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Effects of Delayed Shock and Trauma Management on General Care Outcomes

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Abstract

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Abstract

This research seeks to explore the effects of delayed shock and trauma management on general care outcomes. The study entails synthesizing prior research to contribute to new literature that paramedics, nurses, and other healthcare professionals could use in their practice.

The study was conducted as a qualitative integrative literature review, and a thematic analysis was implemented. The data was collected from electronic databases and scholarly articles relevant to the research questions. The objective of the literature review was to gather information from past studies and to determine gaps that may require further research in the future.

Out of 23 selected articles meeting stringent criteria, several key themes emerged. Firstly, delays in trauma management were consistently linked to heightened morbidity and mortality rates among trauma patients. Studies underscored the exacerbation of existing injuries and increased risk of complications due to such delays, emphasizing the critical need for efficient triage systems and streamlined processes to optimize patient care. Moreover, inadequate and delayed access to essential interventions of care during the initial stages of trauma significantly impacted patient survival and recovery. Failure to initiate timely care, particularly in critical cases, could worsen conditions such as uncontrolled bleeding, compromised airways, and traumatic brain injury, leading to irreversible damage or death. The effectiveness of medical interventions was compromised by delayed trauma care, diminishing healthcare providers' ability to mitigate injury severity and improve patient outcomes.

Keywords

Shock, Trauma, Trauma Care, Golden Hour.

Contents

1 Introduction

1.1 Introduction

Trauma is currently considered to be the leading cause of death among adults and children globally. Trauma typically results from a variety of accidents, incidents, and unintentional acts and constitutes a global health burden. Rapid and appropriate intervention is critical in mitigating any adverse outcomes resulting from delayed interventions. A key concept associated with the best outcomes in trauma management is "the golden hour." This is a concept that critically injured patients are required to receive definitive care within 60 minutes of the occurrence of the injuries. This concept was developed in the early 1970s and was accepted across healthcare facilities without any data or reference (Okada et al. 2020, 2). Even without any clinical plausibility, the term has become popular and continually improved over the decades to ensure the delivery of evidence-based care. The assumption guiding the concept is that this period is associated with increased chances for successful interventions and improved patient outcomes (Patel et al. 2017, 4). Advancements in trauma systems and the implementation of standardized protocols emphasize the importance of immediate assessment, resuscitation, and intervention to minimize the impact of trauma.

There have been several studies conducted over the years on trauma management and some of the key barriers that could limit access to timely care for patients. One commonly cited problem is geographical barriers. Patients living in rural and remote areas may find it challenging to gain access to timely care if they suffer from traumatic injuries. Even in cases where paramedic services may be available, there is no guarantee that they can access the remote regions on time. Transportation issues could also impede the timely transfer of trauma patients to appropriate healthcare facilities. This includes delays in ambulance dispatch, traffic congestion, adverse weather conditions, and logistical challenges in coordinating interfacility transfers. In regions with limited EMS coverage or unreliable transportation networks, patients may experience prolonged wait times before receiving definitive treatment, leading to worsened outcomes. Finally, another barrier is the limited availability of specialized trauma centers equipped with advanced resources and expertise for effectively managing severe injuries. However, disparities in access to trauma care exist, particularly in underserved urban and rural areas. Many communities lack designated

trauma centers or have insufficient capacity to handle high-acuity cases, forcing patients to travel longer distances to reach appropriate facilities. Limited access to specialized trauma centers contributes to delays in care and increases the risk of adverse outcomes.

Despite the advancements in trauma care, there still exists a noticeable gap in the understanding of the consequences of delayed interventions on patient outcomes. This thesis addresses this gap by delving into the nuances of delayed trauma care and its implications on patient outcomes. Preliminary evidence from studies suggests that delayed intervention in trauma management can contribute to increased morbidity and mortality rates, most of which are preventable with the implementation of suitable protocols. Understanding some of the critical factors associated with delayed trauma care would be crucial in the development of targeted interventions that will aid in improving general patient prognosis. The findings from this thesis can have profound implications for healthcare systems. It could lead to refining healthcare facilities protocols, resource allocations, and training strategies to help improve trauma care delivery across facilities. The thesis findings will help contribute valuable insights prioritizing the well-being and recovery of individuals affected by traumatic events.

1.2 Background Information

Trauma resulting from accidents, injuries, and intentional harm remains a significant health concern globally. Trauma care involves a comprehensive system that provides timely and effective interventions to improve patient outcomes and minimize the impact of injuries. The " golden hour " underlines the urgency of trauma care," which ensures that healthcare professionals understand its implications on patient health.

1.3 Definition of Basic Concepts

a. **Trauma**- The physical injuries to the body that result from external forces, such as accidents, falls, violence, and other injuries. Traumatic injuries among patients can vary widely in severity and complexity.
b. **Trauma care** refers to the multidisciplinary and systematic approach to managing injuries. There are various stages involved in trauma care, including assessment, resuscitation, diagnosis, intervention, and rehabilitation, with the primary objective of improving patient outcomes.

c. **Golden hour**- A critical window, typically the first 60 minutes following a traumatic incident, during which prompt and appropriate medical interventions can significantly affect the chances of the patient's survival and reduce long-term complications (Okada et al. 2020, 1).

2 Trauma Management and Significance of Timely Interventions

Timely trauma management is considered vital in reducing mortality among patients. Trauma care principles outline some fundamental concepts that providers should know when providing care in a trauma setting. Research conducted over the past decades helps continually improve the practice and ensure better patient outcomes. The American College of Surgeons and its Committee on Trauma released the Tenth Edition of the Advanced Trauma Life Support (ATLS) course in 2018 (James & Pennardt 2019, 1). The ATLS provides a framework that healthcare providers can rely on to assess and treat patients following a traumatic injury. These protocols guarantee that providers follow a standardized care delivery method and increase interprofessional collaboration.

2.1Trauma Care Principles

Trauma care typically begins before the patient arrives at the facility. Usually, emergency personnel will respond to a call and provide the patient with prehospital care. Prehospital care is grounded in essential life support (BLS), advanced cardiac life support (ACLS), and pediatrics advanced life support (PALS) (James & Pennardt 2019, 1). Collaboration between the hospital and their local rescue teams is vital in ensuring better patient outcomes. Providers' understanding of the limitations and capabilities of their local rescue team will help them better predict what to expect upon arrival at the facility. When trauma patients present to the emergency department, an intermediate assessment must be conducted to determine their status. The providers may also need to acquire a history of events that contributed to the injury, which can be provided by the rescue team and witnesses (James & Pennardt 2019, 1). The initial history and baseline of the patient's vital signs will determine the patient's preliminary management. A sequential set of steps will then follow in the patient assessment, emphasizing areas considered to be the most critical, including airway, breathing, circulation, disability, and exposure/ environmental control.

2.2 Importance of Timely Interventions

Numerous studies have been conducted on trauma management over the years and the importance of timely interventions. Research shows that timely intervention can help in playing a critical role in the prevention of complications that could result from traumatic injury. Rapid assessment and treatment can help prevent the progression of injuries, reduc-

ing the risk of infections and enhancing the overall recovery process for the patients (Bryant, 2022). Most trauma interventions that healthcare facilities rely on achieve the anticipated outcomes in cases where they are performed promptly. Delayed interventions could result in missed opportunities for optimal treatment efficacy (Chen et al. 2020, 3). Research conducted over the years also shows that timely interventions do not only save a life but could also go a long way in the possibility of developing disability among patients. The timely control of bleeding, stabilization of fractures, and other critical interventions can help prevent irreversible damage and enhance the rehabilitation process for the patients (Mock et al. 2012, 960). Recent studies show that implementing timely interventions could reflect the healthcare facility's focus on patient-centered care. It demonstrates a facility's commitment to the well-being and immediate needs of the patients. This approach helps in improving patient satisfaction and trust in the healthcare system.

Given the adverse outcomes associated with delayed interventions in trauma care, numerous studies have been conducted over the years analyzing some of the key factors contributing to this problem. In their research, Pfeifer et al. (2019) determined that prehospital delays could contribute to delayed interventions. According to the study, there are instances in which the local teams could find it challenging to access and transport the patients from the incident site to medical facilities. In some cases, prehospital delays could result from the limited availability of ambulances or emergency medical services, resulting in delays in initiating care (Dharap, Kamath, & Kumar, 2017, 169; Nolan et al., 2017, 328).

Communication challenges between emergency responders and healthcare providers could also contribute to delayed intervention in trauma care. Lack of communication or communication challenges could imply that the providers and other relevant stakeholders may not have the critical information they require in delivering care to the trauma patient. There are also instances in which logistical issues could be a contributing factor. Studies show that there are instances in which a lack of access to the relevant resources could be a limiting issue in implementing timely intervention (Morgan & Calleja, 2020, 4; Patel et al., 2017, 6). Adverse weather conditions or rugged terrain could make it harder for the emergency team to guarantee that the patients receive the required care on time.

Gruen et al. (2016, 372), on the other, focused their analysis on some of the main errors contributing to trauma deaths and how to effectively integrate error detection into a

patient safety program across healthcare facilities. Based on the study, over the past nine years before the research, there were 2594 deaths at the institution out of the 44,101 admissions (Gruen et al. 2016. 372). This number was a significant decrease compared to the past, proving the effectiveness of the current measures and practices in improving trauma care management. However, the study also identified specific errors that could contribute to trauma death, especially in particular phases of care delivery. Some of the main phases identified in the survey that are prone to mistakes include initial assessment, resuscitation, and initial intervention phases. The authors determined that during the initial arrival of the patient at the healthcare facility, there is a possibility that the medical team may focus on non-urgent medical procedures, thereby delaying trauma intervention. Even though this may be unintentional, there is a possibility that healthcare professionals could end up focusing more on the organization's policies on tests and procedures on arrival, which, in the long term, could adversely impact outcomes for trauma patients (Gruen et al. 2016, 376).

3 Aims, Purpose, and Thesis Question

Aim

This thesis aims to investigate the effects of delayed shock and trauma management on the general care outcome. The concrete aim is to assess the current practices and some of the factors contributing to delays in shock and trauma management across healthcare facilities. By doing so, this thesis will help provide actionable insights that can be used to optimize protocols, enhance interdisciplinary collaboration, and improve patient outcomes in general care.

Purpose

This thesis aims to enhance the effectiveness of shock and trauma management across healthcare systems, preventing possible adverse outcomes likely to result from delayed interventions. The thesis's overreaching goal is to improve general care outcomes for trauma patients by identifying some of the challenges commonly faced by healthcare organizations in trauma management. The findings from the research will help develop strategies that could be implemented to advance the existing practices of healthcare organizations.

Thesis Questions

The primary research question guiding this research is "*What are the key factors contributing to delayed shock and trauma management, and how can addressing these factors specifically improve long-term recovery outcomes for trauma patients?"*.

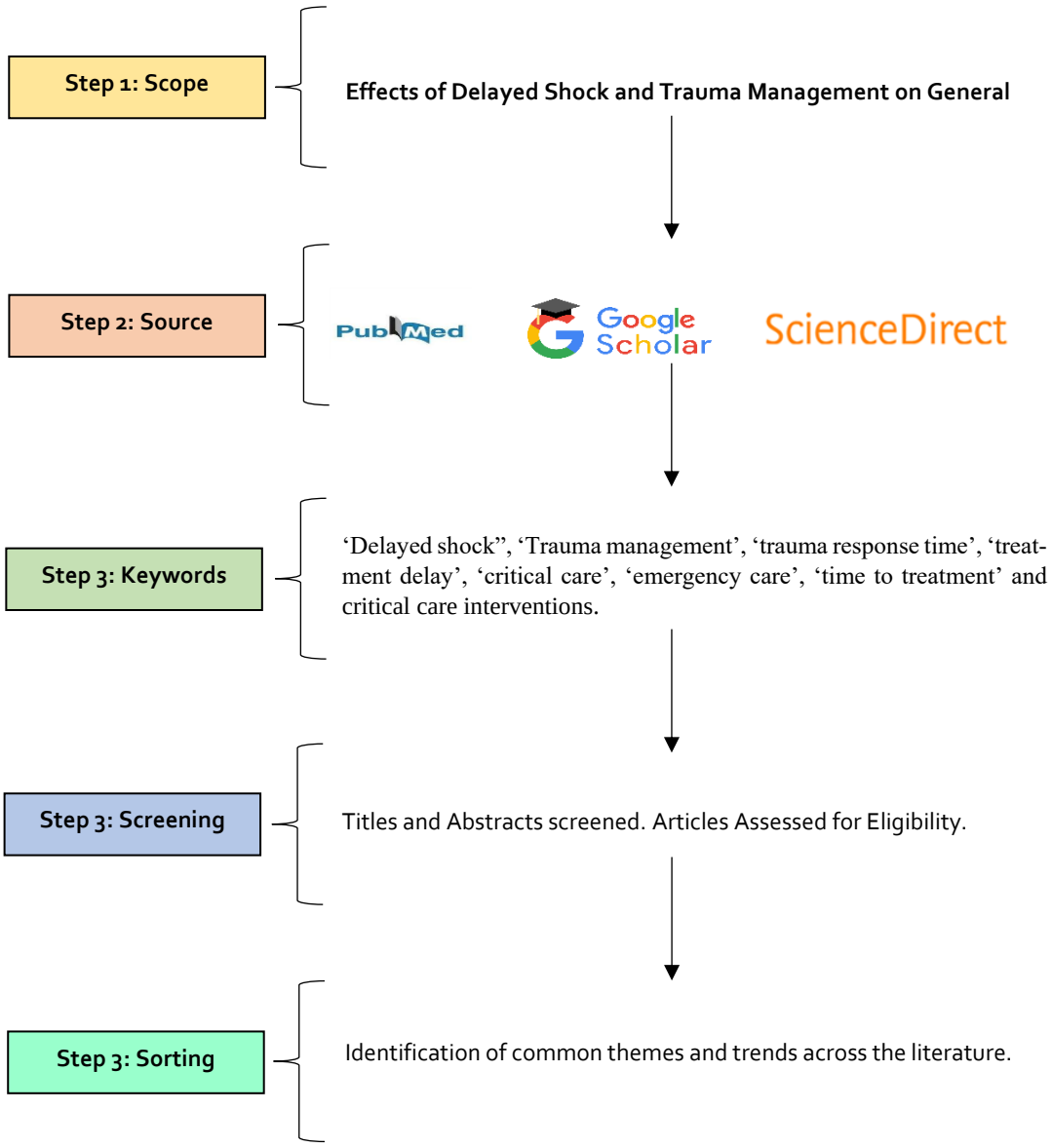
The sub-questions that will guide the literature review for the thesis are:

a. What insights does the current literature provide regarding the impact of delayed shock and trauma management on patient outcomes, particularly in terms of mortality rates, functional recovery, and quality of life?
b. What historical perspectives and critical developments in trauma management have significantly influenced the current practices, and how have these evolved over distinct periods?
c. What evident gaps exist in current knowledge regarding delayed interventions in shock and trauma management, and how might addressing these gaps contribute to more effective and timely patient care strategies?

4 Implementation and Methodology

4.1 Literature Review

Systematic literature review will serve as the primary method for this thesis. This method aims to critically evaluate existing research and scholarly works on the effects of delayed shock and trauma management on general care outcomes. The literature review method would allow for the synthesis of diverse sources to provide a comprehensive understanding of current knowledge, identify gaps, and draw meaningful conclusions based on available evidence. The following steps are taken to guide the review approach:



= Approximately 250 articles were identified based on the keywords, and only 25 were selected due to their relevance to the current study.

In addition, artificial intelligence was utilized in the structuring and editing process of the research. The tool specifically assisted in organizing the thesis structure and refined the grammar and clarity of the writing. The AI provided suggestions and improvements, which were reviewed and integrated into the final manuscript at the researcher's discretion.

4.2 Data Search and Collection

The data search will involve a systematic and rigorous approach to identify relevant literature. The steps below will guide the data search:

1. **Selection of keywords**: It is crucial to identify all the keywords to ensure a comprehensive literature review. The keywords for this research will include terms related to shock, trauma, delayed intervention, general care outcomes, and associated topics. When considering the keywords, a key consideration would be to consider synonyms to the terms, related concepts, and names of people/ experts associated with these ideas. Searching for the keywords will also aid in identifying new terms that could be included in the list.
2. **Choice of Databases**- There are many ways to find relevant resources when conducting research, including searching journals, library catalogs, research databases, repositories, and archives on the web. The critical academic databases utilized in this research include PubMed, Google Scholar, EBSCOHost, and Science Direct. These databases are selected because they are well known for hosting numerous peer-reviewed articles and research studies relevant to medical and healthcare sciences.
3. **Inclusion and Exclusion Criteria**: The next step will involve the identification of the main strategies that will be used to determine which research studies will be included. Before beginning the literature review, deciding on the inclusion and exclusion criteria is essential. The inclusion criteria involve everything the study must

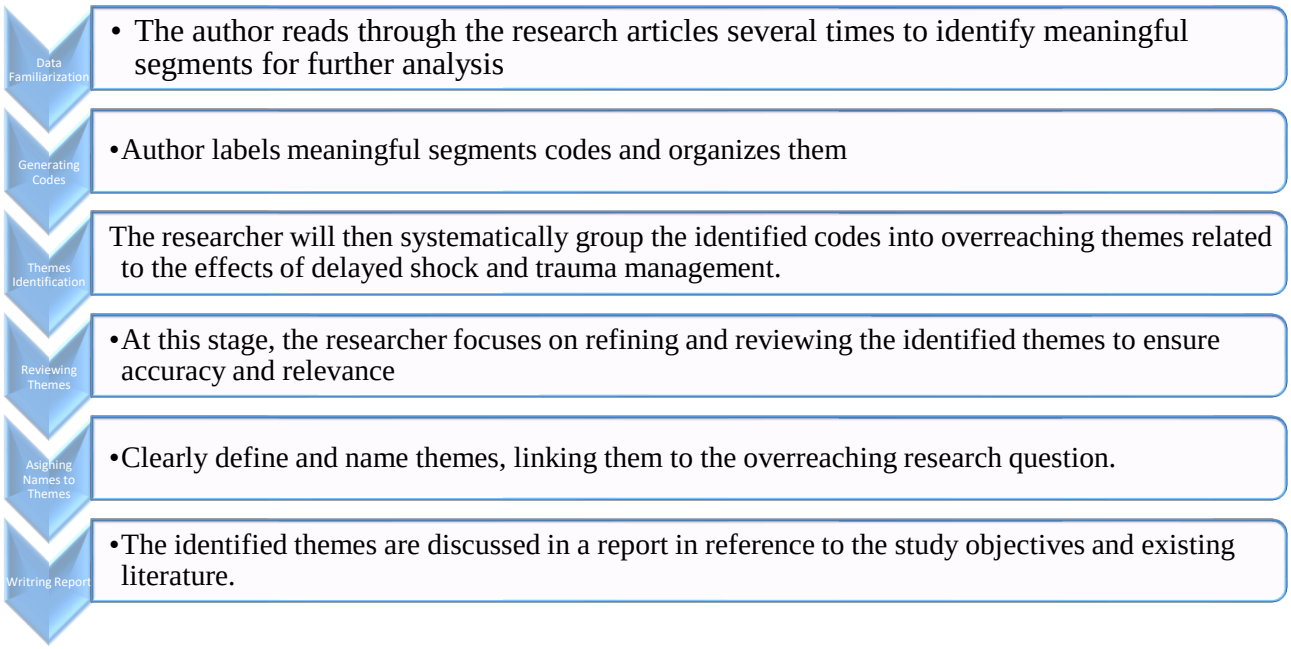
include in the literature review. The exclusion criteria are the factors that would make a study ineligible to be included. The inclusion criteria in this current study will encompass studies conducted within the last decade, written in English, and focusing on adult populations. The exclusion criteria will include studies that involve pediatric populations, non-peer-reviewed sources, and studies that do not relate to addressing the effects of delayed intervention on general care outcomes.

4.3 Method of Analysis

The holistic method of developing themes in the selected studies is the tool to be utilized in the evaluation. Qualitative theme analysis is a commonly accepted approach to analyzing qualitative data. It is commonly the basis for studying a set of texts. The most common kind of literature review is the thematic literature review, which allows the presentation of the existing literature following its connectivity to themes or topics. When applied successfully, this method can help supply a much deeper insight into the topic. Literature reviews that pertain to specific themes are usually relevant when the research questions are complex and have many aspects, for which they provide a way of deepening the focused element of a theme within the more significant topic.

A thematic literature review has various advantages over a broad-based approach. One of the key advantages is that it provides a comprehensive understanding of specific themes within a broader context, allowing for deep exploration of relevant literature. The second advantage is that it provides researchers with a structured approach for organizing and synthesizing diverse sources, which makes it easier to identify trends, patterns, and gaps. Third, this approach allows researchers to focus on specific themes, enabling a more detailed analysis of aspects of the research question. The main downside of this approach is that it is often phrase-based. The main challenge this creates is that it could be hard to fully capture the meaning correctly.

The thematic analysis used in the research will be guided by the following steps, as shown in the flow chart:



By adopting a literature review methodology with a thematic analysis approach, this thesis provides a comprehensive synthesis of the existing knowledge on the effects of delayed shock and trauma management on general care outcomes. This method allows for a more nuanced exploration of the available evidence from the literature, contributing to a better understanding of the research topic.

4.4 Ethical Practices and Trustworthiness

In any research, ethics is an important aspect that the researcher should always ensure that they adhere to. Ethics in research is vital in minimizing chances of dishonesty, given that the findings from the study can be helpful in the future for experts in the field. The research for this thesis was conducted following the ethical guidelines for research. The study utilized appropriate research methods. Their original authors attributed all the ideas, data, and findings. The information from the various sources was accurately presented, and the scientific knowledge was presented logically. Since the research was a literature review without participants, obtaining research permits was unnecessary. '

The data included in the current study were all collected from credible sources. The leading websites selected for their credibility included Science Direct, Pub Med, and Google Scholar. The search for the articles was limited to within the last 30 years to ensure the im-

proved relevance of the findings to the current healthcare settings. Time limitation is important in guaranteeing that the findings from the review can be applied to developing measures to improve healthcare practices.

Maintaining ethical standards when conducting literature reviews typically involves paying careful attention to the methodology. As Hennink, Hutter, and Bailey (2020) highlighted, a critical aspect of literature reviews involves precisely and transparently defining and describing the methods and procedures used during the review. The researcher must ensure that they provide clear information on the databases accessed for the information, the strategies used in selecting the articles, and the criteria used to include and exclude studies in the research. Documentation of this process is vital in guaranteeing that it can be later determined that it adhered to the expected systematic and unbiased procedures.

Hennink, Hutter, and Bailey (2020) also argued that maintaining ethics in research also extends to avoiding plagiarism in the presentation of information. The approach taken in the presentation of the information should make it easy for readers to easily determine the author's original ideas and the information that the author might have accessed from previous studies. Besides, to ensure improved study credibility, the researcher must ensure that they do not manipulate any data presented. This is the only way to guarantee that all the information presented is accurate and can be replicated in future studies. Ensuring the consistency and reproducibility of the information utilized in the research is essential. This facilitates other researchers' ability to replicate the study and obtain similar findings.

The Joanna Briggs Institute (JBI) critical appraisal tools were utilized to enhance the reliability and credibility of the current study. These tools have proven effective in improving the quality of studies, hence researchers' increased reliance on these tools. When conducting systematic reviews, it is vital to ensure the researcher synthesizes all the available evidence to help answer the thesis question. Researchers should understand that when they might not have access to high-quality evidence, they can rely on case studies that would be just as effective in answering the research question. JBI tools are supported by previous analyses in terms of their ability to determine the trustworthiness and credibility of the information of the articles selected to be used in the literature analysis.

The JBI tools have undergone significant revisions over the past three decades to ensure that their overall effectiveness can be improved. These tools have been developed by JBI and

collaborators and approved by the JBI Scientific Committee following extensive consultation (Munn et al., 2023). Beyond their use in systematic review, these tools can also be essential in other educational fields. The tools are often used to assess different aspects of the research methodology. These include the literature review process, the methodology, the data collection procedures, and the data analysis techniques. The comprehensive approach ensures that the researcher considers multiple dimensions of the study likely to impact the credibility and trustworthiness of the information collected.

The JBI tools are also often used in research to help improve the study's ethical trustworthiness. These tools can help ensure the researcher better aligns their work with evidence-based principles, integrating the best available evidence. Through this process, the researcher would better understand that the articles they selected to use in the study are the best options for answering the research questions. Utilizing these tools will help ensure that the final findings from the survey can be easily applied in real-world settings and, hence, contribute to improving the quality of patient care and overall patient outcomes.

The main JBI checklists were tailored for texts and opinions, qualitative research, and analytical cross-sectional studies in the current study. These tools comprise a series of structured questions designed to assess the methodological accuracy employed by researchers in the selected studies. The tools often extend beyond merely evaluating the quality of the studies. They can also prove to be highly efficient in the identification of potential biases in the research that could impact the findings. The selection of the studies was based on their final score upon inspection based on the JBI tools. It was determined that a 60% score was sufficient for the inclusion. For improved efficiency, two evaluators were involved in the process and helped carefully assess the different studies selected. The outcomes of the quality assessment are detailed in Appendix 4.

5 Beyond the Golden Hour: Analysis of the Long-term Consequences of Delayed Trauma Interventions

Of the articles identified, twenty-three were selected for the analysis as they met all the expected criteria. Below is an analysis of the specific themes identified from the literature analysis on the effects of delays in trauma management on general care outcomes.

5.1 Delays in trauma management can lead to increased morbidity and mortality rates among trauma patients.

Delays in trauma management are associated with increased morbidity and mortality rates among trauma patients. Studies by Pouraghaei et al. (2020) and Newgard et al. (2020) determined that delays in the provision of care for trauma patients can, in some cases, come with an increased risk of mortality and morbidity. There is a significant risk that the delays could worsen the existing injuries for the patients and increase the risk of the patients' developing complications, which adversely impacts patient outcomes in the long term. The findings from these studies emphasize the importance of healthcare facilities ensuring that they have efficient triage system and transport to guarantee that trauma patients arrive at the facility on time and get the required quality care. Besides, it is also evident from the findings that having well-trained medical personnel would contribute to better patient outcomes as they would better understand the vital role of providing the required care within the "golden hour" period.

Additionally, delayed intervention during the initial stages of trauma injury can also, in some cases, adversely impact the patient's chances of recovery. Such factors highlight the importance of ensuring that all facility healthcare professionals understand the vital role of providing timely and effective trauma care to patients (Sun et al., 2017). In cases where patients arrive at the facility and do not receive the critical care they require on time, there is the possibility that any intervention may not achieve the desired outcomes. Sun et al. (2017) argue that this is primarily because uncontrolled bleeding is the primary cause of death for patients with traumatic injuries. Besides the unchecked bleeding, other complications that pose further risks to the patient's health include neck injuries or inhalation of foreign objects, which could compromise the patient's ability to breathe. Prolonged failure in securing the airway will result in a drop in oxygen level, causing respiratory collapse, and the condition of the patient will get even worse. To top it all, debilitating traumatic brain

injury (TBI) is another major issue associated with trauma patients. Early maintenance of such systems as adequate oxygenation (avoidance of anoxia) and good perfusion (avoidance of hypoxic ischemia) must become a preventive measure against secondary brain injury. Poor management on time will eventually manifest in the brain's irreversible damage and death.

5.2 Decreased Effectiveness of Medical Interventions

The reason behind the low success rate in the treatment of patients who suffered a massive injury due to a delay in the application of lifesaving procedures in the first 60 minutes after the accident is the ineffectiveness of medical procedures in such cases. As mentioned by Chen et al. (2020), the delay in accessing timely care impairs the effectiveness of treatments already initiated by healthcare providers; hence, these healthcare providers are restricted in their ability to either mitigate the severity of injuries or improve patients' outcomes and recovery. The greater the time the traumatic injuries last without proper medical treatment, the more severe the situation will develop. Advertising for delayed treatment strengthens the injuries and results in more damaged tissue complications, and the effectiveness of treatment is decreased. Sought-after treatment may show that delayed care can drive the growth of other complications such as infections, organ failure, or systemic inflammatory response syndrome (SIRS). Additionally, these complications do not only raise the risk of morbidity and mortality, but they may be the reason for prolonged hospital admission and a disability that remains for the rest of the patient's life.

In support, as Hsieh and colleagues (2020) suggest, expedited clinical care access in this period is paramount to optimal patient outcomes provision. Writing interventions can be most useful after a certain period after the injury was inflicted, the topic of the author's discussion. One example is size reduction or dissolution of clots for certain types of strokes or early surgical intervention for traumatic injuries like intracranial hemorrhage. Timing is essential when offering those treatments, so use a window that is not too late and avoid delays that may reduce the effectiveness of treatments. However, the weight of psychiatric consequences that may happen if someone does not get medical care on time should be well evaluated. Living with this condition can be mentally challenging for patients, sometimes leading to more anxiety, fears, and mistrust of the healthcare system, all of which may interfere with the recovery process.

5.3 Impaired Functional Recovery

The findings from the review also showed that delayed interventions in trauma management could also impact optimal functional recovery for the patients. Myrskykari et al. (2024) and Hsieh et al. (2020) in their study highlighted the importance of timely interventions in trauma care in contributing to optimal patient recovery and minimizing the chances of long-term disability. Studies show timely interventions help promote tissue repair, which is vital to optimal patient recovery. Early interventions such as wound cleaning of wounds and removal of dead tissue, stabilization of fractures, and physiotherapy can help improve the chances of tissue health and reduce healing time. In the long term, these processes will help improve patients' functional outcomes.

Timely interventions in trauma management are also associated with the concept of patient-centered care. It ensures that the healthcare providers focus more on addressing the patient's needs and preferences. Patient-centered care helps guarantee that patients are always involved in vital decision-making regarding their health and that they always have access to timely interventions. Sufficient evidence from studies conducted over the years shows that patient-centered care can significantly enhance patient satisfaction, engagement, and adherence to treatment plans, leading to improved outcomes and quality of life (Newgard et al., 2010).

5.4 Impact on Healthcare Resource Utilization

Another unanticipated outcome of delays in trauma management is increased healthcare resource utilization, which impacts the overall efficiency of healthcare facilities. Ackermann et al. (2024) and Karrison et al. (2018) determined in their studies that delays in trauma management often resulted in more extended hospital stays, necessitated additional medical interventions, and, in some cases, also escalated the overall costs incurred by the healthcare facilities in the delivery of care. Delayed interventions can result in secondary complications, which further increase the complexity of care and prolong the period of patient recovery. Sometimes, the patients may require specialized care to manage the complications.

Furthermore, the complications patients could develop from delayed interventions might require intensive treatments and rehabilitation. Healthcare facilities must ensure that patients have access to these interventions to maintain a certain degree of their initial functionality. The patients' families would also be faced with the problem of additional costs in ensuring

that their loved ones have continued access to the required care. Overall, addressing delays in trauma management would be essential to ensure optimal resource allocation and guarantee that patient outcomes are improved by delivering timely and effective treatment.

5.5 Negative Public Health Outcomes

Finally, another significant finding from the study is that intervention delays can negatively impact public health outcomes. Choi et al. and Kelen et al. (2021) argued that given the negative impact of delayed intervention on patient health regarding prolonged hospital stay, the healthcare system would also be compromised due to the increased patient load and resource depletion. The increased mortality and morbidity rates from delayed interventions can erode public confidence in the healthcare system. These factors might ultimately impact the overall social well-being and economic productivity, which is bound to be a cause for concern for the government (Vincent-Lambert & Mottershaw, 2018; Nishimura et al., 2022). Implementing prompt trauma management is essential for mitigating these negative health impacts, strengthening health system resilience, and improving overall health outcomes.

6 Conclusion

The qualitative study provides excellent insights into the effects of shock and trauma management delays on general patient care outcomes. The analysis highlighted some key factors that might contribute to delays in trauma care across different regions. The research determined many similarities across the literature regarding these contributing factors. Most studies highlighted resource limitation as a significant concern. Healthcare facilities may struggle with trauma system funding, emergency department crowding, and limited technological requirements to deliver timely interventions (Rinkinen, Kinnula, & Nordquist, 2024). Healthcare resource allocation can contribute to delays and hinder the ability of emergency personnel to respond to traumatic injuries, thereby increasing delays promptly. Geographical barriers could also contribute to delays in trauma management (Karstila et al., 2024). Patients residing in remote areas may experience more significant challenges in accessing emergency care, given that EMT services may be unable to access the remote region. Communication and coordination responses between emergency response teams, healthcare providers, and trauma care specialists. Miscommunication or lack of coordination may delay patient assessment, treatment planning, and transfer to definitive care facilities, compromising patient outcomes. Beyond these factors, there are also instances in which patient-related factors could contribute to delays in trauma intervention. These include patients' delays in recognizing symptoms, transportation barriers, and reluctance to seek medical health services (Colnaric, Bachir & El Sayed, 2021).

The analysis also highlighted common themes across different studies on some of the critical effects of delays in trauma management on general care outcomes. Anastasiu et al. (2017) in their research argue that delays in trauma management can result in increased mortality and morbidity among patients with traumatic injury. The focus of the study was on the errors in healthcare facilities that can contribute to mortality among patients in a trauma facility, which included delays in the implementation of the expected intervention. Karrison et al. (2018) similarly supported this view, arguing that delays in trauma intervention due to transport challenges in the United States can contribute to increased mortality rates among trauma patients. Choi et al. (2021) suggested that the best way to prevent preventable deaths among trauma patients would be by ensuring increased funding to meet the needs of the healthcare facilities and their increased population. The funding would help address some of the systematic barriers contributing to delays in trauma care intervention.

Delays in trauma management impose significant strains on healthcare resources, profoundly impacting the efficiency of healthcare systems. Delays in care delivery can mean longer hospital stays for the patients, given that the impacts of the injury could be exacerbated (Peters et al., 2023). Additional medical interventions become necessary to address these complications, further escalating resource utilization and healthcare costs (Pearkao et al., 2023). The financial strain extends beyond healthcare facilities, affecting patients through increased out-of-pocket expenses. Moreover, delays disrupt the flow of patients through the healthcare system, causing bottlenecks in critical areas such as emergency departments and operating rooms, ultimately reducing overall system efficiency. Mitigating delays in trauma management requires proactive measures to optimize resource allocation, streamline patient flow, and enhance communication and coordination among healthcare providers (Zhang et al., 20180. By addressing these challenges, healthcare systems can improve patient outcomes, enhance the patient experience, and achieve greater efficiency in delivering trauma care services.

Jensen et al. (2019) emphasize the importance of implementing evidence-based practices across EMT facilities to enable medical directors and paramedics to integrate research findings into their daily practice and improve patient care in the prehospital setting. Such a strategy will go a long way in ensuring that healthcare facilities have a greater chance of achieving optimal patient outcomes in the long term (Abebe et al., 2021). Myrskykari et al. (2024) emphasize the importance of increased collaboration between EMTs and METs in improving outcomes among trauma care patients.

Future research could explore the effectiveness of implementing evidence-based practices across emergency medical transport (EMT) facilities to improve patient care in the prehospital setting. Additionally, further investigation into collaboration between EMTs and medical emergency teams (METs) could provide insights into enhancing outcomes among trauma care patients. Longitudinal studies assessing the impact of systemic interventions on reducing delays in trauma management and improving patient outcomes would also be valuable in guiding future policy and practice in trauma care delivery.

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Nolan, B., Tien, H., Sawadsky, B., Rizoli, S., McFarlan, A., Phillips, A., & Ackery, A. 2017. Comparison of helicopter emergency medical services transport types and delays on patient outcomes at two levels I trauma centers. *Prehospital Emergency Care*, *21*(3), 327-333.

Okada, K., Matsumoto, H., Saito, N., Yagi, T., & Lee, M. 2020. Revision of 'golden hour' for hemodynamically unstable trauma patients: an analysis of nationwide hospital-based registry in Japan. *Trauma surgery & acute care open*, *5*(1), e000405. https://doi.org/10.1136/tsaco-2019-000405

Patel, A., Vissoci, J. R. N., Hocker, M., Molina, E., Gil, N. M., & Staton, C. 2017. Qualitative evaluation of trauma delays in road traffic injury patients in Maringá, Brazil. *BMC Health Services Research*, *17*(1), 1-8.

Pfeifer, R., Halvachizadeh, S., Schick, S., Sprengel, K., Jensen, K. O., Teuben, M., ... & Pape, H. C. (2019). Are prehospital trauma deaths preventable? A systematic literature reviews. *World Journal of Surgery*, *43*(10), 2438-2446.

Appendices

Appendix 1: Studies Included in the Literature Review

Citation	First author	Title	Geographical location of the study	Remarks (main findings)
Abebe, T., Boru, Y., Belay, E., Abebe, A., Kefyalew, M., & Kifle, F. (2022). Clinical profile and outcomes of trauma patients visiting the emergency department of a trauma center in Addis Ababa, Ethiopia. *African journal of emergency medicine, 12*(4), 478-483.	Tesfaye Abebe	Clinical profile and outcomes of trauma patients visiting the emergency department of a trauma center Addis Ababa, Ethiopia	Africa	The findings from the study showed that trauma was more prevalent among males, with a male-to-female ratio of 2.5:1, and predominantly affected individuals in the age group of 24–33. Additionally, approximately two-thirds of patients received prehospital treatment, underscoring the importance of early intervention and improved prehospital emergency services.
Ackermann, A., Pappinen, J., Nurmi, J., Nordquist, H., & Torkki, P. (2024). The Estimated Cost-Effectiveness of Physician-Staffed Helicopter Emergency Medical Services Compared to Ground-Based Emergency Medical Services in Finland. Air Medical Journal.	Axel Ackermann	The Estimated Cost-Effectiveness of Physician-Staffed Helicopter Emergency Medical Services Compared to Ground-Based Emergency Medical Services in Finland	Finland	Physician-staffed helicopter emergency medical services (HEMS) in Finland were found to be cost-effective compared to ground-based emergency medical services (EMS). HEMS prevented many 30-day mortalities annually, with an incremental cost-effectiveness ratio (ICER) ranging from €43,688 to €56,918 per quality-adjusted life year (QALY). However, most HEMS expenses were attributed to fixed costs related to 24/7 operations, highlighting the importance of efficient capacity utilization to optimize cost-effectiveness.

Anastasiu, M. N., Dedu, R., Anastasiu, M., & Ilie, A. (2017). Errors Contributing to Trauma Mortality: Retrospective Analysis in Level II Trauma Hospital. Journal of the American College of Surgeons, 225(4), e152-e153.	Marius N. Anastasia	Errors Contributing to Trauma Mortality: Retrospective Analysis in Level II Trauma Hospital	United States	The study analysed trauma patients who died during their initial hospital admission over five years, from January 2011 to December 2015. Among 2870 trauma patients admitted, 490 cases (18%) meeting polytrauma criteria were reviewed. Statistical analysis excluded 128 patients due to incomplete data or missed values. Of the analysed cases, 3.3% of admissions (12 patients) were found to have recognized errors in care contributing to their death. Common error patterns included delayed control of bleeding, failure to secure the airway, inappropriate management of unstable patients, missed or delayed diagnoses, and inadequate DVT prophylaxis.
Choi, J., Carlos, G., Nassar, A. K., Knowlton, L. M., & Spain, D. A. (2021). The impact of trauma systems on patient outcomes. Current problems in surgery, 58(1), 100849.	Jeff Choi	The impact of trauma systems on patient outcomes	United States	The work has yet to be completed. Despite recognition of the burden of trauma and our system's critical role in improving patient outcomes, trauma remains severely underfunded; in 2016, trauma accounted for only 2.9% of the National Institutes of Health's extramural budget.171 Accomplishing the mission of Zero Preventable Deaths After Injury will require funding to match the scope of the continued injury epidemic and a ceaseless march toward a genuinely comprehensive trauma system.
Colnaric, J., Bachir, R., & El Sayed, M. (2021). Association between mode of transportation and outcomes in penetrating trauma across different prehospital time intervals: a matched cohort study. The Journal of Emergency Medicine, 60(4), 460-470.	Jure Colnaric	Association Between Mode of Transportation and Outcomes in Penetrating Trauma Across Different Prehospital Time Intervals: A Matched Cohort Study	United States	Considering different prehospital time intervals, this study investigated the association between mode of transport (ground vs. helicopter) and survival of adult patients with penetrating injuries in the United States. Analysis of the 2015 National Trauma Data Bank revealed that patients transported by helicopter had significantly higher survival rates than those transported by ground ambulance within the 0–60-minute time interval from dispatch to arrival at the hospital, particularly in the 31–60-minute interval. However, no difference in survival between the two groups was observed in shorter (0–30 min) or extended (>60 min) prehospital time intervals. These findings suggest that helicopter transport may be beneficial within a specific time window, informing the development of evidence-based dispatch criteria for helicopter emergency medical services.

Eastin, C., Karim, S., Hawthorn, C., Webb, M. H., Waheed, M. A., Buford, A., ... & Sexton, K. (2019). Mandated 30-minute scene time interval correlates with improved return of spontaneous circulation at emergency department arrival: a before and after study. The Journal of Emergency Medicine, 57(4), 527-534.	Carly Eastin	Mandated 30-minute Scene Time Interval Correlates with Improved Return of Spontaneous Circulation at the Emergency Department. Arrival: A Before and After Study		This study investigated the impact of implementing a protocol change mandating a 30-minute scene time interval (STI) for out-of-hospital cardiac arrest (OHCA) on patient outcomes within an urban Emergency Medical Service (EMS) system. They found that after implementing the 30-minute STI, the rate of return of spontaneous circulation (ROSC) from OHCA increased significantly from 27.3% to 40.1%. The STI also increased from 19 minutes and 23 seconds to 29 minutes and 40 seconds after the protocol change. Regression analysis showed that the protocol change was independently associated with an improved chance of ROSC at emergency department arrival.
Hsieh, S. L., Hsiao, C. H., Chiang, W. C., Shin, S. D., Jamaluddin, S. F., Son, D. N., ... & Chen, T. H. (2022). Association between the time to definitive care and trauma patient outcomes: every minute in the golden hour matters. *European Journal of Trauma and Emergency Surgery*, 1-8.	Shang-Lin Hsieh	Association between the time to definitive care and trauma patient outcomes: every minute in the golden hour matters		The study investigated the impact of time to definitive care on trauma patient outcomes within a 2-hour window. It found that shorter intervals from injury to definitive care were associated with lower 30-day mortality rates and better functional outcomes. This association was held across all patients and was particularly pronounced in subgroups with significant trauma and torso injuries. These findings emphasize the crucial role of timely access to definitive care in improving survival and functional outcomes for trauma patients.
Jensen, J. L., Petrie, D. A., Travers, A. H., & PEP Project Team. (2009). The Canadian prehospital evidence-based protocols project: Knowledge translation in emergency medical services care. Academic Emergency Medicine, 16(7), 668-673.	Jan J. Jensen	The Canadian Prehospital Evidence-based Protocols Project: Knowledge Translation in Emergency Medical Services Care	Canada	The Prehospital Evidence-based Protocols Project Online (PEP) is a comprehensive repository of appraised research evidence relevant to prehospital emergency medical services (EMS) interventions. The database contains 182 individual interventions organized under 103 protocols, with 933 citations. This project facilitates incorporating evidence-based practices into EMS protocols, enabling medical directors and paramedics to integrate research findings into their daily practice and improve patient care in the prehospital setting.

Karstila, H., Ruuhela, R., Rajala, R., & Roivainen, P. (2024). Recognition of climate-related risks for prehospital emergency medical service and emergency department in Finland–A Delphi study. International Emergency Nursing, 73, 101421.	Heini Karstila	Recognition of climate-related risks for prehospital emergency medical service and emergency department in Finland – A Delphi study	Finland	The study aimed to explore the challenges climate change poses on emergency medical services (EMS) and emergency departments (ED) in Finland and provide insights for preparedness. A two-round Delphi study involving ten participants identified various climate change-related challenges, including adverse health impacts, increased workload, operational difficulties, and societal problems. Participants emphasized the importance of effectively preparing action plans to manage potential incidents and emergencies, highlighting the need for climate-resilient healthcare systems.
Karrison, T. G., Schumm, L. P., Kocherginsky, M., Thisted, R., Dirschl, D. R., & Rogers, S. (2018). Effects of driving distance and transport time on mortality among Level I and II traumas occurring in a metropolitan area. Journal of trauma and acute care surgery, 85(4), 756-765.	Theodore G Karrison	Effects of driving distance and transport time on mortality among Level I and II traumas occurring in a metropolitan area.	United States	This study examined the impact of ambulance driving distance and transport time on mortality among trauma incidents in Chicago. Analyzing data from over 24,000 cases, the study found that increased driving distance was associated with a modest increase in mortality, with a corresponding linear effect over a range of 0 to 12 miles. Using distance as an instrumental variable, the analysis estimated a significant increase in mortality with longer transport times. These findings underscore the importance of minimizing transport time in urban trauma care, suggesting that small increases in distance travelled can affect patient outcomes.
Kelen, G. D., Wolfe, R., D'Onofrio, G., Mills, A. M., Diercks, D., Stern, S. A., ... & Sokolove, P. E. (2021). Emergency department crowding: the canary in the health care system. NEJM Catalyst Innovations in Care Delivery, 2(5).	Gabor D. Kelen	Emergency Department Crowding: The Canary in the Health Care System		Emergency department (ED) crowding is a critical indicator of health system functionality, impacting patient morbidity, mortality, and staff well-being. Despite its documented effects, ED crowding is often overlooked, attributed solely to patient inconvenience. However, it stems from systemic issues, including misaligned healthcare economics prioritizing high-margin patients, leading to inefficient hospital operations. Addressing the root causes of ED crowding necessitates realigning healthcare financing to allow hospitals to maintain inpatient capacity below a critical threshold. Failure to do so perpetuates ED crowding and exacerbates patient safety risks.

Leppäkoski, T., Paavilainen, E., & Åstedt-Kurki, P. (2011). Experiences of emergency care by the women exposed to acute physical intimate partner violence from the Finnish perspective. International Emergency Nursing, 19(1), 27-36.	Tuija Leppäkoski	Experiences of emergency care by the women exposed to acute physical intimate partner violence from the Finnish perspective	Finland	The study investigated intimate partner violence (IPV) among women seeking care in emergency departments (EDs). It found a high prevalence of physical IPV, with psychological violence often accompanying acute cases. Women expressed the need for comprehensive care, including medical treatment, psychological support, and assistance for themselves and their families. The findings underscore the importance of EDs in addressing IPV and providing holistic care to women affected by violence. Developing family-oriented services and enhancing training for ED professionals are crucial steps toward effectively supporting IPV survivors and reducing the cycle of violence.
Myrskykari, H., Iirola, T., & Nordquist, H. (2024). The role of emergency medical services in the management of in-hospital emergencies: Causes and outcomes of emergency calls–A descriptive retrospective register-based study. Australasian Emergency Care, 27(1), 42-48.	Henna Myrskykari	The role of emergency medical services in the management of in-hospital emergencies: Causes and outcomes of emergency calls – A descriptive retrospective register-based study	Finland	This study investigated the response to in-hospital emergencies by emergency medical services (EMS) in hospitals without dedicated medical emergency teams (METs) in Southwest Finland. Analysis of patient care reports revealed that cardiac arrest and reduced level of consciousness were the most common emergencies prompting EMS calls. Hospital personnel initiated medical measures in 68% of cases before EMS arrived, and follow-up treatment was required in 72%. These findings suggest that while EMS is crucial in responding to in-hospital emergencies, hospital staff can implement initial treatment measures even without dedicated METs.
Newgard, C. D., Schmicker, R. H., Hedges, J. R., Trickett, J. P., Davis, D. P., Bulger, E. M., ... & Resuscitation Outcomes Consortium Investigators. (2010). Emergency medical services intervals and survival in trauma: assessment of the "golden hour" in a North American prospective cohort. Annals of Emergency Medicine, 55(3), 235-246.	Craig D. Newgard	Emergency Medical Services Intervals and Survival in Trauma: Assessment of the "Golden Hour" in a North American Prospective Cohort		The study investigated the correlation between emergency medical services (EMS) intervals and mortality among trauma patients with physiological abnormalities. Despite the widely recognized importance of the "golden hour" following traumatic injury, the analysis found no significant association between EMS response times and mortality rates in this specific patient population. These findings challenge conventional assumptions about the criticality of rapid EMS interventions in improving outcomes for trauma patients with physiological abnormalities, suggesting a need for further exploration and potential re-evaluation of prehospital trauma care protocols.

Nishimura, T., Nojima, T., Naito, H., Ishihara, S., Nakayama, S., & Nakao, A. (2022). Prehospital emergency lifesaving technicians promote the survival of trauma patients: A retrospective cohort study. The American Journal of Emergency Medicine, 56, 218-222.	Takeshi Nishimura	Prehospital emergency lifesaving technicians promote the survival of trauma patients: A retrospective cohort study.	Asia	The study compared the outcomes of trauma patients treated by emergency lifesaving technicians (ELSTs) versus essential emergency medical technicians (BEMTs) in Japan. Overall, survival to discharge did not significantly differ between the two groups. However, ELST attendance was associated with a higher frequency of in-hospital blood transfusion, and specific subgroups, including patients with lower injury severity, older adults, and those transported during earlier study periods, showed a survival benefit with ELST intervention.
Nordquist, H., & Kouvonen, A. (2023). Critical incident experiences, related stress, and support among Finnish paramedics: A cross-sectional survey study. International Emergency Nursing, 71, 101367.	Hilla Nordquist	Critical incident experiences, related stress, and support among Finnish paramedics: A cross-sectional survey study	Finland	This study investigated critical incident (CI) experiences, critical incident stress (CI-S), and their association with leaving the paramedic profession among Finnish paramedics. All 31 listed CIs were experienced by the paramedics, with experiences increasing with work experience, particularly among men. CI-S varied widely and increased with work experience but was not strongly associated with leaving the profession. Support for coping with CI-S was primarily received from colleagues, followed by family members, friends, and managers. The study underscores the need for effective coping strategies, organizational support, and managerial practices to assist paramedics in managing the demands of their profession.
Pearkao, C., Potisopha, W., Wonggom, P., Jumpamool, A., Apiratwarakul, K., & Lenghong, K. (2023). Outcomes of Emergency Trauma Patients after the Implementation of Web Application Operating Systems. *Asian Nursing Research*.	Chatkhane Pearkao	Outcomes of Emergency Trauma Patients After the Implementation of Web Application Operating Systems	Asia	The study demonstrates a significant reduction in trauma team activation intervals among patients who utilized the web application operating system, indicating improved efficiency in initiating emergency response protocols. Furthermore, a substantial decrease in the length of stay in the emergency department was observed for patients who accessed the application, suggesting streamlined processes and faster transitions through the care continuum.

Peters, G. A., Goldberg, S. A., Hayes, J. M., & Cash, R. E. (2023). Patients who use emergency medical services have greater severity of illness or injury compared to those who present to the emergency department via other means: A retrospective cohort study. Journal of the American College of Emergency Physicians Open, 4(4), e13017.	Gregory A. Peters	Patients who use emergency medical services have greater severity of illness or injury compared to those who present to the emergency department via other means: A retrospective cohort study.	United States	The study compared characteristics and illness/injury severity between patients presenting to the emergency department (ED) via emergency medical services (EMS) versus other means. Analysis of nationwide data from 2015 to 2019 revealed that EMS patients were older, predominantly male, and had more chronic medical conditions. They also had higher triage scores, consumed more ED resources, and had longer lengths of stay. EMS arrival was associated with higher odds of hospital admission and in-hospital mortality.
Pouraghaei, M., Vahdati, S. S., Moharamzadeh, P., Abrishami, L., & Balafar, M. (2020). The impact of prehospital emergency services on the outcome of trauma patients. Archives of Trauma Research, 9(3), 139-142.	Mahboub Pouraghaei	The Impact of Prehospital Emergency Services on the Outcome of Trauma Patients		This study explored the impact of prehospital care on the outcomes of trauma patients, focusing on the shock index as a predictive tool. Analysis of 359 patient records revealed that car accidents, motorcycle accidents, and falls from height were the most common trauma mechanisms, with these factors also contributing to fatalities. Interestingly, a significant correlation was observed between the time interval from trauma to emergency care, shock index, and patient outcomes. Notably, patients with an average shock index but delayed transfer times had a notably higher mortality rate. These findings underscore the critical importance of timely prehospital interventions in enhancing survival rates among trauma patients.
Rinkinen, T., Kinnula, M., & Nordquist, H. (2024). Technological development roles and needs in prehospital emergency care from the advanced level paramedics' perspective. International Emergency Nursing, 73, 101406.	Tuomo Rinkinen	Technological development roles and needs in prehospital emergency care from the advanced level paramedics' perspective	Finland	Advanced-level paramedics in Finland identified their roles in technological development processes, including expertise, skill enhancement, and support for development and implementation. However, they faced obstacles such as employer reluctance and lack of training. Paramedics emphasized the need for technological advancements in information and communication technology, treatment tools, equipment, and nationally homogeneous development to support quality and safety in prehospital emergency care. Overall, paramedics possess extensive expertise and can contribute significantly

				to technological innovation in their field, provided they are adequately involved in development efforts.
Sun, Y., Pan, C., Li, T., & Gan, T. J. (2017). Airway management education: simulation-based training versus non-simulation-based training-A systematic review and meta-analyses. BMC anesthesiology, 17(1), 1-7.	Yanxia Sun	Airway management education: simulation-based training versus non-simulation-based training-A systematic review and meta-analyses		This systematic review and meta-analysis aimed to compare the effectiveness of simulation-based training (SBT) versus non-simulation-based training (NSBT) for airway management education. Seventeen studies were analysed, revealing that while SBT was associated with improved behavioural performance compared to NSBT, there were no significant differences between the two methods regarding time-skill, written examination scores, or success rates of procedure completion on patients. Therefore, the study concludes that SBT may not be superior to NSBT for airway management training.
Vincent-Lambert, C., & Mottershaw, T. (2018). Views of emergency care providers about factors that extend on-scene time intervals. African journal of emergency medicine, 8(1), 1-5.	Craig Vincent-Lambert	Views of emergency care providers about factors that extend on-scene time intervals	United States	This study investigates emergency care providers' perceptions regarding factors affecting on-scene time intervals in EMS settings. Through a descriptive and prospective approach utilizing a self-designed questionnaire, the study finds that prolonged on-scene time may negatively impact patient outcomes, with waiting for additional services, patient acuity, and extrication processes identified as significant contributors. Acknowledging and addressing these factors is crucial for enhancing efficiency and resource availability in EMS operations.
Zhang, L. Y., Zhang, X. Z., Bai, X. J., Zhang, M., Zhao, X. G., Xu, Y. A., ... & Li, Y. (2018). Current trauma care system and trauma care training in China. Chinese Journal of Traumatology, 21(2), 73-76.	Lian-Yang Zhang	Current trauma care system and trauma care training in China	Asia	The study highlights the importance of efficient and timely trauma care in addressing life-threatening injuries. It emphasizes the need for improvements in essential capacities and a conceptual revolution to enhance the trauma care system, drawing insights from experiences in developed countries.

Appendix 2: JBI Critical Appraisal Checklist for Systematic Reviews and Research Syntheses

Reviewer_____
Date_____

Author_____Year_____ Record Number_____

		Yes	No	Unclear	Not applicable
1.	Is the source of the opinion clearly identified?	☐	☐	☐	☐
2.	Does the source of opinion have standing in the field of expertise?	☐	☐	☐	☐
3.	Are the interests of the relevant population the central focus of the opinion?	☐	☐	☐	☐
4.	Is the stated position the result of an analytical process, and is there logic in the opinion expressed?	☐	☐	☐	☐
5.	Is there reference to the extant literature?	☐	☐	☐	☐
6.	Is any incongruence with the literature/sources logically defended?	☐	☐	☐	☐

Overall appraisal: Include □ Exclude □ Seek further info □

Comments (Including reason for exclusion)

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Appendix 3. JBI Critical Appraisal Checklist for Qualitative Research

JBI Critical Appraisal Checklist for Qualitative Research

Reviewer_____
Date_____

Author_____Year_____ Record Number_____

		Yes	No	Unclear	Not applicable
1.	Is there congruity between the stated philosophical perspective and the research methodology?	☐	☐	☐	☐
2.	Is there congruity between the research methodology and the research question or objectives?	☐	☐	☐	☐
3.	Is there congruity between the research methodology and the methods used to collect data?	☐	☐	☐	☐
4.	Is there congruity between the research methodology and the representation and analysis of data?	☐	☐	☐	☐
5.	Is there congruity between the research methodology and the interpretation of results?	☐	☐	☐	☐
6.	Is there a statement locating the researcher culturally or theoretically?	☐	☐	☐	☐
7.	Is the influence of the researcher on the research, and vice-versa, addressed?	☐	☐	☐	☐
8.	Are participants and their voices adequately represented?	☐	☐	☐	☐
9.	Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	☐	☐	☐	☐
10.	Do the conclusions drawn in the research report flow from the analysis or interpretation of the data?	☐	☐	☐	☐

Overall appraisal: Include □ Exclude □ Seek further info □

Comments (Including reason for exclusion)

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Appendix 4: Evaluation of the Quality of the Studies

Study		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total

Abebe et al. 2022.	%	Y	Y	Y	Y	Y	Y	Y	Y			8/8
Ackermann et al. 2024.	%	Y	Y	Y	N	Y	Y	N	Y			6/8
Anastasiu et al. 2017	%	Y	N	Y	Y	Y	Y	Y	Y			7/8
Choi et al. 2021	¤	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	9/10
Colnaric et al. 2021	%	Y	?	Y	Y	?	Y	Y	Y			6/10
Jensen et al. 2009	¤	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	9/10
Eastin et al. 2019	%	Y	Y	Y	Y	Y	Y	Y	Y			8/8
Hsieh et al. 2022	%	?	Y	Y	Y	Y	N	Y	Y			6/8
Karstila et al. 2024.	¤	Y	Y	Y	Y	Y	N	Y	Y	?	Y	8/10
Karrison et al. 2018	%	Y	N	Y	Y	Y	N	Y	Y			6/8
Kelen et al. 2021.	#	Y	?	N	Y	Y	Y					4/6
Leppäkoski 2011	¤	Y	Y	Y	Y	?	?	N	Y	Y	Y	7/10

Myrskykari et al. 2024	%	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	9/10
Newgard et al. 2010	%	Y	Y	Y	Y	Y	N	Y	Y			7/8
Nishimura et al. 2022	%	Y	N	Y	N	Y	Y	Y	Y			6/8
Nordquist 2023	%	Y	Y	Y	Y	?	Y	Y	N			6/8
Pearkao et al. 2023	%	Y	Y	Y	?	Y	Y	Y	Y			7/8
Peters et al. 2023	%	Y	Y	Y	?	?	Y	Y	Y			6/8
Pouraghaei et al. 2020	%	Y	Y	Y	Y	?	N	Y	Y			6/8
Rinkinen 2024	%	Y	Y	Y	Y	Y	Y	Y	Y			8/8
Sun 2017	#	Y	?	Y	Y	Y	Y					5/6
Vincent et al. 2018	#	Y	Y	Y	?	Y	Y					5/6
Zhang et al. 2020	%	Y	Y	Y	Y	Y	Y	Y	Y			8/8