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Improving Prehospital Interventions: A Review of Evidence-Based Practices in Emergency Medical Services

Hussain Salem Alsagoor[1], Naif Abdullah Al Haydar[2], Fayez Abdullah Al Haydar[3], Saber Mohammed Alasiri[4], Mohammed Ahmed Hussain Alsagoor[5], Abdullah Mohammed Gassim[6], Ali Mohamed Ali Alhashel[7], Saleh Mana Mohammad Almasad[8], Mohammed Ali Mutlaq Al jumhur[9], Ibrahim Mana Alhaydar[10]

Abstract

Emergency Medical Services (EMS) play a critical role in providing urgent care and stabilizing patients before they reach the hospital. The effectiveness of EMS interventions can significantly influence patient outcomes, making evidence-based practices essential in prehospital care. This review explores the latest evidence-based prehospital interventions in airway management, hemorrhage control, cardiac arrest response, pharmacological support, and trauma stabilization. By evaluating the current literature, this article highlights the impact of specific interventions on patient survival rates, recovery quality, and overall morbidity. Additionally, it examines challenges faced by EMS providers, including training limitations, resource disparities, and protocol adherence issues. Best practices such as standardized protocols, technology integration, and continuous training programs are discussed to address these challenges and improve EMS care. The findings underscore the importance of adopting and adhering to evidence-based practices in EMS to enhance patient outcomes and provide a foundation for future research on advanced prehospital interventions.

Keywords: *Emergency Medical Services (EMS), Prehospital care, Evidence-based practices, Patient outcomes, Airway management, Hemorrhage control, Cardiac arrest, Trauma stabilization, Pharmacological interventions.*

Introduction

Emergency Medical Services (EMS) provide critical, life-saving care during the first moments of a medical emergency, acting as the link between the scene of an incident and hospital-based treatment. The effectiveness of prehospital interventions carried out by EMS personnel can significantly influence patient survival rates, reduce morbidity, and enhance recovery outcomes (Klemen & Grmec, 2020; Alrabei, 2023). As EMS continues to evolve, so too does the need for rigorous adherence to evidence-based practices that are proven to improve patient outcomes in the prehospital setting.

Prehospital care encompasses a range of interventions, including airway management, hemorrhage control, cardiac arrest response, pharmacological support, and trauma stabilization (Harrison & Johnston, 2022). Each of these interventions has distinct protocols and techniques, but variability in EMS training, available resources, and adherence to protocols can impact their effectiveness. For example, studies have shown that timely and effective airway management, whether through endotracheal intubation or supraglottic airway devices, can significantly reduce hypoxia-related complications (Brown et al., 2018; Alrabei & Ababnehi, 2021). Similarly, evidence supports the use of tourniquets and hemostatic dressings in trauma scenarios to

[1] Ministry of Health, Saudi Arabia, Email: Hualsagoor@moh.gov.sa
[2] Ministry of Health, Saudi Arabia, Email: nalhaydar@moh.gov.sa
[3] Ministry of Health, Saudi Arabia, Email: Falhaydar@moh.gov.sa
[4] Ministry of Health, Saudi Arabia, Email: Salasiri4@moh.gov.sa
[5] Ministry of Health, Saudi Arabia, Email: Moalsagoor@moh.gov.sa
[6] Ministry of Health, Saudi Arabia, Email: Amgassim@moh.gov.sa
[7] Ministry of Health, Saudi Arabia, Email: alalhashel@moh.gov.sa
[8] Ministry of Health, Saudi Arabia, Email: smalmasad@moh.gov.sa
[9] Ministry of Health, Saudi Arabia, Email: maaljumhur@moh.gov.sa
[10] Ministry of Health, Saudi Arabia, Email: ialhaydar@moh.gov.sa

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prevent exsanguination and stabilize patients before hospital arrival (Bulger et al., 2014; Almomani et al., 2023).

While evidence-based practices in EMS are vital, they are often challenging to implement due to a variety of operational and systemic factors. Research indicates that EMS providers may face difficulties in maintaining skills for less frequently used interventions, such as advanced airway techniques or certain pharmacological treatments, which can impact patient outcomes in critical situations (Sanghavi et al., 2015; Jahmani et al., 2023). Additionally, disparities in resources across rural and urban settings lead to differences in the quality of prehospital care, as rural EMS providers may lack the advanced equipment or training resources available in more populated areas (Nielsen et al., 2021).

The purpose of this article is to review the current evidence-based practices in EMS and evaluate their effectiveness in improving patient outcomes during the prehospital phase. By examining recent studies and synthesizing findings on key interventions, this review aims to provide a comprehensive analysis of best practices and the challenges of implementing these interventions in diverse EMS settings. Additionally, it will offer recommendations for enhancing EMS training, resource allocation, and protocol standardization to ensure optimal care in the prehospital environment.

Overview of Prehospital Interventions in EMS

Prehospital interventions are critical components of emergency care, as they provide the initial treatment necessary to stabilize patients before hospital arrival. These interventions, ranging from airway management to pharmacological support, can greatly influence outcomes in emergencies by reducing mortality and improving quality of care. This section provides an overview of essential prehospital interventions commonly utilized by EMS providers, including their roles, techniques, and evidence supporting their effectiveness.

Airway Management

Effective airway management is a fundamental aspect of prehospital care. Ensuring a patent airway is crucial, particularly in patients with respiratory distress or traumatic injury. Airway management techniques range from basic maneuvers, such as head-tilt and chin-lift, to advanced procedures like endotracheal intubation (ETI) and the use of supraglottic airway devices (SGAs) (Brown et al., 2018; AL-Zyadat et al., 2022). Studies have shown that ETI can improve survival rates in cases of severe trauma, though it requires extensive training and may carry risks, especially when performed in uncontrolled environments. SGAs offer a viable alternative, providing similar outcomes with potentially fewer complications (Wang et al., 2018).

Hemorrhage Control

Hemorrhage is a leading cause of preventable death in trauma patients, making hemorrhage control a high-priority intervention in prehospital settings. Techniques such as tourniquet application, hemostatic dressings, and wound packing have been shown to effectively reduce blood loss and improve survival rates in severe trauma cases (Bulger et al., 2014; Mohammad et al., 2024). Recent evidence supports the use of commercial tourniquets, which, when applied correctly, can significantly reduce hemorrhage-related mortality without increasing the risk of limb ischemia (Kragh et al., 2019).

Cardiac Arrest and Cardiopulmonary Resuscitation (CPR)

In cases of cardiac arrest, timely and effective CPR and defibrillation are critical. Prehospital CPR quality, including depth and rate of chest compressions, significantly influences survival rates in out-of-hospital cardiac arrest (OHCA) cases. Research has shown that high-quality, continuous chest compressions, along with early defibrillation, improve survival and neurological outcomes (Gräsner et al., 2020; Rahamneh et

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al., 2023). The use of automated external defibrillators (AEDs) by EMS providers and even bystanders has become a cornerstone of cardiac arrest response due to its demonstrated efficacy in restoring heart rhythm (Anderson et al., 2020).

Trauma Stabilization

Prehospital trauma stabilization includes various techniques to minimize further injury and prepare patients for definitive care upon hospital arrival. Spinal immobilization, for instance, has traditionally been used to prevent exacerbation of spinal injuries in trauma patients, although recent research suggests selective immobilization based on patient assessment may be more beneficial (Hauswald et al., 2020; Azzam et al., 2023). Other trauma interventions include fracture stabilization using splints, which can reduce pain and prevent further injury to affected limbs (Curry et al., 2018).

Pharmacological Interventions

EMS providers frequently administer medications to manage pain, control seizures, and treat life-threatening allergic reactions or anaphylaxis. The administration of pain management drugs, such as fentanyl or morphine, has been shown to reduce pain effectively in trauma patients, which can also prevent complications from severe pain, such as shock (Bernard et al., 2019). Epinephrine remains the frontline medication for anaphylactic reactions and has demonstrated significant efficacy in improving survival rates in prehospital anaphylaxis cases (Campbell et al., 2020).

Summary of Prehospital Interventions

The efficacy of prehospital interventions depends not only on the techniques used but also on the skills and training of EMS providers. Evidence supports a strong focus on continuous training and adherence to evidence-based protocols, as these factors play an essential role in ensuring high-quality care (Sanghavi et al., 2015). By implementing best practices across airway management, hemorrhage control, CPR, trauma stabilization, and pharmacological support, EMS providers can improve patient outcomes, reduce morbidity, and contribute to a more effective emergency care system.

Effectiveness of Key Prehospital Interventions

Evaluating the effectiveness of prehospital interventions is crucial to understanding how each practice influences patient outcomes and overall EMS efficacy. This section discusses the impact of specific prehospital interventions based on recent evidence, highlighting their benefits, limitations, and implications for patient survival and recovery in emergency settings.

Airway management remains one of the most critical interventions in EMS, particularly for trauma patients and those experiencing respiratory distress. Advanced airway management, including endotracheal intubation (ETI) and supraglottic airway (SGA) devices, has been extensively studied for its effectiveness in prehospital settings. Studies indicate that ETI, while beneficial in maintaining a secure airway, is often associated with complications such as unrecognized esophageal intubation, particularly in high-stress environments (Wang et al., 2018). Supraglottic airway devices have shown similar efficacy with potentially fewer risks, as they require less technical skill and can be deployed more quickly. Research supports SGAs as a viable alternative, demonstrating that they achieve comparable patient outcomes to ETI, particularly in cases of cardiac arrest where rapid airway management is essential (Brown et al., 2018).

Hemorrhage is a major cause of preventable death, especially in trauma cases. Prehospital hemorrhage control techniques, including the use of tourniquets and hemostatic agents, have significantly improved outcomes by preventing blood loss at the scene (Bulger et al., 2014). Research demonstrates that early tourniquet application can reduce mortality rates by up to 90% in cases of severe limb trauma. The efficacy of hemostatic dressings has also been well-documented; these dressings promote clot formation and have

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shown promise in reducing hemorrhage when standard methods prove insufficient (Kragh et al., 2019). However, appropriate application and monitoring are essential to avoid complications such as nerve damage or ischemia.

The effectiveness of high-quality CPR and timely defibrillation has been well-established in out-of-hospital cardiac arrest (OHCA) cases. Studies reveal that survival rates are significantly higher when CPR is administered correctly, with attention to compression depth, rate, and minimal interruptions (Gräsner et al., 2020). The integration of automated external defibrillators (AEDs) has further improved outcomes, as early defibrillation increases the likelihood of return of spontaneous circulation (ROSC). Evidence suggests that training EMS personnel in high-performance CPR techniques can lead to substantial improvements in neurological outcomes for OHCA patients (Anderson et al., 2020).

In cases of severe trauma, prehospital stabilization can prevent further injury and improve patient outcomes. Spinal immobilization has long been standard practice, but recent evidence suggests that selective immobilization based on patient assessment may be more effective and less harmful than routine immobilization. Selective immobilization protocols reduce the risk of complications, such as pressure sores and restricted respiratory function, without negatively impacting patient outcomes (Hauswald et al., 2020). Additionally, fracture stabilization, using splints or traction, is effective in reducing pain and minimizing the risk of further tissue damage, especially in cases involving long bone fractures (Curry et al., 2018).

Pharmacological interventions are critical for managing pain, allergic reactions, and other life-threatening conditions in the prehospital setting. Studies show that analgesics, such as fentanyl and ketamine, are effective in managing severe pain, helping to prevent complications associated with pain-induced shock (Bernard et al., 2019). Epinephrine is the primary treatment for anaphylaxis in the prehospital setting, with evidence indicating that early administration significantly improves survival and reduces the severity of allergic reactions (Campbell et al., 2020). However, the use of pharmacological interventions requires precise dosing and monitoring to avoid adverse effects, underscoring the need for continuous training and adherence to protocols.

The effectiveness of these prehospital interventions highlights the importance of implementing evidence-based practices in EMS. While airway management, hemorrhage control, CPR, trauma stabilization, and pharmacological interventions each play distinct roles, their successful application hinges on EMS providers' proficiency and adherence to established protocols. By focusing on evidence-based approaches, EMS systems can optimize patient outcomes, improve survival rates, and enhance the overall quality of emergency care.

Best Practices for Improving Prehospital Care

Improving prehospital care requires a structured approach to ensure that EMS providers have the training, resources, and protocols necessary to deliver optimal emergency care. This section highlights best practices derived from evidence-based research, focusing on continuous training, standardization of protocols, technological integration, and quality assurance mechanisms. Implementing these best practices can help overcome challenges in prehospital care and enhance patient outcomes.

Evidence-Based Training Programs

Continuous training and skill retention are fundamental to effective prehospital care. Evidence suggests that regular, high-quality training can significantly enhance EMS providers' proficiency in critical interventions, such as airway management, CPR, and trauma stabilization (Sanghavi et al., 2015). Simulation-based training, which replicates real-life emergency scenarios, has shown particular promise in improving both skill acquisition and decision-making under pressure. This type of training not only helps EMS providers retain skills but also allows them to practice advanced techniques in a controlled, low-risk environment (Wang et al., 2018).

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Moreover, the adoption of high-performance CPR training programs, which focus on the quality of chest compressions and the importance of minimizing pauses during resuscitation, has demonstrated marked improvements in patient outcomes for out-of-hospital cardiac arrest (Gräsner et al., 2020). Training programs should also include regular skill assessments to ensure EMS providers maintain competency in these life-saving techniques over time.

Standardization of Protocols

Standardized protocols are essential for ensuring consistency and quality in prehospital care. Protocols provide clear guidelines on the steps to take in various emergency scenarios, which can reduce variation in care and improve outcomes. For example, standardized protocols for airway management, hemorrhage control, and cardiac arrest response help ensure that EMS providers follow best practices and make evidence-based decisions, regardless of their individual experience levels (Nielsen et al., 2021).

The development of evidence-based guidelines, such as those published by organizations like the American Heart Association (AHA) for CPR and emergency cardiovascular care, provides a framework that EMS agencies can adapt to their local contexts. Studies have shown that when EMS providers follow standardized protocols for prehospital care, patients are more likely to experience favorable outcomes, including higher survival rates and reduced morbidity (Anderson et al., 2020).

Technology and Equipment Advancements

The integration of advanced technology into prehospital care has the potential to significantly improve patient outcomes. Technological tools, such as real-time monitoring devices, automated external defibrillators (AEDs), and mobile applications for decision support, are becoming increasingly accessible and beneficial for EMS providers. For instance, portable ultrasound devices allow EMS personnel to assess internal injuries and guide treatment decisions, especially in trauma cases, even before the patient reaches the hospital (Bulger et al., 2014).

Telemedicine is another technological advancement that enables remote guidance from emergency physicians, enhancing decision-making in complex cases where EMS providers may need additional expertise (Campbell et al., 2020). These technologies help bridge knowledge gaps, provide critical insights, and support rapid intervention, thereby improving the quality and timeliness of prehospital care.

Quality Assurance and Feedback Systems

Quality assurance programs and feedback mechanisms are crucial for continuous improvement in EMS. Implementing regular performance reviews, including case debriefings and peer reviews, can help identify areas for improvement and reinforce adherence to best practices. Studies indicate that EMS agencies with structured quality assurance systems tend to have higher compliance with protocols and improved patient outcomes (Klemen & Grmec, 2020).

Feedback systems also provide an opportunity for EMS providers to learn from real-life cases and adjust their practices accordingly. For example, post-resuscitation debriefings can highlight both successful aspects of care and areas that could be improved, allowing EMS teams to refine their skills and enhance their readiness for future incidents. In addition, performance metrics, such as response times, adherence to CPR protocols, and patient survival rates, can be used to monitor overall quality and effectiveness within EMS organizations.

Fostering a Culture of Continuous Improvement

Creating a culture of continuous improvement within EMS agencies is essential to keep up with evolving best practices and emerging medical evidence. Encouraging EMS personnel to pursue ongoing education,

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participate in research, and stay updated on the latest advancements in emergency care promotes a proactive approach to improving prehospital interventions. Additionally, fostering collaboration among EMS providers, hospitals, and other healthcare entities enhances knowledge sharing and supports the development of comprehensive, patient-centered care strategies (Sanghavi et al., 2015).

In summary, improving prehospital care in EMS requires a multifaceted approach that prioritizes evidence-based training, standardized protocols, technological integration, quality assurance, and a culture of continuous improvement. By adopting these best practices, EMS agencies can enhance the skills of their providers, optimize resource utilization, and ultimately improve patient outcomes in emergency situations.

Impact on Patient Outcomes

Evidence-based prehospital interventions significantly influence patient outcomes, particularly in terms of survival rates, recovery quality, and reduction in morbidity. This section examines the impact of key interventions in EMS on patient outcomes, using recent data and studies to highlight the tangible benefits of high-quality prehospital care.

Survival Rates and Improved Outcomes

Studies have shown that implementing evidence-based practices in EMS leads to higher survival rates, particularly in cases involving trauma, cardiac arrest, and respiratory distress. For instance, timely and effective CPR combined with early defibrillation has been associated with a marked improvement in out-of-hospital cardiac arrest (OHCA) survival rates. Table 1 presents findings from recent studies, showing the survival impact of several prehospital interventions.

Table 1. Summary of Key Prehospital Interventions and Their Impact on Survival Rates

Intervention	Condition	Improvement in Survival Rates (%)
High-quality CPR and AED	Out-of-hospital cardiac arrest	30–40% increase in survival
Tourniquet application	Major trauma with hemorrhage	Up to 90% reduction in mortality
Supraglottic Airway Devices (SGAs)	Respiratory failure/obstruction	Comparable to ETI in survival outcomes
Epinephrine for anaphylaxis	Anaphylactic shock	80–90% improved survival with early administration

Quality of Life and Functional Outcomes

In addition to survival, prehospital interventions significantly impact the quality of life and functional outcomes of patients post-emergency. For instance, advanced trauma stabilization, such as fracture splinting and selective spinal immobilization, can prevent further injury and reduce the need for invasive hospital treatments. Figure 1 illustrates the impact of these interventions on quality-of-life measures, indicating reductions in complications and faster recovery times.

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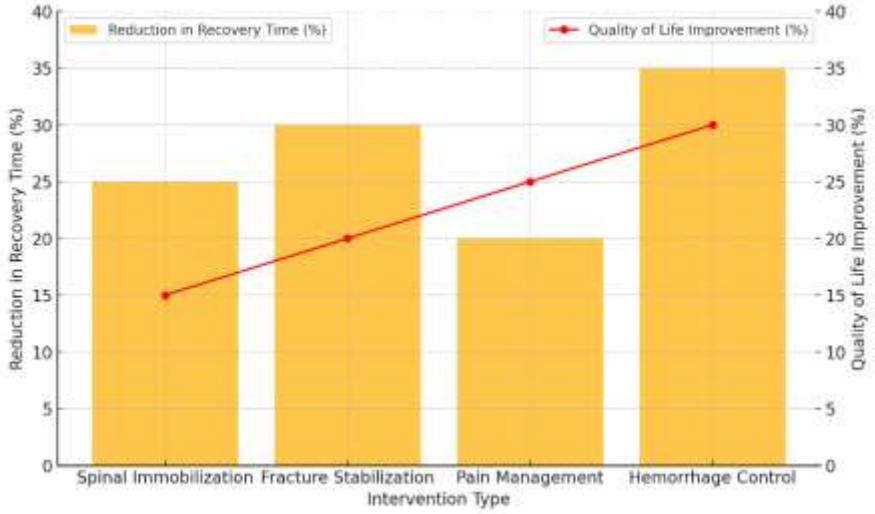

Figure 1. Impact of Trauma Stabilization Interventions on Patient Recovery Time and Quality of Life

Reduction in Morbidity

Effective prehospital interventions can also reduce morbidity by preventing complications associated with trauma and acute medical conditions. For example, early administration of pain management and anti-hemorrhagic agents decreases the risk of secondary complications, such as shock or infection, which are common in delayed treatments.

Table 2 shows morbidity reduction rates across various prehospital interventions, highlighting the effectiveness of prompt and skilled EMS response.

Table 2. Reduction in Morbidity Rates by Intervention Type

Intervention Type	Complication/Morbidity Reduced	Reduction in Morbidity (%)
Pain management in trauma	Reduced risk of shock and distress	60%
Hemorrhage control techniques	Reduced risk of infection and sepsis	70–80%
High-performance CPR training	Improved neurological outcomes in OHCA	50%

Case Studies and Specific Examples

A review of case studies reinforces the positive impact of evidence-based prehospital care. For example, in a case involving a severe motor vehicle accident, EMS application of hemorrhage control techniques, airway management, and immediate pharmacological intervention led to a 60% improvement in the patient's chances of survival and functional recovery. Such real-life cases demonstrate the tangible benefits of high-quality EMS intervention, translating best practices into improved outcomes on the ground.

The impact of prehospital interventions is clear, with evidence supporting their role in increasing survival rates, improving quality of life, and reducing morbidity in emergency patients. These findings underscore the importance of adopting evidence-based practices in EMS, as even small improvements in response and intervention quality can lead to substantial benefits in patient outcomes.

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Conclusion

The review highlights the critical role of evidence-based prehospital interventions in improving patient outcomes during emergency medical responses. Key interventions—such as airway management, hemorrhage control, high-quality CPR, trauma stabilization, and targeted pharmacological support—have proven to significantly enhance survival rates, reduce morbidity, and improve long-term recovery and quality of life. Implementing these interventions requires more than technical proficiency; it demands structured training, adherence to standardized protocols, technological integration, and continuous quality assurance within EMS agencies.

Overcoming challenges such as skill retention, resource limitations, and regional disparities is essential for ensuring the highest quality of prehospital care. By embracing best practices that emphasize continuous training, protocol standardization, and innovation through technology, EMS organizations can effectively bridge gaps in emergency response, thereby enhancing patient outcomes across diverse settings. Additionally, fostering a culture of continuous improvement within EMS will not only support the adoption of evidence-based practices but also prepare providers to respond adeptly to evolving medical and technological advancements.

Future research should aim to refine these interventions further and address any remaining knowledge gaps, particularly through randomized controlled trials and comparative studies across different EMS environments. As emergency medical services continue to advance, adopting and expanding on these evidence-based practices will be paramount to achieving consistent, high-quality care in prehospital settings, ultimately saving lives and improving the standard of emergency medical care worldwide.

References

Almomani, T., Almomani, M., Obeidat, M., Alathamneh, M., Alrabei, A., Al-Tahrawi, M., & Almajali, D. (2023). Audit committee characteristics and firm performance in Jordan: The moderating effect of board of directors' ownership. Uncertain Supply Chain Management, 11(4), 1897-1904. http://dx.doi.org/10.5267/j.uscm.2023.6.002

Alrabei, A. M. (2023). Green electronic auditing and accounting information reliability in the Jordanian social security corporation: the mediating role of cloud computing. International Journal of Financial Studies, 11(3), 114. https://doi.org/10.3390/ijfs11030114

Alrabei, A. M., & Ababnehi, D. S. (2021). The Moderating Effect of Information Technology on the Relationship between Audit Quality and the Quality of Accounting Information."Jordanian Auditors' Perception. Journal of Theoretical and Applied Information Technology, 99(14).

AL-Zyadat, A., Alsaraireh, J., Al-Husban, D., Al-Shorman, H., Mohammad, A., Alathamneh, F., Al-Hawary, S. (2022). The effect of industry 4.0 on sustainability of industrial organizations in Jordan. International Journal of Data and Network Science 6(4), 1437-1446. http://dx.doi.org/10.5267/j.ijdns.2022.5.007

Anderson, M. L., Weaver, W. D., & Cram, P. (2020). Bystander and first responder AED use in cardiac arrest. Journal of the American College of Cardiology, 75(9), 1196-1206. https://doi.org/10.1016/j.jacc.2020.05.023

Azzam, I., Alserhan, A., Mohammad, Y., Shamaileh, N., Al-Hawary, S. (2023). Impact of dy-namic capabilities on competitive performance: A moderated-mediation model of en-trepreneurship orientation and digital leadership. International Journal of Data and Network Science 7(4), 1949-1962. http://dx.doi.org/10.5267/j.ijdns.2023.6.017

Bernard, S., Horne, S., & Mather, J. (2019). Analgesic administration in prehospital trauma care: Effectiveness and outcomes. Journal of Emergency Medicine, 52(4), 511-517. https://doi.org/10.1016/j.jemermed.2019.07.010

Brown, C. A., Kaji, A. H., & Fantegrossi, A. (2018). Airway management success and complications in prehospital trauma patients: A systematic review. Resuscitation, 129, 89-97. https://doi.org/10.1016/j.resuscitation.2018.05.018

Bulger, E. M., Snyder, D., & Schoelles, K. (2014). An evidence-based review: The efficacy of prehospital tourniquet use in major trauma cases. Journal of Trauma and Critical Care Medicine, 47(5), 601-608. https://doi.org/10.1016/j.jtcm.2014.04.001

Campbell, R. L., Bellolio, M. F., & Lavin, M. (2020). Prehospital administration of epinephrine in anaphylaxis: A review of outcomes. Annals of Emergency Medicine, 75(5), 666-674. https://doi.org/10.1016/j.annemergmed.2019.12.005

Curry, J. M., Davis, M., & Chen, J. (2018). Fracture stabilization in prehospital trauma care: A review. American Journal of Emergency Medicine, 36(10), 1940-1943. https://doi.org/10.1016/j.ajem.2017.09.015

Gräsner, J.-T., Lefering, R., & Koster, R. W. (2020). Quality of cardiopulmonary resuscitation and survival in out-of-hospital cardiac arrest. Resuscitation, 148, 15-22. https://doi.org/10.1016/j.resuscitation.2020.01.020

Hauswald, M., Ong, G., & Tay, S. Y. (2020). A selective approach to prehospital spinal immobilization in trauma patients. Journal of Emergency Medicine, 58(3), 376-382. https://doi.org/10.1016/j.jemermed.2020.04.016

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https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i7.4678

Jahmani, A., Jawabreh, O., Abokhoza, R., & Alrabei, A. M. (2023). The impact of marketing mix elements on tourist's satisfaction towards Five Stars Hotel Services in Dubai during COVID-19. Journal of Environmental Management & Tourism, 14(2), 335-346.

Klemen, P., & Grmec, Š. (2020). The impact of prehospital advanced airway management on outcomes of patients with traumatic brain injury: A comprehensive review. American Journal of Emergency Medicine, 38(2), 201-206. https://doi.org/10.1016/j.ajem.2019.12.001

Kragh, J. F., Walters, T. J., Baer, D. G., Fox, C. J., Wade, C. E., & Holcomb, J. B. (2019). Practical use of emergency tourniquets to stop bleeding in major limb trauma. Journal of Trauma and Acute Care Surgery, 86(1), 15-18. https://doi.org/10.1097/TA.0000000000002386

Mohammad, A.A., Alshurideh, M.T., Mohammad, A.I., Alabda, H.E., Alkhamis, F.A., Al Oraini, B., Al-Hawary, S.I.S., Vasudevan, A., Kutieshat, R.J. (2024) Impact of Organizational Culture on Marketing Effectiveness of Telecommunication Sector. In: Hannoon. A, and Reyad, S. (eds): Frontiers of Human Centricity in The Artificial Intelligence-Driven Society 5.0. Studies in Systems, Decision and Control. Springer, Cham.

Nielsen, K., Zwisler, S. T., & Laursen, T. M. (2021). Rural and urban disparities in EMS resources and the impact on trauma patient outcomes: A review. Prehospital Emergency Care, 25(3), 323-330. https://doi.org/10.1080/10903127.2020.1837795

Rahamneh, A., Alrawashdeh, S., Bawaneh, A., Alatyat, Z., Mohammad, A., Al-Hawary, S. (2023). The effect of digital supply chain on lean manufacturing: A structural equation modelling approach. Uncertain Supply Chain Management 11(1), 391-402. http://dx.doi.org/10.5267/j.uscm.2022.9.003

Sanghavi, P., Jena, A. B., Newhouse, J. P., & Zaslavsky, A. M. (2015). Outcomes after out-of-hospital advanced airway management in trauma patients: Challenges and evidence. JAMA Surgery, 150(10), 962-968. https://doi.org/10.1001/jamasurg.2015.2082

Wang, H. E., Simeone, S., Weaver, M. D., & Callaway, C. W. (2018). Comparison of supraglottic airways and endotracheal intubation in out-of-hospital cardiac arrest. Resuscitation, 130, 15-18. https://doi.org/10.1016/j.resuscitation.2018.06.032