practitioners' roles, requiring continuous professional development and training.

## 3. METHODOLOGY

This review adopted a **narrative and integrative approach** to synthesize evidence on the role of health practitioners in saving accident victims. The methodology involved a structured literature search, selection, and thematic analysis of relevant studies published between **2016 and 2024**. Databases including **PubMed, Scopus, Web of Science, and Google Scholar** were systematically searched using keywords such as "*health practitioners*," "*emergency medical services*," "*accident victims*," "*trauma care*," "*paramedics*," "*prehospital care*," and "*rehabilitation*." Boolean operators (AND/OR) were applied to refine the searches and include studies with relevant combinations of these terms.

Inclusion criteria encompassed **peer-reviewed journal articles, systematic reviews, clinical guidelines, and reports from international health organizations** that specifically addressed the role of healthcare providers in accident victim care. Articles focusing on unrelated medical emergencies (e.g., non-trauma-related conditions) were excluded. The review emphasized evidence from **both high-income and low- and middle-income countries** to provide a balanced understanding of global practices and challenges.

The selected literature was analyzed thematically, grouping findings into major domains of accident care: **(1) pre-hospital emergency response, (2) hospital-based trauma management, (3) long-term rehabilitation and psychological support, and (4) emerging technological innovations**. Each theme was critically examined to identify the contributions of health practitioners, gaps in practice, and implications for patient survival and recovery.

The objective of this methodological approach was to present a comprehensive synthesis of existing knowledge, highlight best practices, and identify directions for future research aimed at enhancing the role of health practitioners in saving accident victims.

#### 4. RESULTS

The literature review highlighted the multidimensional role of health practitioners in saving accident victims, spanning prehospital emergency care, hospital-based trauma management, rehabilitation, and integration of new technologies. Findings are presented thematically below.

Pre-hospital care is consistently reported as a critical determinant of accident survival. Studies indicate that trained practitioners—particularly paramedics and EMTs—significantly improve outcomes by delivering airway management, bleeding control, fracture stabilization, and cardiopulmonary resuscitation (CPR).

For example, **Eaton et al. (2019)** reported that patients receiving advanced life support in the pre-hospital phase had a 25% reduction in preventable mortality compared to those who only received basic interventions. Similarly, **Alzahrani&Kyratsis (2017)** emphasized that paramedic competence in Saudi Arabia directly influenced survival rates, particularly in rural areas where access to hospitals was delayed.

These findings underscore that **practitioner skills and timely arrival** are crucial during the “golden hour.” However, resource-limited countries still struggle with inadequate ambulance coverage and practitioner shortages, which limit the impact of pre-hospital care.

Within hospitals, the contributions of emergency physicians, trauma surgeons, and nurses are pivotal. Studies consistently show that **multidisciplinary trauma teams** improve survival rates and reduce complications.

**Stevens et al. (2018)** found that coordinated trauma team responses reduced treatment delays and increased survival by 18% among accident victims. Similarly, **Roche et al. (2020)** reported that standardized trauma protocols (e.g., ATLS) improved treatment outcomes, with better hemodynamic stabilization and reduced time to surgery.

Nevertheless, gaps persist in low- and middle-income countries. **Okonkwo et al. (2019)** observed that a lack of surgical specialists, delays in diagnostics, and shortages of critical care nurses hinder hospital-based accident care.

Health practitioners’ role extends beyond acute interventions. **Tsegay et al. (2021)** highlighted the importance of nurses, physiotherapists, and psychologists in providing post-accident rehabilitation and mental health support. This care helps victims regain mobility, reintegrate socially, and overcome post-traumatic stress.

Evidence suggests that early and continuous rehabilitation programs led by health practitioners improve **functional outcomes, reduce long-term disability, and enhance quality of life**. These findings illustrate the **holistic contribution of practitioners**, not just in survival but in overall recovery.

Despite their critical role, practitioners face significant barriers that limit their ability to save lives effectively:

- **Resource Limitations:** Lack of medical equipment and poor ambulance systems in developing regions (**Okonkwo et al., 2019**).
- **Occupational Stress:** High levels of burnout among emergency healthcare workers reduce performance and quality of care (**Shrestha et al., 2020**).
- **Training Gaps:** Many health systems lack continuous professional development programs for paramedics and emergency nurses, affecting the quality of care provided.

These challenges highlight the need for systemic reforms, including investments in training, infrastructure, and mental health support for practitioners.

Technological advances have expanded the capacity of practitioners to save accident victims. **Smith et al. (2022)** reported that AI-assisted triage systems improved decision-making speed and accuracy in accident scenarios. Likewise, **Al-Hassan et al. (2023)** demonstrated that telemedicine enabled remote guidance for rural paramedics, reducing mortality rates by providing real-time specialist support.

These innovations are particularly valuable in resource-limited settings, where practitioner expertise may be scarce. However, successful integration requires continuous training and institutional support for practitioners to fully utilize these tools.

**Table 1.** Contributions of Health Practitioners in Accident Victim Care

Phase of Care	Key Practitioner Role	Reported Impact	References
Pre-hospital emergency care	Airway management, bleeding control, CPR	Reduced mortality by 20–25%	Eaton et al., 2019; Alzahrani&Kyratsis, 2017
Hospital-based trauma care	Multidisciplinary team management	Reduced treatment delays, ↑ survival 18%	Stevens et al., 2018; Roche et al., 2020
Rehabilitation & recovery	Physiotherapy, psychological counseling	Improved functional recovery & quality of life	Tsegay et al., 2021
Technological	AI triage, telemedicine	Faster decisions, lower	Smith et al., 2022; Al-Hassan

innovations	support	rural mortality	et al., 2023
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The results highlight that health practitioners are indispensable at every stage of accident care. Their **timely interventions, specialized skills, and holistic support** significantly improve survival and recovery outcomes. However, challenges such as resource limitations, training gaps, and occupational stress limit their effectiveness. Emerging technologies present promising solutions but require proper implementation and ongoing capacity-building.

## 5. DISCUSSION

**Principal findings.** This review shows that health practitioners—paramedics/EMTs, emergency physicians, trauma surgeons, nurses, rehabilitation specialists, and mental-health professionals—are pivotal across the full accident-care continuum. Early, skilled pre-hospital actions (airway and hemorrhage control, rapid triage and transport) are consistently associated with lower preventable mortality, while coordinated, protocol-driven hospital care by multidisciplinary trauma teams further improves survival and reduces complications. Beyond the acute phase, practitioner-led rehabilitation and psychosocial support are crucial determinants of functional recovery and quality of life. Technology (telemedicine, decision support, and emerging AI triage) can amplify these benefits when embedded in well-trained teams and reliable systems.

**Why practitioner-led interventions work.** Three mechanisms recur across the evidence. First, *time*—practitioners shorten the interval between injury and definitive care (“golden hour”) through scene leadership, triage, and transport decisions. Second, *standardization*—adherence to evidence-based protocols (e.g., structured airway/bleeding algorithms, trauma team activation criteria) reduces unwarranted variation and error in high-stress settings. Third, *team coordination*—clear roles, closed-loop communication, and early involvement of surgery, anesthesia, radiology, and critical care minimize delays to hemorrhage control, imaging, and operative management.

**System enablers and persistent barriers.** Effective practitioner performance depends on system factors. Enablers include reliable dispatch and communications, adequate ambulance distribution, trauma center designation with bypass policies, access to blood products and rapid imaging, and a culture of continuous quality improvement supported by registries and audit-feedback. Barriers remain common in many settings: shortages of trained personnel (especially critical care nurses and rural paramedics), gaps in continuing professional development, supply chain instability for basic trauma consumables, and high levels of occupational stress and burnout. These barriers attenuate the potential survival gains of skilled practitioners and must be addressed at organizational and policy levels.

**Technology in context.** Telemedicine and digital decision support can extend expertise to the roadside and small hospitals, particularly in rural or resource-constrained areas. Their impact, however, is contingent on connectivity, interoperability with EMS and hospital systems, and clinician workflow fit. AI-assisted triage shows promise for prioritizing transport and imaging, but it should augment—not replace—clinical judgment, and its deployment must include governance to mitigate bias, ongoing model performance monitoring, and clear accountability. Training and simulation that integrate these tools into scenario-based practice are essential for safe adoption.

**Implications for practice and policy.** The findings favor an integrated, practitioner-centered model of trauma care strengthening:

- **Competency and scope:** Invest in pre-hospital and emergency competencies (airway/ventilation, hemorrhage control including tourniquets and tranexamic acid, spinal precautions, pain control, and major incident triage). Empower nurses and paramedics with protocolized extended skills where appropriate.
- **Team readiness:** Institutionalize multidisciplinary trauma team activation, role cards, and brief–debrief cycles; use simulation to rehearse rare, high-stakes scenarios.
- **Standardization and QI:** Implement and regularly update trauma protocols, checklists, and pathways (e.g., massive transfusion, traumatic brain injury). Use trauma registries and dashboards to track time-to-key-events and outcomes; feed results back to teams.
- **Mental health and rehabilitation:** Embed early rehabilitation and psychological first aid into routine pathways; ensure continuity into community services.
- **Workforce well-being:** Address burnout through adequate staffing, rotation policies, peer support, and access to mental health resources; monitor well-being as a quality metric.
- **Technology enablement:** Deploy tele-consults for rural scenes and non-trauma centers; introduce decision support with clinician training, clear escalation rules, and rigorous evaluation.

**Considerations for low- and middle-income settings.** Where specialist capacity and advanced centers are scarce, the greatest immediate gains often come from strengthening the pre-hospital layer (basic life support coverage, dispatcher training, community first-responder programs) and standardizing essential in-hospital bundles (early hemorrhage control, antibiotics for open fractures, timely transfer agreements). Partnerships for

training, regionally shared on-call specialty rosters, and tele-mentoring can extend practitioner reach without large capital outlays.

**Relevance to Gulf and similar rapidly developing systems.** Rapid urban expansion, long inter-facility distances, and high road-traffic injury burdens make coordinated pre-hospital networks and regionalized trauma systems particularly important. Priorities include optimizing emergency number integration and dispatch triage, heat-aware protocols for practitioners working roadside, and data-driven placement of ambulances and trauma resources to reduce response and transport times. Building local trauma registries and simulation centers can accelerate practitioner competency growth and continuous improvement.

**Limitations of the evidence base.** Much of the available literature is observational, with heterogeneity in case mix, system maturity, and outcome definitions. Selection bias (e.g., sicker patients preferentially receiving advanced interventions), survivor bias, and confounding by transport distance or hospital capability can distort effect estimates. Rehabilitation and psychosocial outcomes are under-measured relative to mortality, limiting inference about long-term benefits attributable to specific practitioner roles. Technology studies often report feasibility and process metrics rather than patient-centered outcomes.

**Future research.** Priorities include pragmatic and cluster-randomized evaluations of pre-hospital bundles (e.g., hemorrhage control plus TXA and early activation of massive transfusion), trials of tele-guided rural resuscitation, and implementation studies comparing different trauma team activation criteria. Standardized outcome sets that extend beyond survival—functional status, return to work, mental health—are needed. Finally, mixed-methods research should explore how training, culture, and workload shape practitioner performance and patient experience.

**Conclusion.** Health practitioners are the linchpin of accident care. When their skills are supported by robust systems, clear protocols, coordinated teams, and appropriate technology, measurable gains in survival and recovery follow. Policy efforts that prioritize practitioner capability, well-being, and context-sensitive integration of innovations offer the most reliable path to saving more lives after accidents.

## 6. CONCLUSION

This review highlights the indispensable role of health practitioners in saving accident victims across the entire continuum of care. From the scene of the accident to hospital trauma units and through long-term rehabilitation, their timely interventions and professional expertise are directly associated with improved survival and recovery outcomes. Evidence consistently shows that **early pre-hospital interventions, standardized trauma protocols, and coordinated multidisciplinary hospital teams** substantially reduce preventable mortality and disability.

At the same time, the review underscores persistent challenges, including shortages of trained personnel, resource constraints in low- and middle-income countries, and high levels of occupational stress among emergency healthcare providers. These barriers limit the effectiveness of health practitioners and point to the need for **system-wide investments in training, infrastructure, workforce well-being, and continuous professional development.**

Emerging innovations such as **telemedicine and AI-based decision support tools** present opportunities to extend practitioner expertise, particularly in resource-limited and rural settings. However, these technologies must complement—rather than replace—clinical judgment, and their integration requires structured training and institutional support.

Ultimately, health practitioners are the **linchpin of accident care**, serving not only as lifesavers in critical moments but also as guides in victims' rehabilitation and reintegration. Strengthening their capabilities and supporting them through systemic reforms and technological innovations is vital for reducing the global burden of accident-related injuries and deaths.

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